COLLABORATIVE MANAGEMENT OF THE MEXICAN COAST: PUBLIC PARTICIPATION AND THE OIL INDUSTRY IN THE TERMINOS LAGOON PROTECTED AREA

by

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ABSTRACT

A collaborative approach to protected area management was attempted in southern Mexico as a solution to civil protests over oil-related development. Through the development of a management plan and a joint management body, local people and other actors participated in planning and decision making for the protected area. The national oil company made this collaborative approach possible, by both prompting a crisis that led to the joint management body and later funding this body. The collaborative approach enjoyed moderate success between 1997 and 2000. Yet the process failed due to conflicts that could not be resolved within the protected area framework, flaws in the management body's structure and function, and disagreement among its members regarding each others' rights, roles, and responsibilities.

The case study is analyzed using concepts regarding corporate transformation and public participation, and theory from coastal management and comanagement. The federal government did not clearly define actors' rights, roles, and responsibilities, critical to the success of the joint management body. Forces are identified that both influence the critical role played by national oil company in the protected area and transform the company's approach to environmental and social issues. While the protected area is an encouraging beginning for Mexico, it suffers from the absence of key characteristics for successful coastal management. The protected area does possess clear boundaries, balanced socio-economic and environmental benefits, and identifiable decision-making tools. However, planning within the protected area is inhibited by unclear goals and a lack of continuity and enabling legislation. Whereas the success of comanagement is predicted by the presence or absence of enabling conditions, the protected area possessed enabling conditions related to the participants and preagreement. Conversely, the absence of enabling conditions related to the scale of management, postagreement, and management characteristics inhibited comanagement.

Analysis of this case provides two directions of learning between theory and practice. Comparing the case study to theory, and international examples of protected areas,

demonstrates that potential exists to improve collaborative approaches to protected area management in Mexico. The TLPA experience also contributes to comanagement theory and provides lessons for other protected areas experimenting with collaborative approaches.

Key Words: Comanagement, coastal management, protected areas, planning, public participation, Mexico, Terminos Lagoon, PEMEX, public companies

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Glossary

CTA	Technical Advisory Committee *Comité Técnico Asesor*
EIA	environmental impact assessment
EPOMEX	Ecology, Fisheries, and Oceanography of the Gulf of Mexico *Ecología, Pesquería y Oceanografía del Gulfo de México*
GIS	geographical information system
ICZM	integrated coastal zone management
INE	National Institute of Ecology *Instituto Nacional de Ecología*
IUCN	International Union for the Conservation of Nature
NGO	nongovernmental organization
PEMEX	Mexican Petroleum *Petróleos Mexicanos*
PEP	PEMEX Exploration and Production *PEMEX Exploración y Producción*
PROFEPA	Federal Attorney for Environmental Protection *Procuraduria Federal de Protección Ambiental*
SEMARNAP	Secretariat of the Environment, Natural Resources and Fisheries *Secretaria de Medio Ambiente, Recursos Naturales y Pesca*
SEMARNAT	Secretariat of the Environment and Natural Resources *Secretaria de Medio Ambiente y Recursos Naturales*
SIPA	Industrial Security and Environmental Protection *Seguridad Industrial y Protección Ambiental*
TLPA	Terminos Lagoon Protected Area *Área Natural Protegida de la Laguna de Términos*

1.0 Introduction

The early afternoon sun beats down on the edge of North Beach and a pod of dolphins, panicked and disorganized, thrash through the water mere meters from the shore. Their distressed clicks and whistles fill the air with a sense of urgency. To the south, the Carmen-Zacatel Bridge spans four kilometers across Carmen Inlet and a string of launches with outboard motors approach at great speed. The port captain stands resolutely on the beach watching the spectacle and calmly explains that the dolphins are trapped in an incomplete channel in the process of being dredged. In front of him, a crowd of environmentalists, sailors, soldiers, and municipal workers splash through the water, some herding the pod with long orange colored booms while others gently restrain individual dolphins, trying to remember the hurried instructions they had been given as to which parts of the animal's anatomy were sensitive and which other parts to hold onto. The launches soon arrive and thread their way cautiously through the mass of bodies towards the restrained dolphins. The dolphins are lifted up into the launches and showered constantly with water for the short trip into the deeper waters of the lagoon. When a pair of newspaper reporters arrive on the scene less than an hour later, they are left with only second hand accounts and no photo opportunities as those involved, including the dolphins, have all dispersed back to their daily routines.

This event represents the legacy of a remarkable experiment in collaborative management of the Terminos Lagoon Protected Area in southern Mexico. Over the course of seven years, an unprecedented effort emerged to coordinate government agencies, industry, environmentalists, fishers, and academics towards a common goal. While Terminos Lagoon is not an unqualified success, its story reveals new opportunities for protected area management in Mexico.

The Terminos Lagoon Protected Area (TLPA) is a unique case study because it embodies three unexpected contradictions. First, far from the ideal of protected areas as remote and unpopulated pieces of wilderness that can easily be set aside for conservation, the TLPA is home to over 120,000 people and a complex sandwich of conflicting interests. In addition to urban development, the protected area is under pressure from fisheries, agriculture, and oil development. Second, although Mexico still lacks a formal coastal management program, the TLPA acted as a pilot project for planning land use along part of the Mexican

coast. Third, while the Mexican federal government has a long history of centralized and authoritarian control of its programs, the TLPA was the site of an exciting comanagement initiative without precedent in Mexico that involved local people in the design of the area's future. Better understanding these contradictions can provide us with insight into the role of protected areas as opportunities for collaborative management both within and beyond Mexico.

This report is divided into nine chapters. A brief summary of Mexico's protected area system and the opportunities for public participation are presented in chapter two while the rationale and methods used for this research are described in chapter three. The history of the Terminos Lagoon Protected Area is presented in chapter four, including the rise and fall of collaborative management in the area. Mexico's national oil company is the subject of chapter five including the company's history, involvement in the protected area, and forces for change within the company. The failure of the collaborative management in the protected area is explained in chapter six in terms of conflicts that surpassed the protected area framework and confusion among actors over rights, roles, and responsibilities. Literature reviews of coastal management and comanagement are presented in chapter 7 along with an assessment of how the Terminos Lagoon Protected Area is a limited example of both. Finally, lessons are suggested for comanagement theory and other protected areas in chapter eight before concluding statements are made in chapter nine.

2.0 Protected Areas in Mexico

To comprehend the opportunities for coastal management and comanagement within Mexican protected areas, it is first necessary to have a basic appreciation of the legislative and institutional structures that define the country's system of protected areas. The legislative structure for environmental management in Mexico begins with Article 27 of the *Mexican Constitution* that invests the federal government with primary jurisdiction over a broad range of land, water, and other natural resources. The contemporary interpretation of Art. 27 implies a key role for the federal government in environmental

management, yet the powers described in the *Constitution* are defined in a series of federal laws.

Compared to its North American neighbors, Mexico has a short history of environmental legislation. Whereas the U.S. National Environmental Policy Act came into effect in 1970, the first comprehensive environmental legislation in Mexico emerged nearly two decades later. While a large number of environmental regulations and standards have been introduced over the past 14 years, many are quite new and still developing. As both Mexican environmental law and management are still in their infancy, it would appear that Mexico has much to learn from Canada and the United States. Nonetheless, Mexico represents a unique set of social realities and environmental challenges for which the experiences of its northern neighbors have no precedents. Despite the country's enormous wealth of biodiversity, it is difficult to justify setting areas aside for conservation and deny rural people access to natural resources given the high levels of poverty and inequity in Mexico. Furthermore, there few traces of unaltered wilderness left in Mexico and newer protected areas are often established in populated regions already experiencing environmental degradation and conflict over natural resources.

Mexico's federal system of protected areas started with the establishment of Desierto de los Leones National Park in 1917 near Mexico City. Protected areas remained a low priority on the political agenda, however, until the late 1930s and 1940s when over thirty national parks were established during the administration of president Lazaro Cardenas[1], a legacy that still represents one third of the present system. With the beginning of the global environmental movement, and the first IUCN World Conservation Congress, a second boom in conservation started in the 1970s. Under the influence of the international conservation agencies, Mexico has diversified its system to include categories such as biosphere reserves. Over half of Mexico's protected areas were established during the past twenty years (Mexico, INE 2000). Presently, Mexico's system includes over a hundred protected areas, encompasses 6.5 % of the country's land mass, and utilizes six categories of protected areas that vary in the range of land uses and activities permitted its boundaries (table 1).

Table 1: Mexico's Federal System of Protected Areas.

Category	IUCN Equivalent	Number	Total Area (000's ha)
Biosphere Reserves* *Reservas de la Biosfera**	-	26	8,821
National Parks *Parques Nacionales*	II	64	1,396
Natural Monuments *Monumentos Naturales*	III	4	13
Protected Areas for Natural Resources *Areas de Protección de Recursos Naturales*	VI	5	281
Protected Areas for Flora and Fauna *Areas de Protección de Flora y Fauna*	IV	11	1,661
Sanctuaries *Santuarios*	III, V	7	518
TOTAL		117	12,690

*Mexican biosphere reserves are similar to, but independent of those protected areas included in the UNESCO Man and Biosphere program. As elsewhere, biosphere reserves in Mexico contain core areas that are subject to strict conservation and surrounding buffer zones in which land and resource uses are managed. (Sources: Ghimire and Pimbert 1998, 10; Mexico, INE 2000, and Diario Oficial 1988)

Mexico's present system of protected areas is defined in the biodiversity chapter of the *Federal Environmental Law (Ley General de Equilibrio Ecológica y Protección al Ambiente)*, which was passed in 1988 and modified in 1996 (Mexico, Diario Oficial 1988). The *Federal Environmental Law* describes protected area categories and provides a legal framework for the protected area system. The *Federal Environmental Law* is more descriptive than proscriptive, however, and its implementation depends on a series of regulations and standards, referred to in Spanish as *reglamentos* and *normas.* There is currently a long list of legislation that is potentially applicable to protected areas including a *Coastal Zone Regulation*, an *Endangered Species Rule*, and a *Protected Areas Regulation*. The *Coastal Zone Regulation* declares a 20-meter strip of land adjacent to the high tide mark as federally owned land to be used for coastal management (Mexico, Diario Oficial 1991). A primary reason for establishing a protected area is to conserve habitat for at risk and endangered species listed in the *Endangered Species Rule*, but the rule does not provide for government intervention on private lands (Mexico, Diario Oficial, May 1994). The *Protected Area Regulation* was only recently passed in November 2000 and is discussed below in greater detail.

Federal responsibility for protected areas lies with the Secretariat for Environment, Natural Resources and Fisheries (SEMARNAP - *Secretaria de Medio Ambiente y Rescursos Naturales y Pesca*)[2]. SEMARNAP is divided into numerous departments and government agencies including the National Institute of Ecology (INE - *Instituto Nacional de Ecología*), or and the Federal Attorney for Environmental Protection (PROFEPA - *Procuraduria Federal de Protección Ambiental*). INE has a number of responsibilities among which are maintenance of the federal system of protected areas and conducting the federal environmental impact assessment process while PROFEPA is responsible for enforcing environmental regulations and standards.

The process of establishing a federal protected area begins with a presidential decree that is published in the legal gazette of the Mexican government (*Diario Oficial de la República*). While a decree is a legal document creating a protected area, a decree simply describes an area and a protected area's category. While a decree grants protected area status, it does not specify who is to be involved in its management or how the area is to be managed. Such details are instead subsequently defined in a management plan that describes the goals, programs, and rules for the each protected area.

There are important differences among the NAFTA nations in terms of land tenure within protected areas. While in the United States and Canada, land enclosed in protected areas is often government owned, the establishment of protected areas in Mexico seldom changes existing land tenure and Mexican protected areas often include a mixture of state property, private lands, and communal *ejido* lands. Preexisting landowners continue to hold title over their lands and government owns only those lands that are assigned to it by law, regardless of protected area designation, such as the federal coastal zone and open water. In Canada, Crown ownership of land invests the government with a wide range of property rights over protected areas and the government agencies can manage such land in a manner analogous to a private landowner. In Mexico, property rights are dispersed over a greater number of landowners and the role of government agencies is to coordinate the activities of these landowners. Not surprisingly, Mexico faces a greater challenge in implementing protected area policies as these policies depend upon the voluntary actions of landowners and involve more actors in the management system. Landowners are not

legally required to cooperate with the plans of government agencies and many centrally managed protected areas have continued to experience degradation despite being declared protected areas (Gomez-Pompa and Kaus 1999).

Public Participation

These conditions create the need for a distinct form of protected areas management in Mexico that not only encompasses conservation science, but also manages conflicting interests and coordinates the activities of a wide range of social actors. The key means of achieving these goals is through public participation. Arts. 157 through 159 of the *Federal Environment Law* provide the main description of public participation and declare society "coresponsible for the planning, execution, evaluation, and monitoring of environmental policy and natural resources". Public participation is also mentioned in the specific areas of land use planning (art. 20), protected areas management (arts. 47, 56, 59, and 67), and biodiversity protection (art. 79). Public participation is further defined to make specific reference for the inclusion of academic institutions, indigenous groups, and non-governmental organizations (Mexico, Diario Oficial 1996). Additionally, the opportunity for collaborative management within Mexican protected areas is implied by multiple references within the *Federal Environment Law* of which art. 47 is the most strongly worded:

> In the establishment, administration and management of protected areas . . . the Secretariat shall promote the participation of (the protected areas') inhabitants, property owners and overseers, local governments, indigenous groups, and other social organizations, whether public or private, with the goal of creating integrated development of the community and assuring the protection and preservation of ecosystems and their biodiversity. (Mexico, Diario Oficial 1996)

Changes to the *Federal Environmental Law* made in 1996, gave state and local governments a greater role in environmental management. Previous to 1996, the federal government had exclusive jurisdiction over environmental management. The modifications, however, allow state and local governments to develop their own environmental legislation and declare new protected areas independent of the federal system. While the responsibility for federal protected areas lies solely with INE, there is an understanding that INE is to coordinate its activities with state and local governments. This coordination occurs

through an informal relationship between these governments through a semi-independent local office, or Direction Office, that INE establishes within each protected area. Additionally, the *Federal Protected Areas Program of 1995-2000* established the opportunity for a form of contract-based collaboration under which certain management responsibilities may be transferred from the federal government to other actors.

> The *Federal Environment Law* and *Forestry Law* open the possibility for a decentralized management of protected areas with the participation of local residents and society in general. (These laws) create the option of transferring the administration, total or in part, of protected areas to state governments, the Federal District, individuals or organizations so that they may assume the responsibility for the conservation, development and monitoring, for the time established, for the purposes of research, tourism, recreation, or as otherwise described. (Mexico, *Federal Protected Areas Program* of 1995-2000, 103).

While such references are vaguely worded and distributed among multiple pieces of legislation, they create opportunities for an unprecedented level of public participation in protected areas management in Mexico.

3.0 Rationale and Methods

3.1 Why a Case Study?

Similar to research topics in economics or anthropology, research into protected areas management is often interdisciplinary and falls into the divide between natural science and social sciences. While protected areas are established to preserve the integrity of ecosystems or species on the basis of biophysical data, how our societies make decisions regarding the use of protected areas is essentially a question for social science research.

Case studies form an important tool for social science research to bridge the gap between theory and practice. Theory informs the researcher regarding criteria to use for selecting a case study and what questions to ask. For the researcher, a case study is filled with thousands of anecdotal stories and colorful details of daily life and is a process of immersing his or her self into the complex reality on the ground. It is the researcher's

responsibility to filter these experiences and identify the most relevant points regarding the practice of their field of interest and suggest how these points may inform theory. Rather than a single method applicable to all realities, case study research involves an endless list of techniques, skills, and heuristics that the researcher must possess and call upon when appropriate.

Case studies can be used to both explore and explain real-life situations that are too complex for experimentation (Yin 1994). In general, the purpose of this research project was to explore some of the recent opportunities and achievements of coastal management and comanagement in Mexico. By defining a case study, boundaries were established that limited this research in time and space. The search for explanation serves to further focus the research into a key research question:

Why did a collaborative approach to management fail in Terminos Lagoon Protected Area?

To answer this research question, the case study uses theory to inform practice, and practice to inform theory. First, the case study reflects upon the strengths and weaknesses of the TLPA experience using an analysis based on theory from public participation, corporate transformation, coastal management and comanagement (fig.1). This analysis suggests policy recommendations in order to improve management in Terminos Lagoon. Second, the TLPA experience is compared to international examples of comanaged protected area and is used to inform comanagement theory and suggest lessons for other marine protected areas.

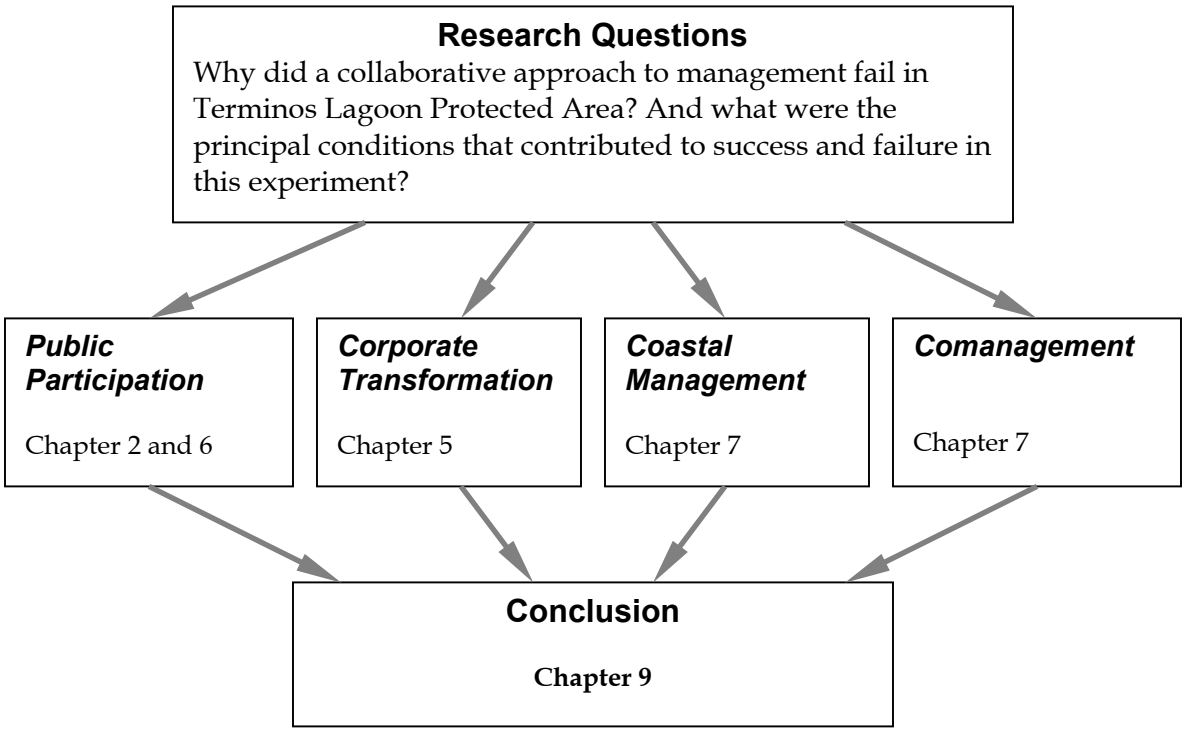

Figure 1: Report Outline The research question is answered through an analysis using public participation, corporate transformation, coastal management, and comanagement.

