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The Rise of Community Forestry in Mexico: History, Concepts, and Lessons Learned from Twenty-Five Years of Community Timber Production

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Executive Summary

Mexico presents a virtually unique case where much of the nation's forests were placed in the hands of communities, in successive degrees of actual control, beginning in the early decades of the 20th century, as a little-noticed result of the Mexican Revolution. Today, Mexico's common property community-managed forests, and associated community forest enterprises (CFEs) in both temperate and tropical areas, appear to be at a scale and level of maturity unmatched anywhere else in the world. It is thus a national laboratory for studying the social and ecological benefits of delivering forests to local communities. Mexico's forests have rich biodiversity, including one tenth of all terrestrial vertebrates and plants known to science. Although deforestation has been a serious problem throughout the second half of the 20th century, a recent national study suggests that forest losses have been at the low end of estimates over the last two decades. Nonetheless there are few substantial intact forest masses left in Mexico, and some of these appear to be in areas where community forest management is a dominant land use. Estimates of communities that are managing their forests for the commercial production of timber in Mexico have ranged from 288 to 740. Preliminary research for this study found 533 community logging permits in just 5 states, suggesting that the number of CFEs may be beyond the upper end of current estimates. With this large universe, there have been several recent efforts to classify CFEs by degree of vertical integration and other characteristics, and a new 5-level classification is proposed here, that also expands the definition of what constitutes a CFE.

The Mexican experience forces a reevaluation of many theoretical concepts which have been used to analyze community forestry elsewhere. Contemporary common property regimes have been defined as those that have endured and those that have emerged, but Mexico is neither. It is a massive, state-structured experiment in common property management that has been growing in size throughout most of the 20th century. Some 40% of Mexico's forest natural assets were transferred to community hands between 1950-1980 alone, reaching an estimated 80% of Mexican forests in community hands. Mexico's CFEs are virtually unique in the world in having mounted community enterprises for the commercial production of timber on the basis of a common property regime. Given Mexico's strong regulatory framework, the Mexican case may also be thought of as a form of co-management as it occurs in Asia, but on the basis of a privately held common property rather than public property. Mexican forest communities are found to have large stocks of relational and traditional institutional social capital, but that government and other actors have done much to create new organizational social capital on the traditional foundations. In asset building the Mexican experience forces the focus of attention away from the accumulation of household assets and towards the accumulation of assets in the CFE and in community infrastructure and social welfare programs. In ecosystem management, Mexican CFEs are seen to be moving progressively towards a more ecosystemic view of their forest resources.

The substantial Mexican CFE sector has emerged from a 70-year history of policy initiatives and struggles by communities and civil society. The Mexican Revolution, predicated on a massive and ongoing distribution of land to groups of peasant farmers in two main categories of agrarian reform (*ejidos* and indigenous communities), had the consequence of giving communities important natural assets on their community lands. Thus, the idea that communities should be in charge of producing timber from these community lands, just as they were in charge of agricultural production on their lands, took root very early. However, there was another major current very early that felt that communities did not have the skills to manage timber production on their lands, and that the Mexican constitution called for state intervention to organize timber production. After early efforts in the 1930s to establish forest cooperatives, which quickly fell into corruption and state tutelage, forest policy in Mexico from 1940-1970 was dominated by logging bans and logging concessions in a context of import-substitution industrialization, with virtually no attention given to CFEs. Beginning in 1970, however, two different strategies for the promotion of CFEs emerged. One, linked to a government agency called FONAFE, attempted the large-scale creation of CFEs that were forced to sell to concessionaires. The second, seated in another government agency, the DGDF-SFF, worked outside the concession areas in promoting CFEs that were freer to operate in the marketplace. By the late 1970s and early 1980s, reformers in the DGDF were able to enter several different regions of Mexico and the "first golden age" of community forest promotion began (1974-1986). After the passage of a pro-community forestry law in 1986, government support of CFEs went into a decline until the late 1990s. In the early 1980s, grassroots mobilizations and civil society actors also banded together to create a new wave of resistance to government concessions. In the late 1990s, two new government programs emerged, PRODEFOR and PROCYMAF, that gave new support to CFEs. This period marked a sea change in community control of forests and logging in Mexico, and was a major advance in social and economic equity and a more democratic distribution of the benefits of forest resources.

Another unusual social capital feature of Mexican CFEs is the large number of second and third-level organizations which have emerged over the last 25 years. These organizations, which have usually banded together around the provision of the forest technical services (FTS) required by Mexican law, have frequently suffered the defections of the largest members because the perceived costs of collective action are higher than the benefits for them. Innovative models for managing the FTS problem without defections and for using second-level organizations to achieve vertical integration for small-volume ejidos are discussed. Third-level or national organizations have presented a special problem in the creation of social capital in the sector, and have been heavily reliant on government and foundation funding. It is found that traditional social capital in local communities can both provide a firm base for the construction of a successful CFE but can also serve as "communal fetters" that inhibit the emergence of a more efficient and productive CFE. Many CFEs are also plagued by internal conflicts over corruption and control by local elites. The construction of CFEs and their associated social capital has proven to be a powerful force for mitigating social conflict in the Costa Grande of Guerrero. The principal role of foundations in creating a stronger national

presence for community forestry than would have otherwise occurred, and in assuring the survival of the more economically precarious experiences in tropical forest management in Quintana Roo.

CFEs have been based on a wide variety of arrangements for apportioning the stocks and flows of the common pool resource. This suggests that the exact conformation of the stocks and flows should be left up to the creativity of individual communities and that there is no one right way to handle this issue. Community enterprises in Mexico require the meshing of traditional governance structures with enterprise management Challenges that this meshing produce include managerial rotation, questions of authority and labor administration, issues of participation, and corruption. Communities have particularly struggled with issues of community interference in rational enterprise administration and corruption. The various organizational structures that have emerged in CFEs are analyzed and it is concluded than an organizational innovation based on a tradition from Oaxaca known as the Council of Elders is a unique feature of some CFEs and has served to separate enterprise administration from community politics in some cases. The emergence of "work groups" which represents dissolution of the CFE in favor of smaller enterprises is a genuine grassroots organizational response to corruption. CFEs are found to be highly profitable at all levels of vertical integration. Compared to small business start-ups in other countries, few CFEs appear to fail entirely. There is a clear relationship between size of forest and vertical integration. Finished product communities have on average some 11,000 ha of forest, sawmill communities 7,500 ha, roundwood communities 5,000 and stumpage communities only 2,400.

Mexican CFEs had enormous natural assets transferred to them through the agrarian reform process and, having constructed CFEs to exploit them, have devised a variety of ways of directing the flow of benefits from the common pool stock. These include employment and wages, investments in the enterprise, profit distribution (reparto), and investments in community infrastructure and social welfare programs. Where asset-building most clearly occurs is in capital asset building in the enterprise, which helps build employment and income security, a key component of household asset-building, and at the community level, where community assets increase the quality of life in forest communities. Almost all CFEs directly market their own timber production and historically almost all CFEs have sold into national timber markets, the smaller ones selling to state-level markets and larger ones selling into different national markets. There have been periods and regions when sales have been difficult due to price competition, but these problems appear to be episodic and transitory and most CFEs at most times appear able to sell their production, even if not always at the price they would like. The forest products industry is moving toward certified products, but this creates a dilemma for certified community forests. They cannot compete on price or volume or, it seems, on certification. This strongly suggests the need for a new market niche, a new form of certification, one that recognizes timber products that are *produced by* communities who are sustainably managing their forests, and who are also producing stable rural communities and economic equity along with timber. This is a market niche that Mexico could dominate.

It is found that the most economically dynamic CFE communities will also have high rates of emigration, as a phenomenon of their economic growth and the creation of migrant social networks. CFEs will not end emigration, but can only offer options to those who would like to stay in their community. It is also found that Mexican local communities, both indigenous and non-indigenous, offer a unique form of communitarian capitalism that should be celebrated and promoted by the Mexican government as a uniquely Mexican form of capitalism, analogous to Asian capitalism, that is proving to be highly competitive in the marketplace.

Mexican CFEs are moving towards a more integrated ecosystem management that goes beyond timber production, in part prodded by a stronger regulatory framework coming from the Mexican government. There are both traditional and newer, urban conservationist tendencies within many logging communities, which could pressure some logging communities to abandon logging or move into the sales of more benign ecosystem services over the next decade. Sales of ecosystem services and products including water, parrots, mushrooms, ecotourism, and carbon sequestration are increasing options for many communities. Since 1997, a highly favorable policy climate for community forestry has emerged, which has now become more pronounced in the administration of President Vicente Fox, with notable expansions of the PRODEFOR and PROCYMAF support programs.

25 lessons learned in Mexican community forestry are presented. A new government-led marketing campaign for the entire CFE sector, in close collaboration with second and third-level organizations and forest NGOS, is an important further step that government could be taking now. As has been argued, Mexico's CFEs represent a distinctive productive sector within the global forest products industry. A publication relations campaign could be mounted within the forest products industry and for the public that "sells" the Mexican CFE sector as one that uniquely combines high quality wood products with "green seal" forest management, and social justice and equity. This should also involve a major push for certification and the development of schemes for the sale of ecosystem services. If it is true that Mexico is the face of the future in global community future, it means that for Mexico, the future is now. Thus, Mexican community forestry stands at the brink of even greater achievements. It is a golden moment for all of its stakeholders to join together in a concerted effort to take it to the next level of equity, democracy, sustainability, and economic competitiveness.

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I. An Overview of the Mexican Community Forest Enterprise Sector

A. Introduction

For years, researchers concerned with sustainable management of forests in the tropics have argued that the road to improved stewardship of forest resources is the transfer of varying degrees of responsibility to the local communities who get their livelihood from them. Inspired by this hypothesis, various joint management, extractive reserve, and indigenous reserve projects, where governments and local communities share responsibility for a given forest resource for production of both timber and non-timber forest products and under varying land tenure arrangements, are increasingly gaining ground throughout the tropics. At the same time, conservationists who despair at the steady loss of tropical forests declare that the only way to stem the tide of deforestation is to place as many tracts as possible under strict protection. In this context, Mexico presents a virtually unique case where much of the nation's forests were placed in the hands of communities, in successive degrees of actual control, beginning in the early decades of the 20th century, as a little-noticed result of the Mexican Revolution. Today, Mexico's common property community-managed forests, in both temperate and tropical areas, appear to be at a scale and level of maturity unmatched anywhere else in the world. It is thus a national laboratory for studying the social and ecological benefits of delivering forests to local communities.

This report examines the historical and contemporary experience of community forest management in Mexico from a variety of conceptual perspectives. It is based on a review of the existing literature in both Spanish and English, ten in-depth case studies of community forest enterprises (CFEs) at various levels of industrial integration (only three of which are included in this draft-Appendix IV), and on an accumulation of over two decades of combined experience in the sector by the authors. The report looks at the current state of our knowledge on Mexican forests, forest communities, and CFEs, examines the concepts of common property, social capital, asset-building, and ecosystem management, and applies them systematically to the Mexican case, and presents a new interpretive history of the development of CFEs in Mexico. This is one product of a series of research projects that have been undertaken under a Ford Foundation grant. Other components include an annotated bibliography in Spanish, a pilot project in evaluating the number of CFEs in Mexico and their characteristics, a study of the impact of community forestry on land use/land cover change, a study of the economic and ecological sustainability of community forest management in temperate and tropical zones, and a variety of published products. A summary of these other research components can be found in Appendix I. In addition to these research activities, a new project, inspired by this review, is being undertaken. This activity will be a census in the 10 principal forest production states of all communities that currently have logging

permits and a sample survey of their characteristics. This will provide the first comprehensive effort to gauge the real magnitude and contributions of CFEs to society, the economy, and the forest ecosystems of Mexico.

A few terminological notes are in order. Throughout this report we will refer to community forest management (CFM) as a reference to the general phenomenon and to community forest enterprises (CFEs) in specific reference to communities that are commercially producing timber with varying levels of integration.[1] As well, the generic term *communities* will be used to refer to both of the common property community land tenure systems that exist in Mexico, e*jidos* and *indigenous communities* (about which there will be more later).

B. The Forests of Mexico: Extent, Ecology and Deforestation

According to the 1994 National Forest Inventory, 29% of the national territory of Mexico is covered by "forests and rainforests", corresponding to 56.5 million hectares. Another 22.1 million hectares are forested but "with diverse degrees of disturbances and without important vegetative or forest cover". Of this, 30.2 million hectares (54% of total forests and rainforests) are temperate zone forests and 26.3 million (46% of the total) are tropical forests, both tropical dry forests and rainforests (INEGI, 1997).

The temperate pine-oak forests of Mexico form the forest cover for the Sierra Madre Occidental and the Sierra Madre Oriental, the mountain ranges in western and eastern Mexico, the Volcanic Axis which joins the two ranges in central Mexico, and the Sierra Madre del Sur along the Pacific Coast of Guerrero and Oaxaca. In the south, after a break at the Isthmus of Tehuantepec, the mountains rise again in the Sierra Madre de Chiapas and the Mesa de Chiapas in southeastern Mexico. It is in on the slopes of the Sierras that Mexico's pine and oak forests are found. Mexico has the greatest number of pine species of any country in the world, some 72 in two major groups, the subgenus Haploxylon and the subgenus Diploxylon (Perry, 1991). Of these, nine are classified from "rare" to "very rare and very endangered" (Perry, 1991). There are also some 130 species of oak, with both pine and oak having rates of endemism of over 70% (Castilleja, 1996). Map I below shows the distribution of forests in Mexico as they were thought to be in the mid-1990s.

Map inserted here in hard copies

(Castilleja, 1996) has grouped the two principal forest vegetation classifications for Mexico, Miranda/Hernández and Rzedowski, into a basic classification of Tropical Rain Forests (including *selva alta perrenifolia, selva alta subperrenifolia, selva mediana*

[1] The term "silvicultura comunitaria" (community silviculture) has also been widely used in the Spanish language literature to refer to all aspects of community forest management. We have not adopted this term here because the use of the term "silviculture" suggests a narrow focus on forest management issues, while CFE is intended to include all aspects of the community enterprise, from forest management to industrialization.

subperrenifolia), Tropical Seasonal Forests (including Tropical Dry Forests), Tropical Montane Forests, and Coniferous and Oak Forests. It is the Tropical Rainforests and Tropical Seasonal Forests that have been most heavily impacted by deforestation. Today, Tall Tropical Rainforest (*selva alta perrenifolia*), with canopy heights of over 30 meters and annual rainfall over 3 meters, are estimated to be at about 10% of their original extension, and confined to the Lacandon region of Chiapas and northern Chiapas-southern Oaxaca, in a region known as the Chimalapas. Medium-high deciduous Tropical Rainforest extends from northern Veracruz through most of the southern and central Yucatán Peninsula. Most of the tropical community forestry projects in Mexico have developed in *selva mediana subperrenefolia* (Medium semi-deciduous forests) in southern Campeche and southern and central Quintana Roo. Tropical Seasonal Forests (*selvas subcaducifolias* and *selvas caducifolias)* loose up to 50% of their leaves in prolonged dry seasons, and may be less than 10 meters in height. Few if any forest management projects for timber have been developed in these forests. Tropical Montane Forests can be found in an altitudinal belt from 1000 and 1500 m on the western slopes of the Sierra Madre Oriental, and parts of the Sierra Madre del Sur and north and central Chiapas. Because of the relative lack of commercial species in these forests, few community forest projects are found in these forests as well. The Conifer and Oak Forests extend throughout the Sierra Regions, with pines dominating in the higher, colder altitudes, with oaks more common at lower and drier altitudes (Castilleja, 1996). The majority of all forest management communities in Mexico are found in the Conifer and Oak Forests, particularly in the states of Chihuahua, Durango, Michoacan, Guerrero, Puebla, and Oaxaca.

These forests contain much of Mexico's vaunted biodiversity. "Although Mexico covers only one percent of the earth's land area, it contains about one tenth of all terrestrial vertebrates and plants known to science. The meeting of the nearctic and neotropical biotic regions, the abundance of topographic islands and the wide climatic variation across its territory are significant factors in Mexico's biodiversity" (Castilleja, 1996). Of some 25,000 vascular plant species and 1352 vertebrate species, 81% of the plant species and 75% of the vertebrates are found in the four types of forest mentioned.

All recent studies of deforestation in Mexico suggest that deforestation rates have varied from tropical and temperate zone areas in recent decades. As elsewhere in the tropics, deforestation in southeastern Mexico where the tropical forests are concentrated, has occurred at alarming rates. In the mid-1980s deforestation rates in Mexico's tropical forests was estimated at around 2% a year but regional studies show local rates that range from 4.3 to 12.4% annually (World Bank, 1995). Sohn, et al. (Sohn, et al., 1999) report for their study area in the state of Yucatan that forest cover had decreased from 41% to 28% in just ten years (1985-1995) and that "extensive and massive forest clearings occurred in the late 1970s and continue in the study area". De Jong, et al., (de Jong, 2000) found that from the mid-1970s to the mid-1990s, a block of the Lacandon rainforest had lost nearly one-third of its mature forest, although there had been very little decline within protected areas. It has been estimated that 40% of the historic Lacandon was lost by 1995 [O'Brien, 1998 #826]. Trejo and Dirzo (2000 #610) demonstrate that only 27% of the original cover of seasonally dry tropical forest remains in Mexico.

The rates of deforestation mentioned above include annual losses of forest cover that range from 365,000 ha annually to 1.6 million annually. However, the most comprehensive recent study of land use/land cover change (LUCC) in Mexico has produced some new figures that come in at the very low end of this range. This study, carried out by the Instituto de Geografía of the Universidad Nacional Autónoma de México (UNAM), commissioned by INEGI and SEMARNAT, constitutes the National Land Use Inventory of 2000 finds that the rate of forest loss in the 1976-2000 period has been .25% for forests and .76% for tropical forests. This implies an average annual loss of 86,718 ha for temperate forests and 263,570 ha for tropical forests, for a total average annual loss of 350,288 ha. This is based on the most rigorous and comprehensive study to date and incorporates the most trustworthy images from earlier periods (Velázquez, et al., Forthcoming). Nonetheless, because it so much lower than many other estimations, this finding remains controversial, and some researchers maintain that the actual rates are higher (J. M. Torres Rojo, personal communication). However, this study confirms the findings of other studies that the rates of deforestation in tropical areas has been much higher than in temperate zones, more than three times higher.

The principal proximate drivers of these deforestation are thought to be agricultural and livestock expansion (Barbier, 1996), although these drivers are linked to policies, such as colonization, and other processes. The factors that drive these proximate causes, such as population density, population growth, increased food production, high agricultural export prices, exchange rate devaluation, increased debt-servicing ratios, and roundwood production, can be considered underlying causes, but "exact magnitudes of relationships cannot be reliably estimated" (Barbier, 1996). Attributing deforestation to particular policies can be challenging since "In practice…it is very difficult to determine the overall effects of policy changes on deforestation, as it is likely that a given policy change will have both positive and negative impacts on forest conversion and degradation" (Barbier, 1996). Complex policy and economic pressures operate on forest cover. For example, increasing the return to corn production and rising population at the state level could further increase pressure on the forest, but liberalization of markets for corn could reduce pressure for deforestation. In regions such as the Lacandon and southern Campeche, logging clearly preceded the expansion of agricultural and livestock, frequently driven by colonization programs, making deforestation processes both sequential and multicausal.

Even more difficult to calculate than deforestation is commercial or ecological degradation through logging and other processes. It has been frequently noted that the common Mexican silvicultural practice in pine and oak forests, the Mexican Method of Managing Irregular Forests (MMOBI) encourages an ecological succession from pines to lesser-value oak (Snook, 1986) (a), (Snook, 1986) (b). In the dry foothills of the northeastern Sierra Madre in Chihuahua, what were once healthy stands of pine mixed with oak have become oak and shrub dominated with few, poorly formed pines left (Gingrich, 1993). It has also been argued that the selective logging of mahogany and cedar in tropical forests is significant reducing the commercial volumes of these species (Snook, 1991).

No effort has been made to link deforestation or relative retention of forest cover with community forest management, beyond general declarations that community-managed forests do not exhibit much land-use change. The vast majority of community-managed forests are in the mountainous, coniferous zones that in recent decades have shown relatively low rates of deforestation, although no cause and effect relationship has been argued. In addition, tropical land use change has been well-below national rates in two areas where community forestry has been prominent, southern Campeche and central Quintana Roo. There are no regional figures for rates of land use change in southern Quintana Roo, the third area where CFM has been prominent, although it is known that rates of LUCC have been there due to colonization processes in the 1960s and 1970s. As noted, although general statements have been made, no one has attempted to link variance in land use change rates with CFM. However, it is also noteworthy that, as historical processes, that the rise of community forestry in Mexico in the 1970s occurred precisely during the period when tropical deforestation was at its most intensive, and its proponents at the time and since have promoted it as an alternative to deforestation. Additional studies associated with this project will attempt to look at the relationship between low rates of LUCC and CFM more closely.

C. Economic Dimensions of Mexican Forests and the Role of CFM in the Sector

Forest production plays only a minor role in the overall Mexican economy. In the early 1990s the commercial production of timber was slightly less than 1% of the GDP of Mexico, with its share of GDP declining nearly 25% since 1987. Historically, very little investment has been made by the government for forestry, and as little as 4% of the total budget for agriculture has been allocated to the forestry agency (World Bank, 1995). The forest industry is heavily concentrated in the three states of Durango, Chihuahua, and Michoacan, which have 63% of all industrial installations. Mexican timber production and the forest industry are not considered to be internationally competitive because, according to the World Bank, "production costs (including transport) are high, community-managed forests are inefficient, few forests are actively managed, and lack of infrastructure makes most of the timber inaccessible. Only 30% of the forests in the six main timber-producing states are accessible for harvesting" (World Bank, 1995). Although the World Bank lays part of the responsibility for underperformance of the Mexican forest sector on community forests, we will later explore how some of this presumed underperformance could become a source of competitive strength in the marketplace.

As with many other things having to do with CFM in Mexico, the exact contribution of community-managed forests to the overall forest sector is not clear. This is not surprising, since there is much confusion about total roundwood and sawnwood production in the overall forest sector. FAO and Mexican government figures show dramatically different production levels for both roundwood and sawnwood. One observer of the Mexican forest sector as noted that "The SEMARNAP numbers are probably understated and the FAO numbers overstated. I doubt we could sort this out

with a month of hard study" (Harold L. Arnold email 8/22/02). FAO figures also show Mexican forest production to be increasing slightly over the last 12 years, when it is widely felt that forest production has been decreasing over the last 12 years. One close observer of the sector has suggested that a figure of around 25 million cubic meters of roundwood production and 8 million cubic meters of sawnwood production may be close for the 1990s, but despite scattered guesses no one knows the magnitude of production from the community forests.

D. The Magnitude and Characteristics of Mexican Community Forests and Community Forest Enterprises (CFEs)

It is commonly noted that as much as 80% of Mexico's forests" are in the hands of in the hands of communities with common property land grants (in two categories known respectively as *ejidos* and indigenous communities). The 80% figure was first put forth by the official Mexican statistical agency and has been in use for the last twenty years, although its empirical basis is not documented. It is known that approximately one half of the national territory of Mexico is in ejidos and indigenous communities (INEGI 1998). According to official figures, temperate and tropical forests occupy 40.1% of the national territory, a total of 56.8 million hectares (SARH 1994). Given that in earlier decades many ejidos were given remote forested lands that were considered to have little value, the circumstantial evidence suggests that well over half of Mexico's forests are on community lands. It has also been estimated that there are approximately 9,000 communities in Mexico with forests on their lands, from large intact forest masses to fragments, a figure which is supported by on-going effort headed by the Instituto Nacional de Ecología (INE) (Juan Manuel Torres Rojo, personal communication).

If there are some 9,000 forest communities, how many CFEs are there or, to put it another way for now, how many of these communities have logging permits? A particularly difficult issue, impossible to achieve with current data, is how to separate communities that have logging permits but who have little or no control over their forest production (known in Mexico as *rentista* communities) from communities that do exercise control over logging in their communities, at varying levels of vertical integration, and thus have CFEs. Estimates from the late 1980s to the 1990s show a range of figures from a low of 288 to a high of 740 (From (Alatorre Frenk, 2000), based on INEGI 1988; (Belausteguigoitia and Juan Carlos and Jose Carlos Fernandez Ugalde, 1993) SARH 1992, World Banks, 1995adapted from (Alatorre Frenk, 2000)

A recent pilot study of community logging permits in the four states of Oaxaca, Guerrero, Michoacan, and Puebla that, due to inconsistencies in the data, includes years from 1998-2000, shows a total of 1,710 total logging permits, of which 351 or 21% were communities, both *rentista* and CFEs. Data for 1997 from Chihuahua says that there were 182 community logging permits in that year (Guerrero, et al., 2000). This would bring the number of communities with logging permits for just five states to 533 with data from years from 1997-2000. These numbers, when extrapolated to all forest states,

would suggest numbers for total logging permits, all forest production ejidos, and possibly CFEs at the high end or beyond of those reported above.

Until this review, it was not clearly known just how little was known, quantitatively, about the community forestry sector in Mexico. Thus, as a direct result of this view, a major study is now under way to set up a database that will collect data on logging permits from the ten major forest states, and will then carry a sample survey of this database to learn more about the characteristics of community forestry in Mexico. Within a year, we should know with considerable precision for the first time in published data, how many rentista communities and CFEs there are in Mexico and many of their basic economic, social, and ecological characteristics.

The significance of community forestry for overall forest management clearly also varies from state to state, and in some states it may not currently be an important part of overall forest management. For example, in Michoacan, only 10% of the forest area is thought to be under management. And only 3% of the forest ejidos carry out authorized extraction, and two-thirds of them as stumpage communities (Merino Pérez, 2000).

E. Typologies of Mexican CFEs

For many years, there was little concern about creating classifications or typologies for Mexican CFEs, since it was a relatively undifferentiated phenomenon. Today, this is no longer the case. The size and complexity of the sector demands a typology of CFEs, but this turns out to be a challenging task. Until the 1970s, almost all Mexican forest communities that produced timber were considered either *rentistas*, a term that simply refers to the fact that communities simply "rented" their forests to outside loggers, whether contractors or concessionaires, or *empresas ejidales forestales* (forest ejido enterprises). The original formal definition of a *rentista* community, had one existed, would have included the criteria that 1) the communities did not participate in any way in the extraction process, commonly not even as loggers since the outside companies would bring their own crews, and 2) communities received only an administratively set *derecho de monte* or stumpage fee, which was far below the market value of the timber even sold on the stump. As early as the 1940s and continuing into the early 1970s, various government agencies promoted community sawmills under the term forest ejido enterprises. These sawmills were not independent businesses, since they were almost always forced to sell to only one buyer, the concessionaire, at a price set by it, and the government agency administered the mill.

Beginning in the 1970s, as more CFEs began to emerge, and the era of the concessions came to a close (see history section below for a more complete discussion), almost all forest communities were allowed to sell their timber and receive the full market price, not a government-set stumpage fee. In this sense, the traditional "stumpage fee" *rentista* communities no longer existed. Nonetheless, the term *"rentista*" continued

to be used to refer to communities that sold their timber on the stump for, in theory, full market value, even if they didn't participate in the extraction process or form a formal CFE to do so. To differentiate these communities from the stumpage fee communities, it might be helpful to refer to communities that do not participate in the logging on their lands but receive full market value for their timber as *neo-rentistas*. In any event, beginning in the 1970s a large number of CFEs emerged, with varying degrees of vertical integration that cried out for classification. Informal classifications came into popular usage as to whether a community sold timber "on the stump" or "standing timber" (*al tocón*); "at the head of the road" (*a pie de brecha*) (they logged and took it out of the woods themselves, but a buyer came to take it to the sawmill); "delivered to the patio" *(al patio*) (those that delivered roundwood to the sawmill); and "sawmill" communities, that had their own sawmills.

The first formal effort at classification was carried out by the World Bank, which proposed a very complicated classification scheme with multiple criteria in each category. While the numbers of CFEs in each category came to be widely quoted, the categorization itself was not widely used. A much simpler scheme was proposed and developed by the *Programa para la Conservación y Manejo Forestal* (PROCYMAF), a World Bank and Government of Mexico project to finance projects in community forest management. The PROCYMAF classification, developed in 1997-1998 follows.

Table III: PROCYMAF Classification of Mexican Forest Communities

Type I	**Potential Producers**: Owners and/or possessors of forestlands with capacity for sustainable commercial production that currently do not carry out logging because they lack an authorized forest management plan or sufficient means to pay for its elaboration.
Type II	**Producers who sell timber on the stump *(rentistas*).** Owners and/or possessors of parcels subject to timber exploitation where the activity is carried out by third parties through commercial contracts, without the owner or possessor participating in any phase of the extraction process.
Type III	**Producers of Forest Raw Materials:** Owners and/or possessors of forest parcels that have authorized logging and that participate directly in some phase of the production chain.
Type IV	**Producers with capacity for transformation and marketing:** Producers of raw forest materials that have infrastructure for its primary transformation and directly carry out the marketing of their products.

Source: PROCYMAF: Balance de Tres Años de ejecución. 2001

As the table indicates, Type I communities have forest resources but are not legally exploiting them for timber, Type II communities have their forests logged by outside contractors (what we are terming *neo-rentista*), Type III communities have some form of CFE where they control and participate in logging, and Type IV communities

have sawmills and do their own marketing. Most focus has been on Types II-IV above, since Type I by definition are not exploiting their forest and do not have any kind of CFE. While a subject of discussion in conservation and development strategies they do not figure in the discussion of currently existing CFEs. For ease of reference, and after (Antinori, 2000) throughout this report we shall refer to Type II communities as *stumpage communities*, that only sell timber on the stump, Type III communities as *roundwood communities*, who do their own logging and may acquire their own extraction equipment, and Type IV communities as *sawmill communities*, that have their own sawmills. Antinori has also proposed a Type V, which she calls *finished products communities*, communities that produce products elaborated from sawnwood, which may include dried sawnwood, furniture, and plywood.

Drawing on Antinori's modifications and discussions among the research team and its advisors, we would like to propose a modification of the PROCYMAF classification, which appears below in Table IV, followed by a discussion.

Table IV: Proposed New Classification of Mexican Forest Communities and CFEs

Type I	**Potential Producers**: Owners and/or possessors of forestlands with capacity for sustainable commercial production that currently do not carry out logging because they lack an authorized forest management plan or sufficient means to pay for its elaboration.
*Type II (**Stumpage Communities**)*	**Producers who sell timber on the stump *(neo-rentistas*).** Owners and/or possessors of parcels subject to timber exploitation where the activity is carried out by third parties through commercial contracts, without the owner or possessor participating in any phase of the extraction process, although they may participate as laborers
*Type III (**Roundwood Communities**, Phase I-Logging Team, Phase II-extraction equipment*	**Producers of Forest Raw Materials:** Owners and/or holders of forest properties that have authorized logging, and that participate directly in some phase of the productive chain. This category contains two phases, Phase I where the community has its own logging team (logging foreman (jefe de monte), scaler, documenter) and Phase II, where it acquires extraction equipment such as skidders, winches, and trucks.
*Type IV **(Sawmill Communities**)*	**Producers with capacity for transformation and marketing:** Producers of raw forest materials that have infrastructure for its primary transformation and directly carry out the marketing of their products.
*Type V **(Finished Products Communities**)*	**Producers with capacity for processing of sawnwood.** Producers of roundwood that have a sawmill as well as other diversified processing infrastructure to give value-added to the sawnwood. These may include driers, furniture and moldings

	factories, chip mills, etc.

In this proposed modification, Type I remains the same and Type II remains basically the same, although it is added that the community may be employed as laborers by the contractors, and still be regarded as a Type II community. Type III is modified to include two phases. In Phase I the communities assume direct control of the extraction process by having its own logging team that works with the contractor, under the direction of the ejido President. This logging team is normally directed by a position known as *jefe de monte* (Forest Foreman), and has other specialized functions associated with it. In Phase II, the community may begin to capitalize itself further by acquiring extraction machinery such as skidders, tractors, winches, and trucks, and may also begin to acquire more specialized administrative functions, especially in accounting. Type IV-sawmill community, remains the same, and a fifth type "finished products community" is added with the criteria noted above. *This is the classification that will be used in this paper*. There are other issues involved in classifying CFEs that include who pays for the logging team and whether or not they have formal managers, and we will cover some of those issues in the section on social capital. A final issue that should be mentioned is when do we consider a community to have a CFE? It has been suggested for example, that Type II-Stumpage communities are not operating CFEs, since they don't do anything but take the money for selling the timber off their land. It has even been suggested that many Type III communities don't really have CFEs since they really keep no books and have no capitalization. In this interpretation, a CFE only emerges when the business is formally incorporated, when a manager or managerial council is established, and when other aspects of a formal business operation are achieved. We will argue that all Type III communities should also be considered CFEs, and that will be the presumption in this review. They may be enterprises in which no operating capital is maintained, in which all profits are immediately distributed, and which shuts down entirely between the logging seasons, but they are nonetheless enterprise based on a common property that carry out productive activities and realize income in the marketplace. Indeed, there is even an argument that the *neo-rentista* communities are also CFEs, since they sell a productive asset in the marketplace and realize an income from it.

II. A Conceptual Approach to Mexican Community Forestry: Common Property, Social Capital, Asset-Building, and Ecosystem Management

Until the last few years, little effort had been made to understand Mexican community forestry through theoretical and conceptual lens, with most publications providing only empirical descriptions and analyses with little reference to broader national or global trends. However, there have been recent efforts to analyze Mexican community forestry using concepts of common property and social capital in particular. This analysis will not systematically review these efforts, but draw upon them to offer a new interpretation of how Mexican CFEs illuminate or elaborate on existing concepts. Specifically, in this section we will look at how concepts of *common property, social capital, asset-building, and ecosystem management* can be used to further our understanding of the phenomenon of CFM in Mexico, and how this phenomenon may call for a modification of the concepts in question.

A. Common Property Theory and its relevance to Mexican Community Forestry.

There is an extensive literature on the theory and applications of common property concepts, so some of the basic ideas will just be quickly sketched in here, with a focus on its relevance for Mexican community forestry. Common property has been defined as one among three major forms of property: private, government, and common properties. The discussion of historical cases of common property have tended to focus on traditional, local, and indigenous forms of governing natural resource extraction from territories held in common or, in a modern context, natural resources which by their nature do not lend themselves to either private or government tenure forms, such as groundwater or the atmosphere. Another important distinction has been made between *open-access* and *closed-access* common property. *Open-access* refers to situations where a resource is genuinely without owners, and where no one feels responsible for the maintenance of the resource. It has been suggested that this is not even really a form of *common* property, but rather of "propertylessness". By contrast, a *closed-access common property* has a clear set of owners. Thus, it has been argued that closed-access common property should more property be regarded as a form of jointly held private property, like a corporation (McKean, 2000). Here the importance of common property terms such as "excludability" (the right and capacity of owners to exclude others from the resource) and "subtractability" (access must be controlled because the use by one reduces the capacity of others to use it) are particularly relevant in defining the characteristics of closed-access common property.

The term "common pool resources" refers to the physical dimensions of a resource while "common property regime" (both referred to as CPR) refers to the property rights arrangements or the "rules" which have been developed to govern access to this physical resource (McKean, 1995). Another important distinction in common property theory is that between the management of the "stock" and the "flow" of a common pool resource. In the case of forests, the "stock" is the standing forest while the "flow" is the outputs that come from it. The management issues around the stock and the flow may be quite different (Arnold, 1998).

Most of the common property literature focuses on traditional forms of CPR management, which are most commonly analyzed to be in a process of dissolution or disappearance, with governments now trying to recover modernized versions of them in the growing perception that they may confer some management advantages at the community level. In a parallel fashion, there has been a growing understanding that many environmental resources of crucial management interest, such as oceans and the atmosphere, are also "commons" and must be approached as such, and that new governance systems of these commons may possibly be able to draw upon some of the principles of indigenous systems.

However, Mexico presents a most unusual case in the common property literature, and its uniqueness has almost been ignored in that literature until very recently. Some analysts have rather mechanically applied Ostrom's "design principles" to the Mexican case (Vargas-Prieto, 1998), but Mexico actually represents what may be a completely unique case in the common property literature. While Mexico is rich in indigenous forms of common property management, what is unique about it is that these indigenous forms were both overlaid and imitated by the massive agrarian reforms that came out of the Mexican Revolution in the second decade of the 20th century. This agrarian reform had as its principal land tenure expression the implementation of two common property forms, the *ejido* and *comunidades indigenas* (indigenous communities), which came to cover about half of the national territory. These land tenure reforms were enshrined in Article 27 of the Constitution 1917, and remained unchanged until 1992 (Ibarra Mendivel, 1996). These agrarian reforms created a unique form of common property where "structural corporateness in which ejidal land, seen as a judicial, social, and economic body, depended, to a great extent, on the intervention and mediation of executive power" (Ibarra Mendivel, 1996). This corporateness is expressed, among other things, in the "forms of representation and organization of communal land, that is in its formal authority structure and in the structures for the intervention of the state in its internal affairs". Ejidos and to an extent indigenous communities are thus "subordinated to state controls and decisions" (Ibarra Mendivel, 1996).

The reform of Article 27 in 1992 presented sweeping changes in the ejido system, while still retaining state control in reduced ways. The reforms ended the distribution of rural lands, allowed private enterprises, through a mechanism of stocks and bonds, to become owners of rural lands, established the foundation that allowed ejidos and communities to exercise greater autonomy in their affairs, established new regulations governing use of property within the ejidos, and new organisms were established for

resolving problems (Ibarra Mendivel, 1996). This greater autonomy sanctioned a variety of forms of communal management which were both already present and emergent. Thus, the reform to article 27 of the Mexican constitution may be thought of as a form of devolution or decentralization of control over natural resources as it is occurring elsewhere, but marked by the very particular agrarian history of Mexico, and where significant state control is still exerted over the use of natural resources, now less out of concern for political control than for environmental protection. *Thus, Mexican common property in general and common property forests in particular are virtually unique in the literature that, in an era when many governments are trying to institute new forms of common property, Mexico is embarked on a reform, but not dissolution, of probably one of the first massive state-directed efforts to create common property*.

