



SUSTAINABLE FOREST MANAGEMENT AS A STRATEGY TO COMBAT CLIMATE CHANGE: LESSONS FROM MEXICAN COMMUNITIES





TABLE OF CONTENTS

Preface	5
Executive Summary	6
1. Introduction	8
2. Sustainable Use Conserves Forest and Captures more Carbon than Alternatives	11
3. Forest Management Options, Deforestation, and Climate Change	18
4. Community Forest Management in Mexico as an Alternative to Forest Conservation	26
5. Expanding Community Forest Management: Are Conditions in Place in the Rest of the World?	32

ACRONYMS

CFE community forest enterprise

CO₂ carbon dioxide

CONANP National Commission of Natural Protected Areas

GHG greenhouse gas

CFM community forest management

I/CCA indigenous/community-conserved area

REDD reduced emissions from deforestation and
degradation in developing countries



PREFACE

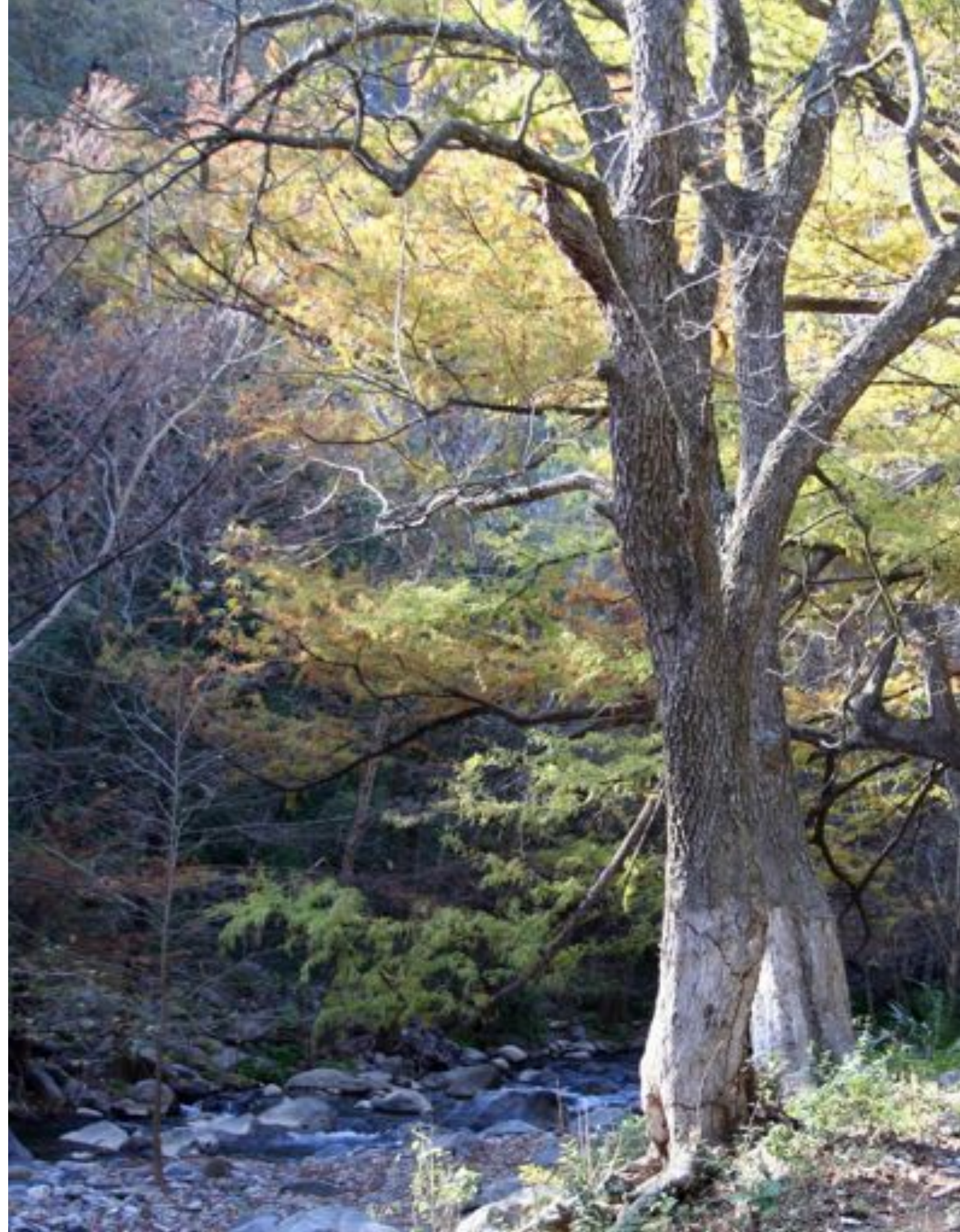
Why publish this report in the middle of global negotiations on climate change? We believe that organizations, governments, communities, scientists, and the private sector can all learn from the forest management experience of Mexican communities, who have shown that they can increase the carbon mitigation role of their forests by managing them sustainably. Many such communities are thriving because of their forest-based businesses, and they are well placed now to capitalize on the carbon-capture and storage capability of their forests.

This document presents the results of recent studies of community forest management in Mexico in the belief that it can inspire other countries and peoples to follow similar paths. Devolving rights over forest land and its resources, including carbon, to the local level is not a panacea for deforestation and forest degradation or the only necessary ingredient for forest-based carbon capture



EXECUTIVE SUMMARY

- Forests managed sustainably by communities, including for wood production, can capture and store more carbon than can forest conservation regimes in which wood-harvesting is prohibited.
- The Mexican model of community forest management is based on the devolution and recognition of rights over forest products, including timber, the establishment of community governance within a clear legal framework, and the enabling of community forest enterprises on the basis of forest common property.
- The model has been supported politically by community mobilizations in crucial periods and by generally positive (although sometimes inconsistent) government forest policies since the 1970s.
- Where community forest management becomes firmly established in Mexico there is increasing evidence that deforestation is slowed or reversed, forest cover expands, and communities increase in prosperity.
- Bringing the community forest management model to deforestation hotspots is a challenge for the Mexican government, which has made it the kingpin of its overall carbon mitigation strategy due to its multiple benefits and comparative advantages.
- Conditions exist and are expanding in other forested developing countries for the widespread adoption of community forest management in the context of climate change.





1. Introduction

"Forests cannot be protected by remote control."

A member of the Capulalpam de Méndez community, Oaxaca, Mexico

Climate change is one of the biggest challenges facing humanity in the 21st century. It not only threatens economies and social stability, if unchecked it will also permanently modify the resource base and ecological processes that sustain life on earth. Countries are designing and implementing strategies for mitigating and adapting to climate change. Climate-change mitigation (also called carbon mitigation) involves meeting targets for reducing emissions of greenhouse gases (GHGs) such as carbon dioxide (CO₂).

Forests are important in carbon mitigation strategies in two ways: they can act as sinks for the capture and storage of carbon, and they can also be sources of GHG emissions. Globally, forests store an estimated 638 *gigatons*¹ of carbon, much more than the quantity currently found in the atmosphere. However, about 5.8 *gigatons* of CO₂ equivalent per year are being released due to deforestation.²

While, in recent decades, Mexico has actively sought to reduce its deforestation and degradation it is still losing forests at an estimated annual rate of 0.24%³, causing the release of close to 89 megatons of CO₂ per year. Deforestation is thus the country's third-largest source of GHG emissions⁴, accounting for 12.4% of the national total⁵ (more than the contribution of oil and gas exploitation⁶). If Mexico could stop deforestation and sustainably manage, restore, and conserve its

forests, it could capture up to 46 megatons of carbon annually over the next 25 years⁷, which would be more than the annual emissions reduction target set by the Government of Mexico for the period 2008–12.

Stopping forest degradation and deforestation is one of the government's priorities in its strategy for reducing GHG emissions: the target for reducing emissions from forests for 2008–12 specified in its Special Climate Change Program is 32.4% of total emission reductions.⁸ In recent decades Mexico has taken great strides in community forest management (CFM), which has started to transform the forest sector to one in which sustainable management, conservation, and community development can co-exist and flourish.

This paper argues that, to meet Mexico's emissions reduction target for its forests, the CFM model must spread throughout the country, including to degraded forest lands and deforestation hotspots. Even though much new evidence on the role and efficacy of the Mexican model has emerged in the last decade, the experience remains scarcely known to forest policymakers around the world. It is time this changed: the Mexican model should inspire other nations to simultaneously pursue the sustainable management of forests, forest-based carbon mitigation, and community development through CFM.