3.2 Methods

Based upon fieldwork conducted between from January 22 to April 2, 2001, a case study database was compiled utilizing multiple source of evidence including: direct observation, archival research, and focused interviews. Direct observation refers to events witnessed by the researcher during multiple visits to the protected area and immersing himself in the local culture. Archival research included consulting past issues of local newspapers, local publications, project reports, and video tape recordings of key meetings concerning the protected area. Focused interviews are short sessions with respondents where the questions asked are often open-ended and assume a conversational manner, but are derived from a previously developed case study protocol (Yin 1994, 84). Focused interviews provided a useful research method that was efficient both in terms of the time required and adaptability to respondents from a range of educational backgrounds. The case study database includes two books of field notes and two MS Office documents containing the researcher's observations and interview transcripts. This database was kept confidential and accessed only by the researcher

The case study used representative sampling where more evidence and more respondents were sought out until additional evidence gathered no longer yielded any new variation (Strauss 1987). Once this full variety of information had been uncovered, findings were drawn when information from one source of evidence corroborated information from another source, or when there was agreement across multiple interviews. This process is sometimes referred to as triangulation (Yin 1994, 13).

A total of 14 focused interviews lasting between 30 and 150 minutes were conducted with government representatives (federal and municipal), the national oil company, local environmental groups, fishing cooperatives, and academics. Archival research was used to identify some respondents and these respondents recommended others potential respondents. While this selection of respondents was not random, all respondents were either active participants in the management of the protected area or had been active in its management sometime between 1994 and 2001. Potential respondents were contacted by phone, mail or in person and given a written description of the project including the

purpose of the research and a list of questions to be asked during the interview. Respondents were given the opportunity to review the document and were later contacted to determine whether they wished to participate and to schedule a date for the focused interview. In all instances, these interviews were conducted either in the respondent's place of work or a neutral space, such as a coffee shop or restaurant. Prior to the focused interview, the researcher reviewed the goals of the project with the respondent and ensured the respondent was aware of both the confidentiality of the interview and the respondent's right to withdraw his or her participation at any time.

To facilitate the accuracy of the case study, respondents were asked if they would permit the interview to be recorded on microcassette. Eight respondents approved and their responses were later transcribed. Summaries of the other six interviews were entered into the case study database shortly afterwards based on researcher's recall and written notes recorded by the researcher during the interviews. All microcassettes were subsequently erased and alphanumeric codes were used in the case study database to hide each respondent's identity and ensure confidentiality.

4.0 A Short History of Terminos Lagoon

This chapter examines the history of the Terminos Lagoon Protected Area (TLPA) including the rise and fall of the collaborative approach to management. The first section explains the precedents that established the region as a net exporter of natural resources. The next two sections describe the process of establishing the protected area and the crisis that later inspired a more collaborative approach to management. The final two sections describe how this crisis was resolved, the experience with collaborative management in Terminos Lagoon, and how the protected area is currently in a stalemate regarding the direction management should take in the future. This chapter adopts a narrative style to convey the story of the collaborative approach to management in TLPA, based on fieldwork conducted in early 2001. This fieldwork included direct observation, archival research, and focused interviews with individuals that had participated in the management of TLPA. A qualitative analysis was used to evaluate the findings reported

here, either through corroboration among multiple sources of evidence or multiple interviews (Strauss 1987).

The Terminos Lagoon Protected Area is located in the Campeche State at the base of the Yucatan Peninsula, between 18.5 and 19 degrees North latitude and 91 and 92 degrees West longitude (fig. 2). With an average water depth of only four meters, Terminos Lagoon is a shallow, calm, and semiisolated from the Gulf of Mexico by Carmen Island (fig. 3). The lagoon has been the subject of intense scientific study for over 20 years and much is known regarding its ecological and biophysical dynamics (Yañez-Arancibia and Day 1988). The lagoon acts as interface between the fresh water inflow of the Usumacinta River to the south and the marine water of the Gulf of Mexico from the north. Oceans currents and wind patterns establish a net flow of marine water into the lagoon from the eastern Puerto Real Inlet. This marine water mixes with nutrient-rich fresh water in the lagoon and returns to the Gulf of Mexico through Carmen Inlet (David and Kjerfve 1998). The resulting flow of nutrients out of Terminos Lagoon helps support numerous fisheries offshore in Campeche Sound, making it one of the most productive fishing areas in Mexico. Many of these same fisheries species depend directly on the shallow waters and mangrove ecosystems of Terminos Lagoon as a nursery for juvenile fish (Yañez-Arancibia and Day 1988).

Figure 2: Location of Terminos Lagoon within Mexico

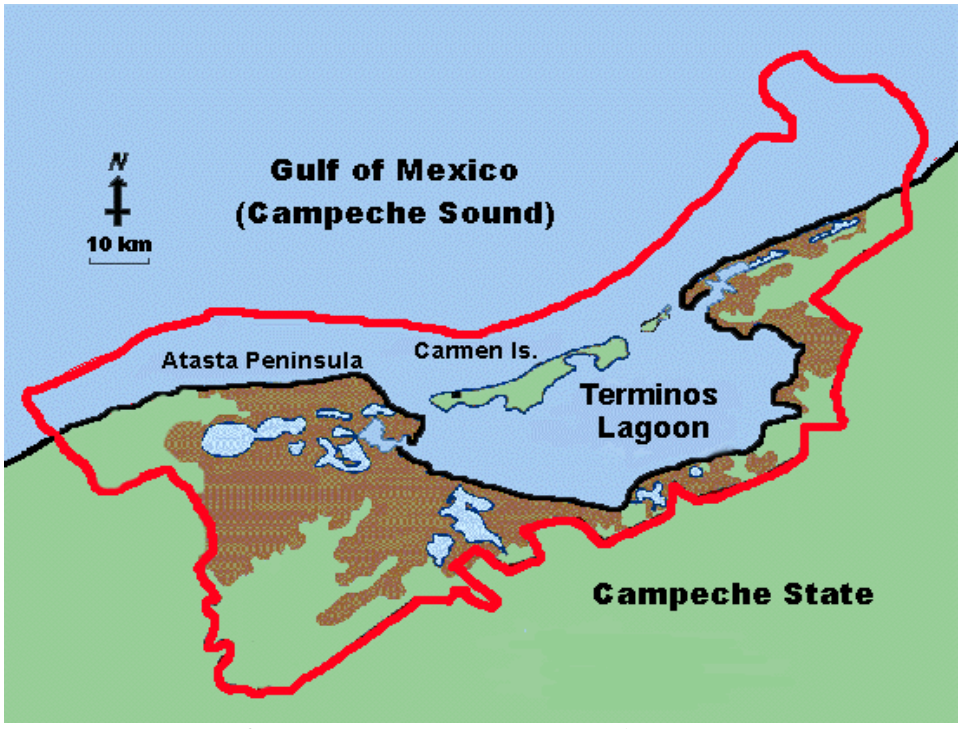

Figure 3: Map of Terminos Lagoon Protected Area. The protected area boundaries and coastline are approximate and not exactly to scale. Shaded areas denoted mangroves and wetlands.

4.1 Prologue

To understand how extraordinary were the contemporary events within Terminos Lagoon, it is first essential to appreciate that area has long been a net exporter of natural resources. For centuries Terminos Lagoon was subject to a series of boom and bust cycles in resource use starting in the 17th century with forestry and continuing today with petroleum.

After the conquest of present-day Mexico by the Spanish forces in the 15th century, the colonial government focused its energies inland, consolidating its control over indigenous populations and the production of precious metals. With the exception of vital shipping ports such as Veracruz, the colonial government ignored the oceans and the Mexican coast was left relatively defenseless. The Gulf Coast thus became a haven for pirates that both used the area as a refuge and the raiding of local settlements. By 1671, a significant number of pirates had settled on the shores of Terminos Lagoon and became foresters. In addition to mahogany and other valuable hardwoods, these pirates harvested *"palo de tinto"* (Latin name -*Vataira lundelii*), a tree that produced a dye used at the time for coloring textiles. These materials were exported to Europe for handsome profits and, as the pirates were primarily English, without any royalties to the Spanish government. Although Spanish forces attacked the pirates' settlements within the lagoon several times and established a naval base on Carmen Island in 1716, pirates were reported to be active in the region until 1824 (Rodriguez 1984, 57).

In first decades of the 20th century, Terminos Lagoon experienced resource booms in chicle extraction and copra. While small-scale fishing was a pillar of the local economy much earlier, the development of commercial shrimp fisheries in the 1950s converted the region into one of the country's most important commercial fishing centers. As the local economy flourished around commercial fishing, servicing boats, and processing shrimp for distant domestic and foreign markets, the transformation caused by this resource boom became part of local identity. Today many people living around Terminos Lagoon are either fishers, or consider themselves the children of fishers. Since the beginning in the early

1970s to the present, Terminos Lagoon has been living in an oil and gas boom. The country's most important hydrocarbon reserves are located offshore in the Gulf of Mexico and are currently responsible for three quarters of national oil production and half of national gas production (Bustillos 2000, 33).

During each of these cycles, the natural resource in question was harvested to satisfy a demand external to the area and was associated with a demographic explosion as new workers immigrated into the region. The new markets created by these resource booms were primarily controlled by outside entrepreneurs and a large proportion of the benefits created by the resource industry was channeled outside of the area. As only a small portion of this wealth is reinvested in the area, the living standards of local residents remained relatively poor compared to the national average. Local people have come to resent outsiders as agents that appropriate local wealth and corrupt local culture, especially with the advent of the oil and gas boom. It is no great exaggeration to state that locals perceive oil workers as the modern day equivalent to the 17th century pirates. The past three decade of oil boom has disrupted the sense of local identity, and many respondents commented that there is now two communities within the region: the locals and the oil workers (interviews). While this ever-present social divide tends to be the rule within the protected area, some long-time oil workers have been an exception as they consider themselves and their families to have become locals (interviews).

4.2 Process

The past two decades have witnessed the emergence of an environmental awareness within the Terminos Lagoon Region based on concerns for habitat and fisheries. Since the 1970s, researchers from several Mexican universities have studied the ecology of both the lagoon and the adjacent waters of Campeche Sound (for example, Yañez-Arancibia and Day 1987). The efforts of these researchers spilled beyond the academic community and contributed equal parts knowledge and passion to a generation of students who value the region as habitat for rare, endangered, or charismatic species such as dolphins. These budding environmentalists have formed a host of small, local environmental groups that

perceive the region's ecology as a part of local identity and lobby for greater conservation and environmental management in the region (interviews).

Meanwhile government and local fishers have come to better appreciate the fundamental importance of the region's ecology to sustainable management of the area. Mangroves and wetlands are vital to the lifecycles of many economically important fisheries species, and the loss of these habitats coincides with a silent crisis in local fisheries due to declining production since the 1970s. Taking shrimp as an example, annual production in Campeche State fell from 14000 metric tons/year in 1979 to less than 6000 metric tons/year by 1998 (Mexico, SEMARNAP 1998, for more details see sect. 6.1, Conflicts). A number of theories exist and the exact causes for the decline remain unknown. Yet conserving the region's remaining habitat is viewed as a logical step towards protecting fisheries. Indeed, the federal government declared Terminos Lagoon a fishing reserve on March 13, 1974, but this effort was largely unsuccessful due to a lack of enforcement and illegal fishing continued (Rodriguez 1984).

By the early 1990s, an alliance had formed between academics, government, and small, local environmental groups. Concerned that exploration studies being conducted by the national oil company, *Petróleos Mexicanos* (PEMEX), meant the company was to increase its presence of the region, local environmental groups approached the state government and proposed that Terminos Lagoon be decreed a protected area. The state government was receptive to the idea and worked with the National Institute of Ecology (INE) to contract a preliminary study to justify a declaring protected area status for the region. The contract for this study was awarded to a team of Mexican academics associated with the Ecology, Fisheries and Oceanography of the Gulf of Mexico (EPOMEX) Research Institute, then part of the University of Campeche.

Based upon the preliminary study, the federal government published a decree on June 6, 1994 that officially established the Terminos Lagoon region as a *Protected Area for Flora and Fauna* (Mexico, Diario Oficial, June 1994). The decree established a protected area covering an area of 7061 km^2, including Terminos Lagoon and its associated shoreline, Carmen Island, Atasta Peninsula, and the coastal zone up to 10-meters of water deep (fig. 3). While

the decree legally recognizes Terminos Lagoon as a federal protected area and the category of *Protected Area for Flora and Fauna* reflects the interest in conserving rare and endangered species, the restrictions placed upon land and resource use in this category are less strict than those for national parks or biosphere reserves. Indeed, the four-page decree is more of a mission statement by the federal government committing to coordinate its activities in the region rather than an action plan on how to achieve conservation. Consequently, the decree does not specifically forbid anything and permits the multiple use of the protected area for a wide range of activities (Mexico, Diario Oficial, June 1994).

The decree does not define what restrictions are to be placed on the human use of the protected area nor specify the area's management priorities. In the Mexican system of protected areas, these matters are defined in a management plan (*programa de manejo*) that is developed for each protected area. A management plan is intended to be a general framework that both better defines the goals of a protected area and describes the rights and responsibilities of each institution involved in its management.

It is during the development of the management plan that the Terminos Lagoon experience began to differ substantially from other Mexican protected areas. INE formed a Technical Committee (*Comité Técnico*) to oversee the development of the management plan. Once again INE contracted this responsibility to academics. While the Technical Committee included representatives from numerous universities active within the state, the University of Carmen was given the responsibility to coordinate the committee and provide space for offices and meetings. At this point, the management plan could have become a closed matter of academic research, but under pressure from local groups, INE and the University of Carmen made the decision to develop the management plan using a series of public consultations.

A first round of consultations was held between October 1994 and January 1995 to identify problems that could be addressed within the management plan. In order to facilitate greater attendance, this round included over 110 open meetings held in various locations within the protected area. Each meeting was dedicated to one of ten themes under consideration including: fisheries, agriculture and forestry, health, tourism, water,

environmental education, coastal zone management, biodiversity, urban and industrial development, and communications and transportation. Representatives from 46 different organizations attended these meetings and representing a cross section of government agencies, civil society, and resource users (Mexico, SEMARNAP 1997).

The Technical Committee also conducted a second round of consultation between January and February 1995 to verify the findings from the first consultation and to seek feedback on a partial draft of the management plan the Technical Committee had prepared. The second round consisted of five workshops, one for each of five themes including public use, conservation, sustainable development, economic development, and zoning (Mexico, SEMARNAP 1997).

The consultation process was to have two lasting legacies: the variety of issues to be considered in the management plan and an opportunity for public participation. Although the decree states the area's purpose is to protect rare and endangered species, the consultation process became a catch all for a wide variety of environmental and social problems in the region. While each of the consultation's themes undoubtedly impact upon habitat, the discourse of the management plan now included larger issues related to regional development. Simply, the management plan's scope had enlarged and it attempted to be all things to all people.

The meetings and workshops also built social capital among interested parties. Through the meetings, attendees expressed their viewpoints, listened to others, and built alliances. In this way, the consultation process created a sense of ownership over the process and many participants began to speak of "our protected area". Through their involvement in open meetings, many individuals and local organizations felt they were exercising a right to participate in developing and managing what they considered to be their protected area. Far from a simple government document, the management plan was perceived as a mechanism by which the protected area could be transformed from a federal government proposal into a more local initiative (interviews).

By June 1995, a year after the protected area decree had been made law, the Technical Committee had prepared a complete draft of the management plan and submitted it to INE for review. The management plan now included the dual goals of conserving biodiversity and improving the livelihoods of local people:

> The particular characteristics of this protected area require a conceptual framework that both conserves biodiversity and provides local communities with sustainable methods of using natural resources. (Mexico, SEMARNAP 1997, 42)

Reflecting the diversity of issues raised in the consultation process, the management plan was now over a hundred pages in length and included a long list of topics ranging from ecological restoration to land ownership and urban development (table 2). Despite the document's length, the management plan was merely a list of objectives rather than a plan of projects or programs. In other words, the management plan described what the Technical Committee and the participants in the consultation process felt needed to be done rather than prescribed actions on how to achieve these objectives. While the management plan included a timeframe for achieving its objectives, little was included as to who would be responsible for the management plan and no mention was made as to how the protected area would be funded. Given the draft management plan's ambiguity, it is hardly surprising that INE did not accept it immediately. Instead the plan remained a work in progress for the remainder of 1995. Yet 1996 was to be the year that all of Mexico would learn of Terminos Lagoon.

Table 2. Outline of Management Plan for Terminos Lagoon Protected Area
(Mexico, SEMARNAP 1997)

Chapters	Subsections
Natural Resource Management	Wildlife Management Agriculture and Forestry Fisheries and Aquaculture Community-Based Enforcement and Monitoring Ecological Restoration
Development	Industry and Infrastructure Urban Development Conservation and National Heritage
Public Use	Tourism Environmental Education Public Participation
Scientific Research	Research Priorities Publication Research Support Monitoring
Legislation	Land Registry Relevant Laws and Regulations
Operations	Planning Personnel Public Relations Enforcement and Assessment

4.3 Crisis

The national oil company, *Petróleos Mexicanos* (PEMEX), has had a significant presence in the region since the 1970s. This presence has been concentrated in the City of Carmen and Atasta Peninsula through the construction of oil infrastructure, but it has influenced the entire region through seismic surveys and exploration. Over the past three decades PEMEX has focused its efforts on hydrocarbon deposits to the west and north of the new protected area, onshore in neighboring state of Tabasco and offshore in Campeche Sound. Within the newly decreed protected area, PEMEX had previously constructed pipelines and a recompression plant to receive oil and gas from the offshore platforms and ship these products to Tabasco State.

This infrastructure has long been a source of tension between PEMEX and the people of Atasta Peninsula. Local farmers and fishers have repeatedly accuse PEMEX of polluting

local soils and waters resulting in the loss of agricultural and fishery production. More recently there have been accusations of pollution negatively affecting the health of local people. Locals have occasionally sought legal action against the company, but more frequently they resort to civil protests aimed at damaging PEMEX´s image or interfering in the company's operations. Through civil protests, local inhabitants have sought media attention, petitioned politicians, blockaded roads leading to PEMEX installations, or occupied oil wells. There is a sincere desire on the part of residents to improve the quality of their local environment through these protests. Yet there is also an element of political positioning and some political parties have capitalized upon, or even directly engineered such protests for their own ends.

While decades ago the company safely ignored such protests, changing social values in the 1990s and an interest in exploring the Atasta Peninsula for oil deposits inspired PEMEX to adopt a practice of giving monetary compensation to individuals and groups claiming to be affected by its activities. Rather than basing compensation on evidence of damages or losses local people accused PEMEX of causing, payments were allocated instead in proportion to the inconvenience caused by their protests either in the media attention these protests received or the extent to which they interrupted PEMEX´s operations (interviews). The policy was successful to the extent that it reduced the number of protests that disrupted PEMEX´s operations. Yet the practice of handing out money also created a cycle of dependency referred to locally as the protest industry (*industria de reclamo*). With the precedent that PEMEX pays those who protest, during the early 1990s protesting in the Atasta Peninsula became a form of income generation as well as a means of gaining attention for local problems (interviews).

In an effort to reduce social tension, and break up the *industria de reclamo,* the federal and Campeche State governments negotiated an agreement in 1995 between PEMEX and one of the more important protest groups, the Campesino and Fishers Movement of Atasta Peninsula (*Movimiento de Campesinos y Pescadores de la Península de Atasta*). In return for ending the protests, PEMEX committed funding for small-scale agricultural projects that would help offset the losses local people claimed to have suffered. However, PEMEX

would provide funding to community projects rather than paychecks to individuals. Peace seemed to return to Atasta Peninsula, but it was not to last.

On 14 March 1996, while the management plan was still under revision, INE approved an environmental impact assessment for a PEMEX proposal to drill two exploration wells in the Atasta Peninsula within the protected area's boundaries. The next day PEMEX announced that drilling for the new wells would start on May 15 and Atasta Peninsula once again erupted in protest. Feeling the new oil wells betrayed the purpose of the protected area and fearing the PEMEX project was a harbinger of expanded oil activity within the region, environmental groups from Carmen quickly formed an alliance with the campesino movement (interviews). On March 21 a new umbrella group was created under the name Citizen's Council for the Defense of the Terminos Lagoon Protected Area (*Consejo Ciudadano para la Defensa del Area Natural Protegida Laguna de Términos*). The citizen's council soon gained national media attention by circulating a petition calling on PEMEX to cancel its drilling project and by distributing white flags that local people hung in front of their homes as a symbol of their protest (interviews).