This legal background, and the specific development of community forest management in Mexico, thus has many unusual features. For example, (McKean, 1995) argue that "in most instances common property regimes seem to have been legislated out of existence", yet in Mexico a massive common property regime was legislated *into* existence. McKean and Ostrom title their article "Common property regimes in the forest: just a relic from the past?", when in Mexico common property regimes in the forest are the widespread legal present, not at all a relic from the past, and has in fact been reinforced by the reforms. In Mexico, we are confronted with a massive, state-structured form of common property management, and one where changes in rules over management of forest resources has been driven either by government policy or by changes emanating from formally constituted *organizations.* Thus, the more informal institutions-as-rules approach common in the CPR literature has relatively little applicability to the Mexican case. Thus, some of the "rules" of resource use for Mexican ejidos are found in the agrarian laws of Mexico, while changes or additions to these rules are driven by training and technical assistance coming through government programs or second-level community organizations. The importance of formal organizations does not play a prominent role in most of the CPR literature, but in Mexico they have been key, including both government organizations and formal civil society small farmer organizations. As (Antinori, 2000) has noted "the Mexican agrarian communities are formal institutions that are adapting to a new role in resource production, whereas much of the common property literature assesses informal institutions not recognized by the state apparatus".

As we shall also see, there are few examples in the world of *formal, market-oriented community enterprises established on the basis of a common property resource,* yet Mexico's forest communities have hundreds of examples of this phenomenon. Common property administration by local communities is almost always seen in the context of subsistence economies. Almost entirely missing from the common property literature is a "systematic focus on stakeholders in a common property resource responding to larger market opportunities as an alternative source of benefits provided by the common property asset" (Antinori, 2000). Yet this is a common occurrence in Mexican CFM.

In the same vein, contemporary common property regimes have also been characterized as those that have "endured" and those that have "emerged" (Arnold, 1998) but Mexico is neither. It represents an on-going solid and widespread institutional reality and what has "emerged" over the last two decades may be thought of, in global development terms" as the "second stage" of what common property arrangements may lead to in terms of the erection of community enterprises on a common property base. It is in this sense that Mexico may be said to be "in the vanguard" or "the face of the future" in community forest management globally (Stone, 2001).

As governments throughout the world have attempted to decentralization the administration of forest resources, various practices known as "co-management" and "joint management" have emerged (McCay, 1987). However, the term has usually referred to a mixture of local and state governance over a *publicly owned* resource. Yet in Mexico, we have a case where community autonomy over their lands has been strengthened in some aspects, while still maintaining a strong government presence in other aspects, particularly in the management of natural resources. As will be explored further in the conclusions, the Mexican case may be thought of as a form of "joint management" or "co-management", but on the basis of *privately held communal property*. That is, Mexican communities manage their forests for timber with many decisions being made autonomously, but also under a strong regulatory framework provided by Mexican forestry law and the Mexican environmental agency, currently known as the *Secretaria de Medio Ambiente y Recursos Naturales* (SEMARNAT).

(Arnold, 1998) has conducted one of the most recent and comprehensive reviews of managing forests as common property. The only references to Mexico in the study are of the Plan Piloto Forestal (PPF) in Quintana Roo, and it is described, but some of its most salient aspects within the common property are not fully delineated. In a later section, the author concludes that the Quintana Roo case "in which local communities are engaged in commercial logging and processing, shows that complex processes and sophisticated technologies can be handled at this level, given an appropriate institutional framework" (Arnold, 1998). This is one of the lessons of the Mexican experience, but the fact that the common property system was created by the state early in the 20th century with, as we shall see, massive transfers of natural forest assets taking place in later periods, and that these are community *enterprises* based on a common property resource is not emphasized for the unique case that it is. Asia is usually considered to contain the most important example of community forest management, but they represent very different realities from Mexico. In Asia, community interests in protecting traditional sacred forests, watersheds and communal forest lands were in some cases strengthened in recent decades in response to increasing pressures on these lands (Arnold, 1998). In other cases these lands have been progressively alienated due to the, " common history of the state exercising progressively greater control over forest resources in the 19th century" and recent government programs have intervened to try and establish versions of former common property arrangements, but now with strong state participation.

Thus, it is argued that traditional common property arrangements have been in decline throughout the world. These institutional arrangements have declined both because communities have abandoned them in the face of social change and because of policies hostile to common property (Arnold, 1998). Recent efforts by the state and local communities have emerged to try and counteract this trend by instituting newly constructed common property institutions, which may or may not be based on traditional forms in a given case, and are focused on *non-timber forest products* and the *regeneration of degraded forests*, and almost always on *government* lands. In this panorama, Mexico again presents a unique case where the government instituted and supported a massive state-directed common property system, which it has only begun to attempt to reform, but without doing away with the essence of communal property. On this basis there has emerged community forest enterprises vigorously engaged in logging and the commercial production of timber. Thus, in this sense as well, Mexico may be said to be decades ahead of the rest of the world in experimenting with the social and economic benefits of what might be called *neo-traditional common property systems*.

B. Social Capital and CFM.

Social capital is a recently emergent concept which suggests that social relations of various kinds are also a factor in economic production, like natural capital, physical capital, financial capital, and the more recently added human capital. There are many definitions of social capital but a general one that will be used for this report is “”those forces that increase the potential for economic development in a society by creating and sustaining social relations and patterns of social organization” (Turner, 2000). These forces may include norms, family structure, and informal and formal organizations. The basic concept is that there are certain social relations that may increase economic competitiveness in the marketplace. Social capital is based primordially on the concept of trust between individuals and groups of individuals, however organized (Fukuyama, 1996). Recent studies of the historical development of social capital leave the impression that social capital is something that can only be created through long social processes. However, more recent research argues that social capital can be created in relatively short time periods and can be influenced by public policy. For example, Schneider has argued that “the design of the institutions delivering local public goods can influence levels of social capital…. government policies can and do affect the level of social capital” (Krishna, 2000). As Krishna has noted in the case of the Rajasthan Watershed Development Program in India, “What is of importance to this discussion of social capital is the evidence that social capital—embodied in functioning and legitimate Users Committees—was not available ready-made to the program and that it was developed, actually quite quickly, in the course of program implementation” (Krishna, 2000). Likewise, ”In the state of Gujarat, violent confrontations between local people and government officials over forest management led to economic stagnation. But once the communities were mobilized and joint forest management was instituted, conflicts declined and land productivity and village incomes rose….In this case, the investment in social capital was a joint effort by local governments and communities” (Serageldin and Grootaert, 2000). As in any other form of capital, social capital is something that can be

invested in; expenditures of governments to promote associational processes can be regarded as an investment in social capital. Time spent by individuals going to meetings of organizations can be regarded as a personal investment in creating social capital.

Krishna (Krishna, 2000) has also pointed out that social capital, like other forms of capital consists of stocks and flows. There can be a initial stock of social capital, this stock can be added to by specific investments by individuals, organizations and government, and that variable flows are possible out of a given stock. Social capital may also exhibit greater or lesser levels of efficiency, "Efficiency of usage will be higher when social purpose is well-defined and objectives are commonly agreed upon. When people in a group do not share similar views about the nature or urgency of any joint task, social capital will not be equally effectively attracted toward this task" (Krishna, 2000).

Krishna (Krishna, 2000) has also distinguished between institutional social capital and relational social capital, a distinction useful for our purposes. Institutional social capital "is structured. Rules and procedures exist to guide individuals' behavior, supervised by people acting out well-recognized roles". To this we would add that a form of institutional social capital could be called "structural or organizational social capital", where specific forms of organization or new structural features of existing organizations exist that encourage ongoing investments in social capital. Relational social capital is based on norms and beliefs, and is derived from cognition rather than institutions and may be based on norms of diffused reciprocity. These two forms can be mutually reinforcing. In the case of Mexican forest communities, it will be argued that forest communities have a large stock of relational and traditional institutional social capital, but that flow of benefits from that stock of capital was inhibited until external actors entered to create new organizational forms and thus new flows of benefits. Government, markets, civil society, and individuals all made important investments in the creation of new social capital around community forest management, and those investments have had important flows of benefits.

C. Asset-Building and CMNF

The concept of assets has recently been introduced in the literature as an alternative means for measuring what influences variations in income, and thus the low levels of income that produce poverty. While it had been demonstrated that factors such as education, occupation, gender, years in the labor force, work record, and industrial sector influence income levels, recent scholarship has sought the relationship between these factors and "wealth" or assets (Oliver, 1995). Oliver and Shapiro found that there was a wider gap between blacks and whites in the United States in household assets than there was in income, suggesting that this gap was another significant source of inequality. The study also showed that the assets of black families tend to be concentrated in real estate, while the assets of white families are much more diversified, particularly in investment instruments such as certificates of deposit and mutual funds (Oliver, 1995).

Out of this study came a new interest on the part of foundations and public policy to focus on building assets among the poor, not just increasing incomes.

On a more conceptual level, it is worth defining a little further what constitutes an "asset". It has been suggested that the relationship between "assets" and "capital" is the same as that between "stocks" and "flows" (M. Bhat, personal communication). An asset constitutes a financial reserve or a good that may not be actively "invested", while "capital" suggests something active in the market place, being used to create new wealth. In the same sense, a "stock" is potential wealth, wealth in reserve, while the "flow" is the realization of that potential wealth.

While housing may be a key asset for middle-class America, in the case of Mexican forest communities the forest itself is clearly the key asset, in this case a "natural resource asset or a "natural asset". Shelly and Boyce (nd?) have identified three crucial steps in natural asset-building: identifying and valuing natural assets, securing access to those assets, and managing assets wisely and democratically, and four routes or strategies for achieving those steps to natural asset-building: investment, redistribution, internalization, and appropriation. In the case of Mexican community forestry, clearly many of these strategies and steps toward natural asset building are in a relatively mature stage. The identification and valuing of timber resources is obvious, communities secured access to those assets through 1) a massive redistribution of natural assets in the form of forests was undertaken from the private sector and the government to communities by the Mexican government and 2) a political struggle to gain effective control over those natural assets in their legal possession. The next step for the communities was to learn how to invest in their forests through better silvicultural and other management practices, and to invest in CFEs. Internalization refers to the identification and valuation of benefit streams from the existing asset which had not previously been compensated, such as new markets for previously unexploited NTFPs, ecosystems services like regulation of hydraulic resources, or "green marketing" strategies. Many Mexican forest communities are currently engaged in this process. The maturation of participatory CFEs is clearly also a major step towards managing natural assets wisely and democratically. As Shelly and Boyce note "Democratic management, combining accountability and transparency, is necessary to guard against the use of natural resources so as (to) advance the narrow interests of the powerful at the expense of the majority, whether under market-oriented or statist structures". With specific reference to community-based institutions as a road to natural asset building, Shelly and Boyce comment, "Given the limitations of market-and state-centered strategies, it is tempting to embrace community-based institutions as an intermediate "third way". To be sure, there are circumstances in which local community organizations are both fairer and more efficient than either the market or the state. Yet local communities should not be romanticized as homogenous and egalitarian bearers of common values and interests. Communities, too, can be sharply divided along class, race, and ethnic lines; and where they are relatively homogenous, they can seek to advance their own interest at the expense of other communities. No one institutional model-market, state, or community-based-is inherently more democratic than the others, or more effective in addressing environmental and economic challenges". Yet, in Mexico these caveats about the

dangers of "community-based institutions" must confront the reality of a relatively mature sector of entire communities who own their own natural assets and CFEs. Thus, in Mexico, an intermediate "third way" is relatively well-developed. Finally, as Shelly and Boyce also note, and with reference to the previous section, building and sustaining social capital are crucial to "engage successfully in the political contests for natural assets".

It is useful to apply this concept to community forestry in Mexico, although the application forces a transformation of the concept. There has been virtually no research on the role of community forestry in building household level assets in Mexico, since this would require detailed comparative survey research. But the contemplation of community forestry processes also forces the analyst to look at asset building not as something that only takes place at the household level, but also as something which takes place at the level of an entire community. When profits from a community enterprise are reinvested in new equipment or a diversification of productive activities, this increases the assets of the entire community, and of each household, as a "shareholder" in the community enterprise. When profits from the community enterprise are used for investing in public goods such as potable water systems and clinics, then the assets of each individual household also increase, although again not through direct acquisition by the household. It is through jobs, direct employment in the enterprise, and through the profit distribution, or *reparto*, that cash enters the household from the CFE. It is here, however, where we have very little information on the link between these cash inputs into the household and the accumulation of household wealth or assets. There are also anecdotal reports, particularly from Quintana Roo, that the possibility of this link is broken by the fact that *repartos* frequently go towards alcohol consumption and other festivities. However, the communitarianism of the Mexican case does force a recentering of the analysis on where accumulation of assets may take place.

D. Ecosystem Management and CMF

For most of the history of forest management in Mexico, as elsewhere, silviculture focused on the management of particular species of value, and the rest of the forest or surrounding areas was of little interest. As Kotar (Kotar, 1997) has noted, "All silvicultural systems were originally developed (as) crop-oriented management…mechanisms driving succession were not well enough understood to be incorporated into silvicultural systems….until recently the need for management strategies that follow natural forest development processes has not been widely advocated by the scientific community, or demanded by society". Thus, the idea of forests as an *ecosystem* that must be managed with an eye to all its parts and functions, including those of the vegetation and land use matrix surrounding a forest, is a newly emergent concept, but one which is beginning to have a significant impact in Mexico, even if the term is not always known.

Before the rise of ecosystem approaches, there existed the science of ecology, which focused on organisms and their interactions, usually at relatively small spatial

scales. An ecosystem, by contrast, has been defined as "a spatially explicit of the earth that includes all of the organisms, along with all components of the *abiotic environment* within its boundaries" (Likens, 1992, quoted in Franklin (Franklin, 1997). By *abiotic environment* is meant the cycling of energy and matter such as water, carbon, nitrogen, and other elements. The concept has also had an impact on the notion of ecology itself that has also expanded to include looking at forests and other biological units as *whole systems* that must be managed for all their values.

If the ecosystem concept was preceded by and expands the notion of ecology, the idea of ecosystem management was preceded by that of "multiple use" in U.S. forest management. "Multiple use" emphasized the sustainable output of goods and services, but was not concerned with sustainability of an entire ecosystem (Franklin, 1997). In this sense, Mexican forest communities have always had "multiple-use regimes", with community members individually and collectively and external agents drawing upon the forest resource for a wide variety of products, from moss to watershed services. But now, in response to changing attitudes and practices within communities, external regulatory and market pressures focused on the sustainability of the extraction, and new economic possibilities in the abiotic environment (carbon sequestration, watershed services), an approach that be may be thought of as ecosystemic is beginning to emerge in Mexican forest communities.

Ecosystem management has been characterized as having ten dominant themes: a hierarchical context (multiple scales), recognition of ecological boundaries, ecological integrity, systematic research and data collection, monitoring, adaptive management, interagency cooperation, organizational change, humans as an ecosystem component and human values as dominant in goal setting (Grumbine, 1994). Ecosystem management asks the question, "What are the crucial structural components in ecosystems, and how much functional redundancy exists within them?" (Levin, 1999) in evaluating the sustainability of a practice.

But some of the strands of ecosystem management as they are emerging in the United States and elsewhere are problematic in their application to the Mexican situation. Hollings has said that "ecosystem management does not focus on the 'deliverables' but rather on sustainability of ecosystem structures and processes necessary to deliver goods and services", but with the realization of the "unknowable responses and true surprises that arise from the complex and ever changing character of ecosystems". This sort of idea has led to the assertion that "you do not begin ecosystem management by stipulating outputs. The capacity of the ecosystem determines the output levels that are consistent with sustainability. Allowable cuts are not appropriate inputs into the design of an ecosystem management plan, nor are they appropriate constraints on a plan that will meet the test of sustainability" (Franklin, 1997). But in situations where communities have long been managing the forest resource with allowable cut, as is the case with Mexican timber management plans and now with non-timber forest products as well, it is precisely with these stipulated outputs that ecosystem management must begin. Can the ecosystem continue to provide this level of output of these products while maintaining all other goods and services? These "authorized volumes" should be thought of as "experimental

interventions" in an adaptive management sense that need to be monitored as to their impacts on the rest of the system. If the current "authorized volume" is not a sustainable output, how do we know? What would be a sustainable output? However, there are elements even to this sense of ecosystem management that would have resonance with community forest managers. For example, it has been argued that, "ecosystem managers should focus at least as much on what is left behind as on what is extracted…a commitment to sustainability is a commitment to intergenerational equity" (Christensen, 1997). As is argued elsewhere, communities display a strong interest in preserving the forest for their children.

Later in this report we will examine more closely the emerging patterns of forest and other land use management and silvicultural practices in Mexican forest communities. Here, however, we will briefly review the implications of emerging concepts of ecosystem management for silviculture in particular. It has been argued that the "goal of forest ecosystem management should be the development of methods of extracting human commodities from forest ecosystems in ways that do not greatly alter the processes that shape the development of natural forest communities" (Kotar, 1997). Historically, managed forests have tended to have less complexity than natural forests because management is focused on species of commercial value, but forest ecosystem management attempts to maximize both complexity and yields. There are considered to be four basic silvicultural methods: selection, shelterwood, seed-tree, and clearcutting, that can be applied in diverse combinations, both spatially and temporally, creating a broad variety of "customized" management practices (Kotar, 1997). The complexity of natural ecological and successional processes suggest that there are a "variety of pathways" with the goal being "not to reestablish the presettlement pattern of forest vegetation but to include in our managed forests some of the compositional elements that have been lost in the initial wave of forest utilization" (Kotar, 1997). The focus is on how to retain or restore structural complexity and on the role of "biological legacies" which are "organisms and organic structures carried over from a predisturbance to a postdisturbance ecosystem" (Franklin, 1997). In this sense, the Menominee of Wisconsin, one of the leading indigenous forestry experiences in the United States, speak of their management practices as having the goal of perpetuating or creating a "legacy forest".

Finally, with its focus on both biotic and abiotic elements, ecosystem management also recognizes the role of sustainability of all ecosystem goods and services. Thus, sustainability has come to embrace the full range of goods and services, from maintenance of carbon cycling to aesthetic and recreational services, and notably including the maintenance of biodiversity. In the section on "From Logging to Ecosystem Management" we will examine the application of some of these concepts in the Mexican CFE sector.

III. The Historical Development of Community Forestry in Mexico: Policy, Grassroots Movements, and the Rise of Community Forestry

As we have briefly seen earlier, the Mexican Revolution, predicated on a massive and ongoing distribution of land to groups of peasant farmers in two main categories of agrarian reform (*ejidos* and indigenous communities) had the consequence of giving communities important natural assets on their community lands. Thus, the idea that communities should be in charge of producing timber from these community lands, just as they were in charge of agricultural production on their lands, took root very early. However, there was another major current very early that felt that communities did not have the skills to manage timber production on their lands, and that the Mexican constitution called for state intervention to organize timber production. In the following section we intertwine the development of Mexican forest policy and the rise of community forestry in Mexico. To discuss the historical development of community forestry in Mexico, we will divide it into 3 phases, Phase I: Early Initiatives, 1932-1970; Phase II: The Great Awakening of Mexican Community Forestry 1971-1986; and Phase III: Inconsistent Policy Initiatives and Consolidation of a Mature Community Forestry Sector.

A. Phase I: Early Initiatives, 1932-1970

This 38-year period was marked by the first efforts by the Mexican government to promote forest cooperatives under the Presidency of Lázaro Cardenas (1934-1940), the dominance of state-led efforts that alternated between bans and concessions and mostly ignored communities from 1940-1970, and persistent struggles by communities to assert their rights over the forest lands that had been theoretically given to them as part of the agrarian reform process.

The fact that the agrarian reforms launched by the Mexican Revolution ended up in transferring large blocks of Mexican forestlands to communities created a dynamic between the state and communities over forests that is very peculiar to Mexico. From the 1930s, it was generally felt that communities did not really have the capacity to manage their own forests, but yet the fact that the forests were on community lands set up persistent tensions between paternalist, top-down, and exclusionary approaches to forest management, and more empowering approaches that would create the conditions that would allow Mexican forest communities to directly administer their own forests. This tension would be played out in efforts by the Mexican government to assure a timber supply through centralized enterprises and efforts by others, frequently also in the government, to assure that the ideals of the Mexican Revolution would be met by empowering communities to manage timber extraction directly. As we shall see, it would not be until the 1970s that forest policy would take on a decidedly pro-community focus, and not until the 1980s that organized communities and civil society began to emerge as independent protagonists, moving beyond the earlier protest phase.

1. 1934-1940. The policies of Lázaro Cardenas as President were clearly modeled on his policies while earlier serving as Governor of Michoacan. In 1931 while still Governor, observing the rapid deforestation of the state and abuses perpetrated against campesinos, he had declared null and void all timber contracts in the state and declared that forests could only be exploited by cooperative organizations of the comuneros (Hinojosa Ortiz, 1958). This state-level policy would later be reflected in national efforts. In a 1934 speech, Cárdenas noted that "part of the indigenous population of the country have extensive properties, populated with timber suitable for industrial exploitation, many of them today exploited by intermediaries, but the exploitation and sale organized in cooperatives constituted by the Indians themselves, under the direction of the State, will help to improve their standard of living" (Durán, 1984 our translation). Based on this policy pronouncement, of 647 cooperatives promoted by the Cardenas government by 1936, 240 were ejido forest cooperatives (Escobar Toledo, 1990, Hinojosa Ortiz, 1958). Unfortunately, these cooperatives had little positive impact on developing local communities. "While the law demanded it, the organization of cooperatives was carried out, but as a simple formula or requirement to process and obtain forest exploitation permits that, in the final analysis, were managed by and for the benefit of third-party contractors" (Hinojosa Ortiz, 1958). When the conservative government of Manuel Âvila Camacho came to power in 1940, the period of cooperative promotion, as inadequate as it had been, came to an end, and government policy would, for next thirty years, focus little on community initiatives.

2. 1940-1970. This period encompasses the administrations of five Mexican Presidents, (Manuel Âvila Camacho, 1940-1946; Miguel Aleman, 1946-1952, Adolfo Ruiz Cortines (1952-1958). López Mateos (1958-64) Diaz Ordaz (1964-1970). In this period, the Mexican state would yield three different, coterminous, and frequently contradictory policy initiatives. 1) The attempt to harness Mexican forests to Mexican import-substitution industrialization, with the initial stimulus coming from the need to expand domestic sources of paper during World War II. 2) The policy of bans (*vedas*) which were an effort to halt uncontrolled and clandestine logging, particularly in areas where large economic interests did not exist. This policy was frequently seated in the Forestry Department, and had some degree of public support. 3) Incipient and isolated efforts to train local communities to manage their own CFEs, almost always to serve as exclusive suppliers to large forest industries. Only during the end of this period would more autonomous efforts began to emerge. Throughout this period, there was also persistent resistance by the communities who had been given nominal rights to forest lands struggled to make that control real by launching a variety of work stoppages and other protests against outsiders logging on the land that had been given them by the government. This alternative approach to forest management in Mexico was struggling to be born.

3. Import-Substitution Industrialization. The first major state-centralized efforts at logging were the *Unidades Industriales de Explotación Forestal* (UIEF) launched under Ávila Camacho. The UIEF's grew out of the First National Forest Convention convened in 1941 by the paper industry. Industrialists acted at the beginning of the Ávila Camacho

administration to assure their supply of timber and to roll back the establishment of cooperatives and national parks promoted under Cardenas (Aguilar Espinoza, 1990). A 1943 Forest Law established the legislation for the creation of the UIEFs, the first attempt to harness Mexican forests to national industrial development. The UIEFs gave the government authority to turn over the rights to blocks of forests on community lands to an industry that would then exploit it. It limited the rights of the communities, in that they could only sell to that industry, in what one author called a "partial expropriation based on Article 27" of the Mexican Constitution (Griffiths, 1958), with the communities to be paid an administratively set stumpage fee (*derecho de monte*) (Chambille, 1983). It also required the concessionaire to reforest and otherwise care for the forest, to pay the communities market prices (Salvia Spratte, 1989), and called for management plans (*estudios de ordenacion)* approved by the Forest Service before any exploitation. The companies also had to pay to mount an apparatus of technical supervision and management that would be under the government. Eventually 12 UIEFs were established between 1945-1972, although most were established in the period 1945-1960. The first one was Atenquique in Jalisco (1941), followed by two in the Federal District (1947, 1948), Chihuahua (1952), Quintana Roo (1954), two in Oaxaca (1956, 1958), and four in Guerrero (1952, 1956, 1952, 1958) (Ovando H., 1979).

With the demise of the cooperatives, the principal mechanism for relating industrialists and communities became the so-called “buying-selling contracts” (*contratos de compra-venta).* This mechanism was termed an "indirect exploitation" and thus in violation of the Agrarian Code by one observer (Hinojosa Ortiz, 1958). According to these contracts, all expenses associated with the exploitation were assumed by the buyer, and preference in employment be given to the community. But even this seldom happened, since the companies had their own lumberjacks. The stumpage fee was paid directly to the Secretary of Agriculture. Studies in the late 1930s showed that the stumpage fee constituted around 5% of the value of the final sale, with the contractors regularly realizing profits of over 50%, since the price of the raw material was virtually free. One source estimates that from 1942-1946 there was an annual average of 450 *compra-venta* contracts approved in ejidos and communities (López Santos, 1948).

4. Bans. Parallel to the establishment of UIEFs and the *compra-venta* contracts, there was also widespread concern about advancing deforestation in many other regions of Mexico, and from an early period logging bans were the favored state policy to deal with it. As early as 1937 there were bans in effect in Michoacan, Jalisco, Guanajuato, Aguascalientes, Hidalgo, Veracruz, Mexico, Puebla, and the Federal District (López Santos, 1948). Between 1940 and 1952, logging bans were declared in 20 states, covering vast extensions of territory. In Durango, two million hectares were placed under a ban (Zarzosa L., 1958). In Chihuahua for a period in the late 1940s, the entire state was under a ban (Gonzalez Pacheco, 1978). In all, by 1958, 11 states were under total bans, including such important forestry states as Michoacan and Veracruz, with partial bans in 10 other states, covering an estimated 32% of the entire forest area of Mexico (Hinojosa Ortiz, 1958). By 1973 when as we shall see, the bans began to be lifted, they existed in 14 states and the Federal District (SFF, 1973).

But the policy of bans seldom had the desired effect. Gerez Fernández (Gerez Fernández, 1993) has described the situation after a ban that was decreed in the Cofre de Perote region of Veracruz in 1958 "Very few inhabitants of the mountain were informed of the existence of the ban. The forest exploitation didn't diminish; to the contrary, informants were sure that was then that "Don Raul" (a local cacique) took charge of finishing off what remained of the woods. His work gangs worked under great pressure in all the regions, free of the vigilance of the forest guards. The latter, on the other hand, detained, fined and relieved of their timber and saws the peasants who went down to sell planks or beams in nearby cities. They explained the difficulties they had in selling these products: to avoid the forest guards they had to go down at night, whether it was foggy or rainy, by steep, muddy roads, to be able to return with food and money for family expenses. If the forest guards caught them, they had to give them a tip, or be left with nothing and go back to their communities empty-handed". In fact, when this contraband activity was finally stopped in 1973, the local economy was plunged into a depression because of the decline in logging activity.

The policies of bans and UIEFs sometimes were used in sequence. In Durango 2 million hectares were banned in 1949, but a following Presidential decree established a UIEF in 1950 that included some of the area of the ban. In 1952 the UIEF was cancelled because the enterprise had not been able to start functioning, and the area reverted back to its banned status (Zarzosa L., 1958). The combined effects were not seen as positive by forest analysts of the period, with Hinojosa Ortiz noting "The Mexican forest industry, backward and destructive of the forest, has not left any works of social benefits..for the owners and inhabitants of the forest" (Hinojosa Ortiz, 1958). The attitudes of the time continued to express both paternalism and the vision that saw that Mexican forest communities could do more to manage their own forests, as exemplified by the following quote, "It is doubtless that ejidatarios and comuneros do not have the aptitude to manage a forest industry, and from that they cannot organize a direct exploitation of their forests. At the present time, it is impossible...to organize in Mexico cooperatives in the style of Switzerland, Finland or Sweden, but we can and should create organizations that, without turning their backs on the people, organize the exploitation for the benefit of comuneros and ejidatarios. These organizations should employ the labor of the members of the community and go educating and preparing them so that, in the future, they can approach and resolve all the technical, industrial, commercial and administrative problems that forest exploitation demands. Only by this road, perhaps long, but the only one, the defense of the patrimony of the communities will remain in their own hands and not those of others, as has happened up until now" (Hinojosa Ortiz, 1958).

5. Isolated efforts by government agencies. From an early period some government agencies began to try and build the capacity of communities to operate their own CFEs. For example, in 1952, a center of the National Indigenous Institute (INI) was established in Guachochi, Chihuahua, charged with the function of intermediating between ejidos and indigenous communities and timber buyers, and which begin entitling ejidos in the zone of Guachochi, Guadelupe y Calvo and Batopilas in southwestern Chihuahua (Plancarte, 1954, Instituto Nacional Indigenista 1962) In 1959, the National Fund for Ejidal Promotion (FONAFE) was created to more systematically channel the

deposited stumpage fees back into investments in community productive capacity (Moguel, 1989).

From this early period, INI was floating the idea of associations, joint ventures between ejidos and private enterprise, a durable idea that is re-floated in every new presidential period, generally as a new idea. For example, an INI memorandum from the period suggests "have the ejidos and private producers associate in the construction of a plywood plant located in Guachochi, to convert it in the first industrial center of the sierra, instead of Parral as Gonzalez Muzquiz would like to attempt, and endow greater economic stability to the Tarahumara zone as well as the individual timber businessmen" (Lartigue, 1983). The degree of intervention by INI in the most successful example of community forest management of the period shows that INI handled all the technical studies as well as handling "administrative organization and directs the work, regulating the production, taking charge of transportation, management of personnel, and sales promotion...all of the labors are realized by the ejidatarios, with the exception of those already mentioned; the remaining labor, up to the most qualified in the workshops, is carried out by the Tarahumaras (INI, 1964). Thus, little community empowerment was going on.

In the 1960s in Durango, Chihuahua and elsewhere, the government encouraged an arrangement called "participatory associations" (*asociación en participación*) which in theory placed communities in a business partnership with logging companies. However, it was partnership in which the seller was legally obligated to supply only the logging company. However, the fact that the forests *were* on community lands meant that the communities always had what the economists call hold-up rights. The reality of Mexican land tenure thus gave communities rights to resist logging that would have been rare anywhere else in the world at this time. They could, and frequently did, refuse to enter into contracts with the logging concessionaires. As one analysis from the period suggested, these arrangements did not work because "the small property owners, ejidos, and communities can't sell their production except to the concessionaire…when they have problems with setting the price, they prefer for the forest to be destroyed by not cultivating it, than selling it at a low price…which has occasioned a collapse in production" (Ovando H., 1979). This led to a serious of struggles and negotiations between the communities and the logging companies which, more than once, ended up in the assassination of the local leaders. However, these experiences also served to launch some of the early, more autonomous CFEs.

6. Community Struggles. A comprehensive history of the early struggles of the forest communities to control their forests remains to be written. The forest protest movements ranged from non-violent, labor-oriented movements to guerrilla movements that had their roots in protests against logging abuses in communities. As early as 1940 the ejido Pueblo Nuevo in Durango attempted unsuccessfully to form its own CFE, an effort ended by an assassination. In 1962 the communities of El Naranjal and San Vicente de Jesus in Guerrero forced logging companies out of their forests and in 1964 the communities of Mezcaltepec, Agua Fria, and El Camarón, also in Guerrero, struggled against the UIEF Maderas Papanoa, a struggle that was headed by a young schoolteacher,

Lucio Cabañas, who later lead a significant regional guerrilla force(Bartra, nd:91). In 1964 agencies of the community of Santiago Textitlán in Oaxaca were blocking roads, accusing the Compania Forestal de Oaxaca of taking out wood illegally and damaging the forest ((UCEFEO), 1989).

Apparently the first autonomous CFE founded in Mexico was the Ejido San Estabán in Durango in 1965, followed by the Ejido La Ciudad in 1966, after freeing itself from an *asociación en participación* (Guerra Lizarraga, 1991). This was followed by the ejido Bajitos de la Laguna in the Costa Grande of Guerrero which fell into operating its own sawmill in 1968, when a private company abandoned the sawmill that had been installed on community lands (Wexler, 1995). In the 1960s, struggles in Durango against the *asociaciones en participación* were paralleled in Oaxaca by the formation of the *Union de Pueblos Abstecedores de Materia Prima a FAPATUX* in 1967. In Oaxaca, 15 communities led by San Pablo Macuiltianguis refused to sign the logging contracts and launched a boycott for higher salaries, increase in stumpage fee, investment in roads and fulfillment of promises like fellowships for children. It is revealing that they did not yet envision managing and logging the forests themselves. A comunero in Macuiltinaguis said of this period "We seem like workers and not owners of the forest. That's why we have always had a rebellious position with respect to the enterprise since it carries away all our wealth and our sweat and doesn't leave us anything..we are the most beaten down, while those that work for the enterprise, the workers as well as those that have their confidence, earn triple what we take out….." (Alatorre Frenk, 2000) (Bray, 1992). The *Union de Pueblos Abastecedores* was able to continue its strike for six years before FAPATUX finally ceded to some community demands (Instituto Maya, 1980). But as Bartra noted, these forest-based movements did were primarily defensive in nature "The struggle of the communities against the arbitrariness of the companies, the failure to live up to the agreements and depredations of their forest, had been basically defensive and lacking alternatives for organizing a self-managed silvicultural exploitation (Instituto Maya 1980). It would not be until the 1970s and early 1980s that communities would begin to grasp the vision of managing their own forests with their own industrial infrastructure.

B. Phase II: The Great Awakening of Mexican Community Forestry 1971-1986

1. The FONAFE period. The situation that Mexico struggled with was captured by a forester who in the 1970s would become a leader of the government-led reform efforts that would lead to the formation of many CFEs. "México's peculiar condition is where timber resources, patrimony of the nation and thus subject to the concept of public profit, is generally the property of ejidatarios, community members, and private landowners, but given in concessions and logged in grand part by private enterprises and administered by the State" [Castanos M., 1969 #535]. This reality led many foresters to the necessity of working to strengthen the productive capacity of these communities, frequently not out of any romantic notions of community empowerment, but as simply the only way to raise the production of forest products in Mexico, which was generally stagnant in the late 1960s and early 1970s.

It is commonly thought that the first concerted government-led effort to promote CFEs in Mexico arose in the mid-1970s from the activities of the General Directorate of Forest Development *(Dirección General de Desarrollo Forestal-DGDF*) a unit within the Forestry Subsecretariat of the Secretary of Agriculture. But the role of FONAFE, particularly in Durango and Chihuahua in the early 1970s, has frequently been overlooked. We can thus speak of the overlapping FONAFE periods (1970-1976) and DGDF periods (1974-1986). FONAFE became part of wide-ranging initiatives to promote rural development on the part of the administration of President Luís Echeverría (1970-1976). It is in this period that we first see the rise of ejido unions. In Article 146 of the 1971 Federal Agrarian Reform Law the way was opened for higher levels of economic association between ejidos, with the creation of "*uniones de ejidos*" (Moguel, 1990). Another feature of relevance for the forestry sector was the creation of a new set of timber parastatals called Decentralized Public Organisms (*Organismos Públicos Descentralizados*-OPD), which were massive parastatals formed during the period in several states (Ovando H., 1979), and were lineal descendants of the UIEFS. As a parallel effort to the formation of these parastatals, FONAFE was encharged with forming CFEs to be suppliers to the parastatals. In this sense, it was not different from earlier government efforts to tie communities in exclusive relationships with suppliers. However, what was different was the magnitude of the effort during this historical period, and that it laid the base for a more autonomous community forest sector later in the 1970s years, even if the original intention was still heavily marked by paternalism. FONAFE was a government trust fund with field operations that was formed from the stumpage fees paid to the communities. By law, 70% of these funds went to FONAFE accounts in the community's name and the other 30% went directly to the community.

As Table V below shows, 135 CFEs were promoted by FONAFE in the early-to-mid 1970s, numbers well beyond anything that had happened before. Ninety-two of them, or 68%, were in Durango and Chihuahua (Enriquez Quintana, 1976), with a second significant cluster emerging in the tropical states of Campeche and Quintana Roo (a total of 20 CFEs). Little is known about this period of the establishment of CFEs in these two states. By one account, these CFEs were controlled politically by caciques and the Confederación Nacional Campesina (CNC) and were created solely as suppliers to parastatals that were withdrawing from direct production (Guerrero, 1988), which is likely the case. Nonetheless, it seems that many of these CFEs survived and evolved in a more autonomous direction in the subsequent years, and became the basis for the founding of the Union de Ejidos y Comunidades Emiliano Zapata, one of the first autonomous second-level organizations, founded in 1976. (see section on second-level organizations below).

These forest ejido enterprises could be either entirely property of the ejido or mixed investments, usually with forest parastatals, although 128 of 135 (95%) were solely ejido enterprise. The distribution by state and by type (ejido or mixed) of enterprises formed by FONAFE up to 1976 follow:

Table V: Ejido Enterprises Promoted by FONAFE

STATE	EJIDO ENTERPRISES	MIXED FINANCING	FONAFE TOTA:
Durango	48	2	50
Chihuahua	42	0	42
Quintana Roo	11	0	11
Campeche	9	0	9
Michoacan	7	1	8
Oaxaca	1	2	3
Nayarit	1	1	2
Veracruz	2	0	2
Guanajuato	2	0	2
Baja California N.	1	0	1
Sinaloa	1	0	1
Jalisco	1	0	1
Tamaulipas	1	0	1
Chiapas	1	0	1
Zacatecas	0	1	1
Total	128	7	135

Source: Enriquez Quintana (Enriquez Quintana, 1976)

The production of ejido enterprises constituted 21% of the total reported volume of national production in 1975. Fifty-Six percent of the enterprises were funded for sawmills and 25% for production of logwood. FONAFE reportedly also made considerable investments in training, including the establishment of training centers in Chihuahua and Durango (Enriquez Quintana, 1976). In Chihuahua FONAFE funds were used to launch CFEs in huge new forest ejidos that were formed out of the breakup of at least 256,611 ha belonging to Bosques de Chihuahua, S. de R. L (Parra Orozco, 1995). This was the same period, for example, when El Balcón in Guerrero received its major forestlands endowment. Thus, as recently as the early 1970s the Mexican government was involved in a very significant transfer of natural assets and financing of CFE assets, as well as human capital formation, for what would later become a more autonomous CFE sector. Jose Garzcón Mercado, a FONAFE official, sounded the note that was increasingly heard in the Mexican forest-related bureaucracy during this period when he said that, "in a period no more than ten years, the peasant will take charge of the complete administration (of the forest enterprises)" (Garzcón Mercado, 1975). On the other hand, social capital investments per se were apparently weak in this period, with little investment in building organizational capacity for the CFEs. However, it appears that this rapid formation of CFEs had a very positive impact on forest production based on figures available from Durango, where production nearly tripled from 1970-1980, from 703, 117 M3 to 2.02 million M3 (Guerra Lizarraga, 1991).