2. Sustainable Use Conserves Forest and Captures more Carbon than Alternatives



Contrary to popular belief, forests that are sustainably managed for timber and non-timber production—especially by forest communities—capture more carbon than other options. This is because:

- Sustainable management retains or increases forest cover over time, thus sustaining or increasing carbon stock.
- If degraded forestlands are restored they can enhance the carbon stock, generating new capacity for capture and storage.
- Sustainable management maximizes carbon capture by managing for the variety of tree ages in forest stands.
- The harvesting of sustainably managed forests provides opportunities to store carbon for long periods in manufactured wood products and through the regeneration of forest cover.
- Sustainable management, including harvesting, provides economic incentives for local communities to conserve forest cover.
- Sustainable management can help reduce the impacts of pests and forest fire (which can cause significant GHG emissions) by ensuring active risk management.

As shown in Figure 1, a sustainably managed forest captures carbon while it is growing. When harvested, a significant amount of the captured carbon remains stored in

long-lasting wood products. New trees grow to replace those harvested. Over time, the amount of carbon sequestered by live forests and subsequently stored in wood products under this cycle of harvest, storage, and replacement is greater than that which would be captured by a protected natural forest in which trees are not harvested.

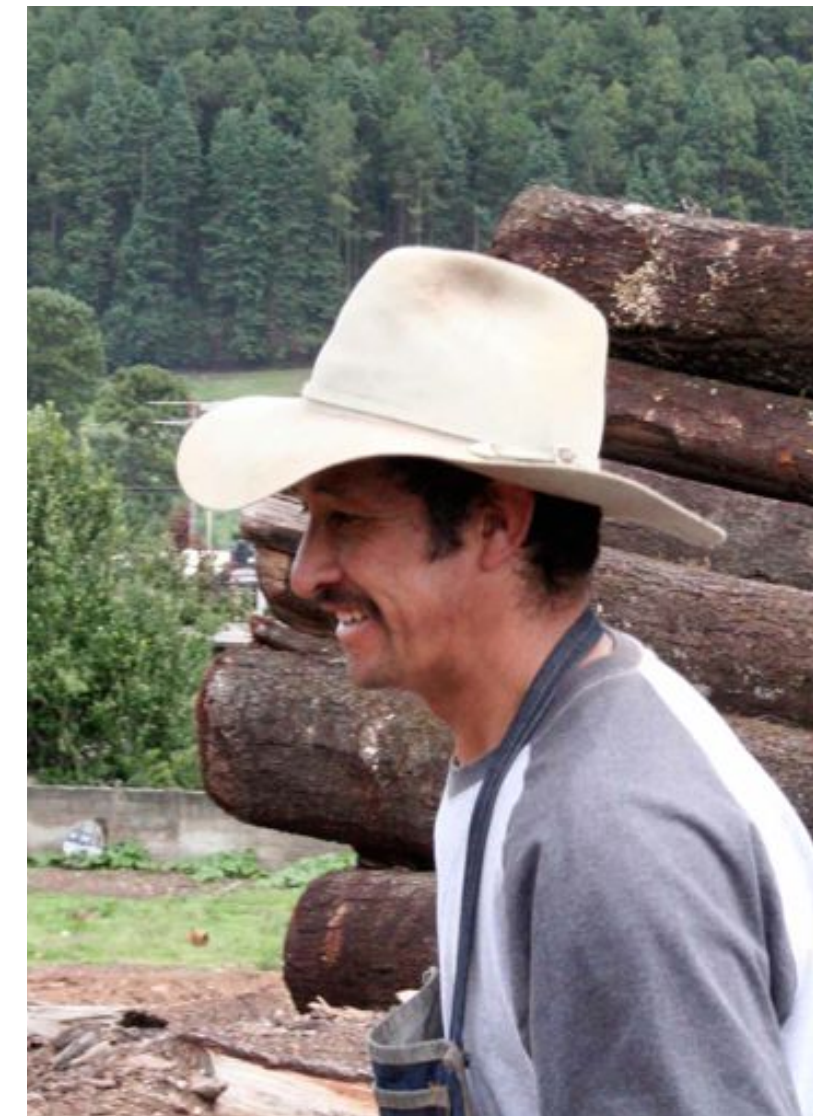
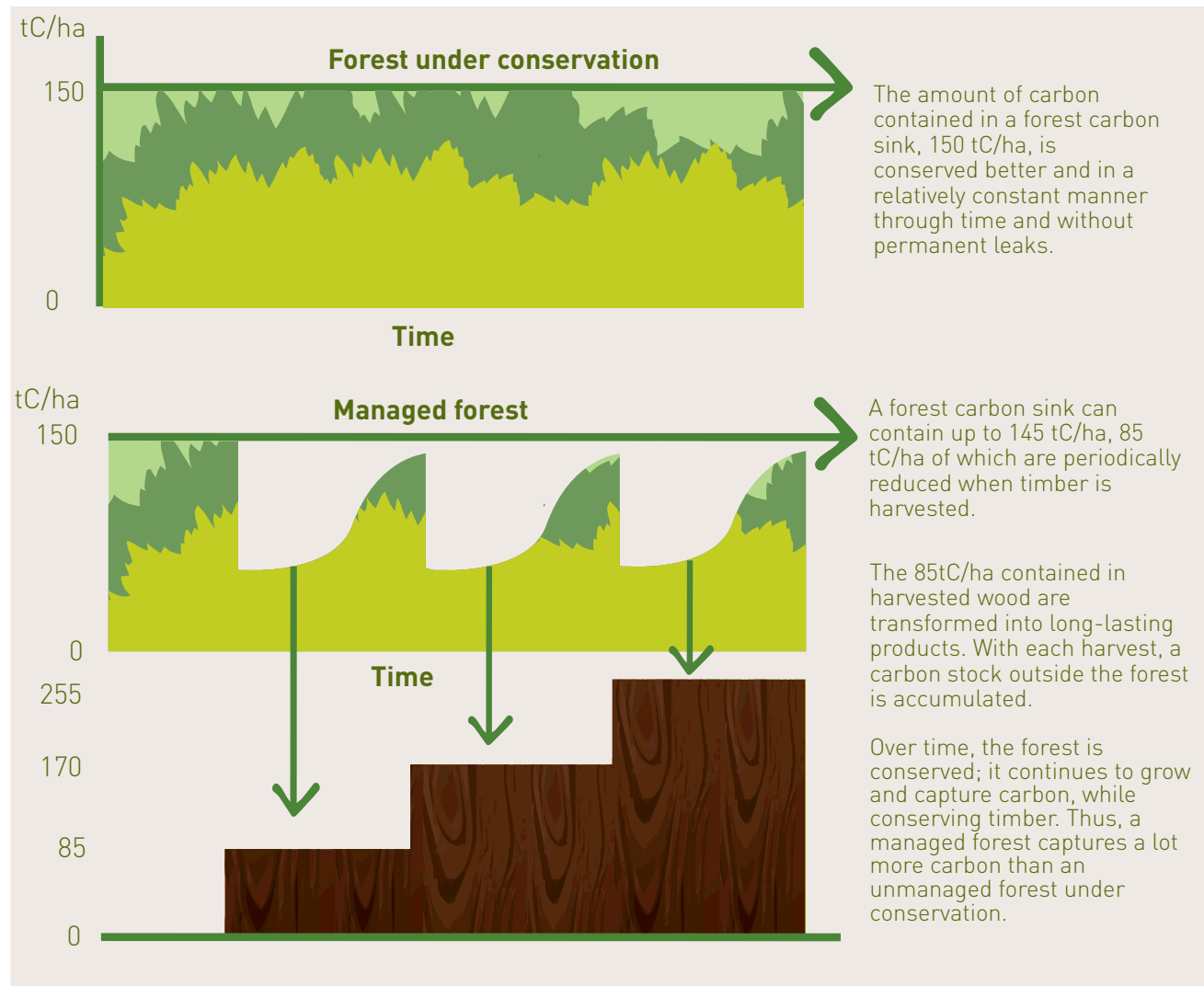
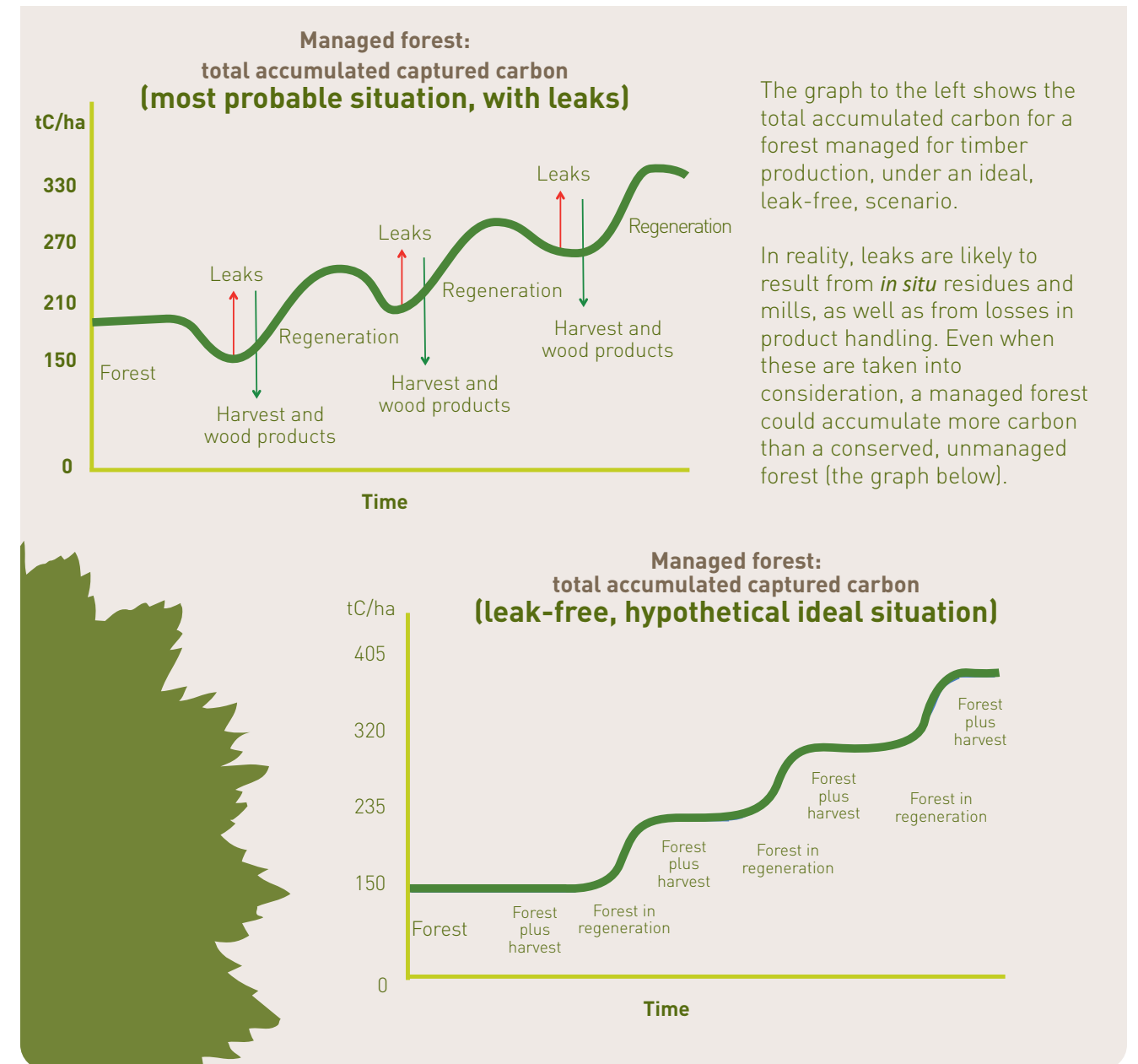