SEMARNAP held a meeting in Mexico City on April 26 in an effort to seek a solution to the social unrest over PEMEX's proposed project. At the table were representatives from the new citizen's council, PROFEPA, and PEMEX. While the council's representatives left the meeting with a commitment from the federal government to hold a series of workshops to gather public opinion prior to the drilling, the citizen's council continued its protests. On May 1, the citizen's council organized a peaceful march through the streets of Carmen to coincide with Labor Day parades and temporarily occupied Carmen City Hall.

More negotiations followed. PEMEX´s argument was that oil exploration was a matter of national interest. Since the management plan had not yet been published, any restrictions it proposed were not yet in force. Moreover, nothing in the protected area decree prohibited the drilling of new wells and the draft management plan accepted the presence of all preexisting oil infrastructure. The company asserted that the new wells would simply count as part of that infrastructure once the plan was published. Meanwhile the citizen's council retorted that published or not, any new drilling went against the spirit of

the management plan and the new wells were part of an exploration effort that, if successful, would see PEMEX expand its activities within the protected area. The citizen's council could not accept the potential for expanded oil development represented by the drilling project.

SEMARNAP was tied. PEMEX´s argument was sound and had the weight of law behind it while the citizen's council held the sympathy of the media and local people and offered a passionate argument for the protected area. The citizen's council had also pointed out an inconsistency in the actions of the federal government: on the one hand, INE was preparing the management plan to conserve the protected area, and on the other hand it had approved PEMEX´s drilling project. Two activities working at cross-purposes had been approved by the same government agency. The major stumbling block was the still unpublished management plan, so the plan became the focus of renewed negotiation.

A none too subtle shift had occurred during 1996. Whereas a year before, the management plan was a matter of consultation with local interests, the management plan now took the form of a negotiation to avoid further protests in the region. Over the next months, the citizen's council finally consented to the drilling project, but in return received commitments from the PEMEX to provide funding for the protected area and commitments from INE to revise the management plan. The Technical Committee once again chaired a series of workshops, this time to expand the draft management plan to include a zoning map and a new chapter on organizational structure.

The zoning map (*ordenamiento ecológico*) was a key advance in making the management plan less ambiguous. Instead of listing general objectives, the management plan would now restrict certain activities spatially within the protected area. An *ordenamiento ecológico* is a form of suitability assessment introduced in the 1988 *Federal Environmental Law*. An *ordenamiento ecológico* examines the geography and ecology of a particular landscape and assigns categories of land and resource use based on physical hazards, ecological sensitivity, and soil fertility. The product of an *ordenamiento ecológico* is a zoning map that expresses what activities are inappropriate in certain parts of the landscape. INE had

already created one large-scale, low-resolution zoning map for the entire country and it was in the process of creating several more regional, medium-scale maps.

The zoning map that emerged from this process for the Terminos Lagoon is roughly divided into 5 zones (table 3) and subdivided into a total of 66 discrete landscape units. These units are more or less homogenous in terms of their geographical and ecological characteristics. Each landscape unit is assigned a set of restrictions for any of 13 categories of land use ranging from wildlife management and agriculture, to fishing and industry. Taking wildlife management as an example, in one landscape unit all forms of hunting may be prohibited while in another landscape unit hunting for subsistence purposes is allowed and sport hunting prohibited (Mexico, SEMARNAP 1997).

Table 3. Zoning Categories used in Terminos Lagoon Protected Area (Mexico, SEMARNAP 1997)

Zone	Name	Description	Permitted Uses
I	Restricted	Relatively intact mangroves and tropical forests ecosystem.	Scientific research or by local residents for subsistence or small-scale production.
II	Low Intensity	Wetlands, and tropical forests that have experienced some degree of alteration including small rural settlements.	Ecological restoration or projects related to sustainable development.
III	Intensive	Land occupied by highly impacted or unproductive ecosystems.	Any type of human activities, such as agriculture, manufacturing or port development, subject to regulation.
IV	Urban Development	Land adjacent to or occupied by urban development.	Present or future urban development.
V	Water Bodies	Lagoons, rivers, and ocean.	Commercial, sport, and subsistence fishing. It is forbidden to modify natural water flow and drainage.

The creation of such a zoning map for the Terminos Lagoon Protected Area moved the management plan away from the polarized positions of its participants and opened the opportunity for negotiating the multiple uses in the protected area. Rather than a simple mapping exercise, the zoning map created the terms on which participants worked out how they could achieve their distinct goals for the protected area. Activities related to the

oil industry and exploration were included as one of the 13 categories of land use and were permitted, with certain restrictions, for most of the Atasta Peninsula (Mexico, SEMARNAP 1997). Representatives involved in creating the map stated that Atasta Peninsula was sacrificed to oil development in order to obtain commitments from PEMEX and the government to safeguard the rest of the protected area (interviews). The zoning map became an informal symbol of agreement between PEMEX and local people that represented a protected area that both could accept.

The second major advancement in the management plan was a description of the organizational structure for managing the protected area. All Mexican protected areas have a small administrative office of INE staff known as a Direction Office (*Dirección*). This office is staffed by a protected area director, appointed by INE, and a small number of biologists or geographers. Terminos Lagoon was to be no different and INE insisted on establishing a Direction Office within the protected area. Yet through the consultation process and in the later negotiations surrounding the PEMEX drilling project, the federal government had given local people greater and greater influence in determining the goals of the protected area. Now local people — represented primarily by the citizen's council— wanted a role in the implementation of those goals (interviews). To permit this, another management body was proposed, known as the Consultative Council (*Consejo Consultivo*) that would include representatives from all interested actors.

Visions for the Consultative Council differed. INE and PEMEX envisioned the Consultative Council as a channel for public input into management while decision making powers remained within the protected area's Direction Office. Local people felt the Consultative Council should be the primary management body for the protected area acting as a roundtable of all actors where everyone would have a voice and vote. This local vision held that the Consultative Council would be responsible for decision making and planning while the Direction Office would be responsible for implementing the council's decisions and the day-to-day operations within the protected area (interviews). Although it may seem curious that PEMEX would be concerned about how the protected area was managed, the company enjoyed certainty in its relations with INE, while any new council was an unknown factor. As both government agencies and local groups were strapped for

finances, through the negotiations it was just assumed that PEMEX would fund at least part of whatever structure emerged. PEMEX had inadvertently created this expectation after the years of compensation payments in Atasta Peninsula and now resigned itself to continue funding the protected area as a means of avoiding further social protests in the region. Compared to a Consultative Council, the cost of a strong Direction Office under INE was more predictable and probably less expensive.

Whereas the zoning map had served as a basis for consensus, the new chapter on organizational structure included in the management plan left the debate unresolved and included an ambiguous description that could be interpreted as supporting either vision. Although the management plan had grown to 166 pages in length, this "chapter" is actually less than two pages long and merely mentions the existence of the Direction Office and Consultative Council without outlining the role, powers, or rules for either of these management bodies. The Consultative Council is described as:

> …consisting of representatives from federal, state, and municipal governments; farmers groups and fishing cooperatives, social and private sectors, research and teaching institutions, and non-governmental organizations that are either located or active within the protected area. The participation of the Consultative Council may occur in two ways: proposing new actions or programs, and evaluating projects and activities. The protected area director has the responsibility to oversee the general work plan and resolve problems inherent to the normal operation of the protected area in accordance with an operations manual and internal regulations to be developed by the Consultative Council. (Mexico, SEMARNAP 1997, 98)

By the beginning of 1997, in addition to the zoning map and this brief description of an organizational structure, the management plan now included a commitment for its review every five years and a list of applicable federal legislation (Mexico, SEMARNAP 1997). The management plan was not perfect, but it had been transformed from a simple government document into a form of negotiated agreement between INE, PEMEX, and local groups. The plan now held the promise of being the basis for an innovative form of collaborative management previously unheard of within Mexico.

4.4 Resolution

The Campeche State government proved to be the deciding force regarding the Consultative Council. Feeling somewhat threatened by the degree of power the federal government was assuming within the state's boundaries through the protected area, and eager to solve social unrest within the region, the state government supported a strong Consultative Council. High-level negotiations between the state governor, the head of INE, and the head of SEMARNAP resulted in an informal agreement that the Consultative Council should have decision making powers and a resolution of the conflict seemed to have been reached. The revised management plan was accepted by INE; PEMEX committed to abide by the plan and zoning map; and the Direction Office and Consultative Council would share the responsibility of managing the protected area. INE named a director for the protected area and established the Direction Office outside of Carmen with a small staff of INE personnel.

The resolution was presented to the public on February 21, 1997 at a press conference held in the Carmen City Hall. The location symbolically recognized local government, which had until then been played little role in the protected area as much of the negotiation had occurred directly between local people and the federal government. Previous meetings in Carmen related to the protected area had been held at the University of Carmen rather than local government buildings. The purpose of the press conference marked both the official release of the management plan and zoning map and the announcement of the Consultative Council. The head of SEMARNAP and representatives from INE, PEMEX, the citizen's council and the campesino movement all took turns addressing the audience and were unanimous in their enthusiasm for what they had accomplished, and their high expectations for the Consultative Council (Bustillos 2000, 56).

Apart from the two-page description in the management plan, the organizational structure for the protected area was still ambiguous. During the press conference INE announced that the state governor would be the honorary president of the Consultative Council, another symbolic gesture recognizing another level of government, while the council's chair would be the INE-appointed protected area director. The rest of the Consultative

Council was to be composed of the same participants that had taken part in the consultation process and negotiations. The intention was to simply build upon the social capital created among these actors while developing the management plan. Similar to the management plan, the Consultative Council was to be all things for all people. Through the consultation process and the negotiations, over 130 individuals from more than 40 different organizations had participated in developing the management plan. Now, all of them were potential members of the Consultative Council (Mexico, SEMARNAP 1997).

It is a testament to the commitment of those involved that the Consultative Council sorted itself out and began operation later in 1997 with at least 30 members (some interviewees recall more than 70 members). Representatives included delegates from the three levels of government, PEMEX, environmental groups, fisher organizations, and other local groups. Although the council appears to have had no formal rules, it operated according to the local vision of a roundtable where everyone had a voice and vote (interviews). The director was responsible for convoking meetings and setting the agenda. Council members debated proposals for the protected area's programs and allocated project funding, making decisions either by consensus or occasional through an open vote. Being a member of the Consultative Council was more or less a volunteer position, although for government representatives sitting on the council it simply became part of their regular jobs.

In addition to the Direction Office and Consultative Council, two more components were added to the organizational structure for the protected area: a Technical Committee and an Oil Evaluation Committee.

The Technical Committee that had developed the management plan was retained in the new organizational structure. This committee was a form of epistemic community of researchers with interests related to conservation and environmental management. It included representatives from post secondary academic institutions in Campeche State and other Mexican universities active in the region. The Technical Committee now provided technical information to either the Direction Office or Consultative Council to aid in decision making and planning. While being a member of the Technical Committee was not a paid position, the sitting on the committee was considered prestigious and the

potential to seek research funding through the protected area was more than sufficient incentive for researchers to participate (interviews).

The Oil Evaluation Committee emerged as a subgroup of the Consultative Council to monitor PEMEX´s activities within the region. Although in name this body included representatives from the citizen's council, campesino movement and local environmental groups, its members were a small number of individuals closely tied to all these organizations. This committee was an association of interest groups that embodied local desires to mitigate the impact of oil development within the region.

Although somewhat confusing, this organizational structure (fig. 4 and table 4) operated more or less successfully from 1997 to 1999. This success can be partially explained by the availability or lack of funding for the protected area. PEMEX committed a substantial amount of financial support to the Consultative Council and gave the council the means to actively manage the protected area through research, monitoring, and other actions. The opportunity to have a say in these decisions was a powerful incentive for local people to participate and was key in its success. On the other hand, lack of funding can explain the willingness of the federal government to allow the Consultative Council such powers. While the *Federal Environment Law* assigns authority for managing the protected area with INE and PROFEPA, these agencies are underfunded in comparison to their mandates. An example of this lack of financial support is the challenge of enforcing environmental regulations throughout the protected area; PROFEPA has few conservation officers in the region and has been unable to deter illegal fishing or poaching. Through the Consultative Council, INE and PROFEPA were able to negotiate an agreement with state and municipal governments and local environmental groups to establish an informal network to monitor illegal activity within the protected areas. While the Consultative Council could be considered a challenge to the authority of these government agencies this challenge was limited as the council was not legally recognized and the agencies were able to use the council for their own purposes.

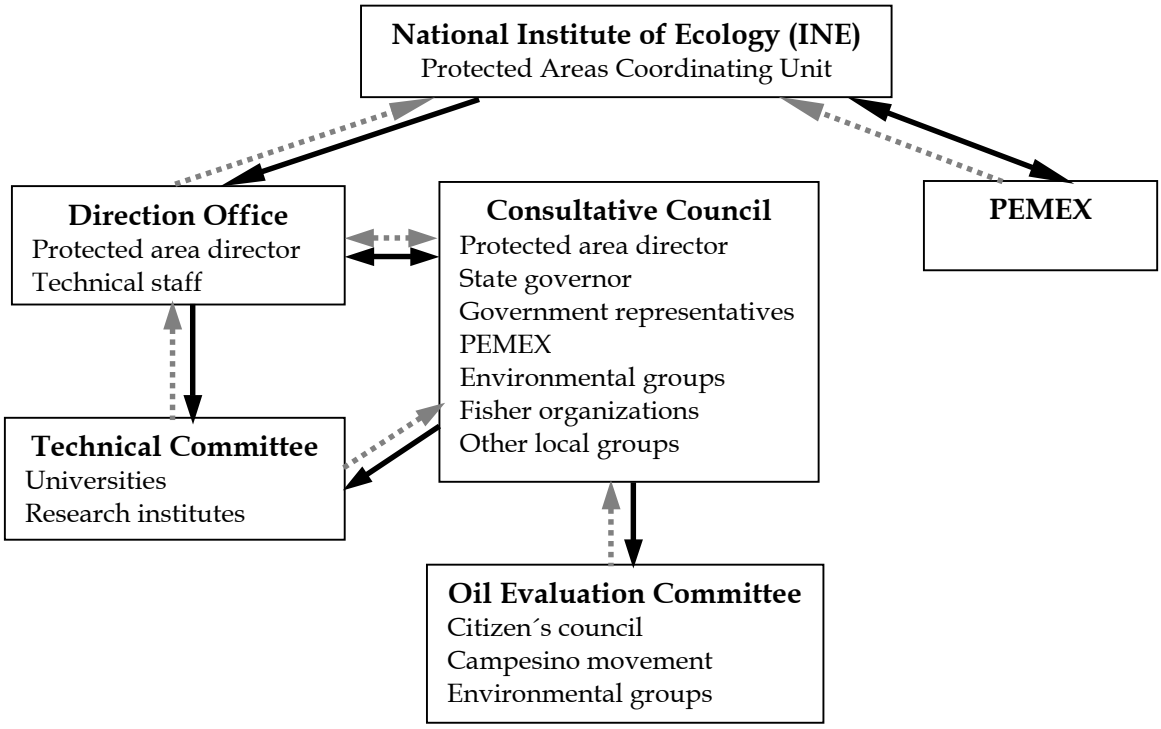

Figure 4: Organizational Structure for TLPA Mangament
Each box represents a component of the organizational structure in use from 1997 to 2000 with the component's name in bold and its members listed in plain type. The flow of power between the components is represented by black arrows and information flows are in gray.

Table 4: Management Bodies within the Terminos Lagoon Protected Area

Authority	Name	Description	Part of Mgt. Plan	Legal Recognition
Official	Direction Office	Local INE office dedicated to protected area management.	Yes	Yes
	Consultative Council	Participatory management body composed of representatives from government and interested actors.	Yes	No
Quasi-Official	Technical Committee	Panel of researchers responsible for providing technical information to the Direction Office and Consultative Council.	No	No
	Oil Evaluation Committee	Committee created by the Consultative Council to monitor the oil industry within the protected area.	No	No

4.5 Stalemate

The Consultative Council's three main strengths were the social capital that had emerged while developing the management plan, funding from PEMEX, and acceptance on the part of government to allow the council to operate. By late 1999, however, all of these advantages had diminished.

From the beginning, the Consultative Council was handicapped by a lack of organizational rules. Conflicting visions of the council's purpose and structure were a continuous source of debate. Burn out became common among representatives from local groups, as being a council member was an additional commitment of time and energy outside of their regular employment. Government representatives feared the council had been captured by local interests and increasingly saw the council as a threat to their authority (interviews). Despite a promising start, the enthusiasm expressed in the 1997 press conference had slowly dissipated and was replaced by frustration, misunderstanding, and repeated debate over the council's purpose.

Without organizational rules, the council lacked transparency in its financial records and allegations of corruption became common. The council itself was accused of funding unnecessary projects, its members of misspending or absconding with council funds; the protected area director was the subject of many rumors, and INE was accused of directing funds intended for the council towards the Direction Office's budget. Representatives of local groups became antagonist with the INE-appointed protected area director, and wished to replace the INE appointment process by making the director an elected position to be voted by the council members (interviews).

PEMEX backed away from its commitments to the Consultative Council. Respondents recall PEMEX changed the people they sent to the Consultative Council many times and that the PEMEX people needed to consult with their executive before making decisions or expressing opinions. One interpretation of this behavior is that PEMEX was interested in the council's activities, but did not take the council seriously enough to send a true representative who could speak on the company's behalf. PEMEX never recognized the Oil

Evaluation Committee as a legitimate part of the protected area's management structure and routinely denied the committee access to its facilities to conduct inspections. Without such access, the committee was unable fulfill its mandate of monitoring PEMEX and soon disappeared altogether (interviews). PEMEX's response to the accusations of financial mismanagement was to stop making direct payments to the Consultative Council and to recruit NGOs from outside the region to allocate funds the company donated to the protected area. As a consequence, both the Consultative Council and Direction Office were subsequently required to submit proposals to outside organizations in order to receive funding from PEMEX.

The effect of INE and PEMEX's actions was to isolate the council and diminish its powers. Retrenchment and withdrawal from the initial liberal conditions created when the Consultative Council was established in 1997 signaled the end of the experiment in shared decision making in Terminos Lagoon Protected Area. The innovative experiment in collaborative management ended as PEMEX withdrew its financial support and denied funding to local stakeholder groups in the Consultative Council. INE was both unable and unwilling to make up for this shortfall as the council had allowed them to question the legitimacy of federal actions and policy.

On June 30, 1999 local newspapers quoted the protected area director as stating that the Consultative Council's next meeting would address the topic of restructuring the council. While the council continued to meet throughout 1999, its last meeting was held in January 2000 when the INE-appointed a new director to the protected area (interviews). This new director never again convened the council and three years after it was created the Consultative Council simply ceased to exist.

The conflicting visions for the Consultative Council's purpose were never resolved and as a result the council was never able to clearly defined its role or function. This confusion allowed its participants to impose their own agendas upon the council, resulting in frustration and poor communication. Relations between council members were stressed as each was convinced that the council should be synonymous with the particular interests

they represented. The negotiated agreement represented by the management plan had been replaced by a fragmentation of interests.

The current state of affairs in Terminos Lagoon can be described as a stalemate between two factions with the Direction Office on one side and local people on the other. With the failure of the Consultative Council, formal management of the protected area became centralized within the Direction Office. While salaries for its staff and director come from the INE budget, the Direction Office must apply to the distant PEMEX-chosen NGOs to fund its activities. Some of the groups that participated in the Consultative Council have disintegrated, due to lack of funding or burn out among their members. Those that continue remain active within the protected area with a variety of projects ranging from aquaculture to crocodile breeding. Feelings of frustration and deception are widespread among the people who participated in the protected area and many comment with sadness that the management plan is now dead (interviews). Both factions continue with their own initiatives, but with a focus on individual projects rather than the more integrated programs outlined in the management plan. Without the benefit of coordination the Consultative Council and management plan provided, projects are duplicated and programs such as enforcement and habitat restoration have been abandoned altogether.