Santa Cruz Tanaco in Michoacan, which was considered one of the model CFEs in the 1970s and early 1980s, was established with FONAFE funds in 1973 (Vazquez León, 1992). In Quintana Roo, FONAFE efforts launched the logging of tropical hardwoods for railroads ties in both Quintana Roo and Campeche, and a series of ejido unions were established in those two states in the early 1970s, several of which would also later evolve into more autonomous CFEs. Also in Quintana Roo, the earliest

community-located, if not completely community administered, sawmills were established in communities like Nicolás Romero and Cafetal-Limones in the early 1970s, both of which later became affiliated with second-level organizations. However, a significant number of these FONAFE efforts also failed in the short run. IXCAXIT in Oaxaca quickly collapsed, but the important CFE of Ixtlán emerged with important government-endowed infrastructure. An account of the 9-member Union de Ejidos Altimirano, an extraction process and sawmill established with FONAFE funds in Chiapas in 1975 can be found in Halhead (Halhead, 1984). By 1980 the ejido union had dissolved for problems such as excessive paternalism, lack of administrative, technical and commercial capacity, lack of planning, disinterest of the community as a whole, and unwillingness to accept responsibility. In 1973 government officials organized the *Unión de Ejidos Forestales del Estado de Campeche (UEFEC*), to be suppliers to the company "*Caobas Mexicanas*" under a state concession from 1972-1977. The UEFEC established 9 ejido sawmills for the production of railroad ties and precious timbers, at least two directly administered by FONAFE, but this ejido union fell into debt and corruption, as was seen as being the tool of government officials. If FONAFE failed in many cases, it must also be noted that more than a few of the later more autonomous organizing efforts emerged out of the failure of the government-sponsored efforts, suggesting that important social learning had occurred, social capital was built, and investments in enduring physical capital and thus assets were made.

2. The DGDF period 1974-1986. This period would mark a sea change in Mexican forest policy when, for the first time, the development of community capacities to manage their own forests, independently from parastatals, would become a significant focus of state action. This period thus constitutes the shift of the timber industry from parastatal firms to community-based timber production.

In 1972 and 1973, the coming changes were heralded by the elaboration of the first national planning document for the forest sector, the National Program of Forestry Development, and the establishment, in March, 1973, of a new division within the Forest and Fauna Subsecretariat, the previously mentioned DGDF *(Direccion General para el Desarrollo Forestal*), charged with implementing the National Program. The DGDF, under the leadership of a forestry engineer called Leon Jorge Castaños, launched an outpouring of studies, some of which would later become initiatives. One source lists 69 studies between 1973 and 1982, with the bulk of them coming in the early years (Calva, et al., 1989). One of the most important of these was the study that justified lifting the bans, and would eventually result in seven bans being lifted from 1971-75.

In 1974, the DGDF was still mostly focused on the emerging problems of the parastatals, and initial reform efforts were focused on small private property owners, with ejidos regarded as too difficult to work with. Over the next ten years, however, the DGDF would become a rich brew of moderate reformers, environmentalists, and political radicals, with ties reaching out from the bureaucracy into political parties, newly emergent NGOs, and the forest communities themselves. After some initial unsuccessful efforts in Morelos, the DGDF staff began working in Tlaxcala, a short drive from the

Chapingo campus. Tlaxcala was considered a Siberia for foresters. It had been heavily deforested for centuries and, despite a ban, was plagued with heavy illegal cutting. The foresters had a contact there with a Mexican small property owner with new ideas about silviculture. The Tlaxcala silviculturist was heavily critical of the forestry subsecretary's emphasis on the parastatals, and strongly encouraged work with small private owners. As the team began working in Tlaxcala, they also started to become familiar with a neighboring area in the state of Puebla, the Chignahupan-Zacatlan area, which had a more extensive and interesting forest mass, albeit one that was also undergoing intense deforestation. The first step was to begin negotiations with the state Governors of Tlaxcala and Puebla to lift the logging bans. Because there were no major logging interests in the regions, just small-scale contractors working illegally, there were few political risks in lifting the ban, and in January, 1975, they were lifted.

While the work in Tlaxcala quickly foundered, the work in Puebla showed much more promise. With the lifting of the ban, the DGDF began to introduce a new silvicultural concept, the Silvicultural Development Method (*Método de Desarrollo Silvícola*), which was also being introduced in Durango and Chiapas in the same period. Along the way, they began to also work with a few ejidos, still regarded by some within the forestry subsecretary as a lost cause. As the work developed in 1975 and 1976, it became apparent that small property owners and even ejidos could learn the new management techniques and could organize themselves for production. As the organizers began to be successful, the DGDF began to receive more resources and, by 1978, they began expanding into Veracruz (Cofre de Perote and Huayacocotla), areas where concessions did not exist, a basic strategy of the team. But it was in Puebla that the first successes began to take shape.

After nearly four years of effort, by October of 1978 organizational work had advanced in 11 ejidos and with 6 small property owners, generating 200 temporary jobs and getting from 50-300% more per cubic meter than those outside Plan Puebla ((AMPF), 1979). Over a period of experimentation, a particular form of organization was conceived the "Unidades Ejidales Productores de Materias Primas" (UPMP) i.e. ejido enterprises, which emerged from the a series of activities that included: socio-economic diagnoses, dasonomic studies, processing and authorizing of the forest extraction permit, diasgnoses for production, marketing studies, and training. The team also developed the concept of socio-production to describe their strategy, "Socio-production is thus named because it is based on the idea that social necessities are resolved by production which in turn, promotes the development of society. It is also seen as a vehicle for promoting forestry culture (Aguilar Espinoza, 1990).

By 1978, they had also promoted a second level organization, Bosques y Maderas de Chignahuapan-Zacatlán (BOMACHIZA), S.A. de C.V. ((AMPF), 1979). By 1979 logging permits had been extended to 52 ejidos and 253 small owners under what was termed Plan Puebla ((SARH), 1979). At the same time, the DGDF teams in Huayacocotla, Veracruz began to show results and by 1981 a second-level organization was established there, one that persists to this day, was established. Efforts in the Cofre de Perote area of Veracruz ran into a new logging ban pushed by environmentalists, but

despite this new ban, the ejido of Rosario-Xico was able to continue logging, using the new silvicultural knowledge gained, and continues today as a successful forestry ejido (Merino, et al., 1997). The DGDF's efforts were bolstered in 1978 when a high-profile political figure, Cuautemoc Cárdenas, the son of Lazaro Cárdenas, was named the new Undersecretary for Forestry. In an interview in 1979 Cárdenas proclaimed "the great goal in forestry is to try and reduce rentismo forestal and unnecessary intermediation until it comes to be eliminated, so that the owners and possessors of the forests work them directly, receiving the benefits deriving from their exploitation" [Cárdenas, 1979 #645].

In that same year, this new policy was codified in the National Agricultural and Livestock and Forestry Plan for 1978, which announced, "It is sought that the possessors participate in the productive process, from the cultivation to the extraction of timber as roundwood and its industrialization" (SARH), 1978). In 1979, the Subsecretaría Forestal y de Fauna (SFF) published its own separate plan the National Program for Forest Development. The DGDF went through budgetary and other crises in the early 1980s, but this was also the period when they launched what would become a very successful operation in Oaxaca (see discussion on social capital below) that would result in the establishing of the Unión de Comunidades y Ejidos Forestales de Oaxaca (UCEFO) in 1986 and indirectly supported the launching of the Plan Piloto Forestal in Quintana Roo. In 1983, the leader of the reformers, Leon Jorge Castaños, was named as Forest Subsecretary, and by 1986 was able to shepherd through a new forestry law that contained many of the elements promoted by the DGDF over the years.

This watershed law 1) ended all private concessions and initiated a process of dismantling the parastatals; 2) required more detailed and environmentally sensitive studies for logging permits and 3) authorized communities directly or through second-level organizations to receive forest technical services (Bray, 1996). In Mexico, *servicios técnicos forestales* (forest technical services-FTS) are a reference to the management plans that must be drawn up by professional foresters in order for a logging permit to be issued. Historically, these services had been monopolized by the government in various forms. The 1986 allowed communities for the first time to control their own STF. Six such concessions were given in 1988 (including Nuevo San Juan Paranagaricutiro, UCEFO, SPEFQR, OEPFZM, and Silvicultores Ing. Eulalio Gutierrez Trevino in Coahuila), 1 in 1990, 74 in 1991 and 8 in 1992, for a total of 83. About half of these were reportedly to peasant communities and their organizations, with the other half going to groups of professional foresters [Castanos M., 1992 #488]. It was also at this time that the some of the huge parastatals were broken up, and in some cases their assets were transferred to community forestry organizations. Productos Forestales de la Tarahumara (PROFOTARAH in Chihuahua, was to be transferred to 7 ejido unions, that was later reduced to three (Solis, 1992).

3. The Role of Community Struggles. While communities began to find a friendlier environment in public policy during this period, bitter struggles to gain rights over community forestlands continued in some areas. Community struggles during the 1970-1986 period took a variety of forms and became more coordinated and effective,

frequently finding allies both in the government and among independent activists. In the most extreme expression of anger about forest exploitation, the guerilla movement in the Costa Grande of Guerrero headed by Lucio Cabanas was based to a significant degree on grievances over illegal logging on community lands. In Oaxaca, by 1973 Santiago Textitlán was able to make a production strike stick for three years, suspending deliveries of timber and in 1976 organized itself into the *Unidad de Explotación Forestal "Zapoteca Cardenas"*, and began operations as an independent CFE by 1978. In 1976 Pueblos Mancomunados carried out a stoppage against Maderas de Oaxaca seizing equipment in protest for illegal logging, and went on to form the first CFE in Oaxaca in 1977 (UCEFO, 1991). Although much attention has been given to the history of CFEs in Oaxaca, it should be underlined that this was at least ten years after the first independent CFE in Durango.

The 1970s and early 1980s were marked by new protest movements against concessions in an expression of more grassroots social capital construction. In 1980 the *Organización en Defensa de los Recursos Naturales y Desarrollo Social de la Sierra de Juárez* (ODRENASIJ) emerged fighting against the renewal of a 25-year concession to FAPATUX that was due to end in 1982. Also in the Sierra Juarez and the Sierra Sur, many communities had production stoppages (*paros*) against various timber companies, which have already been mentioned above. This shows the degree of negotiating space that Mexican communities had under the system. Their putative ownership, if not effective control, of the natural asset made them capable of exercising what economists call, "hold-up rights", the right, formal or informal, to deny outsiders access to the resource even when a contract has been signed. This is a quite different from most third world countries where local communities have been almost completely powerless to stop outside logging companies from despoiling lands that they occupy.

4. Reflections on equity, empowerment and the rise of community forestry

By 1986, the CFE sector as it is known in Mexico had significantly taken shape. In fact, it is an important empirical question for further research just how many new CFEs were formed after 1986 and what are the prospects for the incorporation of more new CFEs into the sector, a question to which we shall return in the conclusions. The visionaries of CFM in Mexico had for years proposed that allowing communities to manage their own forests would significantly enhance incomes and be a step towards simple justice and an improved distribution of the benefits from natural resource management. Despite the momentousness of this transition for the affected communities, there is only anecdotal evidence as to what was the impact of the empowerment of communities on incomes, although most of these anecdotes suggest immediate and dramatic increases in income to the community and community members. For example, it has been reported that an ejido in the Plan Forestal Puebla "reported a doubling in their annual income" (Halhead, 1984). In the Oaxacan community of San Miguel Peras, when the community began to operate its own CFE in 1979-1980, the community's share of the economic benefits went up 600%, included doubling of wages to workers in community enterprises (Klooster, 1997). Incomes in the forest ejidos of Quintana Roo are also reported to have gone up dramatically with the advent of the Plan Piloto Forestal. In terms of asset building, this transition from the *rentista* era to the community logging era

deserves more attention than it has received. More calculations on exactly how much more income and accumulation of assets began at that moment would be powerful figures to demonstrate the advantages of community logging, but they are largely missing. A new national survey inspired by this review will ask questions about value of current community assets from CFEs, which should begin to fill in this picture.

C. Phase III: Uneven Policy Initiatives and Consolidation of a Mature Community Forestry Sector 1988-2000

The phase may be separated into two periods the presidency of Carlos Salinas de Gortari (1988-1994), and the period 1995-2000, which constitutes the presidency of Ernesto Zedillo (1994-2000). We will look briefly at the emerging policies of the administration of President Vicente Fox in the conclusions. Beginning in 1991, the administration of Salinas de Gortari accelerated Mexico's program of deregulation and decentralization in the rural sector with three sweeping reforms that impacted the forest sector. They were the modification of Article 27 of the Mexican Constitution, the 1992 Forestry Law, and the North American Free Trade Agreement (NAFTA), as well as a wave of privatization that affected all of the forestry parastatals and began to turn over some infrastructure to second and third-level organizations. The reform of Article 27 was intended to lay down the framework for more private property and a land market in rural Mexico. Forestlands, however, received special treatment since communities that decided to dissolve their ejido status had to return common property forestlands to the state. The clear thrust of the all of the neo-liberal initiatives was to try and dismantle the common property countryside. In this sense, it has been proposed that sustainable community silviculture is a "counterhegemonic" model to this neo-liberal thrust (Alatorre Frenk, 2000).

The 1992 law represented a dramatic break from a past dominated by the dialogue between proponents of state-led forest industrial development (1943 and 1960 laws) and proponents of state-tutored community forestry (1986 law). It was primarily aimed at encouraging forest plantations, but was also designed to turn over natural forest management to the market as much as possible given the constraints of Mexican land tenure. However, it made little distinction between natural forests and plantations. The government argued that the 1992 law removed the most important disincentives for the creation of a forest plantation sector. This was done by creating a new land tenure category of "small forest property", with a limit of 800 hectares, increasing the confidence of the private sector by ending land redistribution, the legalization of free association between ejidos and indigenous communities and private corporations, and facilities for development of plantations of up to 20,000 hectares (Tellez Kuenzler, 1994). The law also dramatically simplified the paperwork involved in cutting, transporting and processing wood products (opening the door to a surge in clandestine cutting), and privatized the provision of forest technical services (FTS). These services were a legal requirement for the elaboration of the forest management plans, and had previously only been given out as a government concession. Another important feature of the 1992 law

for public participation in forest policy was the creation of a "national consultative technical forest council" with representatives from relevant government agencies as well as academics, industry, NGOs and peasant organizations (Article 6), with regional or state councils created as well that also included state and municipal government participation. Specific impacts of the 1992 forest law on the community forestry sector are not clear, although the principal impact seems to have been to stimulate a rise in illegal logging. For example, the expansion of the total number of sawmills in Chihuahua from 1993-1998 went from 108 to 309, with one report arguing that this was as a result of illegal logging and the elimination of regulations on sawmills under the law (Guerrero, et al., 2000).

1. The Impact of NAFTA. When the NAFTA was passed in 1993 there was much concern in the CFE sector that this would be a devastating blow. It was noted that prices per board foot were 1700-1800 pesos in Mexico when they were 750 in the US (TT:36). It was feared that many small community producers would go under faced with competition from competition from the two largest timber producers in the world, the United States and Canada. As Taylor (Taylor, 2000) commented "social institutions underlying community forestry now face great pressure as neo-liberal principals promote privatization and elevate individuals as privileged decision makers in markets". Paraphrasing Taylor (2000), has the state's turn toward neo-liberalism seriously undermined the social institution's underlying community forestry? Are community forestry institutions being destroyed by larger political economic restructuring (favoring individualism) or are they being transformed into new forms of collective management? Are institutional changes in community forestry steps toward new, possibly more viable forms of collective management or toward privatization of forest resources? (Taylor, 2000). Both of these things may be true, and the earlier observation about policies having contradictory impacts on the sector should be recalled. Indeed, as we shall explore later, new forms of collective management have been emerging and there may also be more pressures toward informal privatization of forest resources within communities (parcelization), although it is not clear if this is as a result of the 1992 law.

While NAFTA did send some shocks through the sector, the worst fears do not appear to have been realized. There are no documented incidents of any CFEs ceasing operation entirely because of NAFTA, although it is possible that some may have retreated to being roundwood producers rather than producing sawnwood or other finished products. There are only scattered accounts of the actual impact of NAFTA on the sector and apparently no systematic studies, although there are several accounts of communities modernizing their industrial plant in the face of the NAFTA challenge. For example, it is has been reported for Ixtlán in Oaxaca that sales went down 40% from 1994 to 1995, and that unsold roundwood and sawnwood began to accumulate in their patio. However, it is also reported that Ixtlán invested 1.2 million dollars in modernizing their sawmill and in a pallet-making machine designed in San Juan Nuevo, and it still operates today, so they appear to have survived the transition (Alatorre Frenk, 2000). For San Juan Nuevo the transition under NAFTA was also difficult because "our system was not very technified" but they have made investments to improve their quality and began to export moldings to the United States on a regular basis in 1996, competing

successfully with Chilean producers (Francisco Eceheverría, personal communication, 1/17/01). In Chihuahua, the International Paper Company opened markets for small-diameter timber (8-15 cms), creating a "boom" in the market for this timber with a slightly higher price than debarked roundwood (Guerrero 2000) although increased logging of larger diameters was also reported. It is probably more true that the private industrialized forest products sector has suffered under NAFTA, but communities can retrench and "warehouse" their forests in ways that private industries cannot.

2. The Zedillo Period. When President Ernesto Zedillo assumed office in December, 1994, nearly all natural resource management agencies were, for the first time, gathered together under one cabinet roof in the Secretaría de Medio Ambiente, Recursos Naturales, y Pesca (SEMARNAP). SEMARNAP took over the environmental functions and agencies previously carried out by the Secretaría de Desarrollo Social (SEDESOL) and the Secretaría de Agricultura y Recursos Hidraulicos (SARH). From the latter, SEMARNAP assumed all forest administration responsibilities and units from SARH, with the exception of forest research. Zedillo appointed as his Environmental Secretary Julia Carabias, who had been Director of the National Ecology Institute (INE) in the last year and a half of Salinas de Gortari's period. But before serving in the Salinas de Gortari administration, Carabias was a biologist, academic, and NGO leader with strong ties to NGOs and peasant organizations. She brought with her as part of her management team many individuals from the ranks of her own environment and development NGO, other NGOs, and peasant organization advisors. Many of these people had participated with the reform efforts of the 1980s. From the time they were drawn into the new cabinet-level agency in early 1995, they began trying to use the levers of government policy to refocus attention on the forestry social sector. This began a new wave of policy and legislative initiatives in support of community forestry which have continued in the Fox administration.

The forestry bureaucracy itself had been dropped in rank, losing its subsecretary status and becoming a Directorate, one of several divisions under a Subsecretary for Natural Resources. Among other things this reduced the influence of what was seen as a "old-guard" forestry bureaucracy, and strengthened the influence of Carabias'more environmentally and community-inclined advisors. Many of these people had substantial experience in community forestry issues and were able to exercise authority over forest policy beyond the Forestry Directorate. Early in 1995, two major strands in forest policy, community-managed natural forests and corporate plantations emerged, both with significant backing. The Undersecretary for Natural Resources organized the discussions around new administrative initiatives (new government programs and agencies) and legislative initiatives (a new forestry law). The Office of the Presidency continued to have a strong interest in promoting plantations, particularly since the President's Chief of Staff, Luis Téllez, had been the principal overseer of the 1992 forestry law. But the limitations of the 1992 law, even in its major thrust of plantation promotion, had become clearer (see below), and Zedillo came under pressure from international timber and paper interests to take further steps to create a plantation sector. A 1995 letter to Zedillo from the head of International Paper's forestry division, argued "If Mexico is to be globally competitive, there should not be limits on the size of privately owned sections of

forests…and the country should legislate incentives to promote the establishment of commercial plantations". A paper analyst would later put a finer point on the argument by noting that, "The ejido system of land ownership has made commercial forest plantations impossible" (Feagans, 1997). However, the strong presence of social sector advocates in SEMARNAP, with support from Carabias herself, also meant that the CFM sector had its strongest policy platform since the days of the DGDF.

These two tendencies began an intense dialogue within SEMARNAP, and it quickly became recognized by all participants that the forces were such that forest reforms would have to include elements for both community-managed natural forests and plantations, with the debate focusing on the relative weight that should be given each tendency. In the discussion that follows we will first focus on the background to the administrative reforms, then discuss the forestry law, and then return to the first phase of the implementation of the administrative reforms.

The two tendencies eventually resulted in two new programs, each with its own administrative division within the Forestry Directorate in SEMARNAP, the *Programa de Apoyos para el Desarrollo de Plantaciones Forestales Comerciales* (PRODEPLAN) and the *Programa para el Desarrollo Forestal* (PRODEFOR). PRODEFOR had its origins in a proposal first put forward by an advisor to the RED MOCAF who later became a high-ranking official in SEMARNAP. The proposal was a program of forest producer subsidies modeled on the agricultural subsidy program PROCAMPO. This proposal and proposals to expand efforts at plantation promotion were discussed throughout 1995 in a series of meetings between various divisions of SEMARNAP, other government agencies, the private sector, and NGOs and peasant organizations. Elements within SEMARNAP most sensitive to the interests of the Presidency took the forest subsidy plan, which at this point was more ambitious and costly than the plantation promotion proposals, and downgraded it. The CFE subsidy plan was competing with plantation promotion efforts, and the latter forces, because of their link to the Presidency, were finally the more powerful within SEMARNAP. The transnational corporations were also directly involved in the discussions, with International Paper paying for some SEMARNAP officials to visit Chile to examine first-hand plantation promotion programs there (interview with former SEMARNAP official, 07/26/98).

This phase of the policy discussions culminated in the Programa Forestal y de Suelo 1995-2000, presented in March, 1996 (SEMARNAP, www.semarnap.gob.mx/gestion/Planes/prog-sect/suelos.htm1, 7/9/98), which included sketches of both PRODEFOR and PRODEPLAN, among other policy initiatives. The other initiatives included the integration of soil and forest polices, the establishment of tree nurseries and the goal of planting 1.7 billion trees (with the participation of Mexican army), and a reorientation of the Programa Nacional de Reforestación (PRONARE)[2], which featured a new orientation towards rural reforestation with high genetic quality native species. In the same period, SEMARNAP took steps to fill the most immediate regulatory lacunae, while drafting versions of a new forestry law. Thus, in December

[2] PRONARE was still housed in the Secretaría de Desarrollo Social (SEDESOL) at this point. It would be incorporated into SEMARNAP in early 1998.

1996 reforms to the *Ley General del Equilibrio Ecologico y a la Proteccion al Ambiente* were passed that include environmental regulation of forest plantations (Alvarez-Icaza Longoria and Salinas, 1996). Similarly, an emergency regulation was issued on May 6, 1996 to prohibit substitution of natural forest by plantations, one of the principal concerns of peasant organizations, forest NGOs, and environmental groups.

As mentioned, the government was under intense pressure to reform the forestry law to further promote plantations and to provide financial subsidies, as had been done in all other Latin American countries with plantation sectors, but which had not been explicitly called for in the 1992 policies. In the years after the 1992 law, the government acknowledged that plantations "have not proliferated owing to the lack of adequate partnership schemes between the social and private sector; the lack of stimuli, incentives, and financing and also because of a lack of clarity in the normative framework" (de Ita, 1996). International Paper pressured the government to address issues such as a new forest policy with long-term goals and objectives, a governmental agency encharged with promoting forest plantations, direct subsidies and fiscal incentives, the development of port and transportation networks that tie together the plantations and the industry, and clearer definitions of the ground rules for joint ventures between private enterprise and ejidos. The new SEMARNAP officials accepted the need for further reforms in the plantation sector and had their own problems with the 1992 law. The fledgling plantations that were being established in the southeast were essentially unregulated environmentally and had little real legal security.

SEMARNAP, in coordination with committees from the House of Deputies and the Senate and the Consejo Nacional Forestal (CONAF), the broadly representative policy consultative policy established by the 1992 law, presented a preliminary draft (*anteproyecto*) for public discussion in July, 1996, beginning a round of consultative forums. These forums represented a broadening of the public dialogue on forestry law. The official count of public opportunities to discuss the law include 9 meetings of CONAF, five regional fora, four meetings with social organizations, the private sector, NGOs, and research, the receipt of 171 proposals, and the establishment of an Editorial Committee composed of peasant, private and public sectors that drafted the final text of the law in 7 meetings. SEMARNAP argued that the consultations revealed the deficiencies of the 1992 law that must be addressed: deregulation had gone too far and clandestine logging had increased, insufficient criminal penalties for violations of forest laws, insufficient regulations of the provision of forest technical services, no framework of evaluating the environmental impact of plantations, strong limitations on the ability of the community sector to participate in plantation programs, and insufficient legal safeguards for the plantations (SEMARNAP, 1997). In essence, the 1997 law had two thrusts: to reregulate the management of the natural forest and introduce more avenues of support for community forestry, and to both regulate and promote new incentives for plantations.

Reflecting both the consultative process and the rapidly changing nature of Mexican democracy, with opposition parties having a far stronger legislative presence, the debate over the 1997 law became highly polemical and resulted in some unusual political alliances. SEMARNAP originally intended to present the law in November,

1996, but peasant organizations sought a delay in order to organize their proposed modifications. They then presented their proposed modifications in January 1997. Their concerns revolved around issues such as "only under their consent and in clear beneficiary conditions for them can plantations be established on their lands."

After this last round of negotiations, the peasant organizations, forestry NGOs, national and transnational corporations, the PRI and some PRD deputies united in support of the law, each one for different reasons, but each feeling that the law was an acceptable compromise. Industry threatened lost investment if the law not passed and noted that some industries had already decided to invest in Guatemala because of the unfavorable conditions in Mexico. CFE groups and NGOs supported the law because "it allows for regulation of commercial plantations and conditions their establishment to certain requirements or "padlocks", and also had many more elements recognizing the significance of community-managed natural forests than the 1992 law. Other key elements for them were the prohibition against conversion of natural forests to plantations and the requirements for environmental impact statements, management plans, and documents for legal use or possession of the land. There was also clearly a desire on their part to support Julia Carabias, someone they considered an ally. The principal opposition came from elements with the PRD and the PAN and environmentalists. A coalition of environmentalists charged that the government was purely bending to pressure from transnational interests, and that the law would encourage planting of environmentally damaging eucalyptus. And indeed, one commentator noted that the new forestry law "includes almost every major recommendation made by International Paper". Concerns were also expressed about protection of indigenous rights and agrarian rights under the new law, and the degree to which the new law took into account international environmental treaties (Sergio Madrid, personal communication). In turn, the community forestry advocates pointed out that the private sector were not the only ones disturbed about the inadequacies of the 1992 law, and that the 1997 version came about because of lobbying from many different sectors of Mexican society (Pare, L & S. Madrid, 1996).

The law was approved in the House of Deputies on April 22, 1997 by a vote of 317-38, despite the presence of a caped protestor posing as the "Universal Ecologist" (Ward, 2001). But even some of the supporters remained bitter about aspects of the new forestry initiatives. Silvano Aureoles, the coordinator of Red MOCAF, complained bitterly about the evident imbalance between financial resources finally dedicated to the plantation program, PRODEPLAN over the community forestry program, the Programa de Desarrollo Forestal (PRODEFOR) (see below), warning that the differences in support would result in plantations "displacing social sector producers in the plains, dedicated to agriculture, while forest owners will continue as primary producers, crushed by timber industrialists." However, Aureoles was later gratified by the degree of participation of the peasant organization in the elaboration of the regulations of the law. Luisa Paré, a prominent anthropologist who finally supported the law, also questions many of its aspects on the grounds of employment generation, equity, environmental impact, and related issues. However disappointed some supporters may have been the 1997 law and associated programs brought a new public policy focus on community forestry that had

been lacking since the passage of the 1986 law. In addition to the PRODEFOR program, this period also saw the development of a much less politicized but highly significant new program in support of community forest development known as the Proyecto de Conservación y Manejo Sustentable de Recursos Forestales en México (PROCYMAF). PROCYMAF was developed as a regional pilot program supported by the Government of Mexico and the World Bank, with a primary focus on Oaxaca, but with some program work in Guerrero and Michoacan as well. The program was originally planned for three years, and has reported it channeled nearly 5 million dollars in technical assistance, institutional strengthening, and strengthening of FTS providers for 256 communities in Oaxaca from 1998-2000 (PROCYMAF 2001). We will further discuss PROCYMAF in the conclusions, and we will now briefly discuss PRODEPLAN and PRODEFOR.

3. PRODEPLAN. PRODEPLAN became operative with regulations published in the *Diario Oficial* on April 3, 1997 with the objectives of establishing 875,000 hectares of commercial forest plantations for pulp and other forest products, reduction of the trade deficit in paper products, and to provide a sustainable development alternative for deforested lands. The plan called for investments in plantation subsidies of 4.425 billion pesos or an average of 177 million pesos a year annually for 25 years. For the first seven year period, 250 million pesos would be made available, with 190 million dedicated to pulp production and 60 million for other forest products (the latter a concession to the community forest sector), with 31 million made available in the first year. The subsidy available would be 65% of total investment costs for up to 7 years, with a series of other technical procedures and provisions. The first auction was held in mid-1997, with 52 projects placing bids. Twelve projects won subsidies, getting a total of 144 million pesos, 97 million for pulp projects and 47 million for other forest products. Among the winners in the other forest products category were two ejidos, one of them being El Balcón in Guerrero. One of them, El Balcón in Guerrero, is in a logging partnership with Georgia Pacific. SEMARNAP officials note that they did receive as many bids as anticipated, suggesting that is both because of lack of liquidity in Mexico, a 15% native species requirement, and technical disagreements over the reference prices and how the 65% subsidy is calculated (Interview with SEMARNAP/PRODEPLAN official 7/15/98). But clearly the other factor that has inhibited participation in the plantation investment in general is a slumping global paper market. To add insult to injury on this score, chief international corporate lobbyist International paper has announced that it "has no firm plans for anything in Mexico". PRODEPLAN has continued to stumble in its implementation due to both bureaucratic problems and problems in the international markets. This raises the question of whether a plantation strategy is viable for Mexico, and the earlier comment of a forest products industry official about the impossibility of working with Mexican ejidos should be noted.

4. PRODEFOR. As mentioned earlier, PRODEFOR was announced as part the government forest and soils policy. This policy, the Forest and Soils Program 1995-2000, was formally unveiled in a speech by President Zedillo to the forest community of San Juan Nuevo in Michoacan on March 27, 1996. It was announced as a program that "combines good measures to encourage production, with clear measures for ecological preservation, that improves the lives of the millions of Mexicans that live in

the rainforests, forests and arid zones of the country. *This program is dedicated especially to the social sector*" (italics mine) (PRODEFOR" cited in http://ourworld.compuserve.com/homepages/caribe/prodefor.htm). The administrative authority for PRODEFOR was published in the *Diario Oficial* 'with guidelines for the granting of subsidies for promotion of forest development" on April 3, 1997, with operational regulations being published on August 15,1997. Despite the modest resources initially programmed, SEMARNAP argued that the support was a 'historic decision to grant direct support to forest producers through PRODEFOR", and further argued that the "best way to conserve resources is through their sustainable exploitation" (SEMARNAP, nd). In the first year, SEMARNAP budgeted 24 million pesos (approximately 3 million dollars), far less than the 171 million (approximately 21.3 million) dedicated to direct subsidies for plantations. Critics bitterly noted the differential, and that while communities were given new access to loans, corporations were given far greater resources in direct subsidies. Resources for PRODEFOR came from a variety of sources including SEMARNAP, the *Programa Intersectorial de Empleos Temporales*, the World Bank, state governments, and beneficiaries. PRODEFOR was to be administered through Trust Funds established in Banrural, with the state government matching resources fifty-fifty. The granting of subsidies is defined in the *Consejos Tecnico Consultativo Forestal Estatal* through a Subcommittee of Forest Development integrated by a majority of forest producers. A master list (*padrón*) of those eligible to give forest technical services is assembled. Then the *convocatoria* is announced, with forest owners and possessors having 60 days to apply. Solicitants are then qualified and prioritized by the Subcommittee. A formula has been established for dividing up the available funds thusly: 30% to "potential producers"; 25% to those that sell timber on the stump "*venden madera en pie*"; 25% to producers who sell only raw materials "*productores de materias primas forestales*", and 20% to producers with capacity of "*transformación y comercializacion*". On a similar sliding scale, the subsidy available for each category is 90%,, 80%, 65%, and 50%, respectively. Thus, the categories are intended to give some priority to communities who are not currently managing their own forests to any significant degree. In the subsequent year, the gap in funding between PRODEFOR and the PRODEPLAN narrowed dramatically, from 6:1 to 2:1. However, there were persistent problems in the implementation of PRODEFOR at the state level, because many state governments did not put in their share, paralyzing the local program. In the concluding section we will look at the current status of PROCYMAF and PRODEFOR in the new administration.

The groundwork for the rise of community forestry was laid with the massive transfer of forest natural assets from the state and the private sector to agrarian reform communities beginning in the 1920s. The first feeble efforts to promote forestry cooperatives in the 1930s under Cárdenas were followed by the long period from 1940-1970 when communities were almost completely shut out of Mexican policy making. This was followed by another thirty-year period that marks the rise of a genuine community-managed forest sector in Mexico. This rise was supported by state policies that vacillated between clear support of these efforts (197-1986), followed by a period of neglect (1986-1994), followed by a period of renewed public policy attention to the sector (1994-2002). During this period, we also saw the rise of more coordinated and

effective grassroots movements and a sector of civil society concerned with community forest management. In the next section, we will look more specifically at the role of social capital in this rise of the CFE sector.

IV. Investments in Social Capital and CFEs: Indigenous, Government, and NGO-created Social Capital

In the previous section we have sketched the historic development of the CFE sector in Mexico and have made passing references to how this history exhibits investments in social capital formation by the government, by communities, by individuals, and later by NGOs. Clearly one of the key elements in the success of CFEs in Mexico has been a rich endowment of social capital in rural Mexico. This is based on both relational social capital and what might be called traditional institutional capital. Both of these forms of social capital would appear to have three sources 1) the social capital present in traditional indigenous organizational forms, which as served as a basis for grassroots mobilizations and the construction of CFEs 2) Institutional social capital promoted by the Mexican government in different periods and for different reasons, particularly ejido forms of organization and second and third-level organizations. 3) Institutional social capital promoted by non-governmental organizations and foundations, who have occasionally also served as important sources of support for grassroots mobilizations. We will look more closely at each source of social capital here.

A. Indigenous Forms of Relational and Traditional Institutional Social Capital

Rural Mexico is rich in forms of social and political organization that have descended from millennial traditions. Kearney (Kearney, 1986) provides a description of traditional forms in the Oaxaca forest community of Santa Catarina Ixtepeji. Santa Catarina exhibits the demanding social and political responsibilities of traditional governance structures, with community assemblies that run continuously from 6:30 pm to 3 am the next morning. In the Sierra Juárez community of La Trinidad, also in Oaxaca, 81 cargo positions must be distributed among some 175 heads of household (Alatorre Frenk, 2000). In indigenous communities in the Sierra Juárez in particular, it was found that "the sense of...identity (is)…strong, and communal life extended to political, economic, social, and religious matters. Cooperative working was not only an economic structure, but also a social and psychological one, consolidating relations between family and community. An individualistic mentality was found to be almost absent, tending to be outlawed whenever it arose" (Halhead, 1984). *Comuneros* are said to be "allergic to anything that smacks of opportunism or personal ambition" (Alatorre Frenk, 2000). As the case study of the Oaxaca community of Calpulalpam shows, many forest communities in Oaxaca are both *muncipios* and agrarian communities which, under a recent Oaxaca state law, have full authority to use their traditional governance practices

in administering their own affairs (*usos y costumbres*). As the case study notes, " (the system of *cargos* and *tequio*) are a living expression of the tradition of community participation characteristic of the Sierra Zapotecan communities and are permeated by the values of reciprocity between the community and its members". The *cargo* system is a traditional civil-religious hierarchy of community service posts, which is today used for traditional religious practices, the administration of civil society, and the administration of CFEs. *Tequio* refers to the practice of voluntary community labor for maintenance and infrastructure projects, and can be used for some forest tasks, especially reforestation. A practice which is both traditional and enshrined in agrarian law is the regular (usually three year) rotation of all posts, a practice which has also carried over to CFE administration, with the *Comisariado* also being the administrator of the CFE. A final important structural feature of many traditional governance systems in rural Mexico is what in Oaxaca is called the *Consejo de Caracterizados (*Council of Elders). The *Consejo de Caracterizados* is traditionally composed of older men who have passed through all the cargos or who have otherwise served the community, although some communities now allow some younger people to participate. The Council of Elders is a kind of collective ombudsman and Supreme Court, where conflicts that cannot be settled at other levels are submitted for final decision. As we shall see later, all of these traditional organizational features have become crucial institutional or organizational social capital features in CFEs. Over all of this is the General Assembly of all certified members of the community, which may meet one to twelve times or more a year, and is the final authority on all matters in the community.