Figure 1. For carbon capture and storage, a managed forest is better than an unmanaged forest under conservation

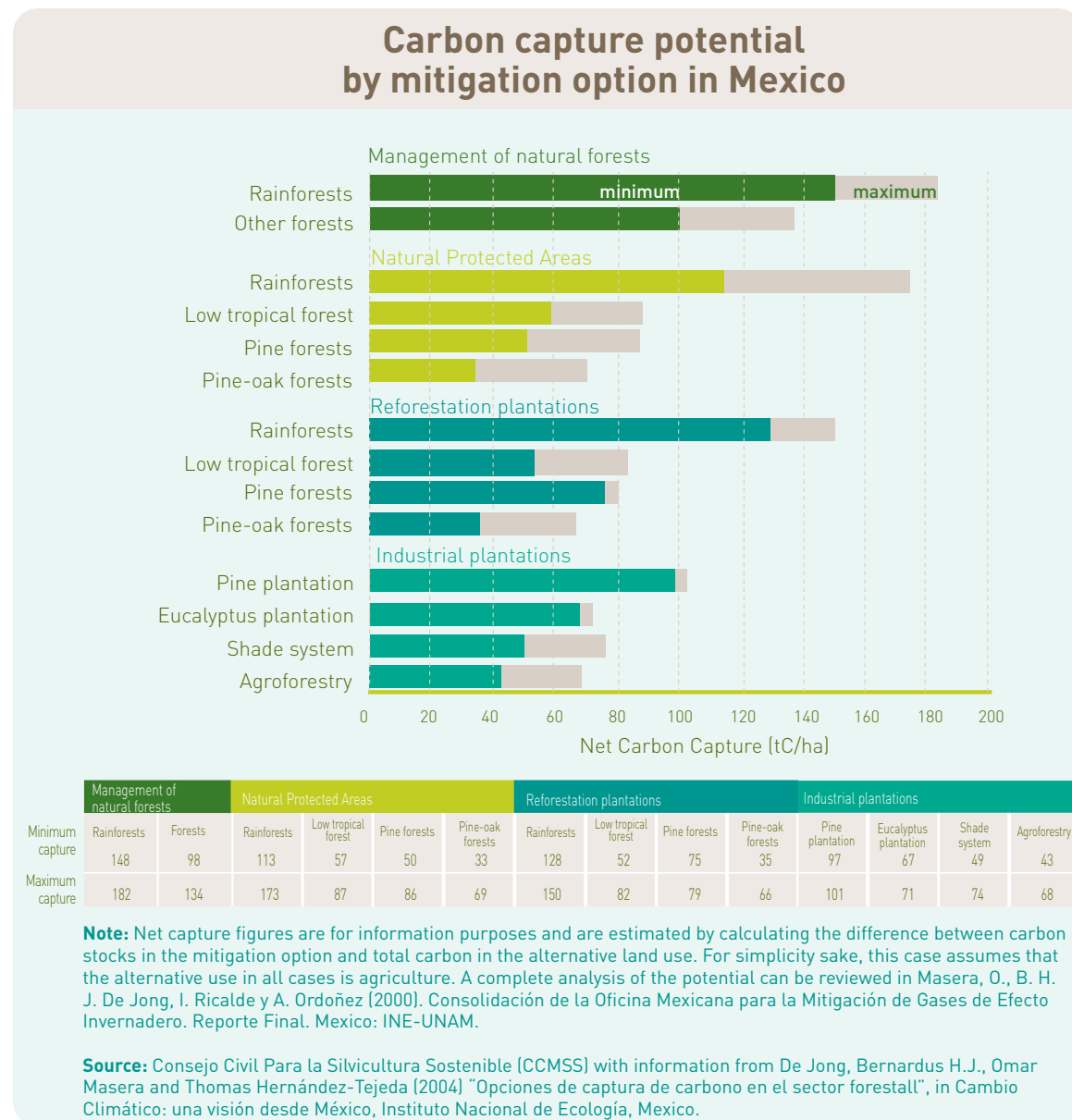


Source: Challenger, Anthony. 2010. Personal communication. [Month], 2010.]



A 2004 study assessed the carbon-capture capacity of four types of Mexican forest ecosystem and four forest management regimes.⁹ It found that the sustainable management of natural forests is the best option for carbon capture, attaining higher net capture rates per hectare than those attainable in natural protected areas, reforestation, or industrial plantations.

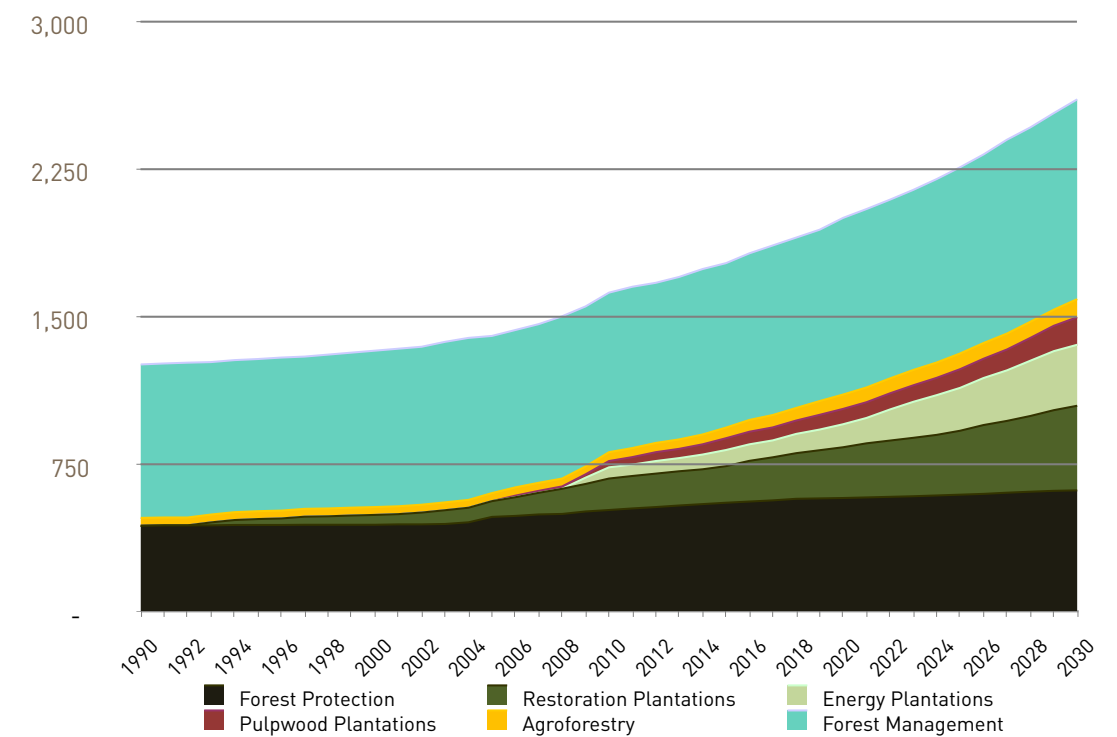
Figure 2 shows the carbon-capture capacity of managed natural-forest ecosystems compared with other uses. While the maximum possible capture in natural protected areas is close to that obtainable in natural managed forests, the difference between the minimums is notable: there is higher certainty in the carbon-capture and storage potential of managed forests compared with all other options.