Today, Terminos Lagoon is at first glance a paper park that exists only in government documents (Gomez-Pompa 1999),. Yet elements of hope remain for the protected area. The City of Carmen continues to dump raw sewage into the lagoon, cattle feed on the shores, fishers bring marginal catches to port, and life continues much as it was before the decree. The casual visitor to the region is unaware that they are standing within a protected area. The management plan lives on in spirit, however, and the Carmen municipal government has formed an alliance with certain environmental groups to establish an ecology department to fulfill some elements of the management plan within the municipality's boundaries (interviews). Perhaps the brightest part of the Consultative Council's legacy is the networking and personal contacts the council created among people. Several of the same individuals have remained involved in the protected area. Many of these people have experienced periods of burn out or moved between organizations over the years, but

they have come to know one another and identify themselves as a community of conservationists (interviews). At its worse, this community is a merely a network for rumors and gossip. But at certain moments the members of this community can put aside their differences and are capable of remarkable coordination such as the dolphin rescue described at the beginning of this report.

Although the Consultative Council no longer exist, its experience served as an example for Mexican protected area legislation. The federal *Protected Area Regulation*, passed in November 2000, describes the creation of technical advisory committees (CTA - *Comités Técnicos Asesores*). The model proposed for a CTA is similar to that used by the Consultative Council in Terminos Lagoon, only the CTA model eliminates some of problems that frustrated the council in Terminos Lagoon. There is a limit to the maximum number of representatives permitted to serve and each CTA is to create a formal document that both legally recognizes the management body and describes its organizational structure and rules. While their name implies that CTAs are simply advisory bodies without formal decision making powers, CTAs have the power to review and advise on annual management plans, to propose projects, and may exercise significant influence over the protected area's director (Mexico, Diario Oficial 2000).

5.0 The Role of the Mexican Oil Industry

It is impossible to separate the events within Terminos Lagoon from the presence of the oil industry. Mexico's national oil company, *Petróleos Mexicanos* (PEMEX), is immense by any measure. PEMEX is the world's fifth largest oil company in terms of oil production and has a monopoly on oil and gas exploration within Mexico, including some of the largest oil reserves outside of the Middle East. The company directly employs over 100,000 Mexicans and has been described as a "state within a state" due to its close ties to the federal government (Simon 1997, 175). Having the oil industry as an actor in protected area management makes for strange bedfellows, but by improved understanding of this behemoth, the behavior of PEMEX and other public companies can be better understood.

This chapter examines the history and structure of PEMEX in order to understand how the company changes over time and to explain why it got involved in managing the Terminos Lagoon Protected Area (TLPA). The information presented here is based on fieldwork conducted in early 2001, library research, and the researcher's own experience as an observer of the Mexican oil industry over the course of nine years. Fieldwork included direct observation, archival research, and focused interviews with individuals who participated in managing the protected area sometime between 1995 and 2001. A qualitative analysis was used to evaluate the validity and reliability of the findings reported here, either through corroboration among multiple sources of evidence or multiple interviews (Strauss 1987).

The first two sections present a brief summary of the company's history and description of PEMEX´s presence in the Terminos Lagoon region. Ways the company has increased its capacity for environmental management and how the company interacts with the protected area are listed in the following section. Findings from a quick survey of respondents as to the forces that influence PEMEX´s involvement in the protected area are presented in the fourth section along with a description of how these forces are connected to a company-wide process of corporate transformation. In the final section, the change in PEMEX is compared to corporate transformation in other oil companies.

5.1 A Short History of PEMEX

In the early 1900s the oil industry in Mexico was centered on medium-sized onshore deposits along the Gulf of Mexico in the northern states of Tamaulipas and Veracruz. A mixture of American and British oil companies controlled these deposits and provided little return to the national economy, creating much frustration among Mexican society as these companies made large profits exploiting Mexican resources. In response to public pressures, and eager to increase Mexican economic independence, the administration of president Lazaro Cardenas used Art. 27 in the *Constitution* to justify nationalizing the oil industry and announced the expropriation all existing oil infrastructure on March 18, 1938 (Grayson 1980).

With the end of this short history of foreign control, a new public monopoly was born and since its creation PEMEX has formed an integral part of the federal government's drive for development. From the 1940s until the 1970s, PEMEX supplied an ever-growing domestic market and provided the country with energy independence while the federal government followed protectionist policies of national development in support of domestic manufacturers. During the early 1970s, immense oil deposits were discovered in the southern states of Tabasco and Campeche and offshore in a part of the Gulf of Mexico known locally as Campeche Sound. This region, traditionally ignored by national development plans, became the new center for oil exploration. Withdrawals from these newer deposits soon exceeded domestic demand and allowed Mexico to become an important nonOPEC supplier in the world petroleum market (Grayson 1980).

As a public enterprise (*paraestatal*), PEMEX shares much in common with government-owned energy companies in other countries. PEMEX provides a double benefit to Mexico through the domestic production of oil, thus avoiding costly imports, and through the sale of exports that provide much needed foreign exchange to the country. Although PEMEX is relatively independent regarding its operations and planning, oils profits contribute to the federal treasury that, in turn, determines PEMEX´s budget. While the current administration under President Vicente Fox is attempting to reform government finances to be less dependent on oil exports, PEMEX has provided between 30% and 50% of public revenue over the past thirty years (Bustillos 2000, 32).

PEMEX is a symbol of national sovereignty. Each year, the anniversary of the 1938 expropriation is an occasion for much media coverage and political speeches extolling the removal of foreign influence from Mexico. There is prestige associated with all things PEMEX. Among Mexican society, PEMEX represents both energy and economic independence. Company employees enjoy exclusive lifestyles with salaries well above the national average and benefits including access to private medical facilities. The company's motto of "PEMEX, the force and pride of Mexico" identifies the company as an agent of national development (interviews, PEMEX 1999).

PEMEX also views itself as the provider of Mexico's oil. Art. 27 of the *Constitution* declares oil to be property of the Mexican people to be administered by the federal government, an authority the government has, in turn, invested in PEMEX. As PEMEX is the only developer of Mexican oil, the company has a wide range of property rights over oil. Rather than a regulator of access by others to this diminishing resource, PEMEX is the sole decision maker regarding oil production. Combined with the prestige associated with being a symbol of national sovereignty, these property rights have led PEMEX to interpret its mission as synonymous with the public good. Rather than simply administering the resource in the name of the public good, PEMEX behaves as if it is the public good and has adopted a superstar role (Yaffee 1994) in which it owns the county's oil. As the company finds and produces oil, it is a small step to assume that this wealth would not exist without PEMEX. Unlike other countries where oil exploration is a competitive business, PEMEX's monopoly allows the company to literately see itself as creating oil rather than simply pulling it from the ground. The company is not required to consult with the Mexican people on how to manage the country's oil and gas; consequently PEMEX treats oil and gas as private property.

The federal government fosters PEMEX´s image as a symbol of national sovereignty and permits the company to act as resource owning superstar. During the 1970s, the Mexican government maintained that the oil industry did not cause any negative environmental impact. Protests on the part of people affected by oil development were either ignored or repressed, and under certain administrations, to speak publicly of oil pollution was considered to be near treason (interviews). With the blowout of the Ixtoc 1 well in 1979, a total of 3 million barrels of crude oil were released over a period of ten months into the Gulf of Mexico, a volume equivalent to twelve-times the 1989 spill of the Exxon Valdez in Alaska (Grayson 1980, 205). The Mexican government protected PEMEX´s image by keeping the blowout a secret for over two months. Even when news of the blowout was made official, the government trusted that PEMEX would develop the best solution and frustrated attempts by the Mexican academic community to hold a conference to discuss means of stopping the release (interviews). More recently, even when local concerns regarding the negative impacts of oil development are accepted, such impacts have often been dismissed as a regrettable, but a necessary local cost to provide a greater national

benefit. An atmosphere of secrecy continues to surrounds PEMEX´s activities, and there is as yet no public right to access information regarding PEMEX operations.

The relationship between PEMEX and the federal government can be described in terms of rights and responsibilities. The federal government grants the company special rights of access to market, land and politicians. PEMEX is a government-created monopoly with exclusive right to explore, develop, produce, refine, transport and sell oil products in Mexico. With the powers invested in the company through Art. 27 of the *Constitution*, PEMEX owns the country's oil reserves and has the right of access to all the nation's lands and waters, regardless of its ownership, in its search for oil. This right of access has created conflict among landowners, farmers, and fishers, but cannot itself be challenged; PEMEX may go where it pleases. As members of the family of federal government, company executives enjoy privileged access to a range of politicians and public servants. From city hall to Congress, when PEMEX wants to be heard, others listen. In return for these rights, the company is charged with responsibilities to generate public revenue, be subservient to federal energy policy, generate employment, and coordinate its activities with government agencies.

A conflict of interest exists within the federal government with regards to PEMEX between economic and energy related objectives on one hand and environmental and social concerns on the other. There is a lack of coordination among government agencies that require the company to accomplish contradictory goals and one can sympathize if PEMEX experiences an occasional bout of schizophrenia. While the treasury department and the Energy Secretariat require PEMEX to generate ever-increasing amounts of revenue and oil, agencies such as SEMARNAP and INE pressure the company to control detrimental environmental and social impacts caused by oil-related activities. Due to the greater age and relative importance of the former agencies within the federal government, their agendas dominate PEMEX´s policies; environmental and social concerns are lesser priorities (interviews: 13/14). The relationship between federal government and PEMEX is one of path dependency. Given the momentum of 70 years of doing business a certain way, it is easier to keep concentrating on economic and energy goals than it is to adapt to newer ideas (interviews: 10/14).

5.2 PEMEX in Terminos Lagoon

Three quarters of Mexico's oil and half of its natural gas are extracted by offshore platforms in the Gulf of Mexico beyond the boundaries of the Terminos Lagoon Protected Area (TLPA) (Bustillos 2000, 33). A network of pipelines connects these platforms with the shore within the protected area in the Atasta Peninsula to the west of Terminos Lagoon. In addition to exploration and wells within the protected area, PEMEX has a recompression plant in Atasta Peninsula to pressurize natural gas for shipment by pipeline processing facilities further westward in neighboring Tabasco State. PEMEX is also nearing completion of a large chemical plant that will produce nitrogen necessary for tertiary extraction of the offshore oil deposits. PEMEX physical activities in the protected area have altered land use, modified the natural flow of rivers and surface runoff, generated water pollution, and disrupted benthic communities through dredging (Yañez-Arancibia et al. 1999a, interviews: 10/14).

Despite the magnitude of detrimental environmental impacts associated with PEMEX facilities and activities, the company's social impact upon the region overshadow these changes. Since the 1970s, PEMEX has used the City of Carmen as an administrative and logistical support center for its operations. The entry of the oil industry into the area occasioned a series of demographic, economic, and social changes. Many workers migrated to the area in search of employment in the oil sector, causing substantial growth in the region in both population and demand for urban services. The City of Carmen has now experienced three decades of uncontrolled urban sprawl. The oil sector is relatively disconnected from the local economy, resulting in inflation, as local wages do not keep pace with wages paid to oil workers. These demographic and economic changes have caused increased insecurity and a loss of local identity (interviews; Mexico, Camera de Diputados 1996).

Starting with the introduction of the *Federal Environment Law* in 1988, PEMEX progressively became subject to an ever-increasing number of environmental regulations. The number of legal requirements for environmental management and public attention to

the detrimental social and environmental impacts of the oil industry have both increased substantially. Yet, instead of modifying its production processes or seeking ways of reducing its pollution emissions, PEMEX often distributed monetary compensation to answer the demands of local people. PEMEX´s practice has been to make compensation payments proportional to the extent local protests interfere with the company's operations, rather than basing compensation on evidence of damage (interviews). This practice has acted as a perverse incentive for local people to exaggerate environmental and social concerns and continue protests in order to continue receiving payment from the company.

5.3 Elements of Change

The pitfalls and irregularities of the country's oil monopoly have not gone unnoticed by its citizens. Over the past decade Mexicans have asked themselves what should be done with PEMEX? Through the milestones of cleaner elections and more democratic politics, economic growth and turmoil, and the advent of the *North American Free Trade Agreement*, Mexican society has lived in a period of transition in recent years and is increasingly more open to question once unquestioned institutions. Once unanimous in their praise of PEMEX, Mexican politicians and media are now openly critical of the company's policies and call for the company to be privatized or decentralized (Mexico, Camera de Diputados 1996). The keepers of Mexico's oil have not been blind to criticism and company-wide changes in the 1990s have begun to transform PEMEX. Prior to that decade, PEMEX was compared to state companies in the Soviet Union, characterized by patronage, secrecy, and a focus on producing quantity over quality. The new PEMEX, however, has reduced its workforce by 40%, increased the transparency of contract bidding, and has adopted a new mission of maximizing the value of Mexico's hydrocarbons (Grayson 1999).

Subsequent to a fatal explosion of Guadalajara´s sewer system in 1992, caused by a gasoline leak from a PEMEX facility, the monopoly was separated into five divisions: PEMEX Corporate, PEMEX Exploration and Production, PEMEX Refining, PEMEX Gas and Basic Petrochemical, and PEMEX Secondary Petrochemical (Simon 1997, 164).

Corporate is an administrative body responsible for financing the company, coordinating activities between PEMEX´s other divisions, strategic planning of the Mexican oil industry, and reporting to the federal government. PEMEX Corporate also takes on responsibilities that do not directly correspond to any particular division such as community and public relations. Exploration and Production is responsible for exploring and developing oil and gas reserves while Refining transforms crude oil and markets energy products such as gasoline and diesel fuels. Gas and Basic Petrochemical processes, transports, and distributes natural gas while Secondary Petrochemical manufactures a variety of petrochemical products such as methane derivatives and ammonia (Mexico, PEMEX 1999, 4). While PEMEX Corporate has some influence over planning, each division is largely autonomous in its operations and management.

Beginning in 1996, each PEMEX division created a new department called Industrial Security and Environmental Protection (SIPA), charged with the mission of providing safer working conditions for PEMEX employees and ensuring the company's activities comply with environmental legislation. While the SIPA department within PEMEX Corporate provides some coordination among divisions, each division's SIPA is largely independent and adapted to the particular needs of that unit. The responsibilities of SIPA include conducting safety and environmental audits of PEMEX installations, training PEMEX employees in worker safety and environmental awareness, and obtaining environmental impact assessment certification for new projects (Mexico, PEMEX 1999).

At the regional level, PEMEX Corporate and PEMEX Exploration and Production (PEP) are the two divisions active within Terminos Lagoon (table 5). The presence of these two divisions differs fundamentally. PEP has a physical presence in the region through the operation of PEMEX infrastructure while corporate has a political presence through funding. PEP´s activities unintentionally affect local people while corporate´s aspires to benefit local people. PEP has a large number of employees and offices within the region while corporate´s employees visit occasionally from their offices in Mexico City. The two divisions work separately in Terminos Lagoon with little interaction between them. PEP is dominated by a culture of engineers focused on finding and producing oil and has little patience for the administrative goals of corporate. PEP employees feel they perform the

real work of PEMEX and perceive corporate to be of little consequence. In a play on words, PEP employees sometimes refer to the Corporate as "Decorate", reflecting the low esteem they hold for that division (interviews).

PEMEX Corporate interacts with the Terminos Lagoon Protected Area (TLPA) through funding, both in lump sum payments to the state government and directly financing projects related to the protected area. With greater awareness of the environmental and social impacts of the oil industry, a new sensitivity has emerged regarding the local costs paid by Mexico's oil producing states to provide the national benefits of oil. These states are also among the poorest in Mexico and have been historically marginalized by development projects. Yet the Tabasco and Campeche State governments successfully negotiated social pacts with PEMEX in the 1980s and 1990s that required the company to directly finance development projects and make transfer payments to state budgets as a form of compensation for PEMEX´s presence within these jurisdictions. These additional funds permit state governments to increase spending on a number of programs, some of which benefit protected areas. PEMEX Corporate also seeks to provide funding to directly assist protected areas where PEMEX is present, including Terminos Lagoon (interviews). To distance itself from accusations of financial mismanagement and decisions on how to allocate funding, PEMEX Corporate has donated funds to NGOs who, in turn, allocate the funds to project proposals related to the protected areas (Mexico, PEMEX 2000). By indirectly funding projects, rather than directly funding management bodies, PEMEX Corporate is partially responsible for the narrow project focus that presently exists in the management of Terminos Lagoon.

PEP interacts indirectly with protected areas through the operation and maintenance of PEMEX installations described above and through the actions of two departments: Regional Development and Industrial Security and Environmental Protection (SIPA) (table 5). Regional Development responds to complaints and provides monetary compensation to persons impacted by PEMEX activities. PEP´s SIPA department has a number of tasks related to the protected area including coordinating with government programs and providing information on PEMEX activities, sharing geographical data with academic

institutions involved in research within the protected area, and contracting and supervising impact assessments reports related to PEMEX projects (interviews: 3/14).

Table 5: PEMEX's Interactions with the Terminos Lagoon Protected Area

Division	Actions Related to Protected Area
PEMEX Corporate	• Large transfer payments to the state government for social programs (part of these funds are dedicated to the protected area). • Indirect financial support to the protected area via a NGO which funds a variety of academic and development projects in the area and provides some funds to the Direction Office. • Review audits and supervise activities of the above-mentioned NGO.
PEMEX Exploration and Production (PEP)	• Operation and maintenance of PEMEX installations.
Regional Development	• Receives and responds to allegations of impacts and demands for compensation. • Provides monetary compensation to persons impacted by PEMEX activities. • Provides some funding for development projects.
Industrial Security and Environmental Protection (SIPA)	• Coordinate with government for the environmental management of the area. • Provide input on government policies and programs. • Provide information on PEMEX activities and the biophysical environment. • Coordinate with academic institutions. • Research the biophysical environment. • Contract and supervise impact assessments reports on PEMEX activities. • Respond requests for information.

PEP has also interacted directly with the protected area through its involvement in the management plan and Consultative Council. PEP donated geographic data and GIS services for developing the zoning map, including new fieldwork and reconnaissance flights to verify existing government maps (Mexico, SEMARNAP, 1997). The management plan itself both restrains PEP´s activities within the protected area and commits the division to future actions. The management plan was a form of agreement where PEP was expected to restrict its activities within the protected area to maintenance of preexisting infrastructure in return for permission to conduct the drilling project in 1996. Within the management plan, the roles described for PEMEX undoubtedly refer to PEP and include restoring ecosystems, financing protected area activities, planning industrial development, supporting public participation and research, and providing human resources for the protected area (Mexico, SEMARNAP 1997, 78). With the exception of funding, when local people complain about PEMEX they refer to PEP, and it was a series of PEP employees that served as PEMEX´s representation on Consultative Council.

5.4 Forces of Change

Why is PEMEX interested in the protected area? Why was PEP involved in the management plan and Consultative Council? And why does PEMEX Corporate continue to fund projects in the protected area? Considering the failure of the Consultative Council, and the frustrations of its participants, one could be forgiven for dismissing PEMEX´s interaction with the Terminos Lagoon Protected Area (TLPA) as so much green wash meant to protect the company's environmental image. Although the government relishes PEMEX as a symbol of national sovereignty, PEMEX itself is neutral regarding its image and the company has not promoted its involvement in the Terminos Lagoon Protected Area, as one would expect if this involvement were entirely to improve its image.

PEMEX became involved in TLPA involuntarily due to local resistance to drilling within the protected area, but also voluntarily as part of changes occurring within the company. The management plan became a form of negotiated agreement between local people and PEMEX that benefited the company by allowing the drilling project to proceed and

providing certainty regarding PEMEX´s future presence in the protected area. The TLPA experience coincided with a time of change inside of PEMEX when the company became increasingly open to discussing environmental and social impacts of its activities and its social responsibilities to local people. PEMEX became involved in the protected area as it was perceived as a vehicle for improving the company's relationship with local people. But the question remains as to why the company desired to improve this relationship. There is a change occurring within PEMEX and understanding the reasons for the company's involvement in TLPA provides insight into the process of transformation within public companies that manage natural resources.