While the cargo system in indigenous communities in Mexico has been praised as a living example of the kind of communal solidarity lost in industrialized countries, the system can be regarded with considerable ambivalence by those who participate it. This ambivalence was well captured in an interview of a *comunero* from 1977 in the Sierra Juarez, "This question (of the cargos), although it has helped the people to continue on at the same level, it's a big problem for us, the lack of remuneration, having to be available nearly all the time without even being able to plant, that there are so many cargos that have to be filled, that at time you can only rest for a year or a year and a half, means for us a big problem that we don't know how to solve. On the one hand, it's an honor for us to represent the people, but it's also a pain in the ass (*friega cabrona*)" (Alatorre Frenk, 2000). Further, the cargo system is explicitly identified as one of the reasons that people emigrate (Alatorre Frenk, 2000). This leads us to the academic question, is the relational and traditional institutional social capital in the communities a collective action investment with a flow of benefits, or a *friega cabrona*? Further, as we will explore further in the section on communities and enterprises, the intersection of traditional practices and modern enterprises can create dysfuncionalities. As a government report has noted, "Typically, the entire management team of the communal forestry enterprise changes each year, however, so while a general knowledge of logging techniques and traditions is widespread, *comuneros* rarely get a chance to develop expertise" (SEMARNAP, 1997). Further, the intense communalism must also be contrasted with an oft-noted high degree of personal mistrust in rural Mexican communities. Kearny, for example, has noted the "generalized distrust of fellow townspeople" (Kearny, 1972) that existed in the Sierra Juárez in the late 1960s. As we shall see later, communities can also

exhibit intense factionalism over forest management and other issues (Szekely, 1990), (Bray, 1991 "Struggle").

Thus, the dense networks of communality both provide a basis for other social capital in the economic sphere and are an important expression and source of communal solidarity. But there may also be aspects of these traditional practices which are increasingly dysfunctional and impractical in the modern world, which can offer many more choices as to occupations and places to live. By the same token, the traditional forms can also serve as the basis for entrepreneurial activity, while also limiting its fuller expression, a point to which we shall return later. How CFEs have emerged from these traditional networks as a new form of collective action will be explored below, but at one level the answer may be easy. Profitable logging businesses provided powerful incentives for collective action (Klooster, 1997).

The grassroots movements that were discussed in the historical section were also creating new social capital. Community leaders, members, and advisors invested much time and effort in creating new associational structures, which had a lasting impact even if the organizations themselves were ephemeral. The struggles against the *asociaciones en participación* in Durango, the struggle against FAPATUX in Oaxaca in the late 1960s and again through ODRENASIJ in the early 1980s were all organizational investments that created new community economic structures, immediately or eventually. These cases show that determined communities with visionary leadership can create the collective action structures that can overcome community divisions and educational deficits. Antinori, in fact, calls this the "social capital hypothesis" arguing that for Sierra Juarez communities the struggle against the concession acted as a "consolidating force among communities that facilitated collective action to invest in the industry" (2000:64). She also argues that this created a "cultural shift regarding forestry, from subsistence to long-term industrial operations" (Antinori, 2000).

B. Government-created Social Capital

The Mexican government has also clearly played an important role in the construction of social capital in the community forestry sector, both intentionally and unintentionally. The Mexican agrarian land tenure system is a perpetual confusion to people outside Mexico, with its ejidos, indigenous communities and "small private property". The ejido and indigenous community land tenure forms (both corporate, common pool regime and resource systems) include 66.3% of all production units and 59% of the land area of Mexico, private individual holdings include 30.8% of the production units and 40.9% of the land area, with mixed systems covering the remainder (Alcorn, 1998). The ejido system is a result of the Mexican Revolution and has been instituted in varying degrees and rhythms in different presidential periods during the 20th century. As Janis Alcorn and Victor Toledo (Alcorn, 1998) have noted, the ejido system created what they call a tenurial "shell", a structured interface between an internal environment and the outer operating system. The ejido system created a

fixed boundary within which communities had certain latitude and security to develop their systems of natural resource management. Despite the frequently analyzed deficiencies of the ejido system, it has also been a massive experiment in management of common pool resources, one characterized by a pervasive state presence and structuring. As was noted at the beginning, The Mexican government created a massive common property regime, certainly unique in modern capitalist societies. In addition to creating a space for natural resource management, it also created spaces of self-governance within legal structures mandated by the Mexican government. Defined as forms of common property with private appropriation, both ejidos and indigenous communities feature privately worked agricultural plots and, if large enough, collectively administered common areas, but with the Mexican government for many years retaining usufruct rights over the forest lands. These usufruct rights were changed in the 1992 constitutional reforms, which gave ejidos the right to title as private property their agricultural land within the ejido, although not forest common lands. Within the ejido, the Mexican government's authority was historically most strongly exercised over forest lands, as we saw in the historical section. Indigenous communities, in theory, build upon preexisting organizations and territorial occupation and thus may combine traditional practices with practices mandated by agrarian law, as we saw in the case of Oaxaca.

Both ejidos and indigenous communities are, at the same time, instruments of political control, a means for the organization of production, and a body of peasant representation (de Janvry, 1999). Both land tenure forms were endowed with juridically prescribed forms of internal political organization and external representation, which sometimes operated conjointly with others forms of traditional community organization. The legally mandated apparatus for governing local communities includes General Assemblies, Comisariados, Consejos de Vigilancia, and Juntas de Pobladores, all elected by the community in a secret vote (Tribunales Agrarios 1994. *Legislación Agraria Actualizada)* These offices and their functions have become the basis of self-governance in rural Mexico. Although frequently corrupt and manipulated by internal elites (known as *caciques*) and external actors, these land tenure-based forms of community political organization nonetheless gave peasants experience in leadership and in negotiating issues with external authorities, and some percentage of them even represented a genuinely participatory community democracy (Fox, 1996).

Besides the ejido level of organization, the Mexican government has historically encouraged supraejidal levels of organization, albeit heavily corporativized ones. In the first decades of the Revolution, the Confederación Nacional Campesina (CNC) served this function, but since the 1970s, successive Mexican presidents have created a welter of new supraejidal forms of organization as they grappled for ways to modernize the countryside while continuing to exert political control. Thus, from 1970 to the present, a bewildering array of ejido unions (*uniones de ejidos*), Rural Collective Interest Associations (*ARICs*), Agro-Industrial Units for Women (*UAIMs*), social solidarity societies (SSS), Social production societies (SPR), civil associations (*AC*'s-the non-profit equivalent status, which all NGOs and some peasant organizations also use), and civil societies (*SC*-a common legal form which permits a wide variety of commercial

activities), among others, were formed. In the historical section we have already reviewed the periodicity of the establishment of some of these second-level organizations, and in the following section on second and third-level forest community organizations we will look more closely at the process.

Many of these ejido unions had little autonomy, and were creatures of various government agencies, such as the Rural Credit Bank (*Banco de Crédito Rural*) and the Agrarian Reform Secretary (Merino Pérez, 2000). But in many cases these efforts also created relational and institutional social capital at the community and inter-community level, providing an important foundation for the emergence of CFEs. As has been noted, "Even if it was not the original purpose, creating these organizations augmented the negotiating capacity of the ejido, giving birth to a new generation of peasant leaders" (de Janvry, 1999). Further, these various extra-ejidal forms of organization have, over the last 25 years, progressively placed natural resource management issues on their agendas (Bray, 1995). As we shall see below in the discussion on second and third level organizations, the Mexican government was the key or a key actor in the creation of most of the current generation of second and third-level organizations in Mexico, and many of the CFEs. It was the Mexican government that created nearly all of the early efforts to establish community sawmills, even if only a suppliers to parastatals. Klooster (Klooster, 1997) has emphasized the role of government in promoting social capital, "in contrast to the influential description of millennial accretion of social capital described for Italy….activist elements in central government can jump-start the process by creating participatory associations and user-groups which circumvent exclusionary elements of local governments and rural elites".

C. NGOs and Social Capital: The Role of Civil Society and "Advisors"

If the 1970s were marked by the efforts of government reformers to build community forestry, it was not until the early 1980s that university activists as well as some young forest professionals who had gained experience in the government programs in the 1970s and 1980s, began independent organizing of communities for forest production. Alatorre has analyzed these "advisors" (*asesores)* as they were commonly called, as part of an incipient civil society within a suffocating state that "creates and centralizes every mechanism of technical and financial support" (Alatorre Frenk, 2000). Students and professionals with urban backgrounds drew on a variety of inspirations, including Maoist, socialist, humanist and Christian to go and "work with the people" as an existential act (Alatorre Frenk, 2000), to become the "organic intellectuals" for the peasant communities (Carrillo Dewar, 1987). Snook has insightfully termed these advisors as leading the "construction of a development alternative within a political opposition movement" (Snook, 1989) quoted in Alatorre, (Alatorre Frenk, 2000).

As Alatorre has noted "The magic words…were participation of the base, self-management (*autogestión*), participatory democracy, horizontality, social appropriation of the productive processes, control of the resources by the owners and possessors….For a current that could be called "ethnicist" (*etnicista*), the central concept

was that of communitarianism (*comunalidad*), with a connotation of democracy, social cohesion, and harmony with nature" (Alatorre Frenk, 2000). Alatorre goes on to note of these advisors that "There was not much interest or capacity in a dialogue with the State, political parties, or private enterprise, and anything that smelled of productivism, or collaboration with government or marketing was treated with great reserve (Alatorre Frenk, 2000). Some did participate in government programs, but with skepticism about the compatibility of the industrialization model with multiple use community forests. But the "bicultural dialogue" between advisors and the communities was not always easy. Frequently, tensions arose between emerging community leaders who saw the advisors as hired help, with no right to participate in community meetings, and the advisors who had their own vision of how the relationship should evolve, and this was a common theme in the first published workshops of the advisors. Among other things, this was clearly an important period of construction of both relational and institutional social capital, where an important function of the advisors was getting communities to talk to each other that would lead to the eventual construction of second and third-level organizations.

The distinction between government agencies, student or young professional leftist or church-based activists, and emerging NGOs was not always clear-cut. Some individuals would move from employment in government agencies to NGOs and back, while others more firmly remained distant from government agencies. It can be said that advisors followed three different career tracks 1) going to work for the government. 2) becoming the technical staff and commonly also part of the leadership of the peasant organizations and 3) increasingly by the mid-1980s began forming NGOs that offered technical and organizational support to the forestry organizations. Although one of the first natural resource oriented NGOs emerged in the 1970s (*Grupo de Estudios Ambientales*-GEA), it was not until the late 1980s that it became common to start NGOs. Estudios Rurales y Asesoría (ERA), which was based in Oaxaca and founded by young professional activists who had supported ODRENASJ, was possibly the first forest-based NGO to receive international foundation support when the Ford Foundation supported it in 1985. At about the same time, the Programa Pasos, a coalition of NGOs composed of ERA, GEA, and a French NGO was supported by the French foundation, Foundation for Human Progress (FPH). The emergence of the forest NGOs as more self-conscious and assertive civil society actors may be marked by the First Seminar-Workshop of Analysis of Forest Experiencies held in 1989. A second workshop was held in November, 1990 and was marked by the publication of a *Memoria* (Aguilar et. al, 1990). This workshop was convened by ERA, the Michoacan-based Servicios de Educación y Desarrollo (SAED) and Programa Pasos. A third workshop was held about a year later, in October of 1991, and also resulted in the publication of a *Memoria* (González, Alatorre, Alvarez 1991). The publications of these *memorias* was followed up in 1992 by the publication of an edition of the opinion journal *El Cotidiano: Revista de la realidad mexicana actual* edited by Programa Pasos among others, dedicated to community forestry and forest issues in Mexico. These three publications together mark the first systematic reflections by civil society actors and academics on the emerging phenomenon of CFEs. Thus, the academic study of Mexican community forestry is only about a decade old. The concerns at this time included analysis of the current forest situation in general, regional situations, the problems in the transfer of Forest Technical Services (FTS) (which had

been authorized by the 1986 law), concepts and methods of integral management, self-management, relations between advisors and the communities, community-enterprise relations, markets, and the transfer of parastatals to community organizations. The coalition of NGOs represented by Pasos was broadened in its representation to include other newly emergent NGOs, and formed in 1994 the Mexican Civil Council for Sustainable Silviculture (*Consejo Civil Mexican para la Silvicultura Sostenible-CCMSS).* The CCMSS eventually came to specialize in certification of sustainably managed forests using the Smartwood label, in an alliance with the New York City-based NGO Rainforest Alliance, the elaboration of initial studies for carbon sequestration programs, and in lobbying the federal government for more community-oriented forest policies. The CCMSS has received consistent support from foreign foundations and U.S. foreign assistance, from the Inter-American Foundation, the Ford Foundation, and the MacArthur Foundation (*see section on Foundation support below*).

As was noted earlier, this was the period of the "great awakening" of Mexican community forestry and the young idealists who were involved in the process, as government agents, as independent activities, or as NGO members, viewed this as a very romantic period in their professional lives. The mid-1970s were characterized as the period when "At last, we began to speak of a country of silviculturalists, of forming social forest enterprises and, in sum, of democratizing the process of forest production" (Gonzalez Martínez, 1992). However, with a few exceptions, it appears that NGOs were usually not very important in the direct promotion of community-level CFEs or second and third-level organizations. UZACHI, supported by ERA, is one of the few cases where there has been a durable relationship between a second-level community forest organization and an NGO. There have also been relatively few academics who have formed durable on-going support relationships with either forest NGOs or second and third-level organizations. Forest NGOs have been more important in lobbying the federal government, playing a role in policy makers and in establishing a capacity to carry out forest certification and carbon sequestration capacities.

D. Investments in Social Capital: Second and Third-Level Organizations

In the section on the history of community forestry in Mexico we made brief reference to second-level organizations. In this section we will expand on the subject and also discuss the three different third-level (confederations or organizations of second-level organizations) organizations that have emerged since the mid-1980s. It has been a defining characteristic of community forestry in Mexico that almost all CFEs have, at one time or another, participated in second and third-level organizations. As mentioned in the previous section, the Mexican government's active promotion of these organizational levels has had a major impact on their emergence. Although there have been some case studies of second-level organizations, there has been little examination of the phenomenon in general. The only published estimate on numbers of inter-community organizations suggests that, ten years ago, 20% of forest communities were involved in second level organizations, that 83 organizations in 22 states existed, and that 54 were regional second-level organizations (Chapela, 1991). Research for this paper suggests

that these numbers may be high. Before discussing the numbers further, we will present a brief history of the emergence of second and third-level organizations and then analyze a database of second-level organizations assembled for this study.

As we have seen throughout this study, the Mexican government has been extremely active in promoting second-level organizations, and many independent organizations emerged out of dissent with the government promoted unions, which could be regarded as a further capitalization of the original investment made by the government. From a political point of view, however, these separations were commonly see as declarations of independence from the government

1. An Overview of the formation of second-level organizations. Apparently the earliest second-level organization in Mexico was in Durango, vanguard of Mexican CFEs in many respects. The *Unión de Ejidos y Comunidades Forestales* (UNECOF) was founded in 1965 by communities struggling to free themselves from *associaciones en participacion,* which apparently continued in existence until 1977, and had some influence in Durango in the early 1970s (Guerra Lizarraga, 1991). By 1976, the *Unión de Ejidos y Comunidades Forestales Emiliano Zapata* (UNECOFAEZ) was established, although the exact connection between the declining and ascendant organizations has apparently not been documented (Chapela, 1998, Taylor, 2000). On more than one occasions, the organizations were supported by dueling government agencies. UNECOFAEZ was supported in its struggle against the parastatal *Productos Forestales Mexicanos* (PROFORMEX) by the Ministery of Agrarian Reform, for example. As Taylor has noted for the UNECOFAEZ, many organizations had to make a "transition from a grassroots political movement defending its members' resource rights to an industrial producer" (Taylor, 2000).

In 1979, the then Secretariat of Agriculture and Hydraulic Resources (SARH) formed the Luis Echeverría Alvarez Union of Ejidos and Communities of the Purépecha Plateau, which had failed by the early 1980s, but out of which San Juan Nuevo Paringaricutiro would emerge in 1981. Also in 1981, promoters from the DGDF joined with a Church-based NGO called Fomento Cultural to form the *Unidad de Producción Forestal Adalberto Tejeda*, originally with 11 ejidos, that later grew to 14 (Carillo Dewar, 52). Promoters from the DGDF entered Oaxaca in 1981 and by 1982 began working with the existing CFE in Pueblos Mancomunados. Based on that experience and the credibility gained, the DGDF promotores were able to organize CFEs in Santa Catarina Ixtepeji, San Miguel Aloapam, San Juan Bautista Atepec, and Nevuo Zoquiapam by 1984. To consolidate these efforts, the *Union de Comunidades y Ejidos Forestales de Oaxaca* (UCEFO) was formed in December, 1985. The DGDF also promoted the Unión de Ejidos de Chignahuapan (UECH), established in 1986 and its predecessor BOMACHIZA, which dated from 1981 in Puebla (see Puebla case study).

The Union de Ejidos Maya in Campeche emerged in 1980 out of an earlier FONAFE established union, only to dissolve by the late 1980s, although some member ejido would form the Consejo Xpujil in the 1990s. In Quintana Roo, an unusual coalition between a team linked to but autonomous from the DGDF, supported by German foreign

assistance (GTZ) and the state government, launched an organizing effort that produced two new second-level organizations, the 10-member Sociedad de Productores Ejidales Forestales de Quintana Roo (SPEFQR) in southern Quintana Roo and the 17-member Organización de Ejidos Productores Forestales de la Zona Maya (OEPFZM) by 1986. The OEPFZM emerged from a struggle with a corrupt ejido union supported by FONAFE in the early 1970s. Two other Quintana Roo second-level organizations were promoted by the state government in the late 1980s. The Union de Ejidos Hermenegildo Galeana, formed out of a more independent organizing effort, was established as informal coalition in the mid 1980s, but did not formally incorporate itself until 1989. The government apparently promoted many of the 7-8 community forestry ejido unions that composed the ARIC Felipe Angeles in 1989. Some forces in the government continued to try and use second-level organizations as a strategy to quash more grassroots movements, such as the *Unidad de Producción José López Portillo* that was promoted in 1982 by SARH in an effort to demobilize the anti-concession grassroots movement ODRENASIJ. The only two second-level organizations which appeared to emerge completely out of student/young professional assisted grassroots activism were the Unión de Ejidos Hermenegildo Galeana in Guerrero and UZACHI. The Coordinadora de Organizaciones y Ejidos Forestales de Oaxaca (COCOEFO) is an unusual case of a state third-level organization, which was founded in the early 1990s and had some success in a struggle against the Treasury Department to exempt communities from enterprise taxes, arguing that the enterprises supported many things that were normally the responsibility of government.

For this study a database on second-level forestry organizations was established as first step towards better understanding the organizational topography and social capital of the sector. The sources of information for the database were entirely documentary. As we read unpublished reports, newspaper broadsides, and the published literature we would enter in the database whatever basic information was available on the organization. This database can be found in Appendix II. It shows a total of 43 second-level organizations that have been recorded in the literature. The fate of many of these organizations is not known. Of the organizations on the list for which existence can still be confirmed, there are approximately 20 second-level organizations. Based on this admittedly highly incomplete list, it appears that Chapela's early 1990s estimate of 54 regional organizations may have been overstated. As a part of new national survey of CFEs we will also be collecting data on second-level organizations, which should help to fix this universe.

2. The dynamics of second-level organizations: collective action and defections. The 1986 law allowed either individual communities or organizations to receive authorization to administer their own forest technical services, a break-through in the growing autonomy of CFEs. However, both government and NGO organizers were strongly encouraging communities to band together in organizations to apply for the FTS as an efficiency measure, and most of the second-level organizations who received them during this period were supported by outside advisors in this effort. So the inducement for collective action around this issue was frequently driven by external actors, even if the

communities also became convinced of its virtues. However, the high costs of collective action for some was revealed, either quickly or after many years, in many of the second level organizations that emerged in the 1980s.

Many of these second-level organizations had within their ranks communities that were highly unequal in terms of the distribution of forest resources, with one or two communities that far outstripped the others in terms of annual authorized volumes of timber. Since the forest technical service fees paid by communities to the second-level organization were based on the authorized volume, this meant that the more powerful communities were subsidizing the technical services received by the smaller communities. Thus, the transaction costs for the high-volume members of the organization were very high and this calculation was eventually made by many powerful communities in the second-level organizations. In some cases these withdrawals would lead to the dissolution of the second-level organization but others survived the crisis.

This pattern was set from an early period, and incurred in both government-promoted and more autonomous organizations. Ixtlán in Oaxaca walked away with the sawmill and other assets given by FAPATUX in the effort to create IXCAXIT. San Juan Nuevo had its first experience in logging in the *Unión de Ejidos Luís Echeverria Alvarez* in 1981. In the *Unión de Ejidos Adalberto Tejeda* in Veracruz, two communities that represented nearly 50% of the forest area withdrew in 1988 (Carrillo Dewar, 1986). In Quintana Roo, the two largest ejidos, X-Hazil and Felipe Carillo Puerto, withdrew from the OEPFZM in 1994. In the SPEFQR, its largest ejido, Noh Bec, withdrew in 1998. UZACHI represents a somewhat different case, since it had no single dominant member. Nonetheless, of the five communities that composed it at its founding in 1989 one, San Andrés Yatuni, withdrew in 1993 saying it could get cheaper FTS elsewhere, and a second, Xiacuí, withdrew in the 1990s, only to rejoin again in 2001. On the other hand, these defections are not a generalizable reality. In the second level organization of IXETO in Oaxaca one community, Aloapam, has a much larger volume than the other communities, and yet it has stayed. It has been suggested that rule for defections may be "people make the effort to organize themselves while it is strictly necessary, and as long as the costs of maintaining the organization are less than the benefits". (Francisco Chapela, personal communication).

If trust is difficult to build at the community level as the basis for a CFE, it is surprising that as many second-level organizations have emerged and survived as have. In a survey of 43 forest communities in Oaxaca, which will be extensively discussed in the section on vertical integration, it was noted that, "An imbalance in the size of forest land represented by each community may be a destabilizing factor among associations, recalling Ostrom's statement on heterogeneity on stakeholders. Over the years, some larger, more successful communities broke away from the associations to seek customized technical services. These communities tended to be "more capacitated" (Antinori, 2000). Most second-level organizations are actually quite limited in the collective action activities they undertake. Most are limited to mutual provision of forest technical services and lobbying for and channeling various forms of government support and other representational activities. Although important, this means that many other

activities which could strengthen forest management and marketing are not undertaken. For example, despite various proposals that a sawmill or a dryer at the level of the union would create many efficiencies, UZACHI members have always rejected such proposals, because the communities do not trust each other enough to take on these more complicated collective actions, with more at risk (Alatorre Frenk, 2000).

However, there are two examples that show that there are other possible solutions to problem of high transaction costs in collective action for high-volume ejidos and that ejido unions can overcome mistrust to take on riskier joint investments.

- *Forest Technical Services (FTS) and the case of the Unión de Ejidos Hermenegildo Galena (UEHG*). From its informal coming together in 1983 and its formal founding in 1989, the UEHG was dominated by one high-volume member, the ejido El Balcón. The expected tensions arose when it became clear that the amount paid in FTS by El Balcón was subsidizing the FTS in the other smaller ejidos in the UEHG. However, the normal solution, withdrawal from the union, was not pursued here, and another solution was found. Instead of withdrawing, El Balcón was able to negotiate a solution whereby it assumed responsibility for its own FTS, but remained a member of the UEHG. This outcome allowed El Balcón to continue benefiting from the representational and negotiating powers that came from collective action, and allowed the UEHG to continue counting on the presence of its strongest member, that also continued paying dues, but not for FTS. This win-win situation provides a model for other second-level organizations in Mexico, and should be more widely discussed as an alternative to withdrawal.

- *Second-Level Collective Action for Industrialization*. The *Unión de Ejidos de Chignahuapan* (UECH) in the Sierra Norte de Puebla was founded in 1986, coming out of a DGDF organizational process beginning in 1978, and is composed of 25 ejidos and two indigenous communities (See case study). In 1994, 18 of the member ejidos, in association with the Technical Direction of the Union, joined together to establish a collective sawmill, one of the few cases in Mexico where a sawmill is administered by a second-level organization. Clearly a factor in this collective action is the extremely small forest holdings of most of the communities, an average of 213 ha per community. Nonetheless, this experience precisely provides a model for how communities with very modest forest resources can increase their added value through collective entrepreneurial action, and the experience could be studied for its application to communities with somewhat larger resources as well.

Antinori (Antinori, 2000) has other useful findings on the role of second-level organizations in the case of Oaxaca. In the late 1990s, it was found that communities belonging to 5 different second-level organizations are more integrated vertically and almost always had established CFEs before joining the second-level organization. The

primary reason for associating was to share costs of technical services. However, she also found that, on average, communities in associations pay a slightly greater fee per cubic meter (13 pesos vs. 12 pesos) than independent communities. Antinori speculates that the expressed motivation of reducing costs was 1) an illusion 2) not the real reason or 3) the real reason is that services are better, even if slightly more expensive, when they are directly controlled by the communities.

The question has been asked, "Has the historical moment of intermediate-level, peasant-based forestry organizations passed?" (Taylor, 2000). In the case of UNECOFAEZ in Durango, Taylor concludes that it has not, and it would appear that for most communities in the existing second-level organizations in Mexico, the benefits continue to outweigh the costs. Taylor has also comparatively analyzed what he calls "crises of legitimacy" in the UNECOFAEZ and SPFEQR in Quintana Roo. Most second-level organizations pass through periods, or are in a near permanent state, of crisis and disorganization, but many also persist despite these problems. In the case of the UNECOFAEZ, the crisis of legitimacy has emerged due to the organization's transition from being a popular movement to being a production organization with business goals. Members have accused it of becoming "a timber buyer like any other". It has also had challenges in grappling with the issue of "work groups" (see below). The SPFEQR has had to grapple with the withdrawal of its most prosperous member and the conversion of all its member communities to the work group mode of enterprise organization (Taylor, 2001). However, it should be noted that in both these case the second level organizations have survived and stabilized, even if they continue to face many challenges.

Finally, it is worth noting that perhaps the first new second-level forestry organization in many years has been promoted by PROCYMAF in the region of Yautepec in southern Oaxaca, and once again it is state action that has promoted it.

3. Third Level Organizations. As with second-level organizations, there has been a strong tendency for third-level organizations to be promoted by government agencies. Not counting intermittent and unsuccessful efforts by the CNC to organize national level forestry organizations, three different national organizations have emerged, 1) one in the late 1980s, promoted by the Forestry Subsecretary with some later involvement by the CNC, 2) one in the early 1990s which was more autonomous in origins but was also "adopted" by government agencies in a later period, and 3) one that was created in the mid-1990s as an initiative of another government agency, but which became more autonomous.

The first effort toward forming national or third-level organizations emerged with a 1981 meeting organized by ODRENASIJ, which promoted apparently a purely grassroots and advisor-aided effort called the First National Meeting (*Primer Encuentro Nacional*) held in Macuiltianguis, Oaxaca. But this was a one-time effort that was not repeated. The next initiative, , also called the First National Meeting, suggesting some false starts, was the "*Primer Encuentro de Organizaciones Socioproductivas*" held in San Juan Nuevo Parangaricutiro in March, 1985. This meeting was organized in coordination with the Forests and Fauna Subsecretary's office, where the former Director of the DGDF

was now Undersecretary, (Primer Encuentro, ms).[3] Of the entities present (see footnote), only three were second-level organizations with all of the rest being individual ejidos. This process went on through 8-10 national meetings, held between 1985 and 1988 and showing a declining participation, with the final meeting attracting only 5 organizations (Chapela, 1991). A sketch of the organizational challenges, and the efforts at cooptation by the Confederacion Nacional Campesina (CNC), of this process is presented by Chapela (Chapela, 1991). In an unclear organizational process, this series of meetings appears to have led to the establishing of the initially-CNC dominated *Productores Forestales y Agropecuarios de México* (PROFOAGREMEX) and eventually to the more autonomous *Red Nacional de Organizaciones Campesinas Autónomas Forestales* (Red NOCAF), which later changed its name to Red MOCAF (substituting Mexicana for Nacional in its name). Red NOCAF/MOCAF came out of the rural organizational processes around the Unión Nacional de Organizaciones Regional Campesinas Autónomas (UNORCA) a national multi-sector autonomous small farmer organization which has spun off various sectoral national small farmer organizations in areas such as corn, coffee, as well as timber.

Red NOCAF/MOCAF, after discussions since 1982, came together with financing from the Inter-American Foundation in 1990. Red MOCAF has had a difficult relationship with its ostensible "parent" organization of UNORCA, and has oscillated between periods where it was supposedly independent from UNORCA and had its own offices (for a time in the early 1990s located in Michoacan), and periods where it has been located in the UNORCA main offices. Red MOCAF appears to have functioning primarily as a communications center for a group of community forestry and a shifting group of CFEs and second-level organizations. It appears to have had few effective programs over the years, with its role becoming most prominent in the lobbying over the two forestry laws (1992 and 1997) when it banded together with the other third-level organizations to put together a united community forestry front. It was Red MOCAF's principal advisor who entered SEMARNAP in 1995 and was instrumental in promoting what eventually became PRODEFOR. It has also been supported for certification activities by the *Fondo Mexicano para la Naturaleza.*

Today, Red MOCAF today appears to be a very mixed bag of organizations, based on the list of the 23 organizations attending a 2001 meeting. The organizations present, based on the names, include coffee and lime growers, and virtually none of the major forest ejidos or second-level forest organizations in the country. It has a governing council with 12 members, participates in the *Consejo Nacional Forestal*, and a Council Member serves as a Coordinator of a PRODEFOR Council. Red MOCAF has been active in recent years in helping member organizations do the paperwork for the PRODEFOR and PRODEPLAN financing. It has also carried out negotiations with the *Fondo de Capitalización y Inversión Rural* (FOCIR) to obtain financing for three

[3] The communities or organizations present at this 1985 meeting were the Union de Ejidos Pueblo Maya, Campeche; the ejidos del Plan Piloto Forestal del Sur de Quintana Roo, the ejidos de la Sierra norte de Puebla, the community of San Juan Nuevo, the Asociacion de Silvicultores de Tlaxco, Tlaxcala, the ejidos Pueblos Mancomunados, the Union de Ejidos La Quiptic of Chiapas, and the Ejidos de Cd. Hidalgo, Michoacan

sawmills (in Tamualipas, Veracruz, and one additional state). It also developed "profiles" for 89 projects with FONAES mostly for establishing community plantations of 50-100 ha for *xate* palm, pine, red cedar, Christmas trees, and other species

The third third-level organization is the Unión Nacional de Organizaciones de Forestría Comunal (UNOFOC). UNOFOC was established at a meeting in 1993 in Chetumal, Quintana Roo with the presence of the then-President Salinas de Gortari. It was a very calculated alliance between Mexican government officials associated with executive office social assistance program, the National Solidarity Program (PRONASOL), and some of the prominent second-level organizations and independent CFEs, led by the SPEFQR in Quintana Roo. The calculation was simply that a strategic alliance with government officials would result in more financial support flowing from the government to forest communities than the more autonomous stance (although still seeking government support) taken by Red MOCAF. Since PROFOAGREMEX still existed but was mostly moribund, the Red MOCAF and UNOFOC became rivals for the loyalty of regional second-level organizations and CFEs throughout the rest of the 1990s.

UNOFOC established a novel governance arrangement reflecting the fact that it had several powerful regional organizations in its ranks, setting up a structure with 5 regions and coordinators. Most activities appear to take place at the regional level, with the national structure primarily serving to facilitate communications and for occasional national lobbying. UNOFOC, to varying degrees in the regions, has established projects in 1) marketing, 2) women's projects, 3) institutional strengthening, 4) certification (supported by the Ford Foundation), and 5) communications. UNOFOC's marketing activity was supported by a credit fund given by the *Fondo Nacional para Empresas en Solidaridad* (FONAES) for 3.8 million pesos. The Fund has had a difficult history, with initial loans made in 1994-1995 showing very low recovery rates. In an effort to overcome this problem, a *Promotora Commercial* was established in 1995, with a North and Southeastern Division, with more than half the funds given to the Southeastern Division because of the greater challenges associated with marketing tropical timber. However, nearly all of these funds were distributed without clear criteria to the SPEFQR in Quintana Roo, and mostly to two ejidos within them, leading to criticisms and mistrust (UNOFOC, 1997). As of 2001, these loans from FONAES had not been repaid. As a UNOFOC official commented with reference to giving loans to the ejidos "the scheme of financing doesn't work. They take it as a gift. They get a lot of money as a subsidy" (Adolfo Chávez, personal communication 1/17/01). UNOFOC has also attempted to promote some regional interchanges of timber, trying to sell tropical timber from Noh Bec (Quintana Roo) out of their offices in Michoacan for example, but the market for tropical timber there does not appear to be very dynamic. Although most communities perceive problems with prices and marketing, most also have well-established marketing channels for a product which is generally in demand, so it is not clear exactly where or how to access better-paying markets. The lack of financing is clearly a problem, with most communities needing to accept loans at high rates from buyers, but clearly loans from lower interest rate government and other sources are not taken seriously.

In institutional strengthening, there was a formal training program in 1997 that sponsored 10 training workshops with government funding, but training since then has been more sporadic. UNOFOC has also had support from the Ford Foundation and other sources to promote certification, but its role here is unclear, since it does not actually do certifications. Nearly all certification in Mexico is carried out by the CCMSS under the Smartwood label. UNOFOC has talked about establishing its own certifying agency, but as an organization of timber producer it would have an inherent conflict of interest in certifying its own members. In communications UNOFC established a useful and informative bulletin, but that only functioned for a few years and is currently not published.

UNOFOC was consistently supported by SEDESOL from 1993-1998 for varying programs, both at the national level and in the various regions, with UNOFOC national serving as a communications channels for the regional projects. In 1999, SEDESOL changed policies and reduced support to UNOFOC, and from 1999-2000 a lower level of support was forthcoming from the state delegations of SEDESOL only. Relations with SEMARNAP became more important after 1997, with discussions around the new forestry law and the implementation of the new forest support programs, PRODEPLAN and PRODEFOR. UNOFOC-Western Region received support from San Juan Nuevo, where it was located, for a period but this terminated in 1999. UNOFOC has also received support from the North American Commission for Environmental Cooperation for certification, and in 2000 from the Ford Foundation for certification and promotion of good forest management. The Ford Foundation also supported UNOFOC and the Coordinadora Indígena y Campesina de Agroforestría Comunitaria Centroamericana (CICAFOC) to work with the International Union for the Conservation of Nature (IUCN) and its working group on community forest management, to publish a review on the status of community forest management in Mesoamerica (Unofoc, 2000).

Government support for UNOFOC and Red MOCAF took on something of the character of an inter-agency rivalry when, in 1995, one of the principal advisors for Red MOCAF went into government service with SEMARNAT. Thus, for a period, officials in SEMARNAT favored support to Red MOCAF and officials in the Secretary of Social Development (SEDESOL) favored UNOFOC. Through most of this period, several the major second-level organizations hedged their bets by participating as members in both national organizations. Both UNOFOC and Red MOCAF, along with the shells of PROFOAGREMEX and a CNC-affiliated national forestry organization, had perhaps their moment of maximum effectiveness during the public debate over the 1997 forestry law, when they were able to form a united lobbying front on behalf of pro-community forestry elements in the legislation (de Ita, 1996, Unofoc, 2000).

If government agencies have supported rival grassroots client organizations, foreign foundations have frequently followed a strategy of supporting at least two of the third-level organizations at the same time. For a time in the early 1990s, the Inter-American Foundation supported both PROFOAGREMEX and Red MOCAF, although it supported Red MOCAF far more consistently. The IAF supported both on the theory that it might help to strengthen the sector in general and tried to encourage them to work

together. In recent years, the Ford Foundation opted to support both UNOFOC and Red MOCAF. The MacArthur Foundation has supported only UNOFOC (see Appendix III for a complete list of Foundation funding of community forestry in Mexico, and a discussion follows below).

Both organizations have, over the years, been important in negotiating government support from various agencies for their member organizations, although Red MOCAF, with central offices in Mexico City, may be somewhat more effective in that role right now than UNOFOC, with its decentralized structure. However, currently both organizations would have to be said to be in a bit of disarray, with limited funding, no clear programmatic direction, and limited support from member organizations. Despite over a decade of organizing efforts, an effective national forestry community organization has yet to be forged, although clearly the existing ones have had some limited periods of effectiveness, although primarily as a vehicle for communications between far-flung communities and regional organizations, for government lobbying for policies and resources. It is questionable whether any of them would have remained functional throughout the 1990s without the decided support of the Mexican government and foreign foundations, and have received very little material support from the member organizations. Foundations may want to reconsider their strategy of supporting up to two, or any, third level organizations until a unified voice representing CFEs in Mexico emerges with significant support from member communities and organizations. Investments in social capital in the third-level organizations have clearly had some benefits, but they have been highly inconsistent.

E. The absence of social capital: conflict and covert privatization

Thus far, we have primarily focused on relatively successful CFEs, but clearly some percentage, possibly a minority, have foundered over internal conflicts and corruption. There is considerable evidence that community-level corruption surrounding forestry issues is widespread. A compilation of reports from five national newspapers between 1989-1993 revealed 226 reports of outside agents pressuring community leaders to sell logging rights cheaply or for bribes to process paperwork, and another 122 reports of complaints about leaders bribed by external agents, which would just reveal the success of the first strategy. It is not known how many of these reports may have been for the same community (Klooster ms).

There are at least three case studies of CFEs that are characterized more by persistent and debilitating conflicts rather than the relative consolidation that most show. Many CFEs are troubled by internal conflicts of varying degrees of severity, but the ones where there is serious corruption are the most troubling ones. It is surprising they are not even more common given that ”a major hurdle for participatory approaches is the problem of rural societies which are not themselves participatory. Many well-intentioned projects founder when local elites misrepresent community interests and usurp the project” (Klooster, 1997). Problems of corruption have been common even in relatively

successful CFEs. In an apt term, the capturing of CFE rents by community elites is an example of what has been called "covert privatization" (Carney, 1993) cited in Klooster (Klooster, 1997), leading to centralized resource control amidst common property ownership. Another widespread form of corruption, which may lead to a somewhat better distribution of resources, is the granting of loans for emergencies or other needs to ejidatarios that are never repaid. For example, ejido Pueblo Nuevo in Durango in 1989 had 1,498 ejidatarios, only 90 of whom did *not* request and receive loans ranging from 50 thousand to 10 million pesos, when the equitable distribution of the profits would have given one million pesos to each ejidatario. Ejido La Victoria also in Durango, prohibited loans to individuals, showing that clear and enforced rules can ameliorate these situations (Guerra Lizarraga, 1991).