Another reason for the higher carbon-capture benefits of managed natural forests is related to their ecological complexity. Each element of a natural forest ecosystem—from its trees to the soil biota—makes a significant contribution to carbon capture. On the other hand, carbon capture in unmanaged protected forests tends to stabilize over time, limiting the role of such forests in carbon sequestration. Industrial forest plantations tend to comprise monocultures (i.e. a single or very few species) that minimize ecosystem complexity and therefore the potential for synergistic carbon capture.

A study of the carbon-capture potential of various forest-based options¹⁰ showed that sustainable management by Mexican communities is especially effective because it fosters local community development while conserving both biodiversity and carbon. Given its effectiveness, this option could even eliminate deforestation and restore forest cover over time, maximizing carbon-capture potential when implemented jointly with other options, as shown in Figure 3.

Figure 3. Cumulative carbon mitigation for forest-based options in Mexico, 1990–2030



Information about the carbon-capture capacity of sustainably managed forest ecosystems is vital to the negotiation and design of new mechanisms to reduce emissions from deforestation and forest degradation. Sustainable management, when undertaken by communities, fosters organization, governance, and economic development at the local level by providing development and income-earning opportunities that go far beyond those of strict protection schemes for conservation and payments for a 'do not touch' approach to forests.¹¹ Forest communities will have a



vested interest in maintaining the long term agreements and contracts required for the mitigation of carbon emissions. And governments can address the multiple environmental and development goals for future rural development.

Mexican CFM Model: Increases Carbon Stocks and Stops Deforestation and Forest Degradation.

The Mexican experience has shown that the establishment of formal rights over forests and their resources, combined with legally recognized forms of community governance, supportive government programs, and community initiative, can lead to:

- stable and expanding forest cover
- the maintenance and enhancement of significant forest carbon stocks
- sustainable forest-based livelihoods
- vibrant, democratically governed forest communities
- biodiversity protection.

Over 2,300 Mexican communities exercise the full range of rights over their forests. They are demonstrating that, through local governance systems that have developed as a result of long histories of resource management, they can sustainably manage the production of timber and non-timber goods in their forests and, at the same time, protect high-conservation-value forests. The core of the Mexican experience of community forest stewardship is based on timber production under government-approved management plans and conservation areas defined by local communities.

Direct observation and case studies in Mexico suggest that the regions with the highest deforestation rates are not the most economically deprived. On the contrary, deforestation is high in places where there is intensive development, such as the Mayan Riviera and the Pacific coast (where tourism is expanding); the avocado-growing region of *Uruapan*; the cattle-raising region of Chiapas; and regions where the production of agave (for mescal) is expanding.

Many of these areas are subject to significant institutional failure and the adverse impacts of poorly conceived or overlapping and contradictory government development policies. In general, however, deforestation hotspots occur where the benefits obtained by forestland owners are greater under other land uses. Where forest management is profitable under sustainable CFM, deforestation has been halted. Hence, investing in and fostering the profitability of forest use is fundamental to reducing deforestation; sustainable forest management for the production of timber and non-timber products offers local development opportunities that better distribute wealth among forest communities.

To make the most of the opportunities offered by the forest sector to mitigate GHG emissions, forest and rural development policies must be redirected. The aim must be to reverse deforestation and forest degradation to increase the carbon-capture capacity of remaining forests. The best way to do this is to encourage CFM through payments for the ecosystem services offered by such forests in the hands of communities. Such payments should promote organizational processes and financial capabilities that, based on a comprehensive vision of the rural landscape, achieve

synergies between forest-based activities such as ecosystem restoration, agroforestry, forest management and conservation, and additional social and economic benefits.

Despite the success of the CFM model, Mexico has not solved all its forest management problems because it still has high rates of deforestation.¹² Generally, where CFM is mature, forests are stable or expanding; where CFM is weak or non-existent, forests continue to decline, albeit at lower rates than in the past.¹³ The challenge for Mexican policymakers is to promote the CFM model in the country's remaining degraded forestlands and deforestation hotspots.





3. Forest Management Options, Deforestation, and Climate Change

The relationship between deforestation and carbon emissions is now well-established and the global community is moving to address it with proposals to build a global mechanism for financing reduced emissions from deforestation and degradation in developing countries (generally known as REDD or REDD+¹⁴).¹⁵ REDD models propose to increase the value of forests through a system of payments based on the capacity of forests to capture and store carbon. The success of this strategy depends on the emergence of international agreements to regulate carbon emissions and to establish formal markets or special funding mechanisms, which is still uncertain.¹⁶ Well-designed mechanisms, with proper safeguards, are crucial if REDD is to succeed. Success will also depend on the willingness and capacity of local forest-dwelling or forest-dependent communities to adhere to REDD agreements; incentives are required.

Efforts to stop deforestation do not start with a blank slate. Several decades of policies and projects have provided many models that, in various circumstances, have proved able to slow, stop, or reverse deforestation and forest degradation. The most widely known of these is the creation of public protected areas. This model has had varying levels of success and failure, but even if they have succeeded in reducing or halting deforestation, many protected areas are increasingly becoming is-

lands in cleared or fragmented landscapes.¹⁷ Moreover, public protected areas frequently involve significant restrictions on the rights of local communities, with negative impacts on the welfare of such communities, including an increase in their poverty.¹⁸

Campaigning against illegal logging is another approach aimed, among other things, at reducing deforestation. To date such campaigning has focused on pressuring local governments to improve the adequacy and enforcement of laws and policies, while at the same time persuading consumer countries to prohibit the import and sale of illegally sourced wood products. Recent studies indicate that this approach has had a significant impact in major wood-producing countries.¹⁹ At the same time, however, it can also have unforeseen negative impacts on local communities, stemming from overbearing and unrealistic regulations that penalize small-scale wood production and put the livelihoods of local communities at risk.²⁰

A growing body of evidence demonstrates that, under the right conditions, CFM has reduced or stopped deforestation and enhanced carbon stocks²¹ while achieving a more equitable distribution of forest income at a relatively low cost.²² Such a confluence of positive outcomes is seldom the case with public protected areas or strong sanctions





against illegal logging. In Nepal, for example, CFM has been more effective in expanding forest cover than has the declaration of protected areas. At a vastly larger scale, in the Brazilian Amazon, indigenous territories are better than national parks at conserving forest cover in areas of advancing colonization.²³

Given the increase in the rights of communities to forests (see later), CFM is emerging as an important option for larger-scale wood production as well as for rewarding the growing potential of mitigation of forest carbon emissions. The experience of Mexico is therefore becoming increasingly relevant globally.²⁴

Mexican Community Forests: a Snapshot

Although the number fluctuates considerably from year to year, more than 2,300 forest communities harvested forests under government-approved management plans in Mexico during the 1990s and 2000s²⁵; an estimated 8.1 million hectares of community forests are under management plans.²⁶ Many communities may harvest their forests only sporadically due to the small size of their forests and for other reasons. Nevertheless, several hundred forest communities have engaged in collective action around their common forests to establish unique business models known as community forest enterprises (CFEs).

Over time, many Mexican CFEs have developed their own management models, combining community management, democratic participation, and economic efficiency with varying degrees of success. CFEs display a wide range of advantages and



great resilience. Most achieve a balance of economic equity and environmental stewardship by combining business and community values, deeply rooted in the use and care of a common property resource. *The experience of Mexico suggests that neither community management nor traditional institutions are necessarily a hindrance to business competitiveness, even in international markets, and that these factors may even confer some competitive advantages.*²⁷

Positive Impacts of the Mexican Model on Deforestation, Biodiversity, and Local Communities

Deforestation is most often expressed as an annual rate of loss, based on varying definitions of what constitutes a forest. The official annual rate of forest loss for all Mexico declined by more than half between the 1990s and the 2000s, from 354,000 ha to 155,000 ha annually, and deforestation rates were much lower in the 1990s compared with those of the 1970s.²⁸ In reality, however, the dynamics of forest loss or recuperation behind the calcu-

lation of deforestation rates are complex, and they vary considerably in different landscapes.