Survey

During focused interviews respondents were presented with a list of seven different social forces and were asked to give their opinion as to the importance of each one in determining PEMEX´s involvement in the TLPA. Respondents were asked to give a numeric answer on a scale of zero to five, where five represented that the respondent felt that a particular social force was very important in understanding PEMEX´s involvement in the protected area and an answer of zero represented that the social force was irrelevant to PEMEX. Despite the small sample of 14 respondents, these results nonetheless suggest forces that cause change within the company. The social forces used in the focused interviews are complementary and it was fully expected that respondents would identify a mixture of social forces. The purpose of this question in the focused interview was to suggest a relative ranking of importance among these forces rather than identify a single dominant social force that determined PEMEX´s involvement.

The social forces influencing PEMEX´s involvement in the TLPA are listed in decreasing order of importance in table 6. Without exception, respondents avoided giving an answer of zero. In focused interviews, respondents tended to either strongly support the importance of a social force, immediately giving an answer of five or four, or expressed indecision over their opinion before answering with a smaller number. This result is partially due to no single force being dominant in its influence over PEMEX to the exception of all others. Yet this result is also artifact of respondents' behavior. Respondents

avoided an answer of zero in order to avoid disagreeing directly with the ideas being tested in the research instrument. Even when respondents felt that a particular social force was irrelevant, they would give a small numeric answer and then explain their choice. Indeed, respondents often offered more detailed opinions regarding each social force and some of their comments have been incorporated into this section.

Table 6: Rank of Social Forces Influencing PEMEX´s Involvement in TLPA

Importance	Social Force	Average Answer
More	Change in the international oil industry.	4.3
	Changes in federal environmental legislation.	4.1
	Protests by local resource users demanding the preservation of their livelihoods.	3.6
	Protests by local groups demanding improved environmental quality.	3.5
	Change in the corporate vision.	3.4
	Autonomous initiative of key employees.	3.2
Less	Pressure from other parts of the federal government.	2.8

Industry Practice and Legislation

The two most influential social forces identified by respondents were changing practices in the international oil industry and new environmental legislation (table 6). Beyond Mexico's borders, in places such as Alaska, Ecuador, and Nigeria, oil companies have been responsible for environmentally damaging oil spills, dislocation and poisoning of indigenous people, and abuses of human rights. These events were a clear sign that oil companies can no longer do business as usual and must adopt new ethics for a new reality (Kleiner and Roth 2000 and Estrada, Tangen and Bergensen 1997). The response of each company is unique, but the oil industry is a closed community within which experiences are readily shared. PEMEX has been exposed to the experiences of other oil companies through training of its personnel abroad, contracting of foreign specialists to work in Mexico, and publications internal to the oil industry. PEMEX´s own internal publications occasionally carry articles comparing PEMEX to other oil companies and many employees believe that PEMEX will not be able to continue doing business if it does not adopt environmental sensitive and socially responsible policies. Indeed, PEMEX´s involvement

in TLPA was motivated, in part, by what PEMEX employees expect other oil companies would have done under similar circumstances (interviews).

The impulse to emulate changes in the international oil industry is reinforced by an ever-growing body of environmental laws and regulations. Although PEMEX is a public company, it is not immune to the increasing body of Mexican environmental legislation. The company's planning and daily activities are now more closely monitored by government agencies than in the past. The *Federal Environmental Law* and subsequent regulations require a large number of PEMEX projects to be submitted to an environmental impact assessment (EIA) process and to obtain permission from the National Institute of Ecology (INE) before proceeding. INE permits are often conditional and require a proponent to modify a project under review by complying with a list of recommendations the agency attaches to an EIA approval. PEMEX is also routinely scrutinized by the Federal Attorney for Environmental Protection (PROFEPA) regarding a host of other regulations ranging from noise pollution to hazardous waste management. Whereas once all of PEMEX´s actions were excused in the name of national development, PROFEPA can now sanction the company with fines or temporarily close PEMEX installations. Initially PEMEX was slow to adapt to the new environmental legislation, and government agencies were required to use sanctions to force the company to comply (Simon 1997, interviews).

With the creation of SIPA departments within each PEMEX division, the need for enforcement is less acute as PEMEX has gradually developed internal procedures to monitor its activities and comply with legislation. Whereas PEMEX once considered itself above environmental law, there are now PEMEX employees who are responsible for keeping abreast of new environmental legislation. As much of Mexican legislation is descriptive, and offer few measurable parameters against which to judge compliance, legal loopholes remain available to the company. And PEMEX´s environmental behavior remains less than perfect. Nonetheless, it is easier to determine PEMEX´s environmental compliance in the protected area than it is to determine the company's compliance to other legislation. While it is difficult to determine whether or not the magnitude of the company’s impact on land and water quality surpass certain limits outside the protected

area, it is relatively easy to monitor whether PEMEX complies with the spatial restrictions on oil activities within the protected area.

Social Protest

The next most important social forces identified by respondents were protests by local resource users in order to preserve their livelihoods, and protests by local groups for improved environmental quality. A number of local farmers and fishers claimed to have been adversely affected by PEMEX´s activities. While some of these groups made unfounded claims and demand handouts from the company, PEMEX employees increasingly accepted that the company has a responsibility to protect local livelihoods. This was a change from the company's past performance when the concerns of local people were considered obstacles to the national mission of the oil industry. By preserving the natural resources that local people depend upon to sustain themselves and generate income, PEMEX may help protect the independence of local people and avoid creating dependency on company handouts.

Respondents assessed protests centered on environmental quality are slightly less important than protests centered on livelihoods (interviews, table 6). As mentioned above, a number of environmental groups appeared in the Terminos Lagoon region during the 1980s and 1990s. These groups focused on a variety of issues including biodiversity and water quality, but were motivated most by aesthetic concerns. Conversely, fishers and farmers value the environment for its ability to generate the resource they harvest, their livelihood. Compared to organizations of local people that depend directly on the area's natural resources, environmental groups are generally less influential with PEMEX due to allegations of corruption within these groups, suspicions that some group leaders have a hidden agenda, and past experiences when these groups have presented unfounded arguments. Even though environmental groups, in general, have less standing with PEMEX, in focused interviews company employees expressed a willingness to receive well-researched criticisms and value proposals as to how the company may improve (interviews: 3/14).

Change in the corporate vision and initiative of key employees were generally considered by respondents to be marginally important in explaining PEMEX´s involvement in the protected area (table 6). Nonetheless while respondents tended to agree on the order of importance of the remaining social forces, opinions varied regarding these two forces. A few respondents (interviews: 3/14) denied that the corporate vision or the behavior of key employees had any influence, while others (interviews: 6/14) provided detailed anecdotes of positive experiences with individual PEMEX employees. Even among PEMEX employees, some respondents identified the efforts of certain colleagues as a key factor that led the company to get involved in the protected area. PEMEX´s corporate vision and company discourse have changed, but it is the effort of key employees implementing those changes that matters. Rather than fear for the company's image, the motivation of these individuals is more a matter of what they consider to be professional behavior and the company's responsibilities to society. The individual efforts of key employees mattered greatly in PEMEX´s involvement with the protected area and continue to be the basis for interaction between PEMEX and other participants.

Respondents consistently classified pressure from the federal government, other than through legislation, as unimportant (interviews, table 6). This is the one force that did not influence PEMEX´s involvement in the protected area. As part of the same family of federal government, it was suspected that representatives from government agencies might influence PEMEX at a policy level as well as through the stick of legislation. Yet respondents routinely denied (interviews: 8/14) that such a social force was at work in case of Terminos Lagoon. Government influence over PEMEX is primarily through the threat of new legislation or the threat of stricter enforcement of existing legislation.

Conclusion

Social Forces: The factors that influenced the company's role in TLPA provide insight into change within the company on a larger scale. Change occurs within PEMEX due to the balance of social forces that are internal and external to the company (table 7). New directions in corporate vision and the initiatives of key employees are forces that promote corporate change. Yet there are also forces that inhibit corporate change and

counterbalance the impact of promoting forces. Such inhibiting forces include older employees content with the status quo, and an engineering mindset that continues to dominate company culture. Currently, the forces that promote change within the company are stronger than those working to preserve the old PEMEX; nonetheless the balance of promoting and inhibiting social forces inside the company means that change is slow. To overcome the inhibiting forces will likely require a generational shift as older workers retire and a greater diversity of younger professionals takes their place. The external balance of the forces for change, meanwhile, is heavily weighted on both sides. Environmental legislation and protests from local people are social forces that promote change. But their impact on the company is limited by the need to maximize foreign currency through oil exports, the nation's energy dependence on oil and gas, and the government's financial dependence on oil revenues. The balance for change is again slightly positive and change occurs; yet this change is more at the periphery of PEMEX´s activities. The creation of SIPA within each division is a perfect example. Rather than introduce sweeping changes throughout the existing organizational structure, PEMEX opted to bundle responsibilities for safety and the environment into a new department in effort to address new concerns while at the same time preserving the status quo.

While the balance of social forces determines the speed of change within the company, the balance of external versus internal forces determines whether company employees perceive change to be imposed from the outside or self-directed. Social forces acting upon PEMEX are more external than internal and while the company begrudges change, it perceives transformation as necessary for its survival. While PEMEX employees generally perceive change as being in the company's best interest, their enthusiasm varies and the change in attitude does not necessarily permeate down to the lower levels of PEMEX´s organizational structure. For example, during the course of fieldwork, despite impressive discussions with SIPA personnel regarding waste management plans, workers from the offshore platforms commented with regret that much of the waste generated on the platforms is simply thrown into the sea. The change within PEMEX is remains limited to paper statements rather than education and compliance monitoring, and it is the result of a few individuals rather than a full revolution in corporate awareness, policy, and delegation of responsibility.

Table 7: Balance of Social Forces Affecting Change within PEMEX. Forces that promote change were identified in focused interviews (table 6 and appendix 1). This table presents the counter-balancing forces that limit the impacts of the forces for corporate transformation identified within the company.

	Promote Change	**Inhibit Change**
Internal	Corporate vision Initiative of key employees	Older employees supporting status quo Engineering mindset
External	Environmental legislation Civil protests by local people	Energy dependence on oil and gas Government dependence on oil revenue

5.5 Making Sense of It All

Once considered a resource management superstar and symbol of national pride among Mexicans, over the past three decades PEMEX has fallen from grace and been labeled an environmental villain. Curiously, the fall in PEMEX´s prestige resulted from a change in society while the company continued to behave as always into the 1990s. Yet during this decade, a shift occurred in the values of Mexicans as they came to appreciate the environmental losses attributable to the oil industry and the variety of costs paid by local people in oil development regions (Mexico, Camera de Diputados 1996). The same behavior that had once won the company praise became the subject of intense criticism, debate, and protest. PEMEX was forced to change in order to adapt to the values of Mexican society and changing practices in the international oil industry. The company now faces a dual mandate: in addition to its original objectives of developing the country's petroleum resources, and contributing to national development, PEMEX is also expected to maintain the integrity of the environment and respond to the needs of local people in the regions in which it operates.

The challenge PEMEX faces is not unique and in many countries, public enterprises that are responsible for managing natural resources also need to change in response to shifting social values. While the balance of forces affecting change within PEMEX is unique, similar forces are at work within Mexico and other countries. In Mexico, the country's

public electrical utility (*Comisión Federal de Electricidad*), and other countries, such as B.C. Hydro in the Canadian Province of British Columbia. Similar to PEMEX, BC Hydro was considered an engine of economic development. During the 1950s and 1960s, large-scale projects were constructed across the province. Similar to PEMEX, the utility was dominated by engineers that planned behind closed doors without public consultation. Detrimental impacts to the environment or local economy suffered by remote communities were viewed as necessary sacrifices in order to provide benefits needed by the rest of society. Today, a shift in social values is forcing the utility to transform. The utility's mandate now includes consideration of environmental impacts and costs paid by local actors. Local people are now included in planning in innovative ways (McDaniels, Gregory, and Fields 1999).

Using Arnstein´s ladder of citizen participation (1969), PEMEX´s involvement in TLPA represents a shift in the company's policy stance regarding local people away from placation. Whereas PEMEX´s previous practice was to either ignore or buy off local protests, through its participation in the management plan and Consultative Council, the company opened the possibility for integrating environmental and local concerns into its planning. While providing funding for protected area programs is token, and hardly affect the company overall finances, other actions such as voluntarily restraining its activities in accordance with the management plan are more significant and costly. PEMEX´s involvement in TLPA can be considered an investment to avoid the more costly alternatives of continuing protests and government sanctions. But the experiences of the respondents from government, local groups, and PEMEX itself, suggest that the company's policy shift in Terminos Lagoon is part of a larger process of corporate transformation across of the entire company.

Where will the forces for change carry PEMEX in the future? In *Environmental Challenges Confronting the Oil Industry*, Estrada et al. (1997) presented a list of variables for describing corporate transformation within the oil industry (table 8) and analyzed several oil companies using these variables. Although the authors did not examine PEMEX, a brief assessment reveals that PEMEX has remained somewhat static with regard to geographic

coverage and organizational driving force. However, it reduced the level of headquarters control and diversified skills throughout the company.

Table 8: Corporate Transformation Variables in the Oil Industry (Estrada, Tangen and Bergensen 1997)

Variable	Scope of Variation
Overall objective	Shareholder dividends → Public good
Headquarters control	Centralized → Decentralized
Diversification of skills	Limited core-business → Integrated Oil Chain
Geographic coverage	Selective → Global
Organizational driving force	Financial → Managerial

Despite speeches about PEMEX competing with multinational oil companies, PEMEX remains a national company focused within its own borders. PEMEX neither operates beyond Mexico, nor does it have any serious intentions of breaking onto the world stage. Even within Mexico, PEMEX is regionally focused in the oil-producing region around the Gulf of Mexico. Plans for expanded oil production within Terminos Lagoon catalyzed the company to participate in the management of the protected area. Yet, as should go without saying, it is unlikely that PEMEX will get involved in protected areas where its interests are not at stake.

PEMEX´s current practices value financial benefit over wise management of the natural resource. Numerous respondents, both within and outside of PEMEX, stated bluntly that the dollar, or Mexican peso, was the bottom line in decision making. PEMEX´s purpose is to generate wealth for the federal government. To do so, PEMEX continues to maximize its production of crude oil for export based on an aging infrastructure. PEMEX does not appear to consider alternatives such as demand management, alternative fuels, or product diversification. Despite Mexico's substantial international debt, and accusations of corruption within the company, it seems remarkable that squeezing every last drop of oil from the ground should be considered an acceptable resource strategy for the 21st century.

As PEMEX is a government owned rather than private oil company means that the scope of the company's overall objective collapses to one and the same thing: PEMEX´s "shareholders" are supposedly the Mexican people. In practice, the federal treasury represents the public. From the perspective of PEMEX and the federal government, revenue generated by PEMEX is a form of "public good" that benefits all Mexicans[3]. Over the past decade, Mexican society has also come to expect PEMEX to contribute to public goods, such as environmental quality and social development, and the company is slowly adapting to those expectations.

With PEMEX´s restructuring in 1992, decision making and opportunities to influence decision making moved down the corporate ladder. With greater control over its own activities, PEMEX-PEP had the freedom to adapt to local conditions and respond to initiatives such as elaborating the TLPA management plan. While PEMEX has always been focused on an integrated oil chain, the creation of SIPA departments introduced new capabilities for environmental management into the company. Although many SIPA personnel are long-time PEMEX employees, SIPA provided an opportunity for these employees to develop new skills or practice existing skills that were underused elsewhere in the company. The creation of SIPA has also made PEMEX more responsive to environmental legislation and allows the company to better coordinate with government agencies and others interested in the environment.

PEMEX is changing, but has not embraced an ethic of environmental management as tightly as the oil companies described by Estrada et al. (1997). Where PEMEX has been forced to change to adapt to a shift in society's values, other oil companies were motivated by shifting energy needs and new economic opportunities in environmental technologies and alternative fuels. Once the subject of science fiction, these technologies are soon to be part of daily reality. The Kyoto Protocol and other international agreements commit countries to reducing fossil fuel emission and legislation, such as California standards, will soon require a certain percentage of new vehicle sales be low emission or zero emission vehicles. The TLPA experience reveals that the company's motivations are not the same as those at play in the international oil industry, as the company remains focused on producing crude oil and natural gas. Although PEMEX is becoming more relevant for

Mexican society, the gap between PEMEX and the international oil industry continues to grow.

6.0 Why the Consultative Council Failed

Why did a collaborative approach not work in the Terminos Lagoon Protected Area? During its brief three-year history, the Consultative Council was a unique solution for managing what is arguably Mexico's most complex protected area. Many hopes were placed in the council. It was expected to be the vessel for continuing the remarkable degree of public participation that had been achieved while developing the management plan, yet there were signs that the council was in trouble from the beginning. The management plan tried to be all things to all people and was overly ambitious given the financial and human resources available to the council. While the council was mentioned in the management plan, and agreed upon in the February 1997 press conference, the council was not legally recognized. As a consequence of being ill defined, the council's purpose was open to interpretation by its members, and it created a confusing array of management bodies. An overly ambitious management plan, lack of legal recognition, and confusion in organizational structure were just symptoms, however, of the root causes that led to the council's failure. Understanding these root causes is an essential first step before lessons can be drawn from the Terminos Lagoon experience, and before attempting to revive a collaborative approach in this protected area.

The root causes for the failure of the Consultative Council are described in this chapter as insurmountable conflicts between actors involved in the protected area, and confusion over the rights, roles, and responsibilities among actors. The information presented here is based on fieldwork conducted in early 2001 including direct observation, archival research, and focused interviews with individuals that had participated the management of TLPA. A qualitative analysis was used to evaluate the validity and reliability of the findings reported here, through corroboration among multiple sources of evidence or multiple interviews (Strauss 1987).

6.1 Conflict

Conflict occurs whenever one actor wishes to use a natural resource in a way that excludes its use by other actors, or in other words, when different actors have different intentions for using the same resource. Conflict is a recurring theme in protected areas management, with the classic conflict being between local people who wish to use natural resources and governmental agencies that wish to conserve them (Weitzner and Borras 1999, Stevens 1997, Brandon and Wells 1992). Resolving conflict is seldom a matter of manipulating natural resources. Solutions are often be reached by sharing the limited resources available, or altering the behavior of the actors involved.

In the case of Terminos Lagoon, the Consultative Council failed to resolve several outstanding conflicts related to the protected area. The reasons for this failure are twofold. First, certain conflicts spilled beyond either the geographic boundaries of the protected area, or the tools available through the protected area framework. Second, the council itself became a focus of conflict among actors. The council's failure is illustrated in this section by describing four regional conflicts: oil vs. community, oil vs. fishers, government vs. government, and government vs. community.

Oil vs. Community

Local people have suffered three decades of detrimental impacts, both environmental and social, related to the presence of the oil industry and they feared even greater hardship should PEMEX expand its activities within the region. Many local people were motivated to participate in the management plan and the Consultative Council by a desire to protect their communities and the region's environment against the threat of new oil drilling (interviews: 9/14). Although the management plan restricts new drilling, the protected area's management bodies have no authority to manage environmental risks beyond its boundaries, such as the offshore oil platforms in Campeche Sound. Despite the potential for dialogue the Consultative Council offered, the oil industry's relation with local people cannot be adequately addressed solely within a protected area framework. To fully

address the concerns of local people regarding the oil industry will likely require another forum for dialogue beyond the protected area.