Several articles detail the severe problems with corruption in the Oaxaca community of San Miguel Peras (called in the articles by the pseudonum of San Martin Ocotlán) (Klooster, 2000 "Institutional"; Klooster, 2000 "Community"; Klooster, 2000 "Beyond"; Klooster, 1997). In this case, communal institutions have failed to check the problems, and a good portrait is provided of how this is done, "The elite dominates communal institutions using intimidation, rigging elections, avoiding supervision, and discouraging participation in community assemblies. Threats, violence, bribes, and the manipulation of reciprocal obligations are common tools of internal politics. 'Some threaten, others invite you to drink', is how one internal dissident put it. The elite comprise the majority on the Council of Distinguished Men, a traditional body of authority parallel to the general assembly, and this traditional institution circumvents the community assembly in decision-making. These weapons of the not-so-weak reproduce the forestry elite's power and privilege, while undermining the democratic potential of the formal institutions of community management" (Klooster, 2000). As in Chihuahua, one of the sources of community division in San Miguel would appear to be ethnic and geographic divides. The community has several population centers, with the community center dominated by mestizos and the outlying communities being Mixtec.

(Vazquez León, 1992) provides a detailed description of the factionalism and corruption that beset the CFE in Santa Cruz Tanaco, Michoacan, which was considered a model in the late 1970s. Internal conflict in the case of the CFE in Cheran, Michoacan led to a reduction in logging volume from 42,000 M3 in 1985 to 10,000 in 1991, was besieged by demands from community owners of carpentry shops that it sell to them below cost, and was barely surviving. Communities also commonly feel like they do not have the power to oppose corrupt leadership. In Cofre de Perote in the early 1990s for example, the community decided to spend money on two classrooms, but when a *cacique* spent it on the fiesta, nobody protested (Aguilar, et al., 1990). The most generalized problems with cacicazgo and corruption in CFEs appear to be in Chihuahua. There are many accounts from that state about the marginalization of the Raramuri and other indigenous peoples and covert privatization within multiethnic ejidos (Gingrich, 1993), (Lartigue, 1983), (Guerrero, et al., 2000). Most ejidos in the Sierra Tarahumara are controlled by mestizos, with some Raramuri still having no grasp of the ejido system or who are actively intimidated from participating in ejido meetings, although there are a few cases where indigenous peoples have a strong presence in their ejidos. For example,

in the ejido Chinatú, which is some 80% indigenous, mestizos controlled logging until the early 1990s, when work groups emerged as a response to the mestizo domination (Gingrich, 1993). In the 1990s, indigenous peoples in the ejidos of Chinatú, Cusaré, Monterde, and Ocóviachi have called for audits and conducted sit-ins to protest what they consider to be corruption in the management of ejido logging (Guerrero, et al., 2000). As mentioned, large ejidos within more than one community or ethnic group seem particularly prone to these conflicts, again recalling Ostrom's comment about homogeneity. At a less destructive level, the lack of trust between communities in UZACHI has been a persistent problem, and has inhibited any collective industrialization projects (Alatorre Frenk, 2000).

F. Community Conflict or Democracy in Action?

Although conflict can occasionally destroy a CFE, more commonly the CFE may stop operation for awhile only to start up again in a year or two, and many CFEs have continued to manage their forests and generate income while managing entrenched social tensions over control of resources, such as in the case of Pueblos Mancomunados in Oaxaca. Activists and academics close to CFEs can become frustrated because some of the communities can seem to be in states of permanent turmoil and internal conflict over the management of the CFEs. Students of Mexican CFEs have "tried to square the anthropologists traditional image of community integration with the contentiousness they have found regarding forest use" (Bray, 1991). In this vein, it has been argued that "It is important to recognize some elements of community life as fundamental: the oft-cited consensual decision-making, ritual offices, voluntary community labor, feast days, and other moments in community life….[However,] we feel that consensus does not imply uniformity but the contrary, the harmonization of different interests, with a focus on the common good" (Szekely, 1990).

The "harmonization of different interests", however, is an endless process in democratic societies and perhaps especially in small communities. As one academic has put it, "a community is a group of people who argue together" [Sabean, 1984 #651]. Peter Taylor, a sociologist who has worked on the Mondragón cooperative in Spain and Mexican community forestry, has eloquently expressed in an email to one of the authors, both what is common and what is unique about argumentation and conflict in Mexican forestry communities.

> "I've come to believe that the cooperative world could learn a lot from the Mexican case. Mexican ejidos and agrarian communities' collective enterprises…look a lot like those successful cooperatives ("success" meaning that they survive over several generations of participants, over the long run consistently benefit more than a handful of people, and include the possibility of renegotiating governance arrangements if necessary). I've attended numerous general assembly meetings in ejidos and agrarian communities and from the first, have been struck by how much they resemble general assemblies in Mondragón. They often drag on, the topic goes all over the place, certain people talk too much, there's not enough

technical mastery of the issues, but at the end, they very often end up in a place that works. People who've participated in the debate then have some commitment to the decision made, because they've been part of the process. At a minimum, they are willing to lose if they have to, because they know they can come back at the next meeting and have another go. Ejidos and agrarian communities are more stable than most ordinary cooperatives, even with all their problems, because their economic relationships are embedded in a network of political, social, cultural, and other economic ties. There is a lot of conflict, but as long as the people have good reason to stick around and work through it, the community can survive and with it, the collective economic enterprise. Lots of cooperatives fold when things get tough because people don't have other reasons to stick around and work through the conflict. If collective enterprise and community, more broadly defined, overlap, then people don't just walk away, even when they lose an argument. Another way to put this is, because of their unique history, the Mexican ejidos and agrarian communities have a lot of social capital to work with when it comes to implementing a collective economic enterprise like community-based forestry." (Peter Taylor, email of 6/7/2001).

It is hard to say that high degrees of social capital-building trust are at the basis of Mexican CFE "success" as defined by Taylor. Community arguments can also be a source of migration by losers in the argument, which does not suggest they trust their fellow community members. But even though individual members may defect, through it all a community persists, the CFE persists, and the argument continues. As Taylor astutely argues, continued conflict does not indicate a lack of "success" in important areas.

G. New Perspectives on Social Capital and Mexican CFEs

In this section we will examine how social capital may also constrain further CFE growth, and its possible role in conflict resolution.

1. Social Capital as Communal Fetters.

The role of communal social capital in Mexican CFEs finds an illuminating parallel in Frances Fukuyama's analysis of the role of trust and social capital in Chinese family businesses. Fukuyama points out that nearly all businesses start as family businesses and then, in modern economies, evolve into more impersonal corporations. The great entrepreneurial vigor and success in founding small family businesses in Chinese families is a globally evident phenomenon. However, if a family business prospers and grows, there arrives a time when there are not enough competent family members to directly manage all aspects of the business. "At this point family businesses face a critical choice: try to retain control of their enterprises within the family, which is often tantamount to opting for continuing small size, or give up control and become, in effect, passive shareholders" (Fukuyama, 1996). In the specific case of Chinese family businesses, Fukuyama, following Max Weber in *The Religion of China* notes that "the strong Chinese family created....'sib fetters'" (overly restrictive family bonds), constraining the development of universal values and the impersonal social ties necessary for modern

business organization" (Fukuyama, 1996). Fukuyama analyzes the decline of Wang computers from its position of dominance in the US computer industry in the 1970s as a case of a Chinese family business on a large scale that was not able to make the transition out of being a family business arguing that "The Chinese family provides the social capital with which to start up new businesses, but it also constitutes a major structural constraint on these enterprises that in many cases prevents them from evolving into durable, large-scale institutions" (Fukuyama, 1996). As Fukuyama goes on to note, "The lack of trust outside the family makes it hard for unrelated people to form groups or organizations, including economic enterprises" (Fukuyama, 1996).

In the same sense, it may be said that some indigenous forest communities suffer from "communal fetters", overly restrictive social practices that impede the development of a CFE which would be more competitive and efficient in the marketplace, or to put another way, an "overbuilding of social assets, where culture still dominates economic decision-making" (Deborah Barry, personal communication). That, following Fukuyama, the indigenous community provides the social capital with which to start up communal enterprises, but it also constitutes a major structural constraint that that in some cases prevents them from becoming more successful and generating more assets for the community. To continue the parallel, Fukuyama notes that it was the inability to bring in professional management from outside the family that has hindered many Chinese and other family businesses. In the Mexican CFE case, it is the inability to bring in professional managers from outside the community which has hampered the continued development of many CFEs.

However, some communities have been able to over come this by training their own professional managers from within the community. San Juan Nuevo is the most notable case where indigenous peoples have been able to overcome any structural constraints associated with social capital, and to place their own professionally trained community members in most management positions, to become a highly competitive business and to take strong collective action. Nor is the prior presence of indigenous social capital been proven to be essential in the construction of successful CFEs. The case of El Balcón is very illustrative here. In this case, the ejidatarios of El Balcon were able to construct a successful CFE beginning from a highly disorganized and violence-wracked social base only twenty years earlier. Likewise, most of the CFEs in Durango are mestizos, not indigenous peoples. In these cases, it can only be speculated that the practices and structure of the ejido governance system has created the necessary social capital to allow for the construction of CFEs. Thus, there would appear to be multiple social pathways to CFE success.

2. CFE Social Capital and Conflict Resolution.

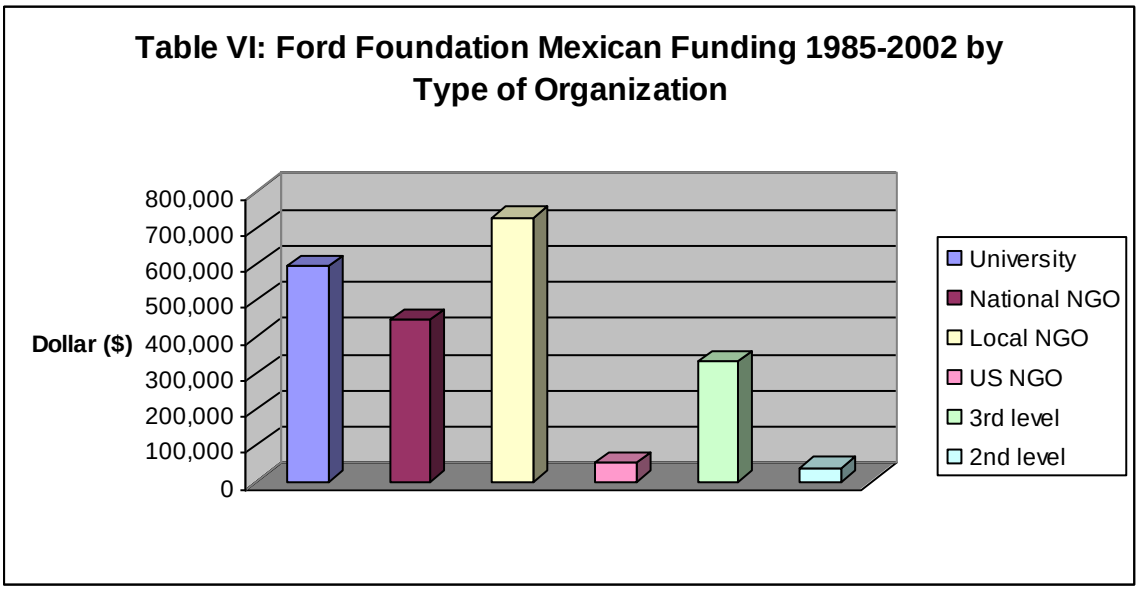
The Case of El Balcon and the Unión de Ejidos Hermenegildo Galeana (UEHG). El Balcón in Guerrero has already been mentioned as an example where visionary community leaders were able to invest in new social capital and take risks with

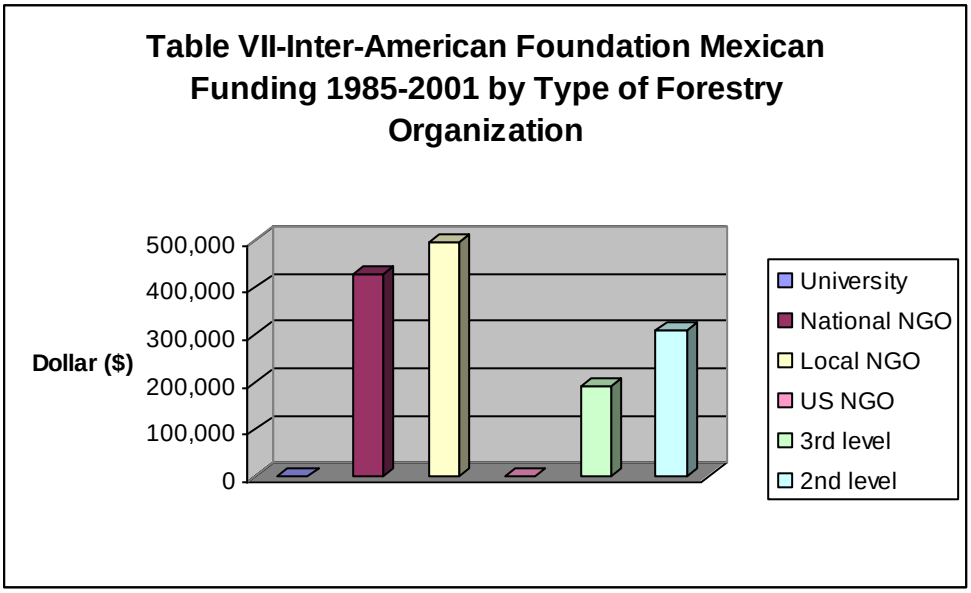
professional managers. But the case of El Balcón and the Unión de Ejidos to which it belongs offers compelling evidence that the process of community organization and the construction of CFEs at the community level and inter-community associations may serve not only to preserve forests and generate income, but also to build civil society and ameliorate serious social conflicts and violence. The community of El Balcón on the Costa Grande of Guerrero and the 11-member UEHG to which it belongs (see El Balcón Case Study) is located in a region famous for deeply entrenched violence due to conflicts over land, personal conflicts, and drug-related violence. Immediately to the south of El Balcón is the region of Aguas Blancas, where 17 campesinos were massacred by police in June of 1995., an incident which some link to forest issues. To the north is the region of the so-called *campesinos ecológicos* and Rodolfo Montiel, a murky case that drew international attention over campesinos who were detained while protesting illegal logging, under accusations of drug and arms possession. But yet in the region of the sierra where El Balcon and the UEHG have operated since the mid-1980s there is relative social peace. Communities within the UEHG have peacefully settled land disputes in ways that include the swapping of lands. The cultivation of drugs has reportedly been sharply reduced because of the alternative income offered by forest production. Recent research on civil violence in India has suggested that integrated civic groups are an important force in forestalling ethnic violence (Varshney, 2000). In the same way, it would be a rich field for further research to attempt to demonstrate that the civic integration arising from community forest production has reduced civil violence in rural Mexico. In this context, a recent incident in Oaxaca where 43 campesinos where massacred is important to mention, although the exact relationship of the incident to forest production is still unclear. But any research on community forestry and civil violence in Mexico would clearly have to closely examine this incident as well.

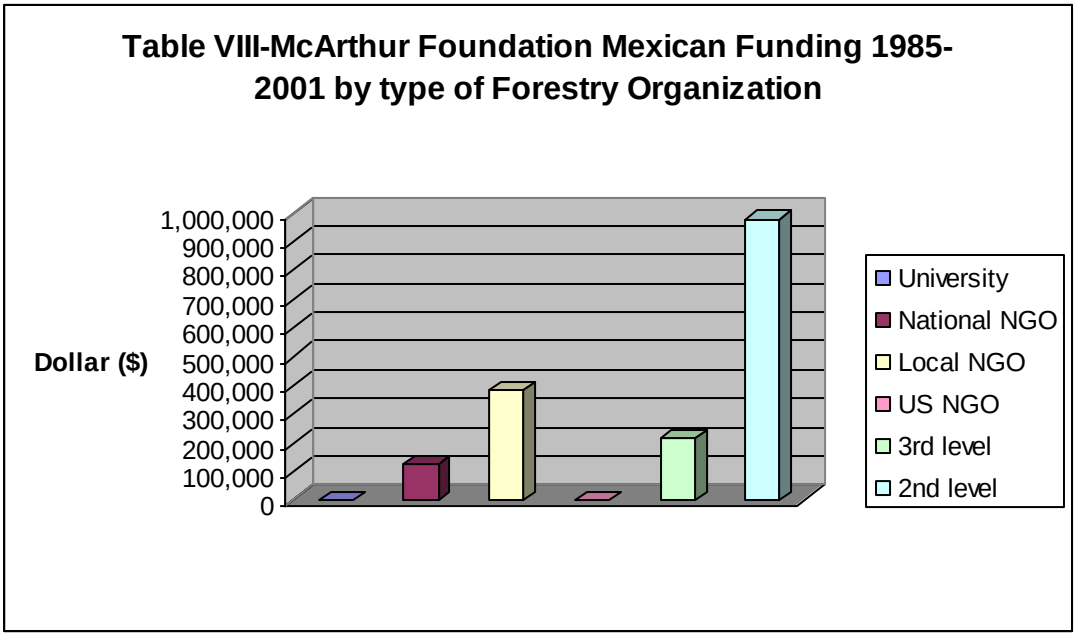
V. Foreign Foundations and Mexican Community Forestry

In this section, we will analyze the patterns of support by the three major foundations that have supported CFEs in Mexico, the Ford Foundation, the Inter-American Foundation (IAF-a U.S. government foreign assistance agency), and the John T. and Catherine MacArthur Foundation. For a complete list of the grantees supported by these foundations, the year funded, the amount funded, and the type of forestry organization supported see Appendix III. As the appendix shows, the Ford Foundation funded one forestry NGO, ERA, in 1985 but then funded nothing else in the sector for 12 years. However, from 1997-2001, it financed community forestry projects in the amount of 2.06 million dollars, for a total investment since 1985 of 2.19 million. The Inter-American Foundation funding of the sector was concentrated in the 1990-1996 period, with only one small grant occurring after 1996, with a total in all years of 1.42 million dollars. Although unplanned, this indicates that the Ford Foundation moved into the sector as the IAF moved out. Finally, the MacArthur Foundation, which funds in three-year cycles, has funded community forestry in Mexico since 1989, for a total of 1.7 million dollars. Eighty percent of the MacArthur Foundation's community forestry funding has been in Quintana Roo.

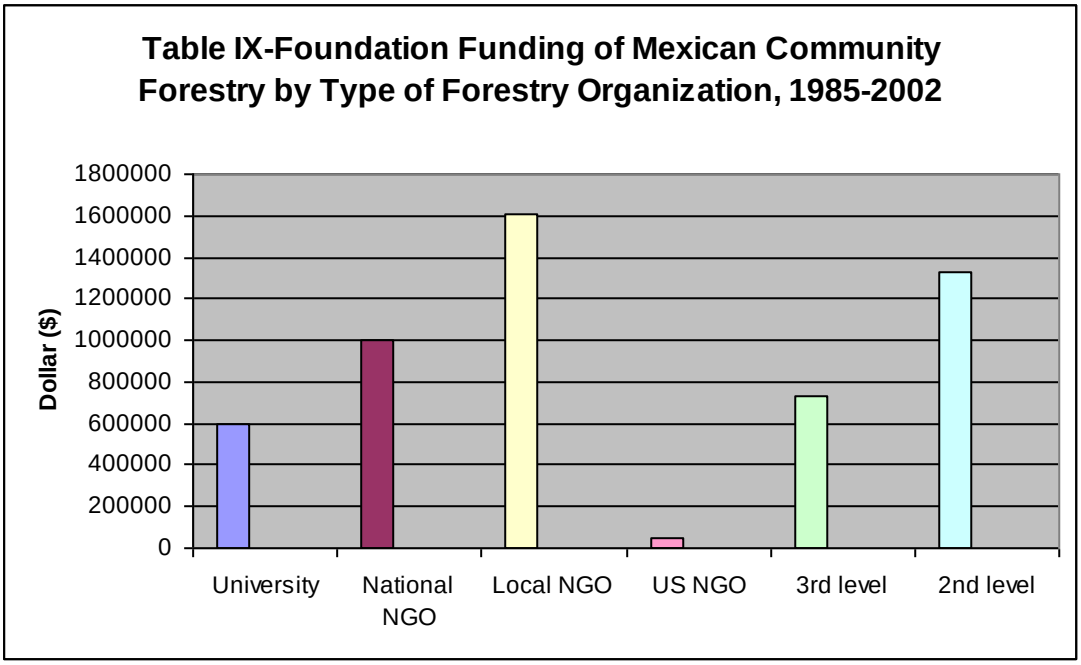
Tables VI-IX below show the patterns by foundation by type of organization funded. For these purposes, organizations were classified as university, national NGO, local NGO, US NGO, third level organizations and second level organizations. Table VI shows that the Ford Foundation has given the most funds to local NGOS, followed by universities, national NGOS, and third-level organizations, with much smaller amounts going to second-level organizations and US NGOs. The IAF also gave the most money to local NGOs, followed by national NGOS, second-level organizations, and third-level organizations. The MacArthur Foundation concentrated most of its funding on second-level organizations with all of it going to two second-level organizations in Quintana Roo, the SPEFQR and the OEPFZM.



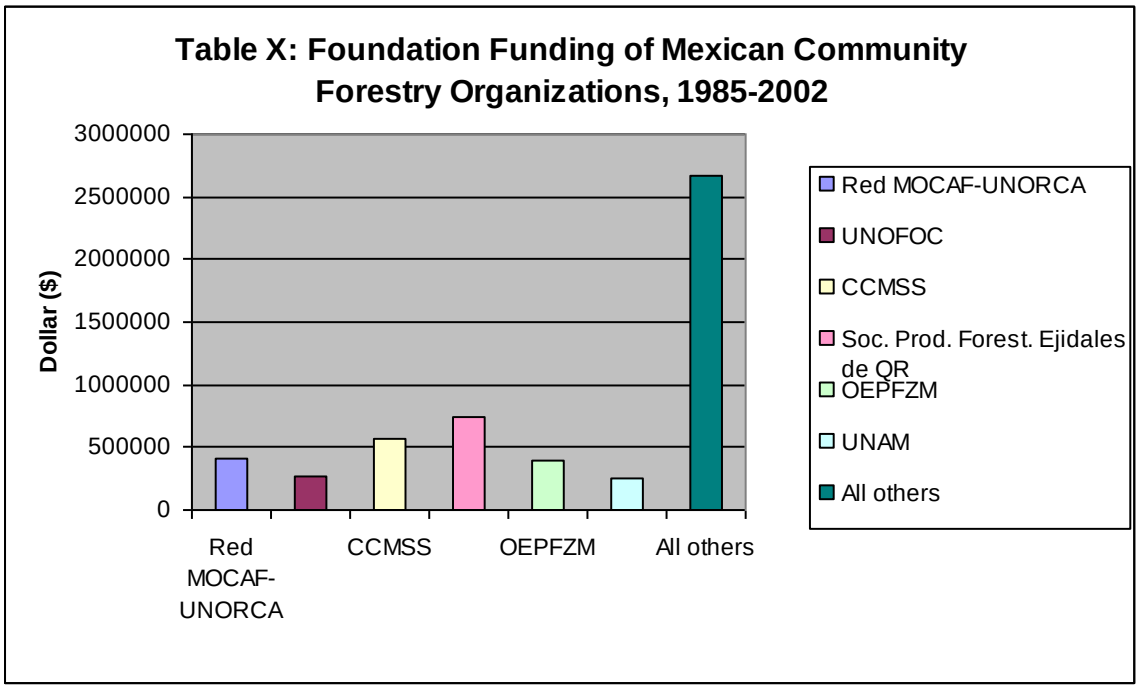




Finally, Table IX below shows the pattern of funding by all three foundations in the 1985-2002 period. Most funding has gone to local NGOs, followed by second-level organizations, national NGOs, and third-level organizations.



Finally, Table X below shows the six organizations which have received the most foundation funding. The SPFEQR in Quintana Roo has received the most foundation support of any organization in Mexico, fueled largely by MacArthur Foundation funding. This is followed by the CCMSS, which has been supported by all three foundations, and Red MOCAF and the OEPFZM, which are tied for third place, and were each supported by two of the foundations. UNOFOC and UNAM are then tied for fourth place. Foundation funding was actually spread out over a considerable number of organizations, since all other funding is over 2.5 million.



However, it can be said on the basis of this analysis that foundations have tended to focus on Quintana Roo, presumably because it is the leading experience in Mexico of community tropical forest management, and there has generally been more interest in the problem of tropical forest management and deforestation than in temperate zones. The second notable pattern is a focus on third-level organizations and the national NGO CCMSS, which has been attractive to foundations because they offer the opportunity to have a national impact with a single grant. On balance, it appears that foundations principal role has been in creating a stronger national presence for community forestry than would have otherwise occurred, and in assuring the survival of the more economically precarious experiences in tropical forest management in Quintana Roo.

VI. Common Property, Stocks and Flows, Communities and CFEs, and Asset-Building

As was discussed in the introductory conceptual section, Mexico presents a unique case of the widespread occurrence of community enterprises erected on the basis of common pool resources and a state-mandated common property regime. In this section we will explore some of the implications and problems associated with communities and enterprises, and the community management of enterprises. We will look at 1) how issues of stock and flow in CFEs have been played out, 2) the relationship between communities and enterprises, 3) the structure of CFEs, 4) the emergence of "work groups, 5) human capital 6) vertical integration, 7) asset-building 8) marketing, and finally 9) reflections on communitarian capitalism in Mexican CFEs.

A. Stocks and Flows in Common Property CFEs

The management of Mexico's common property forests has resulted in a broad range of different management forms, which may be conceived as different ways of managing both the stocks and flows of the timber resource. These range from arrangements whereby there is extensive individual appropriation of timber to situations where the appropriation remains entirely communal, with a range of intermediary arrangements, all within common property administrative frameworks, examples culled from the case studies, interviews, and the literature follow. In most cases, there are also multiple examples of each one of these arrangements in the universe of Mexican CFEs.

- El Balcón (Guerrero). El Balcon may be taken as an example of a *community forest enterprise erected on the basis of a common forest property.* This may be taken as the "classic" model which most community forestry promotion efforts have been focused upon. The forest common property is undivided in any way, and a single community enterprise has been formed to administer the flow of timber from the resource. Thus, both the stock and the flow are considered as communal property, and the flow is divided only after the sale, when it is now in a monetary form.

- San Juan Nuevo Parangaricutiro (Michoacan). In San Juan Nuevo (SJN), a community forest enterprise, *a communally appropriated flow, has been erected on the basis of individually appropriated parcels in the forest*. In the 1940s, long before community logging became an option, the forests of SJN were parceled out for pine resin extraction, so the forest effectively became entirely privatized (see San Juan Nuevo case study). However, beginning in the early 1980s, SJN leaders were able to negotiate with the private landholders to get them to agree to follow a community management plan and allow the community to log on their lands in exchange for being treated as private property holders, through the payment of a stumpage fee, which can be considerable amounts of money. Thus, the stock is

privatized, but with the timber resource managed as communal and thus the flow of timber is communal (Antinori, 2000)[4]. The flow of resin, as another forest product, however, is privately appropriated.

- Petcacab (Quintana Roo). In Petcacab, the forest remains a communal property, but the previously existing CFE has been dissolved, and in it's place approximately 10 "work groups" or subcommunal enterprises have been formed, basically constituting 10 separate community enterprises. These work group enterprises divided up the annual authorized logging volume on a proportional basis. Thus, the stock is common, but the flow is divided up into a number of separate enterprises each composed of community members, but no single enterprise can be regarded as communal.

- (4 ejidos in the *Unión de Ejidos Forestales de Tamaulipas*). In at least four ejidos of this organization in the state of Tamaulipas, the forest remains a common property, but the flow of timber is divided up in two different forms. Approximately half members of the communities divide up the flow of the annually authorized volume into individually proportional amounts, which is then individually logged, while the remainder of the volume is managed by several "work groups" or subcommunal enterprise. Thus, the stock remains communal, but the flow is both individually and work group appropriated.

- Cuauhtémoc (Quintana Roo). In this community, which had only minor flows of lesser- known tropical species, the entire forest has been internally and informally parceled out among the ejidatarios. Each ejidatario can now individually appropriate the timber on his or her land. However, they still operate under a management plan so the authorized flow represented in the management plan is still proportionally divided. Thus, both the stock and the flow have been individually appropriated, although still within the context of a management plan that treats the flow and the forest as a common property. The individual parcel holders respect the common property management plan with respect to how much timber they can harvest on their land. They have thus accepted a communal restriction on their use of the land, a sustainable logging covenant.

This variety of communal management experiences indicates there is no one right way to manage a common property forest resource. Mexican community forestry began with one model, although variants such as San Juan Nuevo emerged almost immediately. There is still a conception, however, that the community enterprise model with a communal stock and communal flow is the "ideal" type and variations from that ideal type are to be avoided. Nonetheless, all of the experiences mentioned above seem to be functioning. Each variant emerged in response to particular problems that particular communities were facing, and are these creative responses to local problems. This suggests that the exact conformation of the stock and flows

[4] It is not known how many of community-managed forests may have been parcelized. In the Antinori study, five of 42 observations have parceled forests., four of which are stumpage communities, suggesting that San Juan Nuevo may be unusual.

should be left up to the creativity of individual communities facing their particular problems, and that there is no one right way to handle this issue.

B. Communities and Enterprises: The Permanent Tension

The relationship between community traditions and CFEs has been described as a "permanent tension" (Lopez Arzola, 1993). It is not surprising that it should be so. As we have seen, the forest management communities in Mexico range from traditional indigenous communities with millennial practices to much more recently organized mestizo ejidos with fewer communal traditions. Thus, the exact nature of community-enterprise issues and problems will vary across the range. However, across all of the range, in Mexico we are clearly confronting a most unusual configuration of communities and enterprises, and one which appears to have few parallels elsewhere in the world. In the conceptual section, we emphasized that there is very little literature on community enterprises operating in the marketplace on the basis of a common property resource. There appears to be little literature on the subject because the phenomena appears to barely exist outside of Mexico. The uniqueness of the Mexican experience in this regard appears to be significantly underappreciated. Almost all the literature on the administration of common property resources concerns traditional, non-formal institutions managing CPRs to which communities commonly do not have formal title or, at the other extreme, complex inter-governmental administration of CPRs such as groundwater or the atmosphere. Perhaps the closest things to the Mexican experience are cooperatives, but cooperatives are almost always associations of individuals within many different communities or subgroups within communities; they are rarely if ever composed of entire communities as such. In this context, the Mexican CFEs really confront a unique problem. In addition to being unique in their formal structural properties, are CFEs also unique because they have a different "logic" as has often been asserted? Perhaps the differentness of this logic is best expressed in the following quote from Reynaldo López, a former President of UZACHI "Maybe our community enterprise isn't as efficient as a private enterprise. Well, that's just how it is. Our goal is the development of the community, and not the enrichment of a few"[5] (Gijsbers, (ms)).

In the section on social capital, we reviewed something of the structure of traditional societies in Oaxaca, but in this section we will look more closely at how those structures and practices have been able to cope with enterprise management. Some of the issues in the relationship between traditional communities, both ejidos and indigenous communities, include

1) *the meshing of the traditional governnance structure with enterprise management*. In almost all cases, management of the enterprise is at least

[5] "Quizas nuestra empresa comunal no es tan eficaz como una empresa particular. Pues que sea así. Nuestra meta es el desarrrollo de la comunidad, segun nuestras costumbres, y no el enriquecimiento de algunos"

initially incorporated within traditional governance structures. Thus, the *comisariado* may directly administer the enterprise as part of his duties, or there may be a separate committee, incorporated into the cargo system or ejido committees, where the job of administration is considered a community service, commonly unpaid. Most of the issues detailed below arise from trying to administer a complicated enterprise in the marketplace as an extensive of traditional governance practices

2) *The issue of managerial rotation*. Because governance posts in Mexico communities typical change by community vote every three years, the managerial positions in the CFE also typically change by community vote every one to three years. "Typically, the entire management team of the communal forestry enterprise changes each year, however, so while a general knowledge of logging techniques and traditions is widespread, *comuneros* rarely get a chance to develop expertise" SEMARNAP, 1997:126). While regarded as an important measure against corruption and centralization of powers, it also creates great inefficiencies in enterprise management, with a experienced people leaving and inexperienced, and sometimes incompetent people enter. This also creates the need, frequently unmet, for permanent training structures for the flow of new personnel.

3) *Who is in charge? The community assembly or the enterprise manager?* Community general assemblies may not understand the technical, financial and management issues involved in the CFE, yet they may make key decisions on personnel, forest management, and marketing. Communities may not respect the right of their elected manager to manage. As one community authority has noted with respect to his fellow community members , "If you do well, they yell at you. If you do badly, they yell at you".[6] (Alatorre Frenk, 2000).

4) *Labor issues: who has the authority to issue orders to employees? Who determines wage levels and labor policies?.* It is commonly noted that it is difficult for CFE managers, who are community members, to issue orders to employees, who are also community members. Community member-employees will challenge the right of the manager to manage "For example, I'm the Forest Foreman-that gives me authority over you-and I yell at you. Then, you say to me, Listen, don't yell at me, this is my enterprise too".[7] In addition, the regular attendance in the place of employment required by industrial production does not mesh well with the episodic demands of campesino agricultural production.

[6] si hace ben, te gritan, si haces mal, te gritan

[7] "Por ejemplo, soy jefe de monte-que me da autoridad sobre ti-y te estoy gritando, entonces me respondes: "Oye, no me grites, porque la empresa tambien es mia" Wim Gijsbers, "Manejo Forestal En Comunidades Rurales De Oaxaca: Ahora Sí Hay Una Idea De Sustentabilidad,", ((ms)).

5) *Financial Management and Business Strategy.* It is commonly noted that most forest community General Assemblies see the CFE as a source of jobs and profit-sharing and not as an enterprise that must be managed on sound business principles if it is to survive. Thus, many communities set high wages and take out all of the profits for distribution or for investment in community works, rather than reinvesting in the enterprise.

6) *Issues of Participation.* General Assemblies are traditionally dominated by the most senior members, and young people are not expected to have a role in community governance, except for quietly filling the lowest rungs in the cargo system. In the modern context, young people increasingly chafe at their marginalization, and many choose the "exit" of migration because of their denial of a "voice" in community and CFE administration. Traditional communities are gerontocracies and not meritocracies.

7) *The issue of corruption and mismanagement.* All of the above problems presuppose basic honesty in CFE management, but as we discussed in the section on social capital, it is easy for powerful figures in the community (commonly known as *caciques* in Mexico) to carry out a "covert privatization" of the enterprise, thus subverting its community nature, and effecting an individual appropriation of common pool resources.

We will now turn to looking at how some communities have dealt with some of these issues at the most general level of the structuring of the relationship between the community and the enterprise, and we will then turn to a series of specific issues in CFE administration. As Antinori has put it, how can a community function as an entrepreneurial firm? (Antinori, 2000).

Timber production in communal forest land extends the local governance structure beyond its original mandate. As has been noted, formal governance structure of the community encases the community forestry enterprises and operations and does not arise from capitalist roots (Antinori, 2000). Community enterprises have multiple goals that may not be shared by private enterprises. "(Private enterprises) aspire only to maximize their earnings, while the community enterprises seek…the generation of sources of employment, the conservation of the forests, the production of resources for collective benefit, and the maximization of the participation of the comuneros" (Alatorre Frenk, 2000). In addition to having to juggle multiple goals, CFEs have two vexing problems which they have struggled to resolve. The first problem is how to separate the CFE from community politics and the second is how to control corruption. Before exploring the organizational innovations that communities have evolved to deal with these two problems, we will first look at the patterns of governance of CFEs which exists.

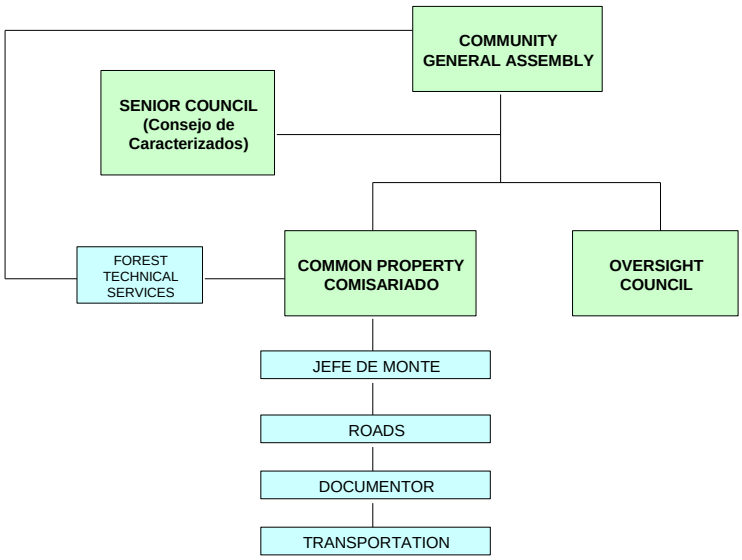
So how do communities go about integrating and/or insulating CFEs in their governance structure? In a survey of 42 communities in Oaxaca at all levels of vertical integration (stumpage, roundwood, sawmill, and finished products), half of the stumpage

communities manage forests as an extension of the cargo system. At the other extreme, the majority of finished products and sawmill communities have a general manager, but only four of the fourteen stumpage communities have such a position. When a General Manager position is designated, it is usually considered outside of the normal cargo system, and may be for a more indeterminate period of time and be paid. The position of Forest Foreman (*Jefe de Monte*) is in charge of all logging operations in the forest, and the presence of a jefe de monte from the community may be taken as the initial stage of community control of logging. *Jefe de monte* normally falls under the cargo system, and is normally paid by the CFE except in the case of stumpage communities, where in 11 of 13 cases the contracting firm pays his salary. Also of interest for the discussion below is that of the 42 observations, 18 have a *Consejo de Caracterizados*, the Council of Elders referred to the in the social capital section, although only two of these report that the Consejo participates in decision making for forestry issues. More integrated communities have more permanent employment positions in administration, documentation, accounting and technical services. Four of the finished product communities, but none of the lumber communities, had a documenter as a permanent employee (Antinori, 2000).