Studies have shown that the rate of deforestation is three times higher in Mexico's tropical forests than it is in its temperate forests.²⁹ But this also masks a more complex dynamic. A recent review, for example, found that while some tropical areas that were heavily deforested in the 1970s are now showing strong recovery due to agricultural abandonment, there are hotspots of deforestation in temperate forests, such as in the Monarch Butterfly Biosphere Reserve.³⁰

Across Mexico there is evidence that in regions dominated by CFM for wood production, forests are being conserved and even expanded (Box 1). At its most mature, the Mexican CFM sector effectively protects forests at rates similar to or higher than those achieved in public protected areas. The CFM model needs to be expanded in Mexico—so that degraded forests can be restored and deforestation can be reversed at the national scale and the potential benefits of carbon capture and storage can be fully realized.



Box 1. Experiences in CFM and Deforestation Reduction in Mexico

- The central region of the state of Quintana Roo, which is dominated by CFM, has the lowest rate of deforestation in southern Mexico—even lower than that recorded in protected areas in the region.³¹
- A study of CFM in *X-Maben* in central Quintana Roo³² showed that under locally recognized land-use rules, regulations, and forest management plans the area of mature forest decreased from 80% in 1976 to 76% in 1997, while early fallow and secondary forest more than doubled; overall, forest cover increased. A variety of local conservation practices were adopted in the forest management plan.
- In the state of Oaxaca, deforestation rates have been high in both temperate and tropical forests, but CFM only occurs there in temperate pine-oak forests. Between 1980 and 2001, Oaxaca lost an estimated 21% of its temperate forests.³³ However, the region of Sierra Norte, where land-use is dominated by mature CFM experiences in timber production (with recent diversification into ecotourism, spring water bottling, and payments for carbon capture and watershed management), showed a 3.3% expansion of pine-oak forests over a 20-year period.³⁴
- The Monarch Butterfly Biosphere Reserve—in a highland area of the states of *Michoacan* and Mexico—has suffered rapid deforestation in the last several decades due to heavy illegal logging and the expansion of subsistence agriculture. From 1971 to 1984 the annual deforestation rate in the region was 1.7%; it jumped to 2.41% between 1984 and 1999 and was even higher (1% and 3%, respectively) inside three sampled areas of the reserve.³⁵ However, two small communities in the region that have managed their forests for timber production have successfully maintained forest cover.³⁶

Key Elements: Forest Property Rights and Governance Structures

Today, community-managed forests in Mexico demonstrate the key elements for long-term carbon capture and storage through forest management and the enhancement of local wellbeing: local property rights to the forest, local decision-making power over the use of the forest, and local access to resultant benefits.

The success of CFM in Mexico stems from the agrarian revolution (1910–18), which generated a process to distribute land and forests to local communities that lasted during most of the 20th century. Accompanying the distribution of forests to local communities was the establishment of new agrarian governance institutions derived from Mexico’s ancient communal traditions: *ejidos* (agrarian units established for landless laborers), and *comunidades* (which legalized territorial rights to indigenous lands originally recognized in the colonial period). Because of this process, 70% of Mexico’s forest land is under a state-regulated common property system today.³⁷

Communal property has deep historical roots in Mexico. It was widely present in the pre-Hispanic era and prevailed during colonial times. In the period 1870–1900, however, many forest lands were given in concession to railroad companies or sold to individuals. The devolution of ancient common land to local communities was one of the main demands of the agrarian revolution. Afterwards, agrarian reform became a fundamental strategy for maintaining peace in rural areas. Over the course of about half a century, many communities, including forest communities, gained land rights.

Agrarian reform also involved a universal community governance template³⁸, which has become part of rural culture and allows considerable autonomy in community forest governance. This template requires the formation of an assembly of all legal community members and the election to three-year terms of a governing body known as a *comisariado*, consisting of a president,





a secretary, and a treasurer, with a parallel three-member oversight committee (*consejo de vigilancia*). The common-property form was based on indigenous concepts of communal property, but it also introduced more formal notions of contemporary democracy, with elections and the legal obligation of the assembly to meet twice a year (although in well-functioning communities it is common for the assembly to meet monthly or even more frequently). This governance institution has served as the foundation for decision-making regarding forest management and the distribution of benefits. It has also led to the more innovative and complex organizational forms required to administer sophisticated and vertically integrated CFEs.³⁹

Globally there are many calls for clearer rights over forests and their products and ecosystem services, particularly those related to carbon capture and storage.⁴⁰ Mexico has been in the vanguard of the devolution of rights but, even so, the struggle for forest rights lasted decades there. It was not until the 1970s and 1980s that a combination of grassroots mobilization and pro-community-forestry government policy began to displace earlier periods of logging concessions and bans on community owned forestlands, thereby laying the ground for a large and vibrant community forest sector.

The Mexican case sends a strong message that REDD programs must include the devolution of rights over forest land and its resources, including carbon. The devolution of forest rights to local communities, particularly rights to wood, combined with a legally recognized governance structure and supportive government policies, have provided the tools by which hundreds of Mexican

communities have arrested and reversed deforestation and forest degradation, maintained and enhanced forest carbon stocks, and generated sustainable forest-based livelihoods for democratically governed communities. The challenge for Mexico is to bring this model to communities with small, degraded forests and to regions where deforestation continues. The global challenge is to examine the implications of the Mexican model for national-level policies of forest rights devolution and efforts to contain deforestation.

The Mexican model shows the benefits of CFM, but it is not a panacea. Like governments and markets, communities can fail in the absence of supportive government policies that provide an environment in which CFEs and sustainable forest management can develop and flourish. Ensuring a supportive policy setting is perhaps the greatest challenge that countries will face when designing REDD mechanisms based on CFM.





4. Community Forest Management in Mexico as an Alternative to Forest Conservation

Almost 12 million people⁴¹ live in 30,305 *ejidos* and agrarian communities in Mexico. In total, they are legal owners of close to 100 million ha of land (of which nearly 40 million ha are forested). The overwhelming majority of these communities live in poverty. Historically, communal property and the poverty of forest dwellers were often cited as the main causes of deforestation. Few people know that government policies greatly undermined the rights of the communities for many decades: for example, commercial forest units and industrial concessions were granted to private and public enterprises with full timber rights over more than half the forested communal lands.⁴²

Even though *ejidos* and agrarian communities had forest access and land rights, during the period of domination by industry and concessions the communities were not allowed to control logging activity on their lands. Logging practices were based on incentives given to public and private corporations that favored forest 'mining' aimed at maximizing short-term gains. For decades, community forest areas were kept under industrial concessions,

even after they lost their commercial value due to poor harvesting practices. Effectively, forest communities could not exercise their property rights. It was in this context that significant deforestation and forest degradation occurred. Some of the most important factors that contributed to this situation were as follows:⁴³

- Demand for forest raw materials increased due to the expansion of the market economy.
- There was (and still is) weak government capacity to penalize illegal logging.
- Disincentives were created for forest owners to use long-term criteria to protect and use forests, while incentives were created for forest concession holders to maximize short-term gains.
- Most forest harvesting units created conditions for de facto open access to communal forests, with perverse impacts.
- The de facto open access and public incentives for agriculture and livestock-raising in tropical and mountain forests fostered changes in land use and high deforestation rates.





Key Points in the Emergence and Evolution of CFM in Mexico

Despite past failures, by 1970 several factors combined to allow the emergence and subsequent evolution of the community forest sector in Mexico. While not every action has been positive, the sector has been able to overcome the difficulties arising from policy changes. The key developments of the last 40 years were as follows:

- By the late 1970s, forest-dwelling communities opposed the renewal of forest harvesting units and concessions.
- As a result of community mobilization, forest use and management rights were given to communities, and government programs were put in place to support community participation in commercial timber production.
- Communities received intensive training, counseling, and support to create community associations.⁴⁴
- Some well-organized CFEs made significant profits from the commercial use of their forests, which were used to build roads, buy extraction equipment and industrial machinery, and organize technical and administration teams.
- The North American Free Trade Agreement opened Mexico's domestic market to two of the world's biggest forest economies, where wood producers have benefited from government subsidies since the mid 1980s.

In the late 1980s and early 1990s, government support community forestry enterprises disappeared and excessive regulation was imposed on forest activities, increasing production and transaction costs.⁴⁵

During the 1990s, despite their high social costs and questionable environmental benefits, natural protected areas with restrictive policies became the main conservation strategy for forested regions.⁴⁶

- Starting in the early 90s, public funding for the forest sector was given to private plantations and reforestation.
- Starting in 1993, some communities adopted an environmental agenda and certified their forest operations under the Forest Stewardship Council. (To date about 700,000 hectares of community-owned forests have been certified, which produce more than 12% of the country's legal

production of wood.)