Oil vs. Fishers

Local fisheries, especially the lucrative commercial shrimp fishery, have been in decline over the past two decades. The reasons for this decline are not clearly established, yet the most likely causes are overfishing combined the detrimental impacts on habitat and water quality of industry, agriculture, and urban development. In the commercial shrimp fishery, seagoing trawlers have been replaced with smaller fiberglass launches with outboard motors (Barbier and Strand 1998). This switch in fishing vessels occurred as trawlers became too costly to operate when restrictions on fishing in areas adjacent to offshore oil platforms and underwater pipelines meant the fishery loss access to part of Campeche Sound. Launches have a smaller range and are less seaworthy than trawlers, so fishing effort has become concentrated closer to shore as a greater proportion of shrimp fishers operate launches instead of trawlers. Between 1979 and 1998, total fishing effort nearing doubled (fig. 5) while shrimp catch per unit of fishing effort fell from over 3 metric tonnes/year to less than 1 tonne/year (fig. 6).

Local fishers argue that PEMEX is responsible for the decline in fisheries through pollution of local waters and loss of access to parts of Campeche Sound (interviews: 3/14). PEMEX has made cash payments to some fishers and provided others with launches and nets to compensate for loss access. No doubt, this action has contributed to further overfishing. PEMEX employees feel frustrated with local fishers who continue to demand that the company pay compensation for unproven losses, as well as staged protests organized by political parties eager to discredit the company. PEMEX employees are also frustrated by a refusal by other actors to acknowledge the possibility of alternative explanations for this decline, such as overfishing and pollution from agricultural runoff (interviews: 4/14).

The conflict in question again extends beyond the protected area's boundaries and an alternate solution must be found beyond the framework of the protected area. Further research is needed to determine the causes of fishery decline and the relative contributions

of overfishing, habitat destruction, oil pollution, and other forms of pollution. Without the benefit of impact assessments or baseline studies, it is impossible to distinguish the relative impacts of overfishing versus PEMEX´s presence (Simon 1997, 175). Once the causes of decline are established, the protected area's management body could facilitate dialogue between fishers and PEMEX, and the protected area could contribute to a solution by providing habitat protection and no-take sanctuaries to support populations of economically important fisheries. Another forum would be required, however, to coordinate the actions within Terminos Lagoon with solutions elsewhere in Campeche State.

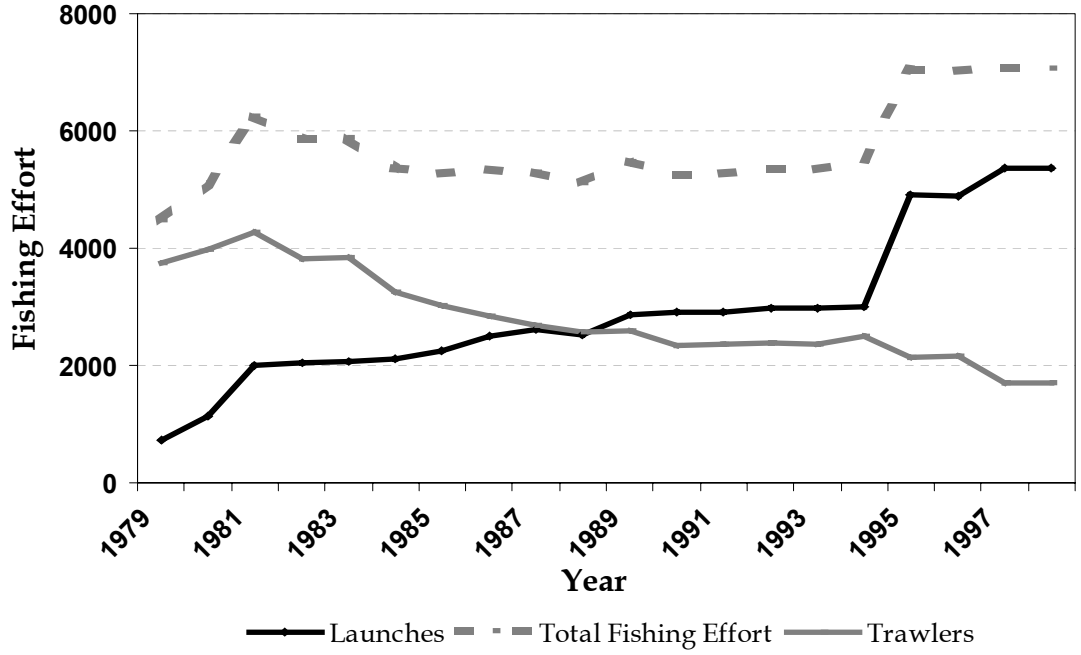

Figure 5: Fishing Effort in the Campeche State Shrimp Fishery
Two types of fishing vessels are employed in the fishery, small launches with outboard motors and larger seagoing trawlers. Fishing effort is expressed as the number of launch equivalents and is obtained by combining the number of trawlers, multiplied by a factor of 5.5, and the number of launches. (Data from Mexico, Instituto Nacional de Pesca 1999. Conversion factor from Barbier and Strand 1998)

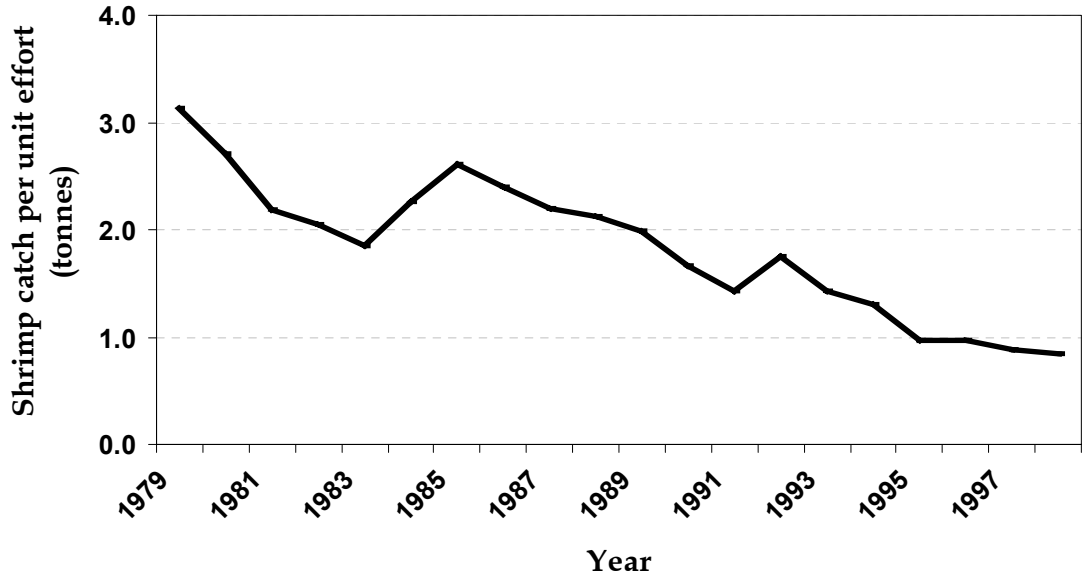

Figure 6: Declining Catch in Campeche State Shrimp Fishery
Dividing the landing statistics reported by the National Institute for Fisheries by the total fishing effort demonstrates that harvest per unit effort has fallen over the past two decades. (Data from Mexico, Instituto Nacional de Pesca 1999)

Government vs. Government

Confusion exists over jurisdiction and the role for each level of government in managing the protected area. The *Coastal Zone Regulation*, *National Waters Law*, and *Federal Oceans Law* grant the federal government jurisdiction over about half of the protected area and includes a 20-meter strip of land adjacent to the coast, coastal lagoons, and the seaward section of the coastal zone (Mexico, Diario Oficial 1992, 1991, 1985). The remaining landmass of the protected area is jurisdiction of the Campeche State government and includes sections of three municipalities: Carmen, Champoton, and Palizada (fig. 3).

With the passage of the protected area decree in 1994, Terminos Lagoon became part of the federal protected area system, and federal government agencies were assigned increased responsibility for managing the region. Although the protected area was not initially a source of conflict, when the management plan grew in scope to cover a wider range of issues beyond biodiversity and habitat protection, the protected area was perceived to

challenge the authority of the state and municipal governments. The state government, and to a certain extent municipal governments as well, began to see the protected area as an imposition of federal authority on lands under their jurisdiction. This conflict was temporarily resolved by the creation of the Consultative Council, as it attempted to coordinate all governmental efforts and, in a symbolic gesture, the state governor was named the council's honorary president. With the council's failure and centralization of management in the federally-owned Direction Office, there is renewed tension between the environmental agencies of each level of government as to who has the authority to make decisions within the protected area.

This conflict could be partially addressed within the framework of the protected area. One possible solution would be to reduce the scope of the protected area's management plan, for example it would be useful to offload the responsibility for issues excluded from the protected area to another forum.

Government vs. Community

The Consultative Council never lived up to the expectations of local people, yet it surpassed the level of independent decision making that the National Institute of Ecology (INE) was willing to support. Local people saw the council as a vehicle for citizen control and believed it represented a transfer of authority from INE to local people. Through their protests, local groups had won a position of power that allowed them to negotiate the management plan with INE and PEMEX as equals. When the management plan was approved and the Consultative Council announced in February 1997, the speeches by government representatives implied that a powerful role for local people would continue in the council. INE, however, intended that decision making for the protected area would remain within the government agency. For INE, the council was a forum for actively consulting with local people to bring concerns to the agency's attention and to provide input into decision making (interviews: 5/14). The February 1997 speeches acknowledged the role local people had played in the management plan. Yet the federal agency did not mean to create a unique management arrangement in the Terminos Lagoon Protected

Area. Despite the consultation process to develop the management plan, INE did not expect TLPA would be any different from other federal protected areas throughout Mexico.

Without a shared vision for the Consultative Council, this management body was bogged down in debate and open to influence by private agendas, resulting in frustration for all concerned. As different members operated under different visions, the council never fully satisfied anyone's expectations. When decisions were made by INE or PEMEX, without the council's approval, local people felt the federal government had backtracked on earlier promises to share power. Local people responded by withdrawing their support for the council (interviews: 5/14). Meanwhile, government representatives believed that only they could ultimately act in the public interest and felt that demands for a greater role for local representatives in decision making to be a power game among local people trying to "steal" control of the protected area for personal benefit (interviews). This stalemate remains unresolved.

6.2 Rights, Roles, and Responsibilities

The latter two of these key conflicts (government vs. government and government vs. community) center on issues of power and which actors have the right to decide the fate of natural resources and environmental quality. These conflicts result from confusion that exists among those interested in managing the protected area regarding each actor's rights, roles, and responsibilities. The concepts of rights, roles, and responsibilities, and how they relate to protected area management, are briefly discussed in this section. Then the role that these concepts played in the failure of the Consultative Council is discussed before examining how this failure continues to plague the protected area. Potential solutions to resolve the differences of opinion on preferred management arrangements are discussed in the final section.

Rights, or *property rights*, refer to the level of control each actor possesses over a particular natural resource. Although derived from economics literature, property rights provide a

useful analytical framework for discussions on public participation in protected area management. While a confusing array of actors often claim a role in protected area management, property rights provide a means of conceptualizing these claims analytically. The use of property rights also facilitates comparison of property relations among multiple resources. Property rights have been conceptualized as access, management, exclusion, and alienation (Schlager and Ostrom 1993).

- *Access* can be as simple as the mere entitlement to physically visit a natural resource, such as visiting a protected area or observing wildlife, or be associated with the right to harvest and withdraw part of the resource, such as fishing and forestry.

- *Management* rights over a natural resource entitles an actor to make decisions to manipulate and plan the use of that resource. Formal management rights often reside with government agencies that have been recognized by legislation as having authority over resources. Yet communities regularly exercise an informal management right whenever they manipulate nearby resources or resources vital to the livelihood of local people.

- *Exclusion* rights include defining a membership of authorized resource users, establishing conditions using a resource, and restricting the actions of nonmembers. A government agency practices exclusion rights when it determines which the conditions of access and use of a protected area. Some individuals may be considered local and granted relatively unrestricted access and use privileges to the protected area's resources. Other individuals may be considered visitors and restricted to sightseeing, while still other individuals may be denied entry completely.

- *Alienation* is the ability of one actor to abandon or transfer their rights to another actor. For example, a government agency exercises alienation rights when it transfers management of a protected area to local people or other actors.

Property rights form an inclusive hierarchy where each higher level of rights includes all previous rights. An actor who has the right to exclude others from a resource also has the right to access and manage that resource. The same actor may also have different rights to different resources, or different rights to the same resource in different areas. For example, foresters receive a right to harvest trees, but do not have a right to hunt endangered animals. Meanwhile, fishers may only access and navigate within a protected area, but have a right to harvest fish beyond the protected area. Finally, rights may be *de jure*, formally recognized in law or written agreements, or *de facto*, practiced by actors without formal recognition of those rights by others (Ostrom 1992).

Roles and responsibilities refer to how actors participate in managing a natural resource. Responsibilities describe the activities an actor performs in support of management and are derived from the rights held by an actor. When an actor is involved in management, each activity in which he or she participates corresponds to a right and responsibility being exercised either formally or informally by that actor. Actors may take on responsibilities without having formal rights, but in fulfilling those responsibilities the actor assumes *de facto* rights. Responsibilities are also referred to by some authors as duties (Pinkerton and Weinstein 1995, 12) and can include activities such as monitoring the condition of the resource, restoring habitat or resource productivity, and allocating resource use. Responsibilities that involve planning and shape how management will be performed are called *collective-choice responsibilities* and require actors to work together to reach agreement. Responsibilities that simply fulfill aspects of a previously agreed to management plan are called *operational responsibilities* (Ostrom 1992). The sum of these responsibilities describes the nature of actors´ involvement and defines an actor's role in management. While actors can include local people, NGOs, private interests, and government agencies, any of these groups may play a range of roles such as decision maker, planner, data collector, enforcer, advisor, critic, and so on. Roles imply both the degree to which an actor participates in management and the relative power he or she possess to influence decision making.

The participation of other actors in managing protected areas has been described as a continuum stretching from full control of a protected area by a government agency to full

control by local people (Borrini-Feyerbend 1996). In between these two extremes exist a number of different situations in which other actors participate in, and influence, management. To facilitate analysis, five conceptual levels of participation have been defined: actively consulting, seeking consensus, negotiating, sharing authority, and transferring authority (fig. 7). In *actively consulting and consensus seeking*, a government agency maintains majority control over a protected area and is the actor responsible for directing management. The role of other actors at this level is primarily to react to an agency's proposals; responsibility for management remains primarily with the agency. *Negotiating* is a situation where other actors have a limited role in decision making and have responsibilities for specific management activities. *Sharing authority* describes a situation where a government agency no longer has majority control over a protected area as other actors have a greater diversity of responsibilities and a more important role in management. Finally, *authority is transferred* when a government agency alienates or delegates certain rights, or when other actors fulfill more responsibilities than an agency. Participation depends on who does what rather than who is entitled to do what. Rather than a government agency recognizing *de jure* rights of others to participate in management, the continuum refers to *de facto* situations in which other actors exercise rights, fulfill responsibilities, and adopt roles in managing a protected area.

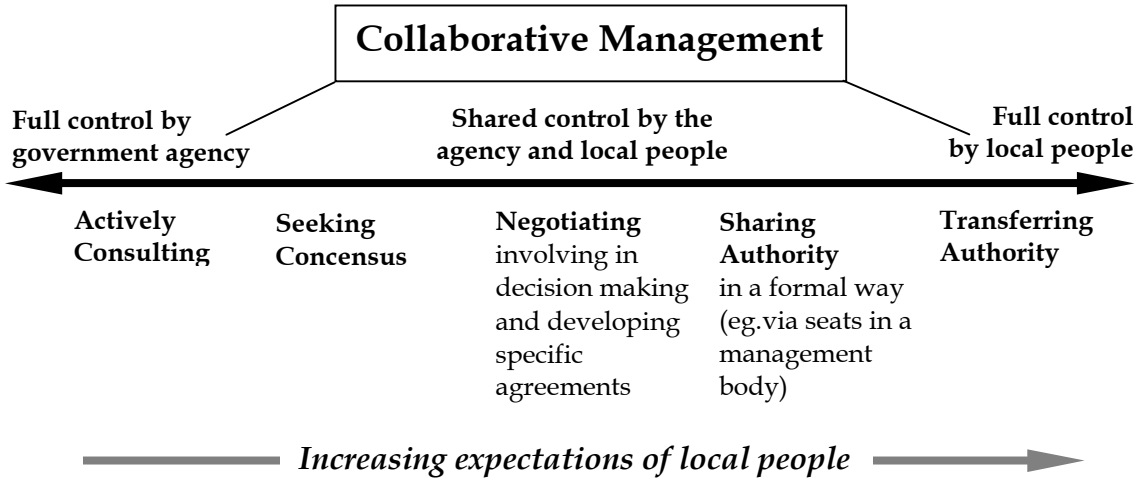

Figure 7: A Continuum for Participation in Protected Area Management.
Adapted from Borrini-Feyerbend (1996). Note that this continuum is an applied version of Arnstein´s ladder of citizen participation (1967). Management for protected areas can also be shared or transferred to other actors besides local people and Borrini-Feyerbend´s original diagram uses the label of stakeholder instead of local people. Local people is used here as it is more relevant in explaining the Terminos Lagoon example.

Assessing the Consultative Council

Depending on who one asks, the council represented a level of participation ranging anywhere from actively consulting to transferring authority. Recalling that the council was never given any legally recognized powers for decision making, using the continuum for participation (fig. 7) is appropriate because it includes *de facto* situations. For the federal government, in the form of INE, the council was a forum for actively consulting with other actors while the agency retained control of the protected area. For the Campeche State government and municipalities, the council was a form of shared authority where control of the protected area was to be shared among government representatives with some input from others. Finally, local people viewed the council as transferring authority for the protected area to them (interviews: 5/14).

The council's success, where everyone expressed ownership of the protected area and management plan, can be understood by considering that each actor held either formal or assumed rights in the area and perceived themselves to have a role in its management. The federal government possesses formal property rights over federally owned lands and water that cover approximately half of the protected area. These rights are distributed among a variety of government agencies while, under the protected area decree, INE is responsible for coordinating their actions for the purposes of protecting habitat and endangered species. INE, however, does not possess formal property rights within the protected area. The Campeche State government and municipalities also possess formal property rights over different lands within the protected area and fulfill a wide range of responsibilities within the protected area related to governance. So long as INE restricted its responsibilities to biodiversity and habitat protection, the Campeche State government and municipalities had no role to play in the protected area. It was only when the management plan grew in scope to cover urban and social development and to include responsibilities that the state government and municipalities considered their own, that these governments demanded a role in managing the protected area.

A variety of formal and informal property rights exist among local people. All locals have simple access rights to the area, fishers associated with recognized cooperatives have access and withdrawal rights related to fisheries, and landowners have full rights to their properties within the protected area. Given the prospect of PEMEX expanding its presence in the region, a number of local groups felt their role was to oppose oil development at all costs (interviews: 5/14). Some members of these groups owned land and held property rights within the protected area, but many others did not. Creation of the Consultative Council, however, implied that each of the council's members held property rights (Pinkerton and Weinstein 1995). Through the council, locals fulfilled operational responsibilities such as zoning resource use and monitoring poachers, collective-choice responsibilities such as allocating funding; and assumed informal rights to manage the protected area. Through their participation, groups representing local people came to continuously expect more of a role in managing the protected area and began to perceive themselves as joint managers equal to the government agency (interviews: 5/14).

Actors were allowed to define their own roles because the Consultative Council never formally defined the rights or responsibilities of its members. INE had little experience in collaborating with local groups and naively believed that the positive experience of developing the management plan could simply be continued without the need to define rights, roles, or responsibilities. Groups representing local people never abandoned their particular interests and instead of committing to the common good, these groups continued to see the protected area as a means of achieving their own individual goals. Without understanding the rights of others, each actor perceived his or her role in managing the protected area as more important than the role of others. Each interpreted the council as representing the level of participation that best justified his or her role in management (interviews: 6/14). These individual interpretations formed the basis of each actor's expectations of the council and influenced how each group interacted with others. When actors felt others did not respect their particular roles, they were apt to argue over details, abandon their responsibilities, or ignore the council. This confusion and bickering is consistent with the results Ostrom predicted when an institution does not possess a clear purpose (1992).