As another aspect of traditional governance, many traditional communities have community service requirements where public works are carried out by unpaid community labor, known as *tequio* or *faenas* in different regions of Mexico. In Oaxaca, almost all communities in the 42-community sample held *tequios* throughout the year, for an average of 3 days each and from 1 to 5 times a year, with the least integrated groups having the most unpaid *tequios*, with more integrated communities relying more on wage labor, a factor in lowering costs for the less integrated communities (Antinori, 2000).

In order to develop an analysis of what constitutes institutional and more specifically structural social capital in CFEs, and to examine the organizational innovations that have emerged and how they have been adopted by other communities, we need to examine the structure of some typical CFEs. Chart I shows the typical structure of a stumpage CFE in Oaxaca.

Chart1: Typical Structure of Stumpage CFE (Oaxaca)



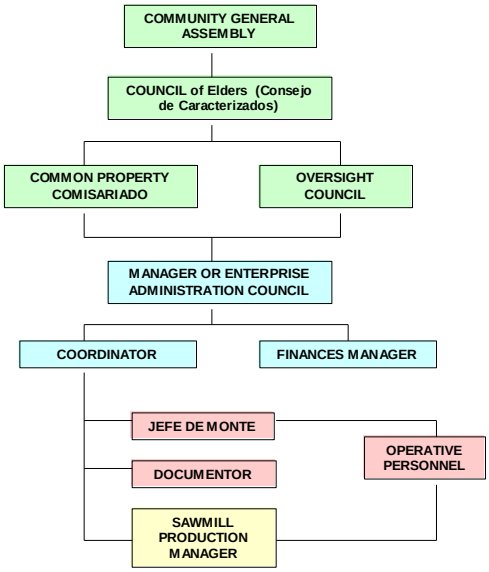
Source: Adapted from Ramirez & Aguilar, 2001

This structure begins to show some of the peculiarities of Mexican CFEs more clearly. The General Assembly of the community is the maximum authority that can set specific policies, such as wage levels and profit distributions. The General Assembly can also influence the level of extraction, although only if it chooses to set it below the technical and legal level set by the FTS through the inventory process, it cannot set it higher than that because of the regulatory powers of SEMARNAT. The day-to-day operations of the extraction process are controlled by the Comisariado, assisted by the President of the Oversight Council, and advised by the FTS provider. The field operations, most commonly today, are in the charge of the Forest Foreman (in an earlier period of "classical" *rentismo*, the jefe de monte would have been provided by the contractor). But we would now like to direct the attention to an important Oaxacan modification of this typical stumpage CFE structure, and that is the so-called *Consejo de Caracterizados* (Council of Elders). This role in the power structure was discussed earlier in the section on social capital, and is composed of people who have passed through all of the cargo system, or who have otherwise won prestige within the community, and are usually older people, although in a few communities in Oaxaca today respected young people will also be placed on the Council. The Council of Elders was the maximum authority in communities before the creation of the General Assembly by agrarian law, but it now serves as a kind of "community Senate" to help resolve particularly contentious problems (Francisco Chapela, personal communication).

When CFEs first began to emerge, communities authorities for the first time had to handle significant sums of money, creating considerable tension. The agrarian law had foreseen the need for an auditing and oversight function with the creation of the

Oversight Council *(Consejo de Vigilancia*) , but much of the time the Council did not fulfill its oversight role. When the organizers of the DGDF began to work in Oaxaca they realized the need for an auditing function and created a new organizational level called the Review Committee (*Comité Revisor*) to control corruption and mismanagement. But, unlike the Oversight Committee, the Review Committee had no legal standing, so if it became embroiled in disputes there was no higher authority to go to. To deal with problems others than auditing issues, some communities in Oaxaca have made novel use of the Council of Elders. In Chart 2, we see the emergence of a more formal enterprise structure within the community and a more formal role of the Council. While the Community General Assembly continues to be the maximum authority, some communities, for example the case of Pueblos Mancomunados after 1993, have given the Council of Elders a more direct and powerful role over the Comisariado and the Oversight Council in the supervision of the CFE. This is an organizational innovation based on traditional practices, and which constitutes new institutional and structural social capital in the communities. It is frequently specifically conceived as a way of separating CFE administration from community politics. Below this level of shared supervisory power, there may be two variations. In Variation I, the Comisariado may continue to directly administer the CFE, even though it may have become a complex and demanding task. This structural variant is frequently regarded as a bottleneck to more efficient CFEs, because professionalized managers with more secure tenure than that provided by the cargo system are not present. In Variation II, a professional manager, who may or may not be from the community, and with longer tenure terms are introduced. Thus, Variation II may be regarded as an increase in both human and social capital that make the CFE more competitive in the marketplace.

Chart 2: Typical Structure of Sawmill Community (Oaxaca)

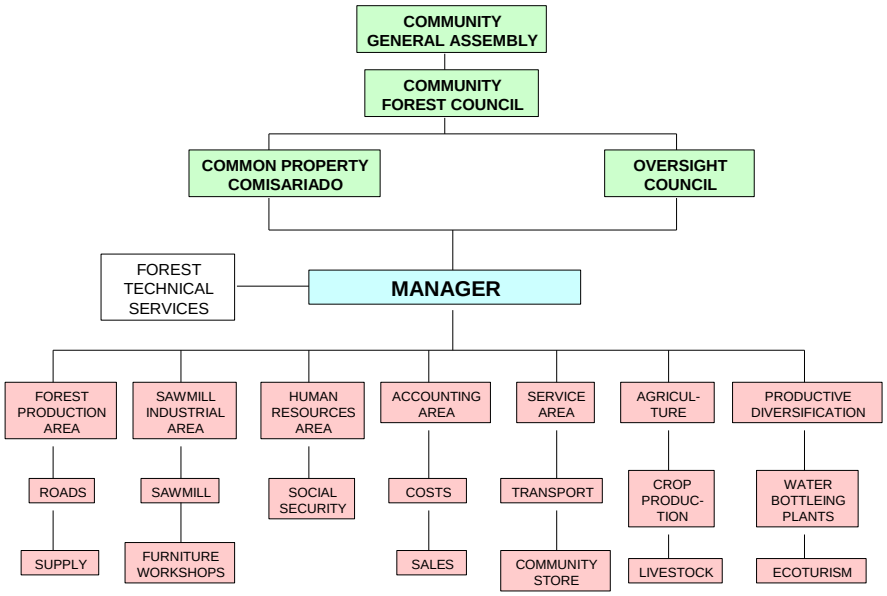


Source: Adapted from Ramirez & Aguilar, 2001

In Chart III, we see the structure of a more diversified finished products CFE as it has been developed in states other than Oaxaca. Here the organizational level of the

Consejo de Caracterizados has been adopted but in a less culturally traditional form as the Community Council, as in the case of San Juan Nuevo, or as the Council of Principals, as in El Balcon. The source of this organizational innovation in the case of San Juan Nuevo is not clear, but today the community makes the direct comparison to the *Consejos de Caracterizados* in Oaxaca. In a more documented case of inter-community social learning, it is known that El Balcón got the idea for its Council of Principals directly from a visit to San Juan. "Leaders from El Balcon traveled to the ejido San Juan Nuevo, where they learned that San Juan had separated the management of the timber business from the politics of the ejido by creating a timber advisory council to oversee issues of production and commercialization" (Wexler, 1995). In most of these cases, there is also a professional manager, who may or may not be from the community, who is not considered part of traditional governance systems and has relatively secure tenure.

Chart 3: Typical Structure of a Diversified CFE (Michoacan, Guerrero)



Thus, in some communities a specialized forestry council, which may have been inspired by the Oaxacan example, has emerged as a way of keeping a distance between the enterprise and community politics, and it seems to be working in some cases. In the case of Pueblos Mancomunados, however, it has not worked, since the community continues to be embroiled in contentious land use issues. With respect to the institutionalization of a professional manager, even some communities with very high levels of production have continued to struggle with this issue. For example, the community of San Pedro El Alto in Oaxaca has much traditional institutional social capital, but has not been able to accept outside professional managers, recruit trained comuneros, or install some form of Consejo to separate administration of the CFE from

community policies, and continues to have persistent management problems. In these cases, it may be said that the "communal fetters" referred to earlier are dominant. These communities have not been able to transcend the limititations of traditional social capital to create new forms of structural social capital.

The models presented above are all modifications of the "one unified CFE" model to help it cope with community politics and corruption, but in the 1990s a more radical alternative for dealing with corruption emerged, and that is the solution of "work groups (*grupos de trabajo*)".

C. Enterprise Organization and Work Groups

Work Groups are an authentic grassroots-driven effort at enterprise reorganization as a response to corruption within the CFE. It was not promoted by any outside agency, but the same solution was arrived at in many different parts of the country apparently independently, and can be seen as a part of the organizational evolution of the CFEs. In Work Group CFEs the community enterprise as such is dissolved and reorganized into self-organized groups of ejidatarios, who divide up the annual authorized volume on a proportional basis. Each one then operates as an independent subcommunal private group, logging its assigned volume. One of the first documented instances of the emergence of work groups was in the ejido Chinatú in Chihuahua, whose CFE was first formed in 1970. In Chinatú 6 groups were formed, with from 2 to 94 ejidatarios, each legally organized as Rural Production Societies *(Sociedad de Producción Rural).* In Quinitana Roo, the SPEFQR is now entirely composed of communities with work groups.

Since many of the work groups, particularly in Quintana Roo and Durango, seemed to emerge in the first years after the sweeping reforms of 1992, it was thought that they were a response to the liberalization of the agricultural and forestry sector. But studies have suggested that it is not so much a product of the reforms but frustration with problems of inefficiency and corruption in the CFEs (Taylor, 2000). At the extreme perhaps is the Durango community of Canelas where there are 11 groups that have "informally mapped the forest and even in some cases fencing it into individual plots. Each of these plots by internal agreements belong to individual families, all with private appropriation of profits" (Taylor, 2000). That work groups do seem to have achieved a better distribution of income and ended centralized corruption in the CFE is evidence by the case of Petcacab in Oaxaca, where income per ejidatario took a dramatic jump upward after the implementation of work groups, although less money now may be going into community projects and capital reinvestment as well.

Work groups complicate second level representation and the administration of FTS since the organization has to deal with the leaders of each group, not just one CFE manager. Work groups can also reproduce on a small scale, problems of inter-personal local politics and lead to privatization of the forest. Nonetheless, the work groups

represent “an organizational innovation in community timber production” (Taylor, 2000). They appear to be a genuine grassroots organizational response, not promoted by any outside organization, to the persistent problem of corruption in CFEs, and in some cases anyway, they appear to have solved that problem.

D. Human Capital in CFEs

As in other areas, there have been few systematic studies of the role of human capital in CFEs. It is known that most of the forest communities have severe deficiencies in formal education, with many people having only rudimentary education and basic literacy or none at all. Added to the deficiencies in basic educational skills and thus capacity to learn, is an almost complete ignorance of the rudiments of managing a forest for the commercial production of timber, much less the rudiments of operating an enterprise, with the all the skills that implies in management, accounting, and marketing. Thus, most CFEs have had very steep hills to climb in acquiring the human capital necessary to operate a CFE. Initial skills were acquired from two basic sources 1) as laborers or truck drivers for parastatals and 2) somewhat more formal training from government agencies and NGOs.

The iconic act of training which occurred in many communities was the imparting of the basic skill of scaling (*cubicación).* This is a basic forestry technique for the measurement of the volume in cubic meters of a felled tree. Lacking this basic skill, the communities had no way of knowing or controlling exactly how much timber contractors and concessionaries were taking out of their communities. With this skill, the communities had greater control over the logging process and culd assure that the authorized volume was not being exceed and they were being correctly paid. The young activists who entered the Sierra Juárez in the early 1980s reported that the first request that came to them from the communities was how to measure timber volume (Alatorre Frenk, 2000).

The other important source of training was experience with the contractors and concessionaries. In a period when their forests were being exploited by a parastatal from 1964-1974, the community members of San Miguel Peras learned bulldozing, winching and trucking skills. In 1966 demands for accountability and a salary increase included a demand that they hire and train a community member who would record the volume of timber leaving community territory (Klooster, 1997).

In the Antinori survey of 42 CFEs in Oaxaca, training was divided into mechanical training (chainsaws, handheld saws, trucks, sawmills), and technical training (documentation, administration, silvicultural treatments, and reforestation). It was found that most training prior to 1986 came from parastatal and private companies, and less from government, although private companies provided more employment opportunities than parastatals for all tasks except for sawmill work. FAPATUX, the Oaxaca parastatal, fostered truck ownership and cultivated a class of truck owners specialized in hauling

logs (Klooster, 1997). In 1984-85, the DGDF sent out persons to train communities in mechanical and technical skills. They tended to go to communities that were already beginning to log on their own (such as Pueblos Mancomunados, and training focused on technical aspects of timber production (Antinori, 2000). In the ODRENASIJ communities, independent advisors were important sources of training. As we will explore more later, a strong positive relationship is found between mechanical training in particular and vertical integration, "Across all regressions, mechanical training is positive and significant above the 5% level, supporting the hypothesis that integration increases as human capital skills increase in the community. Mechanical training is the most basic and fundamental job skill for timber operations. As more people acquire mechanical ability, the more likely are community members to choose forward integration" (Antinori, 2000). It was also found that those communities who currently have sawmills were much more likely to have had parastatal exploitation of their forests, although these communities also tended to have larger and better quality forests, another possible explanatory factor.

Currently, professional positions in some CFEs are being filled by trained young people from the communities. As early as 1990, a young Zapotec forester from Xiacui became the forest technical director for UZACHI, placing control of the technical services in local hands. This also had economic significance in terms of channeling more resources towards the communities. As Jaime Cano, President of the Oversight Committee for Calpulalpam noted at the time "Last year here in Capulálpam we paid over $12,000 for forest technical services. This year, we are paying a much smaller amount to UZACHI as a part of (his) salary, and the rest we can keep for the enterprise" (Bray, 1991). The Forest Technical Director in the SPEFQR in Quintana Roo is a native of the Mayan community of Petcacab. San Juan Nuevo has over 40 university-trained professionals working in its multiple community enterprises, and in fact has only two outside professionals working for it. Community decisions to support fellowships for their young people may reflect other things about their social capital and community vision. For example, San Pedro el Alto in Oaxaca does not give fellowships to its young people, saying that should be up to individual families, while El Largo in Chihuahua gives fellowships to all of its children who want one.

1. Human Capital, Social Capital, and Social Learning. It has been known for a long time that farmer-to-farmer training programs are the most effective means of building human capital in rural communities in the developing country. By the same token, farmer to farmer exchanges, or community forester to community forestry exchanges are highly effective ways to build knowledge and inspire new investments in communith organization on the part of participations. Forest communities have learned important social and organizational innovations from each other, probably even more than has been recognized. For example, San Juan Nuevo's innovation of mounting a communal logging operation on a parcelized commons was apparently learned from Santa Cruz Tanaco. Vázquez León (Vazquez León, 1992) describes for Santa Cruz Tanaco a very similar land tenure arrangement to what emerged in San Juan in the late 1970s, and it is known that San Juan visited Santa Cruz when they were in launching their own CFE. As mentioned earlier, El Balcon visited San Juan Nuevo in 1987 and implemented an

organizational model similar to San Juan's in 1989, in order to more closely supervise a new professional manager.

E. Are CFEs profitable?

There has been a tendency to regard CFEs as constantly teetering on the brink of collapse because of mismanagement, high costs, inefficient industries, and exploitation by outside forces. However, a series of observations over the years as well as some recent studies suggest that most CFEs are more financially healthy than has been supposed. CFEs have a great advantage of owning a valuable debt-free natural resource-their forest. It has been argued that in a crisis situation, private industry can move its capital to other branches, but peasant industries don't have that choice (Aguilar, et al., 1990). However, it can also be argued that in a time of crisis the peasant industry can simply sit on its natural asset, exploiting other means of subsistence, while the crisis passes. It can also choose to devolve to lower levels of integration. Four out of 17 stumpage communities in the Antinori sample were communities that once had sawmills, but gave it up to become more specialized roundwood producers again (Antinori, 2000).

The nature of a CFE can also bring about some cost savings. For example a 1990-1991 comparison of costs between communal and private enterprises in the Sierra Juárez, showed communal costs to be much lower (138,453 pesos per M3 vs 193,493 pesos per M3) mostly because of administrative costs. The communities didn't factor in depreciation and reinvestment, but they had significantly lower administrative costs because of the cargo system, as well as the geographic proximity of sawmills to timber production areas, and transportations costs that were lower than those of private industry (Aguilar, et al., 1990).

Antinori has carried out the first comprehensive survey of profitability in the four CFE classifications and her findings are in Table XI below.

Table X: Costs and Benefits in 42 Forest Enterprises in Oaxaca-1998 (in Pesos)

	Stumpage Communities	Roundwood Communities	Sawmill Communities	Finished Products Communities
Profit from Sales	573,549	1,688,274	3,020,021	9,578,861
Salaries	1,440	406,718	306,388	774,227
Total Costs	304,125	1,010,740	1,462,620	1,462,620
Profits	311,386	870498	1,557,401	3,056,819
Percentage of profits over sales (%)	54%	52%	52%	32%
Percentage paid in Salaries (%)	10	44	29	28

Source: Antinori, 2000: 167

As the table indicates the finished products group has the largest average profits, presumably due to the value added that comes from sawmill and other processing operations. The roundwood group pays the highest percentage of their costs in salaries and the stumpage group the lowest, since many labor costs are paid directly by contractors. The most striking finding, based on our calculations from the Antinori data, is that the net percentage profits for the four categories is 4% for stumpage communities, 52% for roundwood communities, 52% for sawmill communities and 32% for finished products communities. It should be noted that these calculations do not include depreciation and that some of the data is based on direct examination of the books while in other cases it is based on interviews with community authorities, so there could be some margin of error (C. Antinori, personal communication. Nonetheless, the findings are highly suggestive. It would appear, that even making adjustments for error, that CFEs are in on fact on average highly profitable. This also accords with the scattered data reporting profit margins for other CFEs. A 34% profit margin on the production of roundwood has been reported for the community of La Trinidad in Oaxaca (Alatorre Frenk, 2000), and a 52% profit margin for a CFE which was historically wracked by conflicts (Klooster, 1997). It remains to be explored exactly why they are so profitable. As noted earlier, the use of unpaid *tequios* and unpaid or low paid administrators would be part of the answer for some CFEs. In any event, these findings suggests that CFE would be highly creditworthy, and could support considerable investments in improving infrastructure, meriting further policy attention from the Mexican government. This new perspective on CFE profitability also suggests why it is that so few CFEs ever seem to go out of business entirely, when it is unusual for high percentages of small companies in any sector to survive. In 1995, 168,153 new businesses were started in the United States

and 43% of them failed (Stuart, 2000). Although the percentage of start-up CFEs that have failed is not known, it would appear to be far below 43%. It has been argued that "if the peasant enterprises haven't disappeared from the maps its because their logic isn't entrepreneurial. The communities defined their enterprises because they provide employment and they permit their maintenance as social and cultural entities, as little nations" (Alatorre Frenk, 2000). CFEs are clearly different from private enterprises along multiple dimensions, as has been noted, but their survival may be because they are highly profitable enterprises, not because their "logic" is different.

It is frequently noted in the literature on the early stages of CFEs that once communities were allowed to operate in the marketplace freely the profits were so substantial they were able to quickly capitalize through the acquisition of skidders, trucks and sawmills, another strong indicator of the profitability of CFEs. In fact, it is so commonly noted in the literature that this may be regarded as a classic sequence, particularly for communities with higher volumes of timber and thus a greater flow of profits. The most commonly observed sequence of industrial vertical integration in CFEs goes from 1) acquisition of equipment to extract the logs from the forests, in a sequence that goes from *chainsaws*, to *skidders* (specialized winches for dragging logs from the place of felling to a nearby logyard (*bacadilla)* in the yard, to *trucks* for hauling out of the forest. 2) the acquisition of a *sawmill* and associated equipment, and 3) the acquisition of equipment for advanced processing and transformation, that may include drying kilns, moldings, furniture, and plywood factories. It is these levels of vertical integration are also used in most recent schemes to classify CFEs. As we will explore further below, vertical integration also tracks the building of assets in the CFE.

Antinori's doctoral dissertation is the first major research project to focus on vertical integration in Mexico CFEs, in the previously mentioned 42-case Oaxaca study. She asks questions such as "Why do Mexico's agrarian communities integrate into industrial forestry, when hiring-in private contractors should be a perfectly substitutable choice"? She also develops very useful propositions about how community enterprises are different from private enterprises from an economist's point of view. For example, Canadian private "primary processors" do not commonly integrate forward as do Mexican CFEs, making it an unanswered question why the CFEs opt for this strategy. Private companies can be more efficient than community enterprises because they avoid free-riding and have simpler decision-making mechanisms. But private timber companies are primarily concerned with producing timber for profit, while forest communities "have interests other than producing timber, such as producing nontimber goods and services" as well as employment generation (Antinori, 2000), and other goals previously noted. Another difference is that although community members are owner-managers, their access to profits and the use of the forestland cannot usually be traded in the marketplace, so they are bound to the some use of the forest.

Mexico's forest communities face multiple uncertainties in income, food sources, job security, and public resources. For communities with important forest assets, it forest has been a traditional source of multiple use values. Timber production has emerged as a market opportunity in the more recent historical period. As we have seen most

communities began their careers as timber producers under extremely exploitative conditions, where they were legally and otherwise restricted from exercising their rights in the marketplace as owners of a natural resource. As they gained the right to freely manage their timber resource through political struggles, all could have chosen to remain roundwood producers. Vertical integration is not simple, and each step in the vertical integration sequence noted above requires new investments in human and physical capital about which decisions must be made.

So why do they vertically integrate? Antinori's reasoning is worth quoting at length "A basic argument is that communities seek control over local economic development and ecosystem benefits, the noncontractibles in the production process…..given comparable efficiency levels, the interpretation of community integration offered in this paper is that when able to overcome fixed costs, communities integrate forward to avoid contractual hazards. Integration forward is a way for the community to access capital gains from owning downstream timber operations. Asset ownership assures these investment goals when markets are not complete. At a certain point, the benefits of control exceed the costs of organizing the community forestry enterprise" (Antinori, 2000).

These are the formal economic reasons why it would make sense for CFEs to vertically integrate, but in the specific historical context of Oaxaca, Antinori argues that the communities who are most likely to be vertically integrated today are those where community members had gained value human capital skills by working for logging firms. The impact of the concessions period on the communities also "lowered the fixed costs of organization" by both stimulating the communities to form alliances and build social capital against a common enemy and gave them experience in "industrial forestry as a consistent, long-term economic venture" (Antinori, 2000). Forest quality and size are also factors in explaining why communities forward integrate, with communities with larger, better quality forests being more likely to integrate. Here Antinori makes a useful observation as to why smaller ejidos do not more commonly pool their resources to collectively forward integrate, "A policy question is why communities with smaller forests do not pool production activities with other communities more than is observed. Local decision-makers' preferences for autonomy and avoid bargaining costs, even from other agrarian communities, may be a factor" (Antinori, 2000). As has been discussed, there is at least one example in Mexico of small communities who have done just that, in Puebla (forthcoming Puebla case study).

Finally, it is instructive to observe the relationship between level of vertical integration and, average volume of pine produced and the percentage of authorized volume extracted, as shown in Table XII below

Table XII: Volume of Pine Produced, Percentage of Volume Extracted, and Size of Commercial Forest by Level of Integration-1997 (42 Communities in Oaxaca)

Level of Integration	**Volume of Pine Produced (M3)**	**Percentage of Authorized Volume Extracted**	**Size of Forest (Approximate) in Ha**
Stumpage Communities (n=16)	2,817	73%	2,400
Roundwood Communities (n=11)	4,849	67%	5,000
Sawmill Communities (n=8)	4,521	70%	7,500
Finished Product Communities (n=7)	15,889	88%	11,000

Adapted from (Antinori, 2000)

The table shows a large difference between finished products communities and the other categories in the volume of pine (the most common commercial species) produced. As the table also indicates, finished products communities tend to harvest much higher percentages of their annual authorized volumes as well (88%), although not so much higher as to account for the differences in total amount harvested. Finally, the table shows a clear relationship between size of forest and vertical integration. Finished product communities have on average some 11,000 ha of forest, sawmill communities 7,500 ha, roundwood communities 5,000 and stumpage communities only 2,400.

Also, and of key policy importance is the finding that "Stumpage communities are qualitatively and quantitatively different than other categories of communities. The largest marginal effect and explanatory power of the independent variables were in calculations distinguishing the stumpage group...members of stumpage communities may not have the incentive to invest to invest in timber production without substantial investments in human capital skills, organizational and social capital, and commercial quality of the forest". This obviously has many implications with regards to development strategies and we will return to this issue in the conclusions. There are also some examples of failed forward integration. It was mentioned earlier that in Antinori's case studies four sawmill communities had reverted to being roundwood producers. Alatorre (2000) offers a case study of a carpentry workshop in La Trinidad in Oaxaca that failed due to internal community conflicts.

Despite the uneven record in sawmill success, most roundwood communities have at one time or another aspired to have a sawmill, which raises the question at a more practical empirical level as to what is the level of production which would make a sawmill an optimal investment. The Antinori study showed that sawmill communities had an average capacity of 7,000 board feet per day and finished products communities had 10,000 board feet. From this she derives that " communities with forests in the 5-7,000 ha range are candidates for vertical integration, although for small capacity sawmills" (Antinori, 2000). Another observer, using a different measure suggests that 8-10,000 cubic meters of wood is necessary to warrant investment in the first stage of

vertical integration, a winch and a truck (Mario Cedillo, personal communication). It is also possible that the 1992 law, which deregulated forest production, may have had a short-term (until the 1997 law) on vertical integration, at least in Chihuahua. Guerrero (Guerrero, et al., 2000) reports that the number of community sawmills in Chihuahua expanded from 43 to 104 from 1993-1998 (which was part of a generalized expansion, with private sawmills expanded from 64 to 205). On the other hand, the number of CFE box factories in Chihuahua went from 11 in 1993 to none in 1998. The precise reasons behind this unusual dynamics in CFE vertical integration remain to be explored.

There has been much concern expressed over the years about the efficiency of CFE sawmills. There are clearly many CFE sawmills that are overstaffed and inefficient, but there has also been a significant evolution in the quality of CFE sawmills. The sawmill at El Balcón has been termed one of the best in Mexico by a representative of a US timber company who had visited many of them (Chris Cooper, personal communication). A World Bank consultant in 1999 visited four sawmills in Oaxaca and noted that all mills had very high quality logs in their log yards, that very little truly junk lumber is produced by these mills, and that the product would be valuable in international markets. Of the sawmill in Ixtlán he noted "This mill appeared to be very well run without obvious problems…(and) has excellent potential for sales into international markets". Of Pueblos Mancomunados he said that it "will easily provide high quality lumber meeting the national standard and international standards". The consultant also noted some of the problems: the need for maintenance sheds, better training and equipment in the management of drying kilns, and the need for more training in transportation logistics, financial issues, customer service, and finding foreign markets. He also noted serious problems in the financial analysis of the viability of a kiln in one sawmill and called the traditional Mexican system of classifying lumber "wasteful of trees and biased in favor of the purchaser".

Finally, it was suggested that "for motivating communities to improve lumber yields in the absence of the normal financial incentives operative at mills working under a capitalist economic structure…yield improvements be couched in terms of forest area saved from harvest pressure. A 10% yield improvement at the mill translates into 10 hectares out of 100 that do not need to be harvested" (Fuge, 1999). Thus, while there are clearly significant problems with the operations of some CFE sawmills as they look toward the possibility of international markets, they also have a lot of strengths in doing so. Many of the larger CFEs are moving beyond vertical integration and diversifying into other sectors, from fertilizer distribution operations to ecotourism, and becoming what we might call "community diversified enterprises" or CDEs They are also investing more in conservation of the forest. "Vertical integration positively and significantly explains recent investments in nontimber activities which include the protection, conservation, and production of nontimber goods and services" because of "knowledge spillover" in timber and nontimber production (Antinori, 2000).

F. When Communities Don't Have the Resources to Vertically Integrate: The Challenge of Low-Resource Stumpage Communities

There are an unknown number of CFEs in stumpage communities whose resources are so inadequate that building up the logging CFE is unlikely to be a viable strategy. The community of X-Yatil in Quintana Roo is an example of such a community, and also an example of what we have called *neo-rentismo.* X-Yatil is a member of a second-level organization, the *Sociedad Tumben Cuxtal*, and thus has a forestry engineer that works for it and who monitors the management plan and forest extraction. The community has an authorized volume of only 24 M3 of mahogany, and higher volumes of tropical hardwoods and softwoods, but typically only harvests from 20-40% of the authorized volume of these timbers because of lack of markets. Prices are set by a *tabulador* (a set schedule of negotiated annual prices between forest organizations and buyers. All profits are distributed and in 1999 were worth about US$80 to each community member. With such low profits, there is little incentive to invest in greater collective action, and this is not done. The forest business is conducted by the *Comisariado* and a *jefe de monte* is not assigned. The buyer brings all his own chainsaw operators and other works, and only one brief job is generated by the forest activity [Robinson, 2000 #526]. It should be made clear that this case represents a significant step forward from the historical reality. The community receives a fair market price, and is supported by a second-level organization. However, the resource is just so poor that it does not justify any further investment, and natural forest management for timber production is not a viable option for this community without major investments in forest enrichment. For these communities, integrated natural resource management plans, that will be relatively costly, would have to be developed. These might include agroforestry, forest enrichment, and sustainable agriculture.

G. Distribution of Benefits and Asset-Building in Communities and Households: Capital Investment, Social Investment, and Reparto

Clearly the most important resource or economic asset that forest communities have is the forested lands themselves. The communities came into these assets because of government land distribution policies, and that these policies effected massive transfers of natural assets from the state to communities in relatively recent times. This massive transfer of natural assets is highly unusual in a global context. Data assembled by Daniel Klooster suggests that a particularly large-scale transfer took place between 1950 and 1980. Statistics from 1930 suggest that 920,000 ha of forests were in the hands of ejidos and comunidades. By 1940, this figure had jumped to 6.8 million, which represented 18% of forest lands nationally. By 1950 official figures suggest that ejidos and communities owned 23% of all forest lands. By 1980, this figure had jumped to between 65-80%, depending on the source (Klooster, ms; J.M Torres, personal communication).

Thus, around half of all forest assets in community hands were acquired in the 1950-1980 period. The early 1970s appears to have been a particularly active time. This is when, for example, El Balcón received its commercial forest and when a huge private estate was broken up and handed over to communities in Chihuahua. This massive transfer clearly laid the groundwork for the emergence of Mexico's strong timber-producing CFM sector. Although not conceived as a forest policy, it was possibly the most effective forest policy that any nation has pursued in contemporary times. As was discussed in the conceptual section, there are three crucial steps in natural asset-building: identifying and valuing natural assets, securing access to those assets, and managing assets wisely and democratically. The Mexican government identified and valued the natural assets, even while handing the forest over to communities, but "partially expropriating" them under Article 27 for their timber value. The communities then had to embark on a political struggle through grassroots mobilization and legal means to secure access to the forest resources, and are now well launched on the unending process of learning how to manage them democratically and wisely

The democratic and wise management of natural assets involves many decisions and struggles over the distribution of the financial flows from it. The distribution of the benefits that flow from the CFEs mounted on the natural asset can be categorized as 1) employment and wages, 2) investment of profits in the enterprise, 3) social investments, both in community infrastructure and social welfare programs, and 4) profit-sharing (generally termed in Mexico *reparto* "distribution" or *utilidades* "profits). Each of these will be examined in general terms for their contribution to asset building. The challenge for the communities is to "distribute the surplus and achieve a certain equilibrium between communal interest, consumption, (and) family and individual interests" (Alatorre Frenk, 2000). It should be recalled at this stage, as was mentioned in the conceptual introduction, that the locus of asset-building in Mexican CFEs appears to be either in the enterprise or in community infrastructural or financial assets, not necessarily at the household level, which is where the focus of the asset-building literature has been. We will now examine each of the benefit flows in turn.

1. Employment and Wages.

There are many observations in the literature on the impact of CFEs on employment and wages in individual communities, most of it anecdotal. In general, wages paid are higher than the prevailing wage in the region, and the number of jobs, as would be expected, varies in line with the size of the enterprise. At one extreme, there appear to be "full employment" CFEs where nearly everyone in the community who wants a job in the CFE can get one, and this can occur in communities of greatly varying sizes. For example, both San Juan Nuevo, with some 900 full-time employees and Rosario del Xico in Veracruz with 24 employees reportedly employee nearly everyone in the community who wants a job. At another extreme, there are reports of stumpage communities where nearly no one is employed in forest extraction, where only the rents from forest ownership are realized. Most communities are in between. Noh Bec in Quintana Roo, has 216 ejidatarios and generates 33 permanent full-time posts and another 130 jobs which are nearly full-time (see Noh Bec Case Study). Nuevo Zoquiapam, in Oaxaca,

gives employment for 6-8 months to half of its community members, and has four year round jobs (Merino Pérez, 2000). In San Miguel Peras about about half of the community received an average of $205 dollars a year (possibly 1-2 months income) from CFE employment (Klooster, 1997). In Pueblos Mancomunados in Oaxaca, 150 people have full employment of for 7 months, and 50 the rest of the time.

The case study communities also suggest that most communities pay substantially more than the prevailing local rural wages. There are also reports of communities like La Trinidad in Oaxaca, where the daily wage only matches the local agricultural wage, plus you have to provide your own food. However, the jobs are still considered to be relatively attractive since they are continuous for many months, while agricultural jobs are highly episodic (Alatorre Frenk, 2000). In some communities, CFEs are considered less important for job generation than as a source of communal funds for social investments. In Calpulalpam in Oaxaca, for example, only 10% of the comuneros work in the CFE but it generates substantial funds for community social infrastructure (Alatorre Frenk, 2000); see also Case Study. Tensions over wage policy have been reported. Some communities prefer to pay by volume produced, which encourages productivity, while others pay a set daily wage, which leads some workers to reduce productivity (Alatorre Frenk, 2000).

The Antinori study also has light to throw on the issues of wage policies and employment in CFEs. In her sample, the number of community members receiving income from the CFE on a regular basis were 15% in stumpage communities, 17% in roundwood communities, 19% in sawmill communities, and 26% in finished product communities. This highlights that most CFEs can only generate employment for a reduced percentage of the total work force in the community. On the other hand, without CFEs, there would normally be extremely few wage labor opportunities within the community, particularly at relatively good wages. Her study also showed that the stumpage group has largest percentage of outside workers, probably both because of lack of interest in the community and because contractors bring their own laborers. Another figure also suggests that the 26% employment may, in some cases, begin to exhaust the community labor supply that wants to work in the CFE, since 63% of the finished products communities hire outside workers compared to 11% of the sawmill communities (Antinori, 2000).

There are other reports in the literature on total income from forest activities which are also revealing. For example, one study of two CFEs in Quintana Roo, Naranjal Poniente and X-Pichil, estimated that total income from sales of timber were $US 109,689 and US$160,636, very substantial sums for poor communities in the state (Negreros-Castillo, 2000).

2. Social Investments

Many communities invest significant percentages of the profits in community works in two categories 1) community physical infrastructure and 2) social welfare benefits. In both cases, CFE are creating public goods which would normally be the responsibility of government. There are many accounts in the literature of communities

constructing or reconstructing churches, municipal buildings, auditoriums, public lighting, potable water systems, clinics, schools, and reserve funds for maintenance. There are no studies that quantify the value of these social investments, but clearly there has been a very important accumulation of community assets through these investments. San Pedro el Alto generates an estimated one million dollars annually in profits, 60% of which is invested in the community (see case study).

Most of the more integrated and prosperous CFEs support various fringe benefits and social welfare payments for community members,that have included some of the benefits that follow. When a worker is sick, the community enterprise pays the lost salary. When a worker is killed, the CFE pays funeral costs and an indemnization equivalent to about two years salary. In both Noh Bec and Naranjal in Quintana Roo, the CFE covers medical costs of workers and their families, while Noh Bec and many other communities also give modest old age pensions. In El Balcón (see case study) the community currently supports some 20 widows with $1,500 Mexican pesos (around $150) monthly as well as 15 retirement pensions at 2,000 Mexican pesos (around $200) a month each. There is also complete medical coverage for both ejidatarios and non-ejidatarios, with vouchers given for a doctor in the nearby town. The Antinori study found that all 42 communities in Oaxaca channel funds to social services but that the "degree of social giving does not follow a clear pattern across types, reflecting the general civic role of forestry production" (Antinori, 2000). It also found that in the stumpage communities, which tend to have less infrastructure, the buyer frequently built public works as part of the contract, in all but two cases this being to build churches (Antinori, 2000).

3. Reparto (Profit Distribution).

Finally, communities may decide to distribute all profits on a proportional basis to all registered community members, perhaps only retaining a small percentage for the Comisariado for ejido administration expenses, but channeling nothing or virtually nothing into either community infrastructure assets or in reinvestment in the enterprise (see Laguna Kaná case study). It appears that complete distribution of profits is more common in communities with smaller volumes of timber and thus profits, where poverty is greater, where the community may not trust the authorities to invest in community infrastructure, and where proceeds are so small that there is no obvious way to capitalize the CFE using them. Antinori's findings are somewhat counter-intuitive in this regard. As would be predicted, she does find that stumpage communities have the largest average profit distribution, but that this is followed by the finished products group. In this case, it may be that profits are so large that the communities can afford "to do it all". She also found two communities who distributed profits in food baskets (*dispensas)* (Antinori, 2000). A series of observations on levels of *repartos* in individual forest communities suggest that they may range in significance anywhere from less than one months average income to full average annual incomes, with perhaps the average falling in the 1-3 months salary range, clearly an important income supplement for many small farmer families. In San Pedro el Alto, which also invests in its enterprise, the annual reparto is around 1,000 dollars a year.

Repartos, as well as income from employment in CFEs may contribute to the accumulation of assets at the household level, although there have not been any studies to document this. In the United States, it has frequently been noted that the single most valuable physical asset is the home, usually accounting for a large percentage of personal wealth. While this may be true to a degree in rural Mexico, expectations and cultural norms tend to reduce major investments in expanded housing. Increased income is more likely to be spent to increase consumption of basic necessities, although some is probably also invested in the education of the children. Given that *repartos* appear to be more common in poorer communities (although this is not always the case, see Noh Bec case study), this makes it even more likely than the income does not serve to build significant household assets. Even more discouraging, there are anecdotal reports from many forest communities, but particularly from Quintana Roo, that *repartos* are frequently treated as windfalls used to finance drinking binges on the part of the men. This would appear to defeat much of the income-generating rationale for CFEs, and would probably require intensive social service interventions to begin to turn around. There is no data on just how widespread this problem is, but it is a serious one that deserves more attention.