- In the mid 1990s, a second generation of government forest programs favoring communities was implemented, with marginal public investment in production capacity and the meager strengthening of local institutions. (CFM has seldom been regarded by public policymakers as a highly viable strategy for economic development and conservation at scale. For this reason, only a minority of forest communities receive the full benefits of these programs in Mexico.)





FOREST CONSERVATION BY MEXICAN COMMUNITIES

In addition to being in the vanguard of CFM for wood production, Mexico has recently generated a more favorable policy environment for the voluntary establishment of indigenous/community-conserved areas (I/CCAs).⁴⁷ In 2009 the Government of Mexico passed legislation to put in place a formal certification process by the National Commission of Natural Protected Areas (CONANP) to recognize I/CCAs, which may include private lands. As of September 2010, 221 I/CCAs had been certified, covering 274,151 hectares in 15 states.⁴⁸

This is only the tip of the iceberg in terms of community conservation. An unpublished study⁴⁹ estimated that 23 million hectares of land are committed to a government-recognized community conservation scheme known as Management Units for Wildlife Conservation. As of 2007 there were also 216 voluntary conservation areas covering 641,797 hectares⁵⁰, although it is likely that some of these have since been certified in the CONANP process. As of 2006, 600,000 ha were registered in Mexico's internationally recognized payment for hydrological services program.⁵¹

The history of forest policy in Mexico proves that governments play a key role in CFM by establishing the legal and programmatic foundations for it and by granting forest rights. These moves create the conditions for the massive release of community energy and creativity.



5. Expanding Community Forest Management: Are Conditions in Place in the Rest of the World?



The Mexican experience inspires us to seek the conditions that encourage sustainable forest management and conservation elsewhere. If we can promote the expansion of approaches similar to the Mexican experience, the chances of securing global benefits through the capture and storage of carbon will increase because efforts will be based on the generation of local benefits for the people who live and depend on forests.

Many will wonder if such conditions are suitable in other parts of the world. The answer is yes. First, a trend observed in the past several decades of increasing state recognition of community forest tenure rights and governance systems is setting the stage globally. Two major studies have shown a clear move towards devolution and the recognition of the rights of local communities and individuals. By 2002, for example, 22% of forests in selected developing countries had been designated for use by, or property rights had been assigned to, communities, indigenous peoples, individuals, and firms.⁵² By 2008 this figure had risen to 26%.⁵³

This increase in community or private use and property rights has occurred primarily in only eight countries. Brazil, in particular, implemented the lion's share of the tenure reform observed between the 2002 and 2008 surveys, recognizing the rights of local communities and families to approximately 207

million hectares of forest. This reduced the size of the public forest estate in Brazil from about 295 million hectares to about 88 million hectares.⁵⁴

With this large-scale tenure reform under way, in 2008 the Brazilian government took the next steps toward local control and management of forests by creating policies and programs to support CFM for the production of timber and other forest products. With a clear understanding that tenure alone is insufficient to guarantee sustainable management, these programs are beginning to channel financial and legal assistance to interested communities; moreover, a national committee has been established with the participation of local community leaders, representatives of indigenous peoples, and high-level government officials.⁵⁵ The creation of the Federal Program of Community and Family Forests fosters the organization and sustainable management of forests by traditional communities, agro-extractivists, and those who have been relocated because of agrarian reform.⁵⁶

Like Mexico, Brazil has achieved a significant reduction in its deforestation rate, due, among other things, to the recognition of the rights of local forest-dependent communities and the provision of explicit support to community and family organizations, particularly in the Amazon.⁵⁷



Over the last 15 years the Bolivian government has recognized the original rights of indigenous groups, granting them legal title to almost 10 million hectares of land in the Amazon; there has also been experimentation with a variety of approaches to CFM.⁵⁸ In Guatemala's Peten region, adjacent to the Mayan Biosphere Reserve, local communities have had access to more than 500,000 hectares of tropical forest for over 12 years and have developed successful CFEs, keeping their forests in better condition than those in adjacent protected areas.⁵⁹

The Government of Canada has signed treaties with native peoples in most of the country, and the Government of British Columbia is exploring ways to grant concessions to indigenous communities, taking into consideration their rights over the land.



In Asia, the Government of China has taken firm steps in the large-scale reform of state forests and enterprises by devolving rights to families, with measurable results in enhanced local wellbeing.⁶⁰ Through the passage of the Recognition of Forest Rights Act in 2006, the Government of India recognized the rights of historically marginalized tribal peoples, creating a provision to reconstitute the rights of those who live in and depend on forests; this action has the potential to improve the lives of nearly 100 million people living in extreme poverty.⁶¹ In Viet Nam, Cambodia, and Indonesia, governments are beginning to implement reforms to forest rights, in some cases using pilot projects before launching initiatives at a larger scale.

The growing global trend to decentralize the governance and management of forest resources also has the potential to greatly expand CFM.⁶² Although most of the world's forests are still under formal domination by the state, a study conducted in 2009 in 12 countries that together contain 60% of the world's forests showed that forest governance is most effective when: it has greater independence from the central government; the processes of decentralization and the transfer of significant powers and responsibilities occurs at lower levels of democratically elected and transparent governments; property rights are just, clear, and enforced; and an appropriate regulatory framework is in place.⁶³

The direction of change in the ownership and control of forests, especially in developing countries, has positive implications for the adoption of CFM, the local, sustainable management of forests, and the potential for carbon mitigation. A recent study⁶⁴ analyzing 80 forested areas managed by communities in



10 tropical countries in Asia, Africa, and Latin America showed that the amount of carbon stored in a forest is directly proportional to the size of the forest area and the autonomy of local communities. The study found that when communities own the forest they delay their use of it. On the other hand, there is a higher risk of over-exploitation and less carbon storage on state-owned lands.

Time and again, experience has shown that placing ownership and decision-making power in the hands of local communities has positive impacts on forest conservation and therefore carbon mitigation. The above-men-

tioned study concluded that: "The transfer of forest community tenure over large areas to local populations, along with payments to improve carbon storage capacity, can contribute to mitigate climate change without having an adverse impact on local livelihoods".⁶⁵

The Mexican CFM model is a source of inspiration for what can be achieved in the world's forests. It can serve both local and global interests in carbon mitigation, forest conservation, and the improvement of the livelihoods of forest communities. Now is the time to expand this model to the forests and forest peoples of the rest of the developing world.

Bibliography

¹ One gigaton is equivalent to one billion tons.

² Intergovernmental Panel on Climate Change. 2007. IPCC Fourth Assessment Report: Climate Change 2007: Working Group III: Mitigation of Climate Change. Geneva: Intergovernmental Panel on Climate Change.

³ FAO. 2010. Situación de los Bosques del Mundo. Revisar Nota De Pie. Rome: Food and Agriculture Organization of the United Nations.

⁴ De Jong, Bernardus H. J., Omar Masera and Tomás Hernández-Tejeda. 2004. Opciones de captura de carbono en el sector forestal. In Cambio Climático: una Visión desde México. A. Fernandez, J. Martinez, and P. Osnaya, eds. Mexico: Instituto Nacional de Ecología.

⁵ Inventario Nacional de Emisiones de Gases de Efecto Invernadero, preliminary data.

⁶ Programa Especial de Cambio Climático 2008-2012. p28 (public version). Available at: www.semarnat.gob.mx/queessemarnat/consultaspublicas/Pages/peccconsultacomplementaria.aspx

⁷ Masera, O. and C. Sheinbaum. 2004. Mitigation de emisiones de carbono y prioridades de desarrollo nacional. In Cambio Climático: Una Visión desde Mexico. A. Fernandez, J. Martinez, and P. Osnaya, eds. Mexico: INE-SEMARNAT

⁸ Programa Especial de Cambio Climático Capítulos, p xi, Semarnat. Available at: www.semarnat.gob.mx/queessemarnat/consultaspublicas/Pages/peccconsultacomplementaria.aspx

⁹ De Jong et al. 2004. As cited in endnote 4.

¹⁰ Klooster, D. and Omar Masera. 2000. Community forest management in Mexico: carbon mitigation and biodiversity conservation through rural development. *Global Environmental Change* 10 (4): p259-272

¹¹ Nevertheless the latter option may be appropriate and optimal in cases where the density of commercially valuable species is too low for financial profitability, where ecosystems are sensitive to disturbance, or where local communities prefer other forest uses better suited to their way of life.

¹² Wunder, S. 2010. Forest decentralization for REDD? A response to Sandbrook et al. *Oryx* 44: p335-337.

¹³ Durán, E., J.-F. Mas, and A. Velázquez. 2005. Land use/cover change in community-based forest management regions and protected areas in Mexico. Pages 215-238 in D. B. Bray, L. Merino-Pérez, and D. Barry, editors. *The community forests of Mexico: managing for sustainable landscapes*. University of Texas Press, Austin, Texas, USA.

USAID, 2010 Forests, Land Use, and Climate Change Assessment for USAID/ Mexico, Final report prepared by the CIFOR team.

¹⁴ The term REDD is used in this document.