The current fragmentation of management in Terminos Lagoon results from each actor insisting on playing his or her perceived role in management of the area's natural resources, despite the council's failure. For the federal government, the wide range of responsibilities outlined in the management plan remains dispersed among several agencies. At the same time, INE has once again narrowed the scope of its responsibilities to habitat protection and endangered species. The Campeche State government continues its wide range of governance activities in the region and has little interest in the protected area now that the Consultative Council no longer exists. Although the management plan describes a wide range of programs that overlap with the activities of the state government, the management plan is no longer considered a threat to the state’s authority since there is no Consultative Council to implement these programs. The municipalities of Palizada and Champoton are similarly disinterested, although the municipality of Carmen has formed an alliance with certain environmental groups and insists on implementing the management plan alone if necessary (interviews). Finally, groups representing local fishers and farmers continue to work within their own paradigm as resource managers, and these

groups continue to implement projects related to resources over which they have formal or informal property rights (interviews: 3/14).

Currently, the management system within TLPA is divided between formal, government actors and informal, local actors. On one hand, government representatives manage the protected area through their offices, while on the other hand, a number of groups claiming to represent local people continue with a diversity of projects related to the protected area. This division of actors within TLPA is not new. The members of the Consultative Council could have been similarly grouped into government and local representatives. These sides represent two opposing tendencies within Mexican society: centralized rule and populism. Although changing today, the Mexican government has a long history of strong, authoritarian rule stretching back to days of president Porfirio Díaz starting in 1876. This tendency is opposed by an equally strong distrust of government and populist belief in equity among all Mexicans born out of the Mexican Revolution starting in 1910. In one way or another these two tendencies have shaped much of Mexico's history.

The Terminos Lagoon Protected Area manifests another stage of this same age-old struggle. The division between local community and government representatives among the council's membership cannot be dismissed lightly. While the Consultative Council failed, the Terminos Lagoon example should not be disregarded. Instead, the council's experience can serve as a lesson for understanding how a joint management body might resolve the contradiction of represented by these two opposing tendencies, one towards authoritarian rule and the other towards local populism. Collaborative approaches to management are neither purely government-controlled, nor purely community-controlled. Instead successful collaborative approaches use hybrid management systems that achiveve a balance between the official government apparatus and local desires for a say in decision making.

Resolving this contradiction is a challenge faced by many countries, not just Mexico. While the Mexican federal government lacks experience in dealing with demands for more local and direct forms of democracy, the Terminos Lagoon Protected Area represents an opportunity for learning. Assessing the Consultative Council demonstrates that future

collaborative approaches could allay government fears regarding local control by building trust among council members and establishing limits to what the council can perform or decide without government approval. By interpreting the events within the Terminos Lagoon Protected Area in this way, constructively rather than simply dismissing the council as a failure, the council becomes a useful example to reflect upon when attempting collaborative approaches in the future.

Government representatives comprised a large proportion of the Consultative Council's membership and there was little effort to filter the membership of other groups. At one time or another, over 20 of the council's members represented different government agencies, or levels of government. While a number of government agencies hold responsibilities related to the management plan, including all of them in the council made for a large, unmanageable membership and diluted the local and regional voices that were the reason for the council's creation. For such agencies, the council's usefulness was limited, as their responsibilities often extended beyond the protected area's boundaries where the council had no influence. Including the state governor on the Consultative Council is a prime example. The governor's attention is spread over the entire state and he or she cannot invest large amounts of time in a particular area. At the time of the council's formation, the state governor in office supported the protected area and attended meetings; his successor was notably less enthusiastic.

Again, the events within the Terminos Lagoon Protected Area can be interpreted constructively in order to provide an example for future collaborative approaches. Rather than avoiding the involvement of senior level government representatives on a joint management body, future experiments could attempt to focus their participation in ways that are mutually beneficial. Involving senior level government representatives could benefit local management by ensuring that other government policies and programs support the actions of the joint management body. Boundary problems such as those encountered in TLPA could be avoided by harmonizing of policies within and outside the protected area. Meanwhile, government representatives could benefit from their involvement by transferring the positive experiences of working with local communities in one area to another. Through their involvement, government representatives could slowly

learn from several examples over time that would allow them to be better prepared for experimenting with collaborative approaches in the future.

The only condition that the management plan placed on council membership was that its members be either interested in, or dependent upon, resources within the protected area (Bustillos 2000; Mexico, SEMARNAP 1997). While this condition was sufficient for soliciting participation in the consultation process to develop the management plan, effective members of a management body are those who also appreciate the interests of others. Not all local people are necessarily interested in all aspects of protected area management, but instead wish to be involved in decisions concerning the resources that most affect them. By allowing a large membership, the Consultative Council was divided by a number of obstinate and conflicting interests. Future collaborative approaches would do well to ensure that members are publicly-minded individuals committed to seeking the common good.

Moving Beyond the Consultative Council

Unfortunately, the framework for technical advisory committees (CTAs) proposed by the new *Protected Area Regulation* continues these two defects. Although the regulation states that a CTA can have a maximum of 21 members, preventing excessively large memberships, the regulation continues to include a large number of government representatives and places few restrictions on membership. The regulation states that CTA membership must include the state governor, the protected area director, and the president of all municipalities located within the protected area. As Terminos Lagoon includes three municipalities, five of the 21 available seats would be reserved for government representatives (Mexico, Diario Oficial 2000). Additionally, while it is difficult for the state governor to attend meetings, coordinating the schedules of multiple municipal presidents would be an even greater challenge. For the remaining members, the regulation simply states that they must be people with ties to the use or conservation of natural resources within the protected area. This includes representatives of local organizations, NGOs, landowners, or the academic community (Mexico, Diario Oficial

2000). Without providing a more critical mechanism for selecting members, there are no safeguards against a CTA becoming dominated by individual interests rather than focusing on the common good.

With careful implementation the CTA model may replace the Consultative Council and solve the current stalemate in the Terminos Lagoon Protected Area (TLPA). The CTA could benefit by implementing a more rigorous selection process for its members, using a double majority for decision making, creating mechanisms for community accountability, and offloading some responsibilities to a coastal management committee.

Clear Membership and Purpose

By limiting membership, and requiring a formal document that both legally recognizes the management body and describes its organizational structure and rules, a CTA would correct two symptoms that contributed to the council's failure. The *Protected Area Regulation* provides that members may appoint a substitute to represent them in meetings (Mexico, Diario Oficial 2000) and some logistical nightmares could be avoided by carefully selecting substitutes for the state governor and municipal presidents. These substitutes could be connected to their government's environmental office and should be important enough to have the ear of the person for whom they are substituting.

Equal care should be taken in selecting other members to ensure that they represent legitimate interests connected to the protected area, provide the CTA with needed skills or knowledge, and demonstrate a willingness to understand the needs of others. Within the Consultative Council, members were often unable or unwilling to think beyond the narrow interest they claimed to represent. With the upper limit on membership in the CTA, a process will be needed to select members for the new management body. A small committee could be established to oversee this process whereby each potential member is either nominated by others, or applies in writing stating the reasons he or she feels qualified to serve on the CTA. After nominations or applications are received, each potential member could be interviewed by the selection committee to determine how well he or she represents some interest within the protected area, his or her understanding of

other interest groups, and ability to work with others (Abrams 2000, Pinkerton 1991). With such a selection process, the members would be chosen based on their commitment to the common good. Dialogue within the CTA would be elevated towards finding more workable solutions and away from purely interest-based conflicts that plagued the Consultative Council.

Once the CTA membership is decided, members will have to negotiate a common vision for the CTA and themselves, including each other's rights, roles, and responsibilities. This common vision would ideally emerge during a guided process of creating the formal document describing each CTA´s organizational structure and rules as required by the *Protected Areas Regulation*.

Double Majority Decision Rule

A new joint management body could use a double majority decision rule. In a simple majority, more than half of all members must vote in favor of a proposition for it to be approved. In a double majority, when the membership is divided into two distinct sides, more than half of the members within each side must vote in favor of a proposition for it to be approved. The advantage of using the double majority as a rule for decision making is that neither side can overpower the other by sheer number of voting members. Regardless of the relative size of each side, a proposition will not be passed unless the majority of both sides vote in favor. The double majority is appropriate for situations when significant, distinct factions exist within the management body's membership. In the example of the Clayoquot Sound Central Regional Board on Vancouver Island in Canada, the double majority rule is used to ensure that all decisions are acceptable to both First Nation and nonnative members (Abrams 2000).

The use of a double majority decision rule in TLPA could ensure that the CTA's decisions are acceptable to all parties. The council's large membership resulted as each side, government and locals, attempted to stack the council's membership in their favor. Using a double majority could reduce membership size to a more manageable number, as neither locals nor government would need to stack the council with their representatives. If

consensus did not work, then a simple majority vote would see one side or the other always get their way. By using a double majority, there would no longer be a need to stack the management body's membership. A majority of both government and local representatives would need to vote in favor of a proposition for it to be passed, thus requiring dialogue rather than one side or the other being able to force a decision upon the body based on the sheer number of votes.

Community Accountability

The federal government's distrust of the Consultative Council was caused, in part, by the absence of any mechanism to ensure the accountability of the council's members. The fear of government representatives, that local interests had captured the council, were reinforced by allegations of financial mismanagement and constant debate over the council's purpose. This fear could have been partially allayed if there had not been an imbalance of accountability within the council. Local representatives could always hold government representatives accountable by citing legislation, complaining to politicians, or by embarrassing government representatives in the media. There were, however, no such controls on local representatives. Mechanisms for community accountability have already been identified as a critical condition for making collaborative approaches work (Abrams 2000, Pinkerton and Weinstein 1995), and creating these mechanisms in Terminos Lagoon could restore government's faith in a collaborative approach.

Coastal Management

The CTA´s tasks could be simplified by transferring some of the management plan's responsibilities to a new state-wide forum for coastal management. Some authors have already called for the creation of a coastal management committee and legislation in Campeche State (Zarate-Lomeli et al. 1999, Yañez-Arancibia et al. 1999b). These recommendations take on a new urgency given the Consultative Council's failure in TLPA. A coastal management committee could include all levels of government and government agencies with jurisdiction along the Campeche coast, a list of which has already been developed (Zarate-Lomeli et al. 1999). Such a committee could coordinate government

actions across a range of programs currently included in the protected area management plan. This could streamline the responsibilities of the protected area's management body and reducing the need for government representation within the protected area. A coastal management committee would also be in a better position to address conflicts that extend beyond the protected area's boundaries, such as detrimental impacts of the oil industry and the decline in fisheries.

7.0 Collaborative Management of the Mexican Coast?

The purpose of this chapter is to demonstrate how the experience of Terminos Lagoon Protected Area can be considered an experiment in collaborative management. Collaborative management refers to balancing of power relations among multiple actors for the shared management and use of natural resources. Whereas "management" is an informed process of planning and intervening in the natural world so as to maximize benefits and minimize risk to human societies, and vice versa, collaborative management is the participation of multiple actors in that process. It is important to note that the goal of management has shifted in recent decades, away from maximizing production from natural resources, and towards maintaining healthy ecosystems by ensuring that resource use stays within sustainable limits (Yaffee 1994). With respect to coastal protected areas, collaborative management has traditionally been narrowly framed as an isolated process involving government agencies and local people or other actors (Borrini-Feyerbend 1996, Brandon and Wells 1992). Yet more recent writings have framed collaborative management within the wider context of coastal management and comanagement theory (Sandersen and Koester 2000, Diop et al. 1999, Christie and White 1997, Crance and Draper 1996). These theories provide mutually reinforcing concepts that both enrich our understanding of collaborative management and suggest how coastal protected areas—rather than isolated pieces of conservation apart from society — can be continuing experiments in sharing responsibilities for the environment within society.

Coastal management and comanagement are examined in the following sections through brief literature reviews that both define the field and identify characteristics of these

management approaches. After each literature review, these characteristics are used to assess to what extent the Terminos Lagoon Protected Area may be considered a successful example of both coastal management and comanagement. In addition to providing a critical assessment of TLPA, this analysis also contributes to understanding of the conditions necessary for success when attempting collaborative approaches to management.

7.1 Coastal Management Theory

Over the past thirty years, the North American public has become increasingly informed and interested in issues regarding the coastal zone, or the interface between terrestrial and marine environments. The coastal zone is perceived as a unique stage for environmental and socioeconomic problems as land-based activities affect the quality of the marine environment and vice-versa. As coastal populations increase, and societies become more affluent, increasing demands are made on the coastal zone for fish and forest products, agriculture, recreation, as well as urban and industrial development. Already such pressures have led to widespread degradation of the world's coastal zones, including the deforestation of over half of the world's mangroves (flooded forest ecosystems unique to the coastal zone and essential in the maintenance of many fisheries populations). Additionally, unplanned urban development along coastal areas has subjected people to a variety of coastal hazards ranging from the slower processes of erosion to rapid storm damage and violent tsunamis. Intense conflicts over coastal resources grow as the dual forces of environmental degradation and population growth result in fewer and fewer resources being available to satisfy ever-increasing demands. Developing countries, in particular, are highly dependent on coastal resources. While the coastal zone covers just one tenth of the planet's surface, it is home to over half of the human population (Thia-Eng 1993).

Coastal management has been prescribed as a solution to protect human settlements, allocate and preserve natural resources, and reduce conflict over resource use. Coastal management has been defined by Christie and White (1997) as a process of assessing,

planning, and evaluating human activity within the coastal zone in order to achieve the dual objectives of maintaining the integrity of coastal ecosystems and realizing maximum possible human benefit. Sorensen (1993) uses the term "effort" to describe a broad range of coastal management activities from feasibility studies to the implementation of national programs. The earliest coastal management effort identified in the literature is the San Francisco Bay Conservation and Development Commission (BCDC), established in 1965 (Sorensen 1993).

The current theoretical framework for coastal management is referred to as Integrated Coastal Zone Management (ICZM). This framework originated with the experiences in the United States, implementing its *Coastal Zone Management Act* of 1972. This federal legislation provided guidelines and funding for individual coastal states to voluntarily enact their own coastal management programs. Twenty years later, 56 separate ICZM efforts had developed in the United States and a significant amount of literature has been written on the subject (Clark 1997, Sorensen 1993). Based on the perceived success of coastal management programs in the United States, ICZM has been adopted by international development agencies, such as US AID, and has been recommended for addressing coastal problems in Europe, Latin America, and Southeast Asia (Robadue 1995, Thia-Eng 1993). Despite their proximity to the United States, and the existence of discussion papers on the topic, Canada and Mexico yet to implement coastal management programs.

ICZM is a broad and flexible process for the comprehensive planning of the coastal zone. At a minimum, ICZM acts as a means of coordinating various government agencies involved in aspects of coastal management in order that they may integrate policies, planning, and implementation strategies, and work towards common goals rather than negating each others' actions. In many instances, ICZM programs reorganize institutional arrangements in order to provide a horizontal integration of coastal management within government. They do so either by transferring the coastal management responsibilities of various agencies to one existing institution or incorporating the agencies themselves into a new institution.

The inclusion of ICZM on the political agenda is often catalyzed by a distinct disaster, crisis, or conflict that highlights the need for coastal management. Often, ICZM efforts result as an attempt by government to prevent further degradation, future disasters, or to resolve conflicts over resource use. For example, poor land-use planning may result in inappropriately placed industrial development that contaminates coastal waters, or the loss of infrastructure and housing along an actively eroding shoreline. Institutional arrangement that are ineffective at managing the complex land-water interface can threaten the ecological, tourism, and property values of the coastal zone.

ICZM recognizes the interconnections of the terrestrial and marine environments and fosters sustainable solutions to coastal issues. Such issues can range from protecting coastal ecosystems and maintaining natural storm barriers, to managing water pollution, and ensuring access to the coast for both water-dependent users and the public. According to Hennessey (2000), the U.S. *Coastal Zone Management Act* attempted to addresses four primary goals: minimize loss of life and property, give priority to coastal dependent land uses, provide public participation in the development of ports and urban waterfronts, and provide public access to the waterfront. While these were the goals of the U.S. experience, the choice of goals and issues addressed by any particular ICZM effort depend greatly on local conditions.

A literature review reveals eight characteristics of successful ICZM programs: the use of a continuous process, use of a systems perspective, integrated institutional arrangements, enabling legislation, balance of socioeconomic and environmental benefits, clear geographic boundaries, identifiable decision-making tools, and clear management goals. These characteristics are explored below in greater detail in an effort to develop criteria to evaluate the level of success of the Terminos Lagoon Protected Area. Experience has shown that coastal management efforts can be expected to endure longer and encounter fewer conflicts when these characteristics are present. Conversely, coastal management efforts where these characteristics are absent can be expected to encounter great difficulty.

Use of a Continuous Process: ICZM is viewed as a management process that continues over time. ICZM also incorporates many ideas from the theory of adaptive management

(Holling 1978). This framework embraces uncertainty as the actors involved admit they have limited knowledge regarding coastal dynamics. The results of management actions cannot be fully predicted, so actions taken under ICZM are treated as experiments that are evaluated in order to be learned from. Management is an iterative process where lessons learned from past experiences contribute to improving management and understanding of the coastal zone over time.

Use of a Systems Perspective: Clark (1997) argued that the key aspect of ICZM is a perspective that views the coastal zone as a unitary, interconnected system that attempts to balance terrestrial and marine resource use so as to maintain or improve land and water quality over time.

Integrated Institutional Arrangements: Existing government agencies are redefined, or new agencies created, in order to facilitate more integrated approaches to governance within the coastal zone. New forms of institutions, involving public participation, may also be created.

Enabling Legislation: Existing legislation is modified or new legislation enacted to clearly define roles and responsibilities for coastal management within government and to give a legal mandate to ICZM institutions. While not all ICZM efforts are accompanied by legislation, over the longer term initiatives that exist without legislation tend to be more vulnerable to changes in government and run a greater risk of losing their funding.

Sustainability Focus: Sustainable development is often referred to a balance of environmental, social, and economic goals, consequently ICZM programs focus on environmental protection as well as attempt to create tangible socioeconomic benefits for coastal communities. By attempting to improve peoples' lives and livelihoods, rather than focusing exclusively on issues of environmental quality, ICZM programs will tend to enjoy more support over time.

Clear Geographic Boundaries: There is a need for clear boundaries to the geographic area relevant to be considered part of the coastal zone. No one set of boundaries is universally

relevant to all political units. Boundaries should be chosen based on both the biophysical characteristics of the coast, the issues to be managed, and political imperatives (Clark 1997). Boundaries establish both the landward and seaward limits to ICZM programs, allowing for more strategic targeting of management actions. Landward boundaries can include a narrow strip of land adjacent to the coast or encompass entire watersheds.

Identifiable Decision-Making Tools: Decisions regarding permissible activities and the allocation, access, and management of resources within the coastal zone are made using clearly identifiable tools, the most common of which is zoning of activities within land-use and water-use plans.

Clear Management Goals: ICZM efforts appear to work best when focused on a select group of key issues that enjoy significant public support, rather that trying to be all things to all people. Many authors describe a need to build upon this support and move quickly from developing policies to enact practical examples of "on-the-ground" and "on-the-water" management (Clark 1997, Sorensen 1993). These practical examples can occur in the form of pilot projects focusing on a single issue over a large geographic area, or multiple issues within a smaller geographic area. Pilot projects serve to gain experience at a smaller scale and lessons learned can be incorporated into future ICZM programs. Pilot projects also allow managers to develop relationships with coastal communities and resource users that build social capital and trust vital to the success of the program over time.

7.2 Terminos Lagoon as Coastal Management

While the Terminos Lagoon Protected Area is an encouraging beginning to integrated coastal management in Mexico, it suffers from the absence of a number of critical characteristics common to successful coastal management efforts. The coastal management characteristics the protected area does posses are clear boundaries, balanced socio-economic and environmental benefits, the use of a systems perspective, and identifiable decision-making tools (table 9). However, planning and management of the protected area is inhibited by lack of continuity and enabling legislation, poor institutional arrangements,

and unclear goals. These findings are based on a combination of direct observation, archival research, and focused interviews conducted early in 2001.