4. Capital assets

There are few figures available on capitalization and assets of Mexican CFEs. On the other hand, there are many accounts in the literature that indicate that CFE vertical integration has been largely financed out of profits. Many of the histories of the early days of CFEs mention how they were able to buy their first skidders, trucks and extraction equipment from the proceeds from the first year or two logging. Some were then quickly able to finance sawmills as well, sometimes with combinations of enterprise and public funding. The leading vertically integrated CFEs have accumulated very substantial assets, as some of the case studies have shown. San Juan Nuevo had no reliable estimate on the total value of their productive assets, but they generate 5.5-6 million dollars a year in sales. El Balcón's fixed capital assets are reported to be around 4.2 million dollars. At another extreme, Calpulalpam in Oaxaca, with an annual harvest of around 1,500 M^3, compared to El Balcon's 42,000 M^3, only has around 100,000 dollars in capital assets, although it has invested substantial profits in community infrastructure.

It would take more intensive household surveys in CFE communities to establish how much the income generated from forest related activities contributes to asset-building at the household level. At the lower end, the income flow helps to reduce absolute poverty, and at the upper end it greatly increases the cash flow available to the household, and likely some of it is invested in durable assets from tangibles such as housing and household appliances, to intangibles such as education. But where asset-building most clearly occurs is at the level of capital asset building in the enterprise, which helps build employment and income security, a key component of household asset-building, and at the community level, where community assets increase the quality of life in forest communities.

H. Marketing (Local Markets, National Markets, International Markets, Certification)

Almost all CFEs directly market their own timber production and historically almost all CFEs have sold into national timber markets, the smaller ones selling to state-level markets and larger ones selling into different national markets. There have been periods and regions when sales have been difficult due to price competition. There are frequent reports from northern Mexico of patios filling with timber because of price competition from the United States. There were also the previously mentioned difficulties in the first period after the passing of NAFTA. However, these problems appear to be episodic and transitory and most CFEs at most times appear able to sell their production, even if not always at the price they would like. The reported profitability figures, however, suggest that the prices in general have been superior to costs.

In the post-NAFTA period, a few CFEs have established successful export markets. The case of San Juan Nuevo and its exports of moldings to the United States has already been mentioned. There is also a successful experience in exporting certified charcoal from Durango to Europe. In terms of partnerships with US or other foreign timber enterprises, the case of Boise Cascade in the Costa Grande of Guerrero, still little documented, is a notable failure. There is least one successful case of a partnership between a US forest products company and a Mexican ejido which could serve as a model for others, and that is the relationship between state of Washington-based Westwood Forest Products and El Balcón in Guerrero (see case study*).* A Westwood representative first visited El Balcón in 1995, and came away extremely impressed by the sawmill, saying, "I don't think you'll see a better sawmill in Mexico". He was also impressed by El Balcón's management plan, which he thought would assure a steady supply of logs, and by the high quality of their product. Westwood first noted the need to create more efficient use of the forestry resources. Later the company began to integrate more of the processing on site. One company representative stated: "We used to bring up all lumber, but then we wanted to get more added value--the more money I can bring here the better" (Chris Cooper, personal communication).

Westwood invested considerable time and effort in building the relationship and providing technical assistance and financing. Westwood is currently importing both sawn wood and moldings to the US from El Balcón, shipping to their warehouse in El Paso, Texas. El Balcón also sells sawn wood in national markets. From 1996-2001, El Balcón exported 40-45% of its volume, which represented 65% of total sales, with all first-class timber exported through Westwood. From late 1995 to late 2001, El Balcon exported approximately 19 million dollars worth of timber to Westwood. Westwood has also been crucial in financing both capital assets and operating costs over the last several years. Westwood loaned El Balcón US$200,000 to put in drying kilns, in addition to helping to arrange for a 6% interest loan from the manufacturer. In 1999 and 2000, Westwood loaned El Balcón US$400-500,000 in start-up operating capital, all of which was repaid within months. In 2001, only $100,000 was loaned because El Balcón now has sufficient operating capital.

On the state marketing level, the Antinori study shows the range of variation in buying and selling in Oaxaca. Stumpage communities usually only had one buyer, with the other classifications usually having two or more. Six of the sawmill and six of the finished product communities sold roundwood in addition to their end products. The more integrated communities had significantly longer working relationships with their "currently most important" customer. The second-level organizations frequently provide important assistance in supporting member CFEs in negotiations with buyers and in finding new markets. They have frequently also tried to form "marketing fronts" to negotiate prices, even when individuals deals are still struck between buyers and sellers. Perhaps one of the most successful cases of this has been the use of the so-called *tabulador* in Quintana Roo. The Quintana Roo CFEs have the advantage of having a relatively scarce product in the Mexican markets, tropical timbers particularly mahogany, which commands a very high price. Since the advent of the Plan Piloto Forestal in the mid-1980s, the Quintana Roo CFEs have banded together annually to produce a set schedule of production costs, price to the buyer, and the distribution of profits, known as the *tabulado*r (costs of production and price schedule). They have been able to make this cost and price schedule work, despite persistent price competition from illegally logged tropical timber from Guatemala. This may be regarded as a marketing cartel (J. M. Torres Rojo, personal communication) and one that has apparently continued to be successful, despite the fact that in recent years the second-level organizations have reportedly produced slightly different cost and price schedules.

For tropical timber in particular, exports for foreign markets are frequently seen as the answer. A recent study by Winrock of tropical timber marketing in Quintana Roo suggested that is not necessarily the case (Shoch, et al., 2002). The Winrock report attempts to dispel the belief that international markets were willing to pay higher prices. It argues that regional and domestic markets make sense for a lot of reasons, including willingness to pay prices equal to or exceeding the international market, better recognition of non-traditional species, and the fact that Mexican buyers are more understanding of the constraints, irregularities and quality problems of Mexican producers. The report also suggests that Quintana Roo producers must think strategically about pricing to secure sales, arguing that prices must come down to be competitive in the region. It notes that for 2002 prices for hardwoods were reduced by 4% and precious timbers and softwoods by 8%, suggesting that the *tabulador* mechanism is becoming more flexible in the face of these realities.

The products of both temperate and tropical natural forests are facing a very dynamic marketplace where they may be increasingly displaced by plantation production and substitute or recycled materials. Seven major trends have been identified in the forest products industry: 1) a gap between supplies of wood and demand for wood products, 2) a rise of plantation forestry in the Southern Hemisphere, 3) the globalization of trade in wood products, 4) greater product standardization, 5) greater efficiencies and recycling, 6) demand for environmental sustainability and certification as a means to assure it, and 7) heavier government regulation of forest extraction activities (Jenkins and Smith, 1999). Not all of these will be discussed here, but in the specific case of Mexico, it must also be remembered that Mexican forest production and efficiency in production

is dwarfed by two of the largest forest products producers in the world, the U.S. and Canada. In the face of this competition and for other reasons, Mexico needs to seek out specialized niches.

There are varying projections as to the role of plantations in future world wood supplies. In 1995, the FAO estimated that about 12% of the total global roundwood supply came from plantations, but it is thought that this percentage is rapidly increasing. It is also argued that advances in genetic engineering will create new fast-growing and higher yielding trees that will greatly increase the productivity of plantations. Based on these projections, some have suggested that "…the entire world demand for industrial wood fiber for all uses (excluding fuelwood…) could be supplied by plantations on 'good forest land' equivalent to only 5 percent of the currently forested global land area, or about 490 million acres. *Very*-high-yield plantations covering the equivalent of one half to one percent of current forest areas--57-99 million acres, no more than the area *currently* supporting industrial forest plantations--could in principle meet today's world demand for wood fiber for all purposes at present efficiencies of use" (Hawken, et al., 1999). However, other forecasters see a continued reliance on natural forest products for some time to come. Nonetheless, the steady increase in environmental concerns around natural forests should work to continue to expand plantation production and increase environmental regulation on production from natural forests. New recycling and building technologies could also serve to eventually slow down the growth of demand for new paper products. The Japanese are developing "recycle copiers" that can strip off toner allowing a sheet of paper to be used up to ten times. E-paper "a flexible and cordless computer screen that looks like a sheet of paper, uses no energy for storing images or for viewing, and can be electronically written and rewritten at least a million times". In building "New ways to assemble small pieces of lumber into larger sections have begun to make it profitable to substitute small trees, little-used species, and "waste wood" for premium and old-growth timber". New forms of plywood can reduce the need for timber by a third (Hawken, et al., 1999).

Certification is the principal means by which environmental concerns about logging are currently being met, and the number of certified forests is expanding rapidly worldwide. As of January, 2002 there are 109 million hectares of certified forests, almost four times that of 1999, encompassing some 2.8% of the world's forests. Only 8% of the total, however, is in Asia, Africa, and Latin America combined (Atyi, 2002). Although the Forest Stewardship Council does not currently classify its global list of certified operations by land tenure type, an examination of the list suggests that no other country approaches the number of certified communities that Mexico exhibits (FSC 2002). The percentage of Mexico's community forests that are well-managed may still be relatively small, but as one indicator of positive management practices 502,656 hectares in 25 communities have been certified under Forest Stewardship Council (FSC) criteria by March, 2002 (Forest Stewardship Council, 2002); (Ward, 2001).

With the size of its CFE sector, it is not surprising that Mexico has also become a world leader in certified community forests. However, it has been noted for some time that certification will could have uncertain benefits for community forests (Merino Pérez,

1997). As a former authority from San Juan Nuevo has noted "It's not true that certified production has more value. It's a tool for consciousness-raising. We, the forest technicians, can be conscious of what certification is, but these are just small groups. There aren't any direct benefits" (Adolfo Chávez, personal communication). Actual sales of certified timber have been few. Quintana Roo ejidos, which have been certified since the mid-1990s, have only made a few and sporadic exports of certified timber, although these also may be the only sales of certified sawnwood in Mexico. San Juan Nuevo has been experimenting with a line of certified rustic Mexican furniture, and has exported one shipment to Northern Ireland. The exports of certified charcoal to Europe from a Durango organization has already been noted. However, the lack of sales has left some communities who were originally certified uninterested in getting recertified and otherwise understandably confused about what it is how it works. For example, the Oaxaca community of La Trinidad didn't understand why they had to pay for something that is supposedly a prize, nor did they like the clause in the contract that said any dispute would be adjudicated in New York, deciding as a result not to authorize any more visits by foreigners (Alatorre Frenk, 2000). La Trinidad is correct to be concerned about the cost of certification. A recent ITTO report has confirmed the worst fears of communities "In general certification costs tend to be much heavier for primary producers than processors. On the contrary, the benefits of certification, which relate mainly to market access, tend to be realized by actors down in the supply chain. Therefore, at present, the main winners from forest certification appear to be far from the forest, particularly in the case of tropical forests" (Atyi, 2002).

Despite this dilemma for producers, it appears that the entire forest products industry is beginning to move towards certified products. There is now a growing realization that certification will seldom bring the price premium that was promised at the beginning. Instead, certification is becoming a requirement for remaining competitive in the marketplace, and even high volume, low cost producers can market their products as being certified. However, there may be a price premium in certified tropical timber, at least for a time. As the ITTO report notes "While certification is becoming a baseline requirement for suppliers of temperate and boreal timbers in some markets and market segments, buyers cannot be expected to pay any extra for certification, even though certification adds value to the product in the sense that it provides information on the environmental quality of the product. Slow progress of certification in the natural tropical forests means that shortage of supply will remain for some years to come enabling advanced exporters to benefit from a price premium, which varies by product, market and end-use segment. With increasing supply the premium is likely to disappear as the case of other types of timber" (Atyi, 2002).

All of this creates a dilemma for certified community forests. They cannot compete on price or volume or, it seems, on certification. This strongly suggests the need for a new market niche, a new form of certification, one that recognizes timber products that are *produced by communities who are sustainably managing their forests, and who are also producing stable rural communities and economic equity along with timber*. This is a market nichewhich Mexico could dominate. As has been noted, "As consumers have become more affluent and educated, their desire for differentiated

products has grown, leading to greater market segmentation, smaller production runs, and the consequent need for craftlike flexibility in manufacturing" (Fukuyama, 1995). Certified forest products from Mexican rural communities could be a new market segment. But a new form of certification alone will not be sufficient unless the market segments for this new certified product are built as the certification seal is being developed. One strategy would be to use foundation funding to "partner" small high value niche producers of finished wood products in Mexico and the U.S. with larger CFEs or second-level organizations, to systematically work with them to understand what is impeding them from becoming suppliers to the industry, and to study ways mutually to build niche markets for certified, community-produced timber. This would not commit either one to necessarily signing a contract at the end of the process. Discussions would also have to take place about sharing the costs of certification along the marketing chain. In the specific case of tropical timber, it has been argued that "It is hard, therefore, to see any route open for the tropical timber trade after another few years other than to disengage from its largely commodity timber strategy before it is driven out of it and to develop itself as an exporter of high value, high quality, decorative timbers from sustainably managed natural tropical forests" (Leslie, 1999). Mexican tropical forest production is already well down this road, with more work particularly needed on developing high value markets for the lesser-known tropical species.

I. The Challenge of Migration

From the earliest efforts at promoting CFEs they were seen as an alternative to migration, as a means of developing jobs in communities that would compete the opportunities offered by migration to Mexican cities and to the United States. For example, in the community strike against FAPATUX in the Sierra Juárez from 1967-1973, it was reported that the strike and consequent cessation of logging activity caused a burst of out-migration, with some communities losing up to half of their population. One of the factors in ending the strike was to stop emigration [Instituto Maya, 1980 #544]. Migration has both costs and benefits, it drains human capital from communities, but sometimes more experienced and worldly people return, and they also send remittances that improves the economic standing of those who remain behind. Migrant communities, both in Mexico and the US, also frequently organize themselves at least partially to help their home communities, and it creates new broader senses of indigenous identity, beyond the local community. As Luis Hernandez has noted, the organizations of migrants have become a "schooling in identity". The migration phenomenon is particularly well documented in Oaxaca. Oaxaca is known as one of the major sending states in Mexico, in the Mixteca region it is said that it would be easier to hold community assemblies in Oregon, and forest communities are no exception to this. The population of Pueblos Mancomunados dropped from 4,216 in 1980 to 3,274 in 1995. In the community of La Trinidad, almost half of the registered community members live outside the community (52 in the US, 40 in Mexico City, and 63 in Oaxaca City) (Alatorre Frenk, 2000). Thirty percent of community members in Nuevo Zoquiapam live in the United States (Merino Pérez, 2000). Although better economic opportunities are obviously an overriding reason for migration, as was noted earlier, the weight of obligations of the cargo system

is also a factor. "The emigrants say: If you are in the communities, the cargos fuck you".[8] The effect is cumulative, because those that stay have to occupy more cargos (Alatorre Frenk, 2000).

Studies of Mexican migration in general have shown that the wage gap, which was reported at 8-1 in 1997, is a strong initial driver of migration, but that once networks are established between a sending community in Mexico and a receiving community in the U.S., the existence of the networks themselves become a powerful driving factor "Eventually, the causal force of the network overwhelms the initial determinants of migration, progressively separating migration from its initial determinants" (de Janvry, 1997:4). The relationship between migration and CFEs obviously passes through household incomes and the contribution of CFEs to household income. As de Janvry et. al have noted, a household's income level is "determined by its control over income generating assets, particularly agricultural assets (quality adjusted land area), human capital assets (combining number of working age adults and levels of education achieved), migration assets (the number of permanent migrants from the household and the extended family to whom a migrant has access), institutional and organizational assets (access to restricted sources of credit and existence of producers organizations in the region), and social assets (ethnicity)" (de Janvry, 1997:12). This lists of assets does not specifically mention generation of income from CFEs, but on the basis of a 1994 national study, it does note that *higher levels of general community development are not significant in inhibiting migration*, and that migration in general plays a major role for middle-income groups than for the poor or rich. Thus, CFE communities with a long existing migration history will continue to be sources of migration no matter how much employment may be generated by the CFE.

The Antinori study found that the finished products group reported far more often than any other group that emigration was a problem in recruiting labor, obviously because they have many more jobs to fill, although the stumpage group had the next highest emigration problem in filling jobs, notable because they usually have so few to fill. The survey showed that finished product communities are more economically dynamic in may ways, showing the highest average percentages of persons receiving income from forestry, employment in Oaxaca, and employment outside of Oaxaca state and in the US. This finding confirms the de Janvry study mentioned above. Successful CFE communities are also likely to have *more* not less migration. At the same, significant number of full-time jobs are generated by some CFE communities, 21% of community members in roundwood communities and 34% of those in finished product communities realize all their cash income from the CFE (Antinori, 2000).

Clearly, CFEs will never solve all of the employment problems of Mexican forest communities, and will not necessarily reduce migration, and they should not be promoted as doing so. Just as clearly, there is a tendency for higher levels of integration to generate more employment, *giving a higher percentage of community members the option of staying and working in the CFE if they so choose*. As CFEs began to diversify more strongly into other forest-related business, this percentage should began to increase in

[8] "Dicen los emigrados: Si estas en la comunidad te chingan los cargos"

modest numbers, and new opportunities are also created for women, who are also increasingly likely to migrate. One of the interviews for this study was with a young woman with a high school education who works in office of Pueblos Mancomunados water bottling plant, who stated clearly that if it were not for this job in the community enterprise she would have likely migrated to the US, even though she would have preferred to remain in Oaxaca. The community job allowed her to do so. Another observation was made in San Juan Nuevo of a young community member who had worked in the United States for awhile, but was now back living in the community, working in the furniture workshop.

Two final notes on migration: 1) On a topic that will be explored more later, the migration phenomenon has also created a segment of people within communities who are exposed to urban attitudes towards conservation that see logging as inherently destructive to forests. This brings strong conservationist tendencies within the communities who argue against the continued operation of the CFE. 2) Migration is also serving to expand forest edges into former agricultural areas in both CFM communities and other rural communities in Mexico. As agriculture is abandoned secondary succession takes over and forest recovery begins (Merino Pérez, 2000). A community member in the Sierra Juárez has noted, "where our grandparents had their milpas thirty or forty years ago, is becoming reforested" (Alatorre Frenk, 2000). For the community of Nuevo Zoquiapam in Oaxaca it has been noted that "…the economic importance of agriculture to the families of Nuevo Zoquiapam has been diminishing as the participation of migrant remittances in family incomes has increased. The decline in agriculture has not only permitted the reestablishment of low forest areas….but has also permitted the recovery of closed forest" (Patiño Pascumal, 1994).

J. CFEs as communitarian capitalism: Mexico's unique contribution to the global economy

The economist Lester Thurow (Thurow, 1993) has suggested, following George C. Lodge, that there are two major variants of world capitalism, an individualist Anglo-Saxon, British-American form of capitalism and a communitarian form of capitalism represented by Japan and Germany. "In the Anglo-Saxon variant of capitalism, the individual is supposed to have a personal economic strategy for success, and the business firm is supposed to have an economic strategy that is a reflection of the wishes of its individual shareholders. For the profit-maximizing firm, customer and employee relations are merely a means to the end of higher profits for the shareholders. Wages are to be beaten down where possible, and when not needed, employees are to be laid off" (Thurow, 1993). "In communitarian capitalism individual and firm strategies also exist but are built on quite different foundations. The individual does not play as an individual. One joins a team and is then successful as part of that company team…the communitarian business firm has a very different set of stakeholders who must be consulted when its strategies are being set. In Japanese business firms employees are seen as the number one stakeholder, customers number two, and the shareholders a distant number three" (Thurow, 1993).

In the case of Mexican CFEs, we have another variant of communitarian capitalism not contemplated by Thurow, the "community as entrepreneurial firm" in Antinori's phrase. In the CFEs, the community is the *owner and shareholder*. One does not join a team, one is a member of the team by birth. The community team is both owner and employee in sense far beyond employee ownership plans in Western capitalism and or even cooperatives. Cooperatives are normally marketing cooperatives based on private property ownership. CFEs are firms operating in the marketplace, but as community-owned and staffed firms operating on the basis of a common property asset. Mexican local communities, both indigenous and non-indigenous, offer a unique form of communitarian capitalism that should be celebrated and promoted by the Mexican government as a uniquely Mexican form of capitalism which is proving to be highly competitive in the marketplace. Mexico's *entrepreneurial forest communities* are a third way between private and state ownership for Mexican capitalism. Further, the efforts of the Mexican government to roll back communal land ownership in rural Mexico has almost totally failed. Communal landownership is now such a deeply ingrained part of rural culture that very few ejidos, usually those in suburban areas, have opted to dissolve the common property association.

VI. From Logging to Ecosystem Management

In this section, we will look at what is known about the ecological impacts of logging in CFM, and how CFM is moving from an early focus on timber production to, at least in some cases, a broader focus on forest ecosystem management.

A. The Evolution of Silviculture in Temperate and Tropical Forests

Logging in Mexico's temperate zone forests was conducted for decades under the Mexican Method of Management of Irregular Forests (*Método Mexicano de Ordenación de Bosques Irregulares-MMOBI),* a conservative system of selective logging that removed about 35% of the pines in each pass through the forest. It has been noted that MMOBI is based on two false assumptions: that the forests were all-aged and that pines would regenerate in the understory. In fact, pines typically become established in open, sunny conditions and commonly regenerate in even-aged stands after fire or agricultural clearing. Fire is an integral part of the pine-oak forest ecosystem in the Sierra de Juárez in Oaxaca, for example, as it is in most pine-dominated systems. Fires occur somewhere in the forest approximately every decade, and occasionally spread out over thousands of hectares, as did a large fire in San Pablo Macuiltianguis in 1983. Although oaks can survive fires and resprout, forest fires encourage the regeneration of pines which have small, winged seeds that need the sun and bare soil to establish themselves. Slash and burn agriculture, practiced in the Sierra de Juárez for centuries also created highly favorable conditions for pine regeneration. Twenty years after abandonment, an old field in Oaxaca was occupied by 87% pines and 13% oaks by basal area (Snook, 1986). MMOBI did maintain forest cover and high structural and biological diversity, but

encouraged high-grading (removal of the tallest, best specimens) and impeded regeneration of pine by leaving small openings where shade-tolerant oak could out-compete the pine. Thus, the system tended to convert pine forests to oak-dominant forests, while natural and traditional anthropogenic processes maintained pine forests. Thus, it has been argued that the MMOBI "has reduced the productive potential of these forests for decades into the future" and "taught Mexican foresters to follow a recipe rather than evaluating how forests grow and regenerated and developing site-specific silvicultural solutions" (Snook, 1994).

An alternative to the MMOBI, the Silvicultural Development Method (MDS) was introduced in Chihuahua and Durango in the early 1970s (Luján Alvarez, 1997). After being introduced in the north, MDS was then taken up by the DGDF in the 1970s as part of the package of reforms in the forestry sector. It is based on an even-aged seed-tree system of management that includes thinnings, seed-tree regeneration cuts, and a liberation cut. It attempts to mimic the effects of a fire to encourage the regeneration of pines, and in this sense is a step towards ecosystem management principles of mimicking natural processes. In northern Mexico, however, its use has been considered abusive at times. In Durango, there is one report, that needs to be verified, that the greater volumes that can be harvested in the short run under MDS led to a 250% increase in logging volume from 1978-1988, but then dropped to only 10% of that volume in the following ten year period (Guerra Lizarraga, 1991). MDS had been applied in as much as 25% of Chihuahua's forests by 1977, with the criticism that as a result of leaving even-aged stands it can affect the structure and diversity of the natural forest and wildlife habitat. MDS in Chihuahua also promoted the four most desirable commercial species and has almost eliminated the Chihuahua spruce (*Picea chihuahuana*) (Gingrich, 1993). MDS was introduced in Puebla in the late 1970s and in northern Veracruz in the Huayacocotla region in the early 1980s (Carrillo Dewar, 1987).

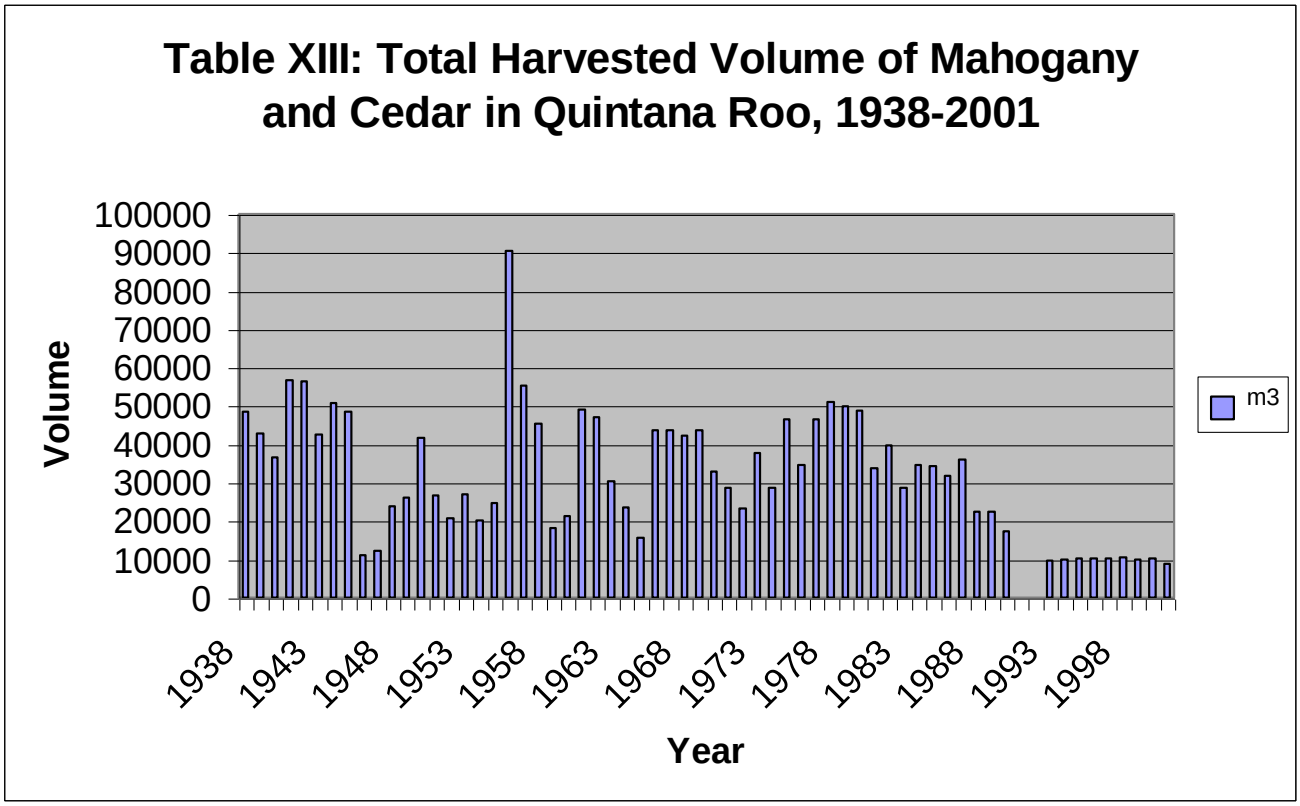
There are several accounts in the literature of CFE communities resisting the introduction of MDS by foresters because it leaves much larger openings in the forest than MMOBI, and to the casual observer appears to be more damaging to the forest than MMOBI. However, in most cases, the vigorous regeneration of pine seedlings that quickly emerges has won over the skeptics. Although many communities in the Sierra Juárez were highly critical of the logging practices (MMOBI) of FAPATUX, they continued exactly the same silvicultural practices for many years, and were not convinced to begin to change to MDS until the early 1990s, a decade after the ending of the FAPATUX concession.

A slightly modified version of MDS known as SICODESI was introduced into Mexico by the *Convenio de Cooperacion en Materia Forestal Mexico-Finlandia*, with San Pedro el Alto in Oaxaca being the first community to initiate SICODESI in 1989, followed by Pueblos Mancomunados in 1993. SICODESI is another incremental step towards managing the forest, as an UCEFO newsletter put it, to take into account 'the whole forest'" (UCEFO, 1989), and thus contributes to more ecosystemic management. In some communities, both MMOBI and SICODESI are applied, with the lower-

disturbance MMOM used on the steeper hillsides where there are concerns that the larger clearings left by SICODESI may induce erosion.

In the tropical forests of Quintana Roo, with their high tree biodiversity and greater silvicultural challenges, management plans under the parastatal concessionaire Maderas Industrializadas de Quintana Roo (MIQROO) (1954-1983) focused management practices entirely on mahogany (*swietenia macrophylla*) and cedar (*cedrela odorata*). The MIQROO management plan, the first such management plan in tropical America, included elements that were incorporated into the Plan Piloto Forestal (PPF) management plan such as the estimates of the annual increment of mahogany, a 75-year turn with a 25-year cutting cycle and a diameter limit of 55 cm for mahogany and 33 cm for lesser-known tropical species (Merino Pérez, 1997). The PPF also established the first community forestry estates in tropical America with "Permanent Forest Areas" (PFA), the first time local communities had declared an end to land-use change on their own lands. However the establishment of the PFAs, also created a kind of internal agricultural frontier and interrupted a "milpa-achaual-monte" (agricultural field-secondary succession-forest) continuum, (Merino Pérez, 2000). This is a reference to the fact that slash and burn agriculture in these tropical forests, as in the pine-oak forests, opened up ideal-sized openings for mahogany. Mahogany, like pine, flourishes in large openings and languishes in too much shade. Thus, ironically, the creation of the PFAs, a forest management decision that maintained forest cover in the face of advancing deforestation, also created the conditions that inhibited a good regeneration of the most commercial species. This is a contradiction with which forest management in Quintana Roo is still struggling. Other silvicultural problems in Quintana Roo include unclear production objectives, lack of well founded data on species growth, a management plan that assumes homogenous distribution of mahogany, and a lack of silvicultural treatments that encourage regeneration (Merino Pérez, 1997).

In many Mexican forest communities in both temperate and tropical areas there are reported declines in harvests, especially of large volume trees. The majority of the mature CFEs today began logging in forests that had already been logged, frequently for many decades by outside loggers, who usually harvested at much higher volumes than the communities. In Durango, which has a nearly 100-year history of commercial logging, there are reported declines in large volume timber, resulting in "unpopular reductions in authorized harvests" (Taylor, 2000). In Oaxaca FAPATUX, under various private and government ownerships, began logging in 1958 extracting 250 M^3/ha, a volume that had declined to 140 M^3/ha by 1978. In the 1980s, in the CFE period, the harvest volume declined to 91 M^3/ha, both because of community concerns about sustainability and because of the diminished state of the forest (ERA/UZACHI, 1994).



In Quintana Roo, the advent of the PPF brought about a dramatic decline in the levels of logging that had been maintained by the parastatals and earlier. Table XIII above shows the impact of the PPF on these logging volumes (with a few missing data years in the early 1990s). The table shows that extraction of mahogany and cedar from Quintana Roo forests was extremely high from the 1930s (and earlier). In the early years of the PPF, beginning in 1984, volumes remained relatively high, but as inventories were improved and the more careful community stewardship of the forests took hold, it became clear that volumes would have to be reduced further, and in the early 1990s, these reductions became the new standard.

But even at these dramatically reduced logging volumes, the community forests are beginning to show the strain. It appears that after over a decade of stability,that authorized volumes are beginning to decline, especially in the smaller communities. For example, Cafetal, with a commercial logging history going back to the early 1970s, ceased logging of mahogany in 2002 because it had extinguished commercial-sized trees. (Foresters says that the community may be able to begin logging again in ten years if the forest is cared for). In several other Quintana Roo communities logging volumes have had to be significantly reduced just in the last year or two. On the other hand, in some of the communities with richer stands of mahogany the prospects for the foreseeable future appear to be quite positive. There have been efforts in recent years to introduce compact enrichment plantings of high value species in logyards and other large openings in the forest, in effect creating mini-plantations within a natural forest matrix, but to date these efforts have not advanced very far.

B. From Silviculture to Forest Ecosystem Management

As was noted in the conceptual section, ecosystem management refers to managing forest ecosystems for a broad range of values, including both the biotic and abiotic components of the ecosystem. To what extents are CFEs and the communities that own them now managing their forests as ecosystems and not just for timber production?

1. The Evidence from Forest Management Plans. The Forest Management Plan (*Plan de Manejo*) is the basic document of forest management in Mexico, and the extent of concern about broader ecosystem values should be reflected in the management plans. The Antinori study evaluated management plans in the 42 Oaxaca communities, and found that they were generally the same except for some differences in whether or not inventories were done and in the extent of soil classification. Most management plans stated a fire exclusion policy. The plans do not systematically view the forest as an ecosystem, they are clearly timber production-oriented documents. But some ecosystem concerns are expressed, "Ecosystem protection provisions can be general and did not exist in all plans, except that the rules about prohibiting harvest in buffer areas, hydrologic zones and watershed areas was carefully specified" (Antinori, 2000). There was also a tendency for more integrated communities to have longer harvest rotation cycles (from 4 to 6.3 to 9) suggesting better stewardship from those communities that had a more valuable resource. In general, she found that plans in the more vertically integrated communities included more general ecosystem protection. She found that "the more vertically integrated communities have a longer and more consistent history of forest management" (Antinori, 2000). More of the vertically integrated communities currently used the SICODESI or MDS silvicultural practices, although a few "finished products" communities continued using MMOBI.

In evaluating commercial quality, Antinori's study used five levels, and found that the roundwood and finished products categories had the highest forest quality, suggesting that the longer histories of logging in the finished products category may be having a positive impact on commercial productivity. The finished products category also has more hectares on average ranked as high in biodiversity (using estimates from foresters), although this is probably also a reflection of the much larger forests they have. The stumpage group also had higher biodiversity than either the roundwood or lumber groups. However, soil erosion was greater in the stumpage and roundwood groups than in the sawmill communities. It is also of considerable interest that Antinori found that the five communities in her sample that had parceled their forests show "a higher average level of quality of the forest than the non-parceled forests for commercial, biodiversity and soil maintenance services", although contraband logging is also more common in these communities suggesting both a deterioration of rules in these communities and that the quality may not last (Antinori, 2000). But a significant finding is that to achieve an overall measure of good forest quality, forward integration is not necessary. She also found that the finished products communities have more land under reforestation and used for tourist purposes than the other categories, while the sawmill group has "the

largest average number of hectares under natural regeneration and below productive potential (Antinori, 2000). However, better forest management among more integrated communities is not universal. The pseudonymous community of San Martin Octolan in Oaxaca is a community that has had a sawmill for decades, but severe internal conflicts have led to logging practices that differ little from those under earlier private logging companies, and widespread clandestine logging is leading to significant forest degradation (Klooster, 1997).

The 1997 Forest Law, with regulations issued in December of 1998, put a stronger environmental regulatory framework around logging and makes strong use of ecosystem concepts, and pushes communities more towards ecosystem management principles. Among the purposes of the law, expressed in Chapter 1, Article 1, are to "Conserve, protect and restore forest resources and the biodiversity of their ecosystems" and to "Promote the multiple use of fo rest ecosystems, avoiding their fragmentation, providing for natural regeneration, and protecting the germplasm of species that constitute them". Management plans must include environmental impact statements, take "measures to conserve and protect the existing habitat of species and subspecies of wild and aquatic flora and fauna in danger of extinction, threatened, rare and those subject to special protection as indicated in the corresponding legal orders" (Chapter 2, Article 21), leave protective fringes of 20 meters around permanent water bodies, and reforest with native species, among other similar measures (Secretaría de Medio Ambiente, 1998).

Thus, the 1997 law and new regulations which have been issued under the administration of President Vicente Fox, demand ever great attention to the environmental impact of forest extraction activities. But there is also a lot of anecdotal evidence that some communities have both preceded and gone beyond the requirements of the new laws and regulations. In El Rosario, Veracruz several species have been placed under strict protection or limited logging regimes, no new land is to be opened for agriculture and grazing prohibited, resulting in an increase in forest area between 1982-1993, before the 1997 law. In La Trinidad, Oaxaca, agricultural plots have also become permanent, people are careful with fire, and reforestation and enrichment are regular practices, and hunting is restricted.

2. Communal Conservationists and Ecosystem Management. Fifteen years ago it was common for rural activists to say that small farmers had no interest in environmental issues, that their only interest was producing food for their families. It is an open question whether that was true then. But if it ever was, it no longer seems to be the case now. Expressions about the need to preserve the forest, knowledge of the watershed services of forests, and even the subject of carbon sequestration, are now commonly found in rural Mexico. Whether from the media, training workshops by government agencies and NGOs, or their own observations of environmental deterioration, many members of forest communities today will spontaneously express concern about environmental issues. There may have been both a traditional form of rural conservationism and an emergent form, which is really a stream of urban conservationism introduced by widespread urban and international migration, as well as dependence on urban employment for communities near urban center. A primary

manifestation of these phenomenon in many forest communities is internal resistance to logging by the CFE.