¹⁵ Angelsen, A. 2009. Policy options to reduce deforestation. In *Realising REDD+: National Strategy and Policy Options*. Angelsen, A. with M. Brockhaus, M. Kanninen, E. Sills, W.D. Sunderlin, and S. Wertz-Kanounnikoff, eds. Bogor, Indonesia: CIFOR. p125-138.

¹⁶ Joeri Rogelj et al. 2010. Analysis of the Copenhagen Accord pledges and its global climatic impacts—a snapshot of dissonant ambitions. *Environmental Research Letters* 5 034013.

¹⁷ Curran, L., S. Trigg, A. McDonald, D. Astiani, Y. Hardiono, P. Siregar, I. Caniagon, and E. Kasischke. 2004. Lowland forest loss in protected areas of Indonesian Borneo. *Science* 303 (5660): p1000-1003.

Defries, R., A. Hansen, A.C. Newton, and M.C. Hansen. 2005. Increasing isolation of protected areas in tropical forests over the past twenty years. *Ecological Applications* 15 (1): 19-26.

¹⁸ Cernea, M.M. and K. Schmidt-Soltau. 2006. Poverty risks and national parks: policy issues in conservation and development. *World Development* 34 (10): 1808-1830.

Dowie, M. 2009. *Conservation Refugees: The Hundred-Year Conflict between Global Conservation and Native Peoples*. Cambridge, U.S.: MIT Press.

Mombeshora, S. and S. Le Bel. 2009. Parks-people conflicts: the case of Gonarezhou National Park and the Chitsa community in south-east Zimbabwe. *Biodiversity and Conservation*. 18(10):2601-2623

¹⁹ Lawson, S and L. MacFaul. 2010. Illegal Logging and Related Trade: Indicators of Global Response. London: Chatham House.

²⁰ Kaimowitz, D. 2007. Forest law enforcement and rural livelihoods. In *Illegal Logging: Law Enforcement, Livelihoods and the Timber Trade*. Tacconi, Luca, ed. London: Earthscan. p110-138.

²¹ Hayes, T.M. 2006. Parks, people, and forest protection: an institutional

assessment of the effectiveness of protected areas. *World Development* 34 (12): p2064-2065.

Chatre, A and A. Agrawal. 2009. Trade-offs and synergies between carbon storage and livelihood benefits from forest commons. *Proceedings of the National Academy of Sciences of the United States of America* 106: 17667-17670.

²² Prakash Dev, O., N. Prasad Yadav, O. Springate-Baginski, and J. Soussan. 2003. Impacts of community forestry on livelihoods in the middle hills of Nepal. *Journal of Forest and Livelihood* 3(1): p64-76.

²³ Nagendra, H. 2007. Drivers of reforestation in human-dominated forests. *Proceedings of the National Academy of Sciences of the United States of America*. 104 (39): p15218-15223.

Nepstad, D. C., S. Schwartzman, B. Bamberger, M. Santili, D. Ray, P. Schlesinger, P. Lefebvre, and E. Prinz. 2006. Inhibition of Amazon deforestation and fire by parks and indigenous reserves. *Conservation Biology* 20: p65-73.

²⁴ Bray, D.B., E. Duran, S. Anta, G. Martin, and F. Mondragon. 2008. A new conservation and development frontier: community protected areas in Oaxaca, Mexico. *Current Conservation* 2: p7-9.

²⁵ Bray, D.B., L. Merino, and D. Barry. 2007. El manejo comunitario en sentido estricto: las empresas forestales comunitarias de México. In *Los bosques comunitarios de México*. D.B. Bray, L. Merino, and D. Barry, eds. Mexico City: Instituto Nacional de Ecología (INE-SEMARNAT). p21-50.

²⁶ Anta, S. 2007. Áreas naturales de conservación voluntaria. Estudio elaborado para la iniciativa Cuenca. Online document <www.ccms.org.mx/documentos/areas_naturales_de_conservacin_voluntaria.pdf> consulted July 2009.

²⁷ Antinori, C. and D.B. Bray. 2005. Community forest enterprises as entrepreneurial firms: economic and institutional perspectives from Mexico. *World Development* 33: p1529-1543.

²⁸ Mas, J., A. Velázquez y S. Couturier (2009) “La evaluación de los cambios de cobertura/uso del suelo en la República Mexicana”. *Investigación ambiental* 1(1): 23-39.

²⁹ A. Velázquez, E. Durán, J.F. Mas, D.B. Bray, and G. Bocco. 2005. Situación actual y prospectiva del cambio de la cubierta vegetal y usos del suelo en México. In *Más allá de las Metas de Desarrollo del Milenio*. Mexico: CONAPO. p391-416.

³⁰ Bray, D. (2010) “Forest Cover Dynamics and Forest Transitions in Mexico and Central America: Towards a “Great Restoration” en Nagendra, H. y J. Southworth (Ed.) “Reforesting Landscapes: Linking pattern and process”. *Landscapes series* 10. Springer, Netherlands.

³¹ Bray, D.B. and A. Velazquez. 2009. From displacement-based conservation to place-based conservation. *Conservation & Society* 7: p11-14.

³² Dalle S.P., S. de Blois, J. Caballero, and T. Johns. 2006. Integrating analyses of local land-use regulations, cultural perceptions and land-use/land cover data for assessing the success of community-based conservation. *Forest Ecology and Management* 222: p370-383.

³³ Velázquez, A., A. Torres and G. Bocco (compilers). 2003. Las enseñanzas de San Juan. *Investigación participativa para el manejo integral de recursos naturales*. Mexico: Rústica Existencia. 595 pp.

³⁴ Gómez-Mendoza, L. y Arriaga, L. (2007) “Modeling the Effect of Climate Change on the Distribution of Oak and Pine Species of Mexico”. *Conservation Biology*. 21: 1545–1555.

³⁵ Brower L.P., G. Castilleja, A. Peralta, J. López-García, L. Bojórquez-Tapia, S. Díaz, D. Melgarejo, and M. Missrie. 2002. Quantitative changes in forest quality in a principal overwintering area of the monarch butterfly in Mexico, 1971–1999. *Conservation Biology* 16: 346–359.

³⁶ Merino-Perez, Leticia and Marina Hernández Apolinar. 2004. Destrucción de instituciones comunitarias y deterioro de los bosques en la Reserva de la Biosfera Mariposa Monarca, Michoacán. *Revista Mexicana de Sociología* 66 (2): p261-309.

³⁷ Bray, D.B., C. Antinori, and J.M. Torres-Rojo. 2006. The Mexican model of community forest management: The role of agrarian

policy, forest policy and entrepreneurial organization. *Forest Policy and Economics* 8 (4): 470-84.

³⁸ Bray et al. 2006. As cited in endnote 37.

³⁹ Antinori, C. and D.B. Bray. 2005. Community forest enterprises as entrepreneurial firms: economic and institutional perspectives from Mexico. *World Development* 33: 1529-1543.

Bray et al. 2006. As cited in endnote 37.

⁴⁰ Blanco.

⁴¹ Instituto Nacional de Geografía y Estadística; INEGI, 2000

⁴² Merino, L. y Segura, G. (2007) “Las políticas forestales y de conservación y sus impactos en las comunidades forestales en México” en: Bray, D.B., Merino, L. y Barry, D. (Ed.) “Los bosques comunitarios de México”. México, D.F., Instituto Nacional de Ecología (INE-SEMARNAT): 77-97.

Alatorre Frenk, Gerardo. *La construcción de una cultura gerencial democrática en*

las empresas forestales comunitarias. México, D.F: Casa Juan Pablos, Procuraduría Agraria, 2000, pp. 431.

Bray, D.B. and L. Merino. 2004. La experiencia de las comunidades forestales en México: veinticinco años de silvicultura y construcción de empresas forestales comunitarias. Instituto Nacional de Ecología: Mexico, DF

⁴³ Boyce, J.K. and Shelly, B.G. 2003. *Natural assets: democratizing environmental ownership*. Island Press, Washington, DC.

Merino, L. y M. Hernández Apolinar (2004) “Destrucción de instituciones comunitarias y deterioro de los bosques en la Reserva de la Biosfera Mariposa Monarca, Michoacán”. *Revista Mexicana de Sociología*, 2004. Año 66, vol. 2; México, abril-junio de 2004; pp.261-309.

⁴⁴ Bray, B.D. y L. Merino Pérez (2004) La experiencia de las comunidades forestales en México. Veinticinco años de silvicultura y construcción de empresas forestales en México. Semarnat, INE, Consejo Civil Mexicana para la Silvicultura Sostenible, Fundación Ford, México.

⁴⁵ Merino, L. y M. Hernández Apolinar (2004) “Destrucción de instituciones comunitarias y deterioro de los bosques en la Reserva de la Biosfera Mariposa Monarca, Michoacán”. *Revista Mexicana de Sociología*, 2004. Año 66, vol. 2; México, abril-junio de 2004; pp.261-309.

⁴⁶ Klooster, D. y O. Masera (2000) “Community Forest Management in Mexico: Carbon mitigation and biodiversity conservation through rural development” *Global Environmental Change* 10(4):259-272.

⁴⁷ IUCN

⁴⁸ http://www.conanp.gob.mx/que_hacemos/areas_certi.php

⁴⁹ Anta, S. 2007. Áreas naturales de conservación voluntaria. Estudio elaborado para la iniciativa Cuenca. Online document <www.ccms.org.mx/documentos/areas_naturales_de_conservacin_voluntaria.pdf> consulted July 2009.

⁵⁰ Ibid.

⁵¹ Muñoz-Piña, C., A. Guevara, J.M. Torres, y J. Braña. 2008. “Paying for the hydrological services of Mexico’s forests: analysis, negotiation and results”. *Ecological Economics*, 65:4, pp. 725-36

⁵² White, A. y A. Martin (2002) “Who Owns the World’s Forests? Forest Tenure and Public Forests in Transition”. Washington, DC: Forest Trends. Disponible en: http://www.forest-trends.org/publication_details.php?publicationID=159

2008 Sunderlin, W., J. Hatcher, M. Liddle. From Exclusion to Ownership? Challenges and Opportunities in Advancing Forest Tenure Reform. Rights and Resources Initiative. Washington, DC

⁵³ Sunderlin, W., J. Hatcher, M. Liddle (2008) From Exclusion to Ownership? Challenges and Opportunities in Advancing Forest Tenure Reform Rights and Resources Initiative, Washington, DC http://www.rightsandresources.org/publication_details.php?publicationID=736

⁵⁴ Ibid

⁵⁵ <http://www.mma.gov.br/index.php?ido=conteudo.monta&idEstrutura=95&idMenu=9922&idConteudo=9222#1>

⁵⁶ On 5 June 2009 President Luis Ignacio da Silva signed Decree No. 6874 establishing the Federal Program of Community and Family Forests under the responsibility of the ministries of Environment and Agrarian Reform.

⁵⁷ Nepstad, Daniel, Britaldo S. Soares-Filho, Frank Merry, André Lima, Paulo Moutinho, John Carter, Maria Bowman Andrea Cattaneo, Hermann Rodrigues, Stephan Schwartzman, David G. McGrath, Claudia M. Stickler, Ruben Lubowski, Pedro Piris-Cabezas, Sergio Rivero, Ane Alencar, Oriana Almeida, and Osvaldo Stella. 2009. The end of deforestation in the Brazilian Amazon. *Science* 326 (5958): p1350-1351. <http://www.sciencemag.org/cgi/content/short/326/5958/1350>;

Regalado, Antonio. 2010. Deforestation rate continues to plunge in Brazil. *ScienceInsider* <http://news.sciencemag.org/scienceinsider/2010/09/deforestation-rate-continues-to.html>;

Pacheco, Pablo. 2009. Agrarian reform in the Brazilian Amazon: its implications for land distribution and deforestation. *World Development* 37(8): p1337-1347.

⁵⁸ Cronkleton, P., P. Pacheco, R. Iburguen, and M.A. Albornoz.

2009. Reformas en la tenencia de la tierra y los bosques: La gestión comunal en las tierras bajas de Bolivia. La Paz, Bolivia: CIFOR/CEDLA.

⁵⁹ Cronkleton. P., D. Barry, J.M. Pulhin and Sushil Saigal 2010. The devolution of management rights and the co-management of community forests. In *Forests for People: Community rights and Forest Tenure Reform*. London: Earthscan. p43-68.

⁶⁰ Jintao, Xu, Andy White, Uma Lele. 2010. *China’s Forest Tenure Reforms: Impacts and Implications for Choice, Conservation and Climate Change*. Beijing: Peking University and Washington D.C.: Rights and Resources Initiative; Keliang, Zhu, Darryl Yhugen and Nathan Hilgendorf. 2010. *Who Owns Carbon in Rural China? An Analysis of the Legal Regime and Practices with Preliminary Policy Recommendations*. Seattle: Rural Development Institute, and Washington, D.C.: Rights and Resources Initiative.

⁶¹ Scheduled Tribes and Other Traditional Forest Dwellers (Recognition of Forest Rights) Act, 2006; Springate-Baginski, O, M. Sarin, S Ghosh, P. Dasgupta, I. Bose, A. Banjee, K. Sarap, P. Misra, S. Behere, M.G. Reddy, P.T. Rao 2009. Redressing ‘Historical Injustice’ through the Indian Forest Rights Act, 2006: A Historical Institutional Analysis of Contemporary Forest Rights Reform. Discussion Paper Series 27. Manchester, United Kingdom: School of Environment & Development, University of Manchester.

⁶² Arun Agrawal, A. Chhatre, R. Hardin 2008 Changing governance of the world’s forests. *Science* 320: p1460; Tacconi, L. 2007. Decentralization, forests and livelihoods: theory and narrative. *Global Environmental Change* 17: p338-348; Batterbury, S. and J. Fernando. 2006. Rescaling governance and the impacts of political and environmental decentralization: an introduction. *World Development*, 34 (11): p1851-1863.

⁶³ Arnoldo Contreras-Hermosilla, Hans M. Gregersen & Andy White. 2008. *Forest Governance in Countries with Federal Systems of Government: Lessons and Implications for Decentralization*. Bogor, Indonesia C: Center for International Forestry Research.

⁶⁴ Chhatre and Agrawal 2009. As cited in endnote 62.

⁶⁵ Chhatre and Agrawal 2009. As cited in endnote 62.





Consejo Civil Mexicano para la Silvicultura Sostenible (CCMSS)

ccmss@prodigy.net.mx
Miguel Ángel de Quevedo 103
Chimalistac, Deleg. Álvaro Obregón
Distrito Federal 01070 MEXICO
Telephone [52](55) 5661-8574
Fax [52](55) 5662-8157
www.ccmss.org.mx

Rights and Resources

1238 Wisconsin Ave NW,
Suite 204, Washington D.C. 20007
United States of America
info@rightsandresources.org
Telephone: +1 202.470.3900
Fax: +1 202.944.3315
www.rightsandresources.org

Authors

(in alphabetical order)

David Bray
Deborah Barry
Sergio Madrid
Leticia Merino
Ivan Zuñiga

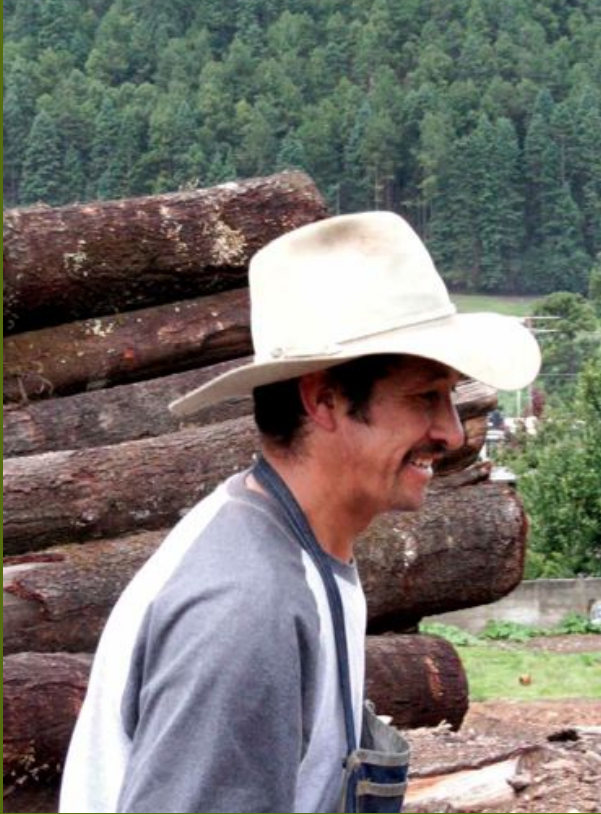
The **Consejo Civil Mexicano para la Silvicultura Sostenible (CCMSS)** is a non-profit organization, legally established in Mexico City in May 3rd, 1996. This organization promotes the conservation of forest ecosystems through its communitarian management, the creation of proposals to improve forestry policy and the fostering of economic mechanisms that stimulate conservation and responsible management of forests.

The **Rights and Resources Initiative** is a strategic coalition comprised of international, regional, and community organizations engaged in research, development and conservation to advance forest tenure, policy and market reforms globally. Its mission is to support local communities' and indigenous peoples' struggles against poverty and marginalization by promoting greater global commitment and action towards policy, market and legal reforms that secure their rights to own, control, and benefit from natural resources, especially land and forests. RRI is coordinated by the Rights and Resources Group, a non-profit organization based in Washington, D.C.

Editorial Production

PUNTO VERDE CONSULTORES S.C.
Azucena Garza
Ana Gabriela Robles
Photography
Ivan Zuñiga
Design and illustrations
Alejandra Fernandez
Karina Juárez





FORD FOUNDATION