In any given case today, it may be difficult to distinguish how much of expressed conservationism is traditional and how much is an emergent urban form. Many forest communities reflexively resist logging even when it is done by their own communities. There appears to be a sharp awareness of the ecological services of the forest, and a fear that logging will not be controlled and will result in complete deforestation. These fears have been expressed when well-meaning organizers have attempted to introduce community logging for the first time. The DGDF, when it attempted to work in the Cofre de Perote of Veracruz in the late 1970s, found that "This task wasn't easy, the ejidatarios were very aware still of the era of extensive logging carried out by "Don Raul" and many ejidos refused to enter the program for fear of finishing off the rest of their forests" (Gerez Fernández, 1993). The PROCYMAF Program in Oaxaca has found similar attitudes in the early 21st century in the Mixteca region of Oaxaca. For example, the community of Coyal Grande in the Mixteca has a substantial forest mass in good condition but has resisted offers to help them carry out community logging. "They think that logging the forest is to finish off the forest" (Miguel Angel Soto, personal communication). In these cases, the best strategy may be to forget logging and start looking at the selling of ecosystem services, jumping a historical stage of development. In the case study community of Platanillo in Guerrero, community members expressed the sentiment that perhaps it would be better to stop logging entirely to preserve the forest as a watershed for agriculture. Struggles within Chihuahuan communities in recent years have frequently revolved around groups of ejidatarios who want to end logging in their communities, compounded in some cases by corruption around the logging process (Guerrero, et al., 2000). The ejido Pino Gordo in Chihuahua, an exclusively Raramuri ejido with 17,000 ha. as of the late 1990s, has resisted efforts to introduce concession logging into their community and has denounced illegal logging on lands disputed with a neighboring ejido (Gingrich, 1993, Guerrero, et al., 2000). Antinori (Antinori, 2000) has noted that less integrated communities, with less experience in forest management tend to resist vertical integration because of concerns that more logging will damage the forest

Thus, in many CFE communities today (particularly those where the volume of production may not be very large), there are different tendencies, sometimes leading to open conflicts, between community members who think that logging can be done while conserving the forest, and those who regard any form of logging as inherently damaging to the forest and seek to stop it. For example, in Oaxaca communities, alliances between urban migrants and the leaders of the struggle against FAPATUX have formed a coalition opposed to community logging (Alatorre Frenk, 2000). The community of Pueblos Mancomunados in Oaxaca is a particularly interesting case in intra-community struggles over logging and other, more conservation-oriented ways of earning income from the forest. Pueblos is a complicated case because it is composed of eight different communities with a single agrarian reform land grant. As a result, conflicts between the communities are frequent, although they have maintained a mostly successful CFE over the years despite the conflicts. Currently, one of the eight communities, Yavesía, is seeking autonomous control over the forests around its village, which also happen to be

some of the richest commercial forests in PM. Yavesía, supported by conservation groups, wants to declare this forest as a community protected area and dedicate it to ecotourism. As a model, the larger Pueblos community already has a successful ecotourism project. The remaining communities want to retain the forest as part of the community logging area. The issue has gone to the courts in Oaxaca, and the current situation is muddled. Nonetheless, it is highly symbolic of a transition that many CFEs will be making over the next decade or more, as they move out of logging and into selling of more benign ecosystem services. This is a point to which we shall return in the conclusions.

Finally, it is worth noting, with an eye towards the larger forest community landscape, that conservationist attitudes also occur in communities that are not logging. Merino has documented the case of the community of Pablo Cuin in Michoacan, a community with no organized exploitation, and with a small fragmented forest that is not under active management, but that nonetheless has not permitted any further land use change for the last ten years, keeping it as a "savings" (Merino Pérez, 1997). It also appears evident that community forest management has done much to preserve forest cover and reduce land use change in rural Mexico, although this has been little documented. A study associated with this report is now conducting satellite image analyses of land use change in a temperate and tropical forest area dominated by community forest management in an effort to begin to understand its contributions to the reduction of land use change. A related issue that it is commonly noted in rural Mexico is that "where communities are managing their forests, they don't have forest fires, or they control them quickly" (Miguel Angel Soto, personal communication).

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C. Non-Timber Forest Products

Management of forests for non-timber forest products (NTFPs) is a long-standing tradition in Mexican communities, and in the CFE communities it frequently complements timber production. There are a wide range of traditional subsistence uses of both timber and non-timber forest products and these will not be gone into in depth here. Tree resins, the resin of the *chicozapote* tree (*manilkara zapota*) in the Yucatan Peninsula and pine resin in the Sierra, particularly Michoacan, are among the most valuable NTFPs. The value of chicle, from the chicozapote tree, traditionally used as the base for chewing gum has been quite unstable in recent years due to marketing problems but its value has been as much as 2.8 million dollars a year. It has been estimated that medicinal plants marketed in Mexico City could reach one billion dollars a year. The camedora palm, used in floral arrangements in the U.S. and harvested from tropical forests, brings in around 20 million dollars a year. The World Bank has noted that "The annual economic value for formal and informal trade of about 296 medicinal plants and ornamentals approaches US1.5 billion, but even this figure grossly underestimates the total value of non-timber products, as species traded and consumed could approach 1,500. The trade value for this larger number could exceed US$7 billion annually ([Bank, 1995 #29]. A recent study of NTFPs in temperate zones supported by PROCYMAF found 1,300 species that have some use, although only about 10% can be considered important. It

notes efforts to raise bromeliads using tissue cultures in Chiapas and the use of palms in the Yucatan to make lobster traps as interesting new NTFP products (J. M. Torres Rojo, personal communication).

Most of these numbers reflect traditional NTFPS, but it is notable that a range of high value new NTFPs have been emerging in recent years, suggesting that some communities have been successful in finding new ecosystem products and services to sell into high value niche markets. Some of these products include parrots, bottled water, microbes, and mushrooms. Estimates from the 1980s suggest a legal annual trade of live birds from Mexico of 100,000 a year, with another 50,000 entering clandestinely, and the World Bank has noted that "The trade of wild flora and fauna could be a sustainable source of national and foreign income if property managed" (World Bank, 1995). The community of Tres Reyes in Quintana Roo is beginning to realize this potential. Beginning in 1996 with funds from the MacArthur Foundation, the OEPFZM began to support Tres Reyes in breeding native bird species and establishing an orchid plantation under natural forest cover. This initial project had little success because of lack of technical assistance and other support, but a few years later a biologist began working with the community on the same idea, building on the previous experience. Today, many of the community members of Tres Reyes are conducting carefully monitored wild harvests of parrot chicks, which they then raise and sell under a permit from SEMARNAT. One community member interviewed had sold eight parrot chicks the year before for the equivalent of US$150 each, for light work in his own backyard (once the initial parrot harvesting had been carried out). Many other members of the community are now doing this as well, selling to intermediaries who export the parrots to US markets. As part of this process, the community also monitors the wild populations of the marketed species to assure that their harvest is sustainable, and has constructed two observation towers for conducting counts of the populations. As one observer noted "They used to go out in the morning to tend to their milpa, now they go out to conduct bird counts". As a result of this new source of income, which substantially exceeds the income this community had realized from logging, they have not used their logging permit for the last two years. While some young people in the community would like to continue logging, and at least one is doing some small-scale logging on his own, most prefer to work in their own backyards for better money than doing the hard, heavy, and dangerous work of logging. Like Yavesía in Oaxaca, Tres Reyes appears to be in a transition out of logging and into selling more benign forms of production from their forest ecosystem.

In Oaxaca, 5-6 new community water bottling plants have emerged in the last several years, most of them promoted as an alternative or complement to timber production by PROCYMAF (PROCYMAF 2001). There appears to be a large unsatisfied demand for bottled water in Oaxaca, and most of the new plants are successful. Of particular importance is the fact that the water bottling plants employ principally woman, given them opportunities in a forest-related industry. The first water bottling plant was established by Pueblos Mancomuandos in 1997, apparently as a homegrown initiative. The plant is generating employment for 45 people including 21 women. The water bottling enterprise is also paying for the university education of four

female office employees, thus making an important contribution to the formation of human capital. In Nuevo Zoquiapam, the new water bottling plant is employing six woman and three men who graduated from the secondary school in the town, and who have received special training.

In the mid 1990s markets emerged for very high value matsutake mushrooms for export to Japan, with more integrated communities taking greater advantage of the opportunity. The percentage of communities that exported fungi were 7, 8, 38, and 57% according to each group of increasing level of integration (Antinori, 2000). The UZACHI communities had a relationship with Sandoz pharmaceutical company for bioprospecting of micro-organisms which brought new income into the community for several years. But when this relationship terminated two years ago the laboratory which had been dedicated to preparing samples turned to producing mushroom spores, and is now the largest producers of mushroom spores in Oaxaca. This may represent one of the first cases of a community enterprise making a successful transition from one cutting edge market to another, precisely the kind of productive flexibility that is required in the dynamic, constantly changing markets of today. All of these represent new products for new markets that did not exist five to ten years, so represent a new dynamism in the community enterprise sector, and an important diversification from timber production.

Antinori found a relationship between higher levels of vertical integration and a diversification of investments in non-timber products and services, and suggests that "The positive impact of vertical integration on recent non-timber investment and production bodes well for adopting ecosystem management approaches in self-governing systems…as programs diffuse information and finance projects concerning forest projects, we may begin to see greater use of the complementarities between timber and non-timber production by community forestry enterprises and innovative approaches to industrial community organization" (Antinori, 2000).

D. Valuation Through Sales of Ecosystem Products and Services: Carbon Sequestration, Watershed Services, Ecotourism

Ecotourism. Ecotourism is one of the most commonly mentioned new alternatives for forest use in rural Mexico, and probably one of the least realized. However, there are now several emerging examples of successful community-based ecotourism enterprises. Not surprising, most of them occur in the more successfully vertically integrated enterprises, since their experience in CFEs serves them well in diversifying into other enterprises. Pueblos Mancomunados has established cabanas and hiking trails through its forests, and attracted around 250 tourists in 2001. In July 2002, it won a first prize for ecotourism from Conde Nast Traveler magazine, that included a write-up in the magazine, which should help to boost customers. San Juan Nuevo has a large house next to a successful white-tailed deer breeding project where they receive groups, and they are currently booked up for months. In another indication of how timber production is giving way to these new activities, Ejido La Ciudad in Durango moved its sawmill from the an area called Mexiquillo to the town in order to establish an ecotourism operation in the

area. For some years, the community of Tres Garantias in Quintana Roo has operated a camping, wildlife observation, and sport hunting enterprise which attracts modest numbers of tourists and hunters. The community of X-Maben, also in Quintana Roo, has had an interesting first experience in ecotourism. They negotiated with their timber buyer to use his heavy equipment to open up a road to a beautiful tropical lagoon in an isolated area of their ejido, and established a beach area, with a small dock and canoes. While they have yet to attract any foreign tourists, they unexpectedly tapped into a market for local recreation. They are now receiving over 100 visitors a day on weekends, but all local people who had nowhere to go in the area for outdoor recreation. It has also opened up new recreational opportunities for young people in the community, who can now be seen snorkeling and canoeing. In Chihuahua, there are reportedly still very few community forest ecotourism projects and a report that at least one may have fallen subject to the same kind of covert privatization that has beset logging (Guerrero, et al., 2000).

E. Carbon Sequestration

Markets for Greenhouse Gas (GHG) emissions trading are emerging. For example, more than 40 companies are creating the Chicago Climate Exchange (CCX), a voluntary national market for all greenhouse gases. Eight major companies have signed an agreement with the Environmental Defense Fund to report, track, and place caps on their emissions, with the goal of establishing a trading system among themselves. But these program primarily focus on the trading of emissions permits (Murphy 2002). The so-called offset market is more difficult, where companies can get credit for emissions reduction at home by investing in projects that reduce or absorb emissions abroad. In these markets, there are more difficult issues of verification and what is called "leakage". For example, a project that reforests land currently used for agriculture could just displace the agriculture into a currently forested area, giving no net gain in carbon sequestration.

As the evidence for anthropogenic global warming continues to accumulate, there has been much attention given to the role of tropical forest loss in contributing to GHG emissions, particularly carbon dioxide. Lowering the rates of deforestation would reduce emissions from this source and efforts to recover forested areas would capture or sequester more carbon out of the atmosphere. The technical options for sequestering carbon by forestry activities include the conservation and management of existing intact forests, the restoration of degraded or secondary forests through enrichment activities, and the establishment of plantations, agroforestry systems, and new forests in not currently forested areas. However, there is a substantial debate over whether or not forests in general as carbon sinks should be included in international carbon trading arrangements. Many environmental organizations have opposed the inclusion of tropical forests as offsets because they are concerned that it will allow companies to avoid reducing industrial pollutants. They are also concerned that the carbon sink function may be more efficiently met by a monocrop plantation than the maintenance or enrichment of tropical forests or agroforestry schemes. The ongoing debate has impeded, and is likely

to continue to impede, the large-scale implementation of carbon sequestration schemes in rural Mexico. Nonetheless, a few companies or trade associations can likely be induced to participate in carbon sequestration schemes either because it can be used to generate positive publicity or as a hedge against future greater regulation of carbon emissions that could include forest offsets.

The potential economic value from the carbon absorption capacities of Mexican forests and reforestation/agroforestry activities is immense. There has been one estimate that the total annual value of Mexico's forests is around 4 billion dollars, the majority of this amount in the value of its carbon sequestration (Adger, et al., 1995). But it is a long hard road from a figure like that to actually generating any income for Mexico's rural communities, and there are many difficult financial, technical, social, and organizational issues involved. UZACHI, with the support of ERA and CCMSS, put together a technical proposal that was accepted and placed on a register of potential projects by the US Initiative for Joint Implementation. A US broker was also found who took on the project to look for clients for the project but, to date, no client has stepped forward, so the project has languished. Apparently the only functioning carbon sequestration project in Mexico is the *Scolel Té*[9] project in Chiapas (de Jong, 2000);(Nelson, ms). This project, implemented by the University of Edinburgh, the Colegio de la Frontera Sur (ECOSUR) in Chiapas, and the *Union de Crédito Pajal Ya Kac-tic*, established in 1997 a contract with the Federation Internationale De L'Automobile (FIA), a European racing car association. Under the contract, the FIA deposits annually $55,000, in exchange for 5,500 tons of carbon sequestered in agroforestry projects, in a locally managed trust fund that gives grants, under varying conditions and for varying purposes, to farmers who have enrolled in the program.

The project is focusing on promoting five different agroforestry systems-taungya, upland enriched fallow, shaded coffee, fenced natural regeneration, and enriched fallow, with each system estimated to capture from 56 tons/ha to 137 tons/ha over twenty years. As of 2000, there are 145 contracts with individual farmers for one ha each and one contract with a community for 28 ha of communal land. The project has had a long and rocky road, but it also appears to be achieving a measure of success, and the experience, which is well documented, now stands as a model for others to follow. As one study of the process has concluded "CO^2 mitigation projects have their own unique social characteristics to consider such as the establishment of long-term socio-economic contracts, independent financial administration, and the blending of CO^2 criteria into local knowledge and agroforestry projects. Similar to agroforestry projects, any CO^2 mitigation project must be able to understand local norms and knowledge related to trees, establish specialized training, develop cultural specific work plans, and be able to respond to uncertainty. As a community development project, CO^2 mitigation projects will confront major sociopolitical issues as they establish just distribution of project costs and benefits, build organizational relationships, permit empowering participation, address the history of paternalistic development, and in some cases, struggle with intense regional conflicts" (Nelson, ms). Despite this relatively successful experience, it seems clear that to put together a project like this requires a coalition of institutions and an academic or

[9] *Scolel Té* means "the growing tree" in Tzeltal, Tojolobal, Cho'l and Tzotzil

NGO entrepreneur ready to dedicate nearly full time to making it happen. Nonetheless, the variety of emerging markets for GHG offsets suggests that persistence in promoting these projects will pay off, and that over the next decade carbon projects could become a significant new market for CFEs.

Watershed services. There are a growing number of proposals and organizing efforts about the creation of markets for the services of forested watersheds, particularly in supplying water for municipal areas. Apparently none of these have borne fruit yet, but there is considerable activity in this area so it is likely that over the next decade some concrete projects will begin to take shape. A few communities who own the forests above the city of Oaxaca currently do receive extremely small amounts from the city for watershed protection. But in the last year, more of these communities have begun to organize themselves to lobby to increase the number of communities receiving payments and the amount of the payments to better reflect the value of the water to the city. Unrelated to this effort, a group of NGOs and grassroots organizations in the state of Oaxaca have organized a new civil society called "Environmental Services of Oaxaca" to more systematically market ecosystem services provided by Oaxacan communities in preservation of genetic diversity, carbon sequestration, preservation of biodiversity, and watershed services. In northern Mexico, there are is increasing concern has been expressed about the impact of logging in the Sierra Madre of Sinaloa, Sonora, and Chihuahua, rivers of which irrigate over a million ha in Mexico and which contribute one-third of the flow to the lower Rio Grande (Gingrich, 1993).

VII. Conclusions: Current Trends, Lessons Learned and the Future of Mexican CFEs

A. Current Trends

There are still many and profound problems in the CFE sector. Many smaller CFEs continue to struggle with problems of isolation, corruption, lack of capital and technical assistance, and illegal exploitation by outsiders. However, some are also beginning to have more tools to combat some of the worst abuses. In 1996 13 ejidatarios of ejido San Alonso in Chihuahua, with the support of a Chihuahua forest and human rights NGO, filed suit against the International Paper Company for cutting unmarked pine outside of the logging area and for logging a listed species. The suit was found in the favor of the ejidatarios, which led to the suspension of the logging permit, the suspension for one year of the license of the forestry engineer, and a fine of 205,000 pesos on the ejido, although later protests and negotiations on the part of other members of the ejido apparently diluted somewhat the impact. Other ejidos have led protests against clandestine logging on their lands, but with little response from government authorities. PROFEPA, an environmental attorney general, has investigated 411 claims of forest violations from 1996-2000 in Chihuahua, but there are no comparative numbers from other states to judge whether this is high or not. Exploitative forms of neo-rentismo

continue to be widespread in states like Chihuahua and Guerrero with frequent corruption of ejido authorities (Guerrero, et al., 2000). The community of San Juan Tierra Negra in southern Oaxaca is another documented example of the kind of abusive exploitation of forest resources which continues in Mexico, particularly in unorganized communities (Merino Pérez, 1997).

At the same time, however, after an initial year of considerable confusion around the polices of the Vicente Fox administration around forests, a clearer and highly promising policy picture has begun to emerge. The new Director of the National Forestry Commission (CONAFOR) is a former Governor of Jalisco and said to be an intimate of President Fox. As such, he may be the highest-ranking political figure to occupy a top forestry policy position since Cuauhtémoc Cárdenas in the late 1970s. The significance of this is apparently showing up in the budgets for forestry programs. PRODEFOR and PRODEPLAN have been significantly expanded in resources and broadened in its scope. According to an official government statement, the resources for PRODEFOR are larger than those both programs had in the total of the previous four years. The resources for PRODEFOR are 276 million pesos (about 27.6 million dollars) for 2002, with an additional 30% coming from the states. Investments will also be made on the same kind of sliding scale as had previously been in effect, with vertically integrated communities receiving lower percentages of support than more incipient communities. But in addition to the substantially expanded resources, the possible investment projects have been greatly expanded. Whereas PRODEFOR was mostly limited to financing management plans, projects can now be presented for a wide range of forest production and diversification activities. Now, training, silvicultural treatments, certification, technical studies for harvesting of NTFPs, ecosystem services projects, and ecotourism project can all qualify for funds, with amounts in the 50-100,000 range available for ecotourism and logging road projects.

At the same time PROCYMAF is being expanded to include ten states over the next several years. PROCYMAF, in association with PRODEFOR, is the first Mexican government program since the 1970s that has made a concerted effort to promote community forest management and the formation of CFEs in Mexico, with Oaxaca being the primary focus of its work thus far. In the 1988-2000 period, PROCYMAF in Oaxaca was able to incorporate 32 new communities into community logging activities, a notable achievement for such a short period (PROCYMAF, 2000). The existence of the PRODEFOR and PROCYMAF programs since 1997, and their current rather dramatic expansion, is the most decided public policy support for CFEs in Mexico since the late 1970s and early 1980s. This opportunity needs to be seized by forest advisors, communities and NGOs to use the new government and multilateral resources that assure CFM remains as a permanent part of forest policies in Mexico. Historical suspicions of government action need to be overcome to recognize this historic opportunity.

But as new and more favorable public policies are consolidated, the question of how many more new CFEs can be promoted in Mexico becomes urgent. Very little is known about the periods of formation of CFEs in Mexico, i.e. how many CFEs were formed in what years or historical periods. The survey information from Oaxaca

confirms the general impression that most existing CFEs were probably legally formed by the end of the 1980s. For 15 sawmill communities in Oaxaca the average founding date was 1984, the average for roundwood communities is 1988. Only the stumpage communities on average organized themselves legally more recently, with an average of 1994. We visited one sawmill CFE in the Mixteca of Oaxaca, San José Zaragoza, that was established in 1994. How many more new CFEs have been established in the 1990s? PROCYMAF staff suggests that nearly all communities with logging permits in Oaxaca now have their own logging team headed by a trained *jefe de monte*, which would mean that even the period of *neo-rentismo* has ended in Oaxaca, an important historical achievement which has been insufficiently recognized. In the many other forestry state, how many more new CFEs can be created? Was the promotion of forest communities themelves "high-graded" during the community forestry "boom" years of the 1970s and 1980s. Did government agencies and NGO identify and create most of the CFEs that will be able to be created. How many viable CFE's can still be organized? The experience of PROCYMAF in its first three years of operation in Oaxaca is illustrative. As mentioned above, it was able to start CFEs in 32 new communities for a collective forest estate of 75,593 ha, an average of 2,362 ha. This is relatively small forest estate, although there are example of successful CFEs mounted on even smaller forest estates, it still suggests that what remains of the *estrato promovible* is concentrated in the small communities, and that few, if any, large forest communities do not have CFEs. The new ones who are incorporating now are the ones with very marginal forests, and the marginal costs of incorporating new communities will be high.

PROCYMAF has identified the problems associated with trying to extend the CFE model into additional Mexican forest communities, including 1) Some communities lack leadership or have severe internal conflicts that prevent them from responding 2) In the Mixteca region of Oaxaca in particular, there has been widespread parcelization of the forest, a "covert privatization" of the forest (although, as we have seen, this is not an inherent barrier to mounting a CFE), 3) On the northern Pacific coast of Oaxaca, there are few technical service providers, with FTS being dominated by a private plywood factory in Puerto Escondido. PROCYMAF has also discovered that there is no inherent desire in communities to autonomously mange their own forest. In relatively remote (but heavily impacted by migration) areas like the Mixteca of Oaxaca, there are few examples of community-managed forests, and people show little interest in the concept. It takes considerable talking, visits, and training before communities begin to understand the idea. As was discussed earlier, some communities with good commercial forests may never pursue logging, and the strategy here should be to make the leap directly into more benign ecosystem service sales.

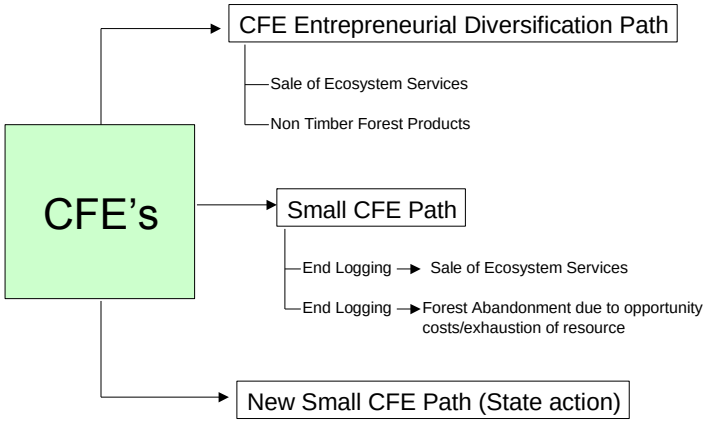
For the 2001-2003 period PROCYMAF is developing strategies that include a regional focus, a thematic focus (diversification), ecotourism, resin, water bottling, financing management plans, helping communities demand more of FTS providers, and strengthening community technical teams (Gerardo Segura, personal communication). As previously noted, they will also be expanding into a total of 10 states over the next several years. As mentioned earlier, the expansion of PRODEFOR and PROCYMAF

together constitute a major new policy focus on CFEs and represent a golden opportunity to truly consolidate and build a distinctively Mexican forest product sector.

B. Future Paths of Mexican CFEs

As a part of the development of a more diversified strategy for Mexican CFEs it may be helpful to imagine what the future paths may be of CFEs in different competitive positions at the present. The illustration below is intended to try and map out these paths. First, a substantial diversified, entrepreneurial sector is beginning to emerge, and there are probably more cases of this path than have been popularly recognized. These entrepreneurial CFEs are investing in modernized equipment, exploring new markets, investing in human capital, and diversifying their activities into the sale of ecosystem services of various kinds. The second path, the "Small CFE path" is probably where the bulk of Mexican CFEs are. These CFEs are generally not modernizing their equipment, have continuing problems with administration and organization of the CFE, and may have varying degrees of internal debate over the purpose and direction of the CFE. Nonetheless, these CFEs should be regarded as small community businesses that have found their niche in the marketplace, that are profitable in spite of it all, and can probably continue to survive without expanding for the foreseeable future. Few of these small CFEs ever seem to go out of business entirely, which is to be contrasted with the very high rate of failure of most small businesses in the private sector.

Future Paths for Mexican CFEs



These CFEs are under various internal and external pressures however, and some percentage will probably be undergoing transformations over the next decade. Some of these CFEs may abandon logging entirely and undertake two different paths, one would be the path of the sale of ecosystem services, whether though ecotourism, sales of watershed services, or carbon sequestration projects. Others may abandon logging entirely because the opportunity costs become too high, and most people who would work in the CFE migrate. Others may end logging because they have simply exhausted the commercial supplies of timber, due to decades of overexploitation both by outside interests and the CFE. Finally, the combined actions of PROCYMAF and PRODEFOR are engaged in the first major effort at state promotion of CFEs since the 1970s. This is likely to produce a new strata of small, fragile CFEs with small forest resources. This strata will require continued state support to survive and find their own niches in the marketplace and, as noted, some communities may elect to skip the logging state of community forest development entirely.

C. Twenty Five Lessons Learned from the CFE Experience in Mexico

In this section, we will propose 25 lessons that have been learned from over 25 years of concerted development of a CFE sector in Mexico. The number is arbitrary and it is hoped that readers can draw other lessons from the text. The lessons are divided into global lessons, which can apply to CFEs anywhere in the world, and national lessons, which may apply more specifically to Mexico, although it is hope that many of these national lessons may also have some value for emerging experiences elsewhere.

Global Lessons

1. *The devolution of public and private forestlands to local communities with common pool resource regimes and clear tenure status CAN create economic equity, social peace and justice, democratization of power, and improved forest ecosystem management*. Mexico is a unique historical case that may prove the hypothesis that delivering forests to local communities will bring a wide range of benefits. Mexico may be unique in the political process, a major agrarian revolution early in the 20th century, that eventually effected a massive transfer of forest assets to local communities, but less dramatic efforts are now underway globally.

2. *Mexican CFEs represent a unique global case, where hundreds of communities are managing common property forests for the commercial production of timber. As such, it is a model for many other developing country forest communities*. This model can be viewed as a form of co-management on privately held communal lands, in a common property form that is neither declining nor emergent, but is a decades-old persisting form of state rural administration. Mexico is a global model, and in this sense is the "face of the future" in community forest management. Emerging CFEs in

Clayquot Sound in Vancouver and elsewhere are beginning to face many of the same problems with which Mexican CFEs have grappled for decades. Mexico demonstrates that local communities can master complex industrial processes and produce for the market with the right support.

3. *The strength of CFEs in Mexico shows that assets can be accumulated at the community level, and not just at the household level, and that these assets increase individual welfare.* There is substantial evidence that community-level assets, where each family may be regarded as shareholder, have substantially increased due to CFEs. There is no direct evidence that CFEs serve to help in the accumulation of assets at the household level. In the best cases, increased flows of income may be invested in the consumption of education.

4. *Government actions, at times supplemented by NGO action, can create new social capital in rural areas and thereby increase the economic competitiveness of community enterprises*. Mexican government efforts to promote CFEs, with varying motives and at varying periods, as well as efforts to supported second and third-level organizations, were instrumental in creating new organizational and institutional forms of social capital which undergird the CFE sector.

5. *Visionary community leadership and demonstration effects can create social capital and relative social peace, even from a base of conflict-ridden, non-indigenous communities in the space of 10-20 years.* The case of El Balcón demonstrates that even situations of great conflict can be pacified, and civil society built, by the concerted action of constructing a CFE and a second-level organization. Social learning through producer exchanges is also key. Just as integrated civic groups are an important force in forestalling ethnic violence in India, they may be an important source in diminishing rural violence in forest communities in Mexico.

6. *Communities and CFEs should be aware that some of their great strengths in establishing CFEs, their traditional social capital, can also serve a barrier ("communal fetters") to further development of CFEs which could better serve the community.* Communities who are not willing to make some adaptations in their traditional structures and practices may continue to confront administrative problems with their CFEs, community conflict around them, and a reduced flow of financial resources.

7. *Mexican CFEs should not be regarded as a backward, noncapitalist economic sector to be dismantled, as is the neoliberal impulse, but promoted as a uniquely Mexican contribution to the global economy, a Mexican grassroots version of communitarian capitalism in Asia.* Mexican CFEs have demonstrated that they have uniquely local ways of organizing themselves on

the basis of a common property resource, and that these local traditions may be sources of strength in the national and international marketplace. This also stands as a global model for the local common property communities who are attempting to organize themselves for commercial production, demonstrating that they do not have to abandon traditional forms of organization, practices, and culture in order to be competitive in the marketplace.

National Lessons

8. *Two specific organizational innovations help to make the relationship between the community and CFEs more efficient 1) the establishment of a new supervisory "Community Forest Council" and 2) the institutionalization of a professional manager, with preference given to supporting community young people to receive the necessary training.* Several communities, inspired by the traditional Council of Elders in Oaxaca, have created new organizational supervisory organs that have proven to be more effective than the General Assembly at overseeing the CFE operations, and serve to separate CFE administration from community politics. Communities must also pay greater attention to creating a role for professional managers.

9. *Mexican CFEs, particularly finished products communities, make increased investments in improving forest management and diversification of their enterprises.* The most vertically integrated and diversified community enterprises are investing in better forest ecosystem management and are evolving towards corporate diversified structures that give them increased resilience in dealing with shifts in markets.

10. *The most dynamic, diversified, vertically integrated CFEs will also be in communities that show high migration rates.* In these cases, the CFE provides an option for those young people who would rather stay in their communities than migrate, and it will probably reduce the total number of those who do migrate. But migration will continue to be very dynamic from these communities. CFEs only increase the number of options for those who may want to stay.

11. *There are alternatives to the defections, due to higher costs than benefits, of high-volume communities from second-level organizations, which may create win-win situations for both community and second-level organization.* The relationship of El Balcón and the UEHG provides an alternative to defections. El Balcón began providing its own FTS, but remained as a dues-paying member of the UEHG, thus continuing to have the advantages of collective action, particularly in seeking resources from the government, while controlling its own FTS, and paying dues at lower rates than the FTS to the UEHG.

12. *Small ejidos can successfully manage their forests and successfully unite to undertake vertical integration steps that are not possible for any one community*. In the UECH in the Sierra Norte of Puebla, a 25-community organization, 18 of the communities organized themselves to establish a sawmill. This demonstrates that if communities can overcome mistrust, they can gain more value-added from their timber production. The fact that the average forest size in these communities is 213 ha also shows that even very small forests can be successfully managed for timber.

13. *Third-Level Organizations must be supported by government external donors, who may need to start examining more cost-effective ways to serve the needs of national collective action*. Third-level forestry organizations have competed for a membership that has shown little interest in directly supporting such organizations. Third-level organizations have had moments of great effectiveness, mostly in leading national lobbying efforts on national forest laws, and continue to be important as intermediaries for the channeling of government resources, but have been unable to summon an effective continuing presence at the national level. Foundations may want to consider not supporting third level organizations until a single unified third-level organization emerges, as exists in the industrial forestry sector.

14. *In accordance with common property theory, large heterogenous communities, particularly one characterized by geographic and ethnic divisions, are more likely to have severe conflicts in attempting to administer a common property resource*. Experiences in Chihuahua, Oaxaca and elsewhere suggest it will be extremely difficult to develop successful CFEs in these circumstances. Agrarian reform authorities may want to consider allowing the partition of communities with these characteristics that are continually wracked by conflicts, or undertaken more decided external interventions to help resolve conflicts.

15. *There is no one way to organize a successful community enterprise and its relation to the common pool resource*. The stocks and flows of a forest resource may be divided up in a multitude of ways, and even parcelization of the forest resource for some individual uses need not be a barrier to mounting a successful CFE on the same resource. Promotors of CFEs need to be flexible. There are multiple social pathways to CFE success.

16. *"Work Groups" represent an authentic grassroots solution to the persisting problem of CFE corruption, and should be accepted as a viable alternative model to unified CFEs.* While work groups present new challenges in the administration of FTS, forest management, and marketing, these problems are not insurmountable.

17. *Investments in human capital, both through short-term training and longer-term formal education of young community members is a key element in the*

success of CFEs. NGOs and government agencies have invested much time and energy in training for years, but new ways need to be found to institutionalize this process. Communities need to be given models of how to establish fellowship programs in areas needed by the community that ties the recipient to a period of community service. Prosperous communities can finance these themselves while government or foundation funds will be needed in poorer communities. Community-to-community exchanges, as carried out by PROCYMAF, should continue to be a key element in training programs.

18. *CFEs are highly profitable undertakings, and this is true at all levels of integration.* This finding should change the development approach to CFEs. They should no longer be viewed as welfare basket cases, but as viable community enterprises that have been successful at generating jobs and income, but who need more investments to do what they do even better.

19. *Mexican CFEs vertically integrate in order to seek control over local economic development, i.e. to generate jobs and better control over forest extraction.* Mexican forest communities should be encouraged to continue to seek local economic development through vertical integration, but also analyses that help them understand when vertical integration is indicated (size of resource) and when it may not be. There is a strong relationship between size of forest resource and vertical integration. Promotors should no longer stigmatize some communities as *rentistas* when classical *rentismo*, based on a stumpage fee, no longer exists. For many communities selling timber on the stump, with little direct participation, may be the optimal economic decision.

20. *Most CFEs have survived in the post-NAFTA period, and some have been able to become internationally competitive. Despite some notable failures in foreign investment, there are successful models of partnership between US timber companies and Mexican CFEs.* The case of El Balcón and probably some cases in Durango as well, show that Mexican CFEs can successfully compete in US markets and partner with US businesses.

21. *While a relatively small number of CFEs may be internationally competitive, most others seem to have local market niches where they will probably be able to survive for a time yet, but they will need government and foundation support to establish a new market niche for certified wood produced by communities.* Most CFEs may be thought of as small community businesses, like small businesses everywhere, who may not be very dynamic or expansive, but who continue to survive because they have found a local market niche. Mexican timber is generally of very high quality, and this is one competitive advantage that even small CFEs have.

22. *In tropical timber marketing, CFEs in Quintana Roo have had 15 years of success in maintaining a marketing cartel, and experience won in the*

domestic market should be capitalized upon. Export markets may not always be the best answer for Mexican timber products. Deepening relationships with the forest products industry in Mexico may be the optimal path.

23. *Mexican CFEs are beginning to move towards the management of their forests for values other than timber, towards what can be called ecosystem management*. While some of this is being driven by a heavier regulatory framework from the Mexican government, it is also being driven by community interest.

24. *Mexican forest communities with CFEs, particularly those that are not major income generators, are increasingly divided between pro and anti-logging groups within the community. Both traditional peasant conservationism, which identifies forests with water, and emergent forms associated with urban environmentalism, work to place pressure on some CFEs.* Some promoters of CFEs have seen these conservationist forces within communities as "the enemy" but communities should be allowed to work out these debates on their own. For some communities, it may be a natural social and economic evolution to abandon logging and move on to other forest management options.

25. *Mexican CFEs are increasingly diversifying into the sales of ecosystem services and products of various kinds.* Ecotourism and the sale of wild products such as parrots are finally emerging as viable economic complements and alternatives for some communities.

D. Final Thoughts

For many years it appeared as if Mexico's success in the development of timber-producing CFEs was a unique historical event, attributable to Mexico's agrarian reforms over the 20th century. But it is now becoming clear that land tenure reforms and government programs in other countries are gradually beginning to create the conditions that will allow timber CFEs to emerge elsewhere. A small number of community forest concessions in the Petén of Guatemala have been partially modeled on the Mexican experience (GRETZINGER, 1998). Community timber production is also emerging in Peru and Brazil, with an estimated 16 CFEs in the Brazilian Amazon (Loayza Villegas and Chota Valera, 1996); Samantha Stone, personal communication). In Bolivia, the number of indigenous timber management projects has expanded from 9-32 from 1999-2002 (Cronkleton, 2002). Several other timber producing CFEs have been identified worldwide (Salafsky, et al., 2001a); (Salafsky, et al., 2001b). This emergence makes Mexico far more significant as a global model, and makes it even more crucial to draw the appropriate lessons from its experience.

In the course of carrying out this study, we have frequently used the term "successful CFE" and frequently asked ourselves what we meant by that. We think Peter Taylor provided the best answer, in his earlier cited comments, and it is worth repeating here. "Success" means that the CFE survives over several generations of participants, over the long run consistently benefits more than a handful of people, and includes the possibility of renegotiating governance arrangements if necessary. By this standard, it may be the case that Mexico has hundreds of successful CFEs. Too often, the Mexican CFE sector has been seen as an undifferentiated mass, with nearly all of them being inefficient, conflict-ridden, on the brink of collapse, and in need of massive government and NGO help to survive, basically as a part of rural welfare programs. This review suggests a different picture. CFEs at all levels of integration can be highly profitable. The Mexican government, at times in spite of itself, and frequently arising from warring government agencies, has played a key role in the creation of the CFE sector, and this needs to be more clearly recognized. Community forestry organizations and advocates, who frequently found themselves in intense struggles with government actors, may understandably had difficulty accepting this notion. But the Mexican government has been a very complex actor, and should feel proud of what it has created, with major prodding from emerging, democratic civil society, and to understand that it has helped to create a uniquely competitive sector in the global timber and ecosystems services market. CFEs are also in very different competitive positions, and nuanced and differentiated strategies need to be developed for the different levels of vertical integration and efficiency.

A new government-led marketing campaign for the entire CFE sector, in close collaboration with second and third-level organizations and forest NGOS, is an important further step that government could be taking now. As has been argued, Mexico's CFEs represent a distinctive productive sector within the global forest products industry. A publication relations campaign could be mounted within the forest products industry and for the public that "sells" the Mexican CFE sector as one that uniquely combines high quality wood products with "green seal" forest management, and social justice and equity. This should also involve a major push for certification and the development of schemes for the sale of ecosystem services. If it is true that Mexico is the face of the future in global community future, it means that for Mexico, the future is now. Thus, Mexican community forestry stands at the brink of even greater achievements. It is a golden moment for all of its stakeholders to join together in a concerted effort to take it to the next level of equity, democracy, and sustainability.

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