At best, the Terminos Lagoon Protected Area (TLPA) can be considered a discontinuous process. Although the protected area has survived for eight years, its management has been divided into three distinct periods: the decree and development of the management plan, the short-lived Consultative Council, and the present stalemate in management. While the existence of the management plan implies a continuing effort, the plan has been more or less abandoned, and there was no discussion of how management would deal with uncertainty (interviews: 11/14; Mexico, SEMARNAP 1997). With respect to legislation, existing laws and regulations do not clearly define roles and responsibilities for coastal management within government. The federal *Coastal Zone Regulation* only applies to a narrow strip of land parallel to the coast, extending 20-meters inland from the high tide mark. Yet even this modest legislative control is seldom implemented on the ground (Mexico, Diario Oficial 1991; Zarate-Lomeli et al. 1999).

To improve the protected area as a coastal management effort, the TLPA's managers should clarify the goals and organizational structure for the area, focus on programs that enjoy wide public support, and build public awareness regarding the benefits of coastal management. The management plan is a diverse wish list of goals and programs that does not clearly state the purpose of the protected area. While public support for the protected area centers concern over risks associated with oil development, as well as a dramatic decline in fisheries, the federal government is primarily concerned about habitat issues and reducing social tension. Although of these fears are addressed in the management plan, the perspective on how these issues are interconnected has been loss with the focus on individual projects instead of integrated programs. Compared to the now defunct Consultative Council, the Direction Office does not provide the same opportunity to facilitate integrated approaches to coastal zone governance. Clearly, a new institutional arrangement must be created.

The protected area possesses clear geographic boundaries, but it is not obvious why these boundaries were chosen. The landward boundary is confusing and has no connection to

natural drainage patterns. The protected area extends seaward to include all waters less than 10-meters deep and allows coastal management efforts to be highly focused in a relatively small area. Yet this area is too small to be of any practical use in addressing the issues of interest to local people, such as oil development and fisheries. The present boundaries limit the protected area's potential to address issues that extend further into the Campeche Sound such as fisheries decline and the detrimental impacts of the oil industry. If the protected area intends to deal with these issues as described in the management plan, the seaward boundary should be extended further offshore.

The management plan mentions both a systems perspective and balanced socioeconomic and environmental benefits (Mexico, SEMARNAP 1997). However, neither of these objectives are currently being implemented within the protected area. Neither the decree nor the management plan explicitly mention the interdependence of terrestrial and marine environments, yet the management plan calls for an ecosystem-based perspective and makes commitments to protect mangroves and improve water quality. In focused interviews, respondents described the regional environment as a complex system and described some of its dynamics and interconnections (interviews: 7/14). Their perspective implicitly includes the coastal zone, but this awareness is not reflected in the diversity of small-scale projects currently underway within the area by a number of local groups and government agencies. More integrated programs are needed to combine efforts of the diverse actors within the protected area and put a systems perspective into practice. While the decree focused exclusively on environmental benefits, the management plan is more balanced between socioeconomic and environmental outcomes. Many respondents placed an intrinsic or existence value on the region's environment, although the most respondents place greater value on the economic benefits associated with regional resource use (interviews: 11/14). With the failure of the Consultative Council, there is no coordinating body to guide economic benefits towards the common good. In the current project-based approach to management in Terminos Lagoon, the emphasis on socioeconomic versus environmental benefits varies from project to project. Those benefits that do exist tend to be directed to a small group of individuals associated with a specific project. Clearly, the protected area's management system needs to adopt more integrated programs if greater, more equitable socioeconomic benefits are to be realized.

The presence of identifiable decision-making tools is the strongest characteristic of coastal management in Terminos Lagoon. Both the zoning map and management plan provide a basis for deciding what activities are permitted within the protected area. The zoning map provides spatial limits to land use activities. However, zoning for the aquatic portion of the protected area needs to be diversified as all of the region's water bodies are currently considered as a single unit (Mexico, SEMARNAP 1997). A mechanism is also needed to update these tools, and new incentives are needed to improve compliance.

Table 9: Terminos Lagoon Report Card as an Example of Coastal Management
Presence of the characteristics: A = Complete, B = Strong, C = Partial, D = Limited, F = Absent

Characteristic	Grade	Qualities	Areas for Improvement
Continuous Process	D	Protected area has existed for eight years.	Greater continuity in management is required.
Systems Perspective	C	Management plan states that park management is to have an ecosystem perspective.	Systems perspective must be implemented through more integrated programs. The response of regional ecosystem and species need to be used to evaluate management actions.
Integrated Institutional Arrangements	D	Government agencies involved in developing the management plan, and the Consultative Council coordinated interests within the protected area.	New arrangements must be established now that the Consultative Council has been abandoned.
Enabling Legislation	D	A decree, *Federal Environment Law*, and *Protected Areas Regulation* recognize the protected area.	There is a need for more specific coastal management legislation within Mexico to improve the integration of government agencies with coastal management responsibilities.
Sustainability Focus	C	Management plan mentions both socioeconomic and environmental goals.	Integrated programs are needed to provide a more equitable distribution of benefits.
Clear Geographic Boundaries	C	Protected area has clear landward and seaward boundaries.	Boundaries should be justified on the basis of biophysical characteristics or management issues.
Identifiable Decision-making Tools	C	Management plan and zoning map provide boundaries and criteria for suitable water and land use practices.	Need a mechanism to update these tools, more diverse zoning for water bodies, and incentives are needed to improve compliance.
Clear Management Goals	D	Decree states that the protected area is to protect habitat and endangered species.	Management plan complicates the protected area's purpose by mentioning a wide range of issues in need of attention.

7.3 Comanagement Theory

Comanagement is a situation where control over of some natural resource is shared between two or more actors, at least one of which is government and one is community-based. The term comanagement is often attributed to Judge Boldt whose 1974 decision granted a legal mandate for the comanagement of salmon fisheries between state officials and the indigenous people in northwestern Washington State (Singleton 1998). As other fisheries beyond the United States have faced moments of crisis, comanagement has been proposed as a way forward when existing management institutions are fraught with conflict.

Since the Boldt decision, a great deal of attention has been paid to fisheries comanagement (Pinkerton 1994, 1989; Pomeroy 1993, 1997; Miller 1989), and a quick survey of comanagement literature reveals over half is related to fisheries[4]. The conceptual basis of fisheries comanagement has expanded over time to include more ecosystem-based perspectives (House 1999, Pinkerton 1994). In so doing, comanagement literature has realized a synergy with theory concerning a multitude of different resources. Despite a relatively short history of three decades, comanagement theory has now been applied to resources ranging from forestry (Klooster 2000, Beckley 1998), to wildlife (Taiepa et al. 1997), and watersheds (Pinkerton 1993).

In addition to the term comanagement, and depending on the authors or their audiences, situations of shared natural resource management are also referred to as collaborative, cooperative, or joint management. Although the literature continues to develop, articles dealing with forestry tend to use the term joint management and the term collaborative management is often used with respect to coastal regions or protected areas (Weitzner and Borras 1999, Christie and White 1997, Borrini-Feyerbend 1997, 1996, White et al. 1994). All of these bodies of literature refer to similar situations of shared management, regardless of the exact terminology used.

Whereas management by a government agency can be considered a "top down" approach, comanagement is simultaneously a "top down" and "bottom up" approach (Christie and

White 1997). Comanagement is seldom a government-initiated process to devolve powers from state to local actors; rather comanagement is often initiated by multiple actors and is a situation of power sharing (Weitzner 2000). Comanagement often emerges as a result of local actors organizing themselves and demanding a role in management. These demands often emerge under conditions when the state is, for some reason, open to such arrangements either due to crisis, budget limitations, or lack of authority. Through comanagement, multiple actors combine their capacities such as people, skills, authority, equipment, and financial resources in complementary ways. In so doing, actors realize a more effective or equitable management arrangements than could be realized by any one actor working alone. Actors may enter comanagement to improve the long-term benefits of a natural resource. Alternatively, they may view comanagement as means of realizing secondary goals such as improving the ability of a community to govern itself, decentralizing decision making, or reducing conflict among resource users. The success of comanagement depends upon the willingness of all actors to make, or support, rules that govern their behavior (Pinkerton and Weinstein 1995, 12).

Despite the variety of names used for situations of comanagement in the literature, it is important to remember that the key feature of comanagement is a real sharing of decision making power and responsibility for natural resource management. Comanagement is thus different from situations where one actor maintains absolute control over management and conducts some form of public participation, be it community consultations or the creation of advisory boards. So long as the ultimate decision making authority remains in the hands of any single actor, a situation cannot be called comanagement. This distinction appears easy to identify; yet in practice many potential examples of comanagement could be overlooked if details are not taken into account. Even when a single actor appears to hold all legal authority over a particular resource, a comanagement situation may emerge due to subtleties in communication and power relations between and among actors, and the existence of *de facto* rather than *de jure* property rights.

The literature includes a number of different aspects of comanagement. Whereas some authors describe comanagement as a product, others consider comanagement as a process.

The former scholars research the structure of comanagement institutions (Pomeroy 1997, 1993), while the latter research how comanagement relationships develop among actors (Pinkerton 1994, 1993). Once established, comanagement can encompass any one, or a combination of, management responsibilities including: gathering and analyzing data, harvesting levels, allocating harvest among resource users, protecting or enhancing environmental quality, enforcing regulations, or policy making and crafting a long-term vision for the future of a resource (Pinkerton and Weinstein 1995). Authors have developed a number of characteristics, or enabling conditions, to identify and analyze examples of comanagement. The presence of these enabling conditions contribute to the success of comanagement, while the absence of enabling conditions is considered a significant barrier preventing the success of comanagement initiatives. Enabling conditions can be broadly grouped into five categories that describe the scale of management, preagreement conditions, postagreement conditions, management characteristics, and the characteristics of the participating actors.

Scale of Management: Enabling conditions related to the scale of management include clearly defined resource boundaries and appropriate scale. Comanagement requires that all actors have a clear understanding of the resource to be managed and reasons for management. Whereas coastal management tends to focus on a bounded geographical area and manages whatever resources are found there, comanagement tends to focus on relatively few resources and extends management to wherever those resources are found. Actors need to agree on the purpose of management before clear goals can be established. While scale is an issue of intense discussion among researchers (see Gibson et al. 2000), appropriate scale can be considered to exist when the scale of management effort is compatible to the scale of the natural resource being managed. Scale can be considered both spatially, as the feasibility of resource monitoring and enforcement, and culturally in terms of the ease of communication and cultural cohesion among actors (Pinkerton 1989).

Preagreement Conditions: Certain enabling conditions apply to the situation prior to negotiating a comanagement agreement. These conditions include sensitive government bureaucracy, the existence of a resource crisis, and a sense of identity among resource users. Resource users' demands for comanagement will likely encounter greater success if

the government bureaucracy is small and sensitive to local conditions, the area involved is biophysically diverse, and government agencies are eager to assist local people and access resources in order to fulfill their mandate (Kuperan and Abdullah 1994, Pinkerton 1989). Actors are also more open to negotiate comanagement when a crisis exists in resource stocks (Pinkerton 1989). Whether a crisis is proven or simply perceived to exist is unimportant so long as actors feel there is a need for change and that comanagement might better secure their longer term interests than the status quo. Comanagement is also more likely to succeed when there is a well-developed sense of place among resource users or actors personally identify with a resource (Pinkerton and Weinstein 1995).

Postagreement Conditions: Once actors have agreed to enter into a comanagement arrangement, it is more likely to succeed if the arrangement is formally recognized and actors gradually develop the capacity for management responsibilities. Experience has shown that comanagement arrangements that are formalized in long-term agreements tend to endure longer than those arrangement without such agreements. Preferably such agreements are written, legally binding, and signed by the actors involved (Pinkerton 1989). Comanagement agreements must at least acknowledge the right of resource users to organize and participate in management (Ostrom 1995), and may also outline the goals of resource management and the rights, roles, and responsibilities each actor. Finally, by gradually developing actors´ capacity for management responsibilities, comanagement may start simple with a small number of responsibilities and develop over time to include more complex aspects of management (Pinkerton 1989).

Management Characteristics: How comanagement is put into practice is at least as important as how it comes into being. Several enabling conditions consider management characteristics such as resolving conflict, using external support, and distributing costs and benefits. By providing means for actors to resolve conflicts within the comanagement arrangement, comanagement opens opportunities for creative and informal problem solving among actors, while avoiding the need for protests or costly legal action (Ostrom 1995, Pinkerton 1989). While a comanagement arrangement is an effort on behalf of actors to be self-sufficient, comanagement participants can make strategic use of external support such as technical expertise, funding, or negotiators when needed to improve management

(Ostrom 1995, Pinkerton 1989). Comanagement agreements tend to be more durable if there is an equitable sharing of costs and benefits among actors. Actors have a greater stake in seeing comanagement succeed if everyone must contribute to support an arrangement to ensure its effectiveness, and all participants are guaranteed to share the fruits of its labor (Pinkerton 1989).

Participants: The final category of enabling conditions concerns the characteristics of the individuals involved in a comanagement arrangement. This includes clear membership and the presence of leadership. Having clear membership means knowing who is part of a comanagement arrangement, controlling the entry of new participants, and being able to restrict the actions of nonmembers. Leadership exists when there a consistent group of dedicated, charismatic, and effective individuals who promote trust and cooperation among actors. This group of leaders is also referred to as an "energy center". It facilitates the process towards more complete comanagement where a greater number of responsibilities are shared among actors (Pinkerton 1989).

7.4 Comanagement Experience in Protected Areas

Over the past decade there has been an explosion in the number of comanaged protected areas. Although comanagement literature originated with the management of individual natural resources, a synergy has emerged between this theory and a long-standing debate in protected area literature regarding the participation of local people in management. Theory concerning the comanagement of protected areas thus represents both a novel approach and a natural extension of existing theory. Writings on the comanagement of protected areas often chronicle case studies, describe comanagement as a process rather than a product, and propose theoretical frameworks that must be adapted to the local conditions (IUCN 1999, Venter and Breen 1998). While comanaged protected areas now exist in Nepal, Costa Rica, Australia, and Canada, countries have developed different models for comanagement based on the mixture of actors, rights, and conflicts involved.

In Nepal, the government has historically displaced local people from areas slated to become national parks. Once established, these protected areas followed a "fence and fine" model. Local people were not allowed to use the park's resources, to the extent of using military enforcement to keep local people from accessing the park, and transferring access to the park from locals to foreign tourists. Moved by the plight of local people, foreign groups pressured the government into recognizing and permitting resident Sherpas to continue occupying the land within Sagarmantha (Mount Everest) National Park and using the park's resources. Since 1996, the government has given the Sherpa people half of the entrance fees collected from foreign tourists, has entered into comanagement agreements with the Sherpa for some park resources, and has fostered the revival of community institutions to manage others, such as timber (Stevens 1997). A similar model has developed half a world away in Costa Rica's Cahuita National Park (Weitzner and Borras 1999).

In Australia, both Uluru-Kata Tjuta (Ayer's Rock) National Park and Kakadu National Park are currently comanaged between aboriginal people and the respective state conservation agency. Additionally, several more protected areas are the subject of continuing negotiations for comanagement. In the Australia model, the land is owned by the aboriginals and leased to the state agency. Aboriginals reserve the right to manage the land according to their customs and traditions while the state agency administers tourism and sponsors recreation opportunities. Aboriginals value the protected area as a means of recovering their long history of managing the landscape, rebuilding their spiritual connection to the land, and ensuring the survival of their culture (de Lacy and Lawson 1997).

First Nations groups in Canada possess a unique claim in the management of lands they have traditionally occupied. Recent interpretations of 100 + year old treaties between First Nations groups and the colonial government have established that parts of the country were never surrendered to the Canadian government. First Nations groups possess a legal entitlement, or "aboriginal title", to these lands and many First Nations groups have initiated land claims for the return of these lands and compensation for their loss. Despite the recognition of aboriginal title, lands claim negotiations proceed slowly on a case-by-

case basis as there is still much uncertainty as to the extent of First Nations' rights. Nonetheless, First Nations groups must at least be consulted regarding the management of land under their claim, and are potentially entitled to a wide range of property rights over these lands.

This special status of First Nations groups has been a catalyzed a number of comanagement initiatives in Canadian protected areas. Section 1.3.13 of the *Parks Canada Policy* of 1979 requires "joint management" of protected areas with First Nations. While Parks Canada has often interpreted this as an advisory role, First Nations themselves have seen the policy as mandating them an authority role in protected area management (Hawkes 1995). The past two decades have seen a flourishing of agreements for the comanagement of protected areas between the First Nation and government. These agreements have occurred as part of a lands claim settlement (Inuvialuit Final Agreement and Ivvavik National Park), after lands claim settlement (Nunavut Final Agreement and North Baffin Island), and as an interim measure prior to lands claim negotiations (Clayoquot Sound Central Regional Board on the West Coast of Vancouver Island and Gwaii Haanas National Park Reserve on the Queen Charlotte Islands) (Weitzner 2000, Abrams 2000, Hawkes 1995). The *National Parks Act* continues to invest the federal minister with final authority for protected areas so that comanagement boards are *de jure* advisory bodies, yet the *de facto* powers of these comanagement boards are much stronger. For example in both the Gwaii Haanas National Park Reserve and Kluane National Park, comanagement boards must approve management plans prior to their submission to the minister for final approval. Thus most decisions remain at the protected area level (Sneed 1997, Hawkes 1995).

While property rights are always fundamentally changed by a move to comanagement, the ownership of protected areas lands is not. Although sharing the responsibility for protected areas invariably changes property rights of access, management, exclusion, or alienation (Schlager and Ostrom 1993), this change does not necessarily alter whether a resource is legally considered state property, common property, or private property. For example, land within the Kakadu National Park in Australia is the common property of aboriginal people (de Lacy and Lawson 1997) while the area occupied by Gwaii Haanas

National Park Reserve in Canada is currently state property owned by the federal government pending a lands claim settlement (Hawkes 1995).

7.5 Terminos Lagoon as Comanagement

Although the actors involved never used the term, the Terminos Lagoon Protected Area (TLPA) from 1997 to 2000 may be considered a limited form of comanagement initiative. Assessing the protected area based on the categories of enabling conditions listed above, the barriers to comanagement are the scale of management, postagreement conditions, and management characteristics. Conversely, the presence of enabling conditions in the categories of preagreement conditions and participants facilitate comanagement (table 10). These findings are based on a combination of direct observation, archival research, and focused interviews conducted early in 2001 and consider the Consultative Council's influence in management.

Scale of Management: ***Absent*** It is unclear which resources are to be managed within TLPA as the limits of many of the resources mentioned in the management plan do not coincide with the protected area's geographical boundaries. Both fisheries and oil are mentioned in the protected area's management plan yet activities related to these resources occur primarily beyond the protected area's boundaries in Campeche Sound. Water quality is also mentioned in the management plan, but it is affected by activities beyond the protected area, both to the north in Campeche Sound and to the south upstream in watersheds that flow into Terminos Lagoon (Mexico, SEMARNAP 1997). While documented examples demonstrate that collaborative approaches tend to be more successful when located in remote areas isolated from outside interests (Christie and White 1997), TLPA is neither remote nor isolated. The area is readily accessible from other parts of Mexico, fisheries resources spill over the area's boundaries, and the presence of oil reserves and PEMEX introduces national economic and energy objectives into protected area management. Efforts within the protected area will have little impact if oil

development is poorly planned and fisheries continue to be heavily exploited outside the area.

Preagreement Conditions: ***Partial*** Comanagement in TLPA occurred due to government openness, sense of identity, and the occurrence of a crisis during which local people demanded a management role. Despite a recent movement towards distributing its bureaucracy among several regional offices (*delegaciones*), federal government agencies remain highly centralized as significant policy and decision making responsibilities continue to reside in Mexico City. Although the federal government is possessive of these responsibilities, government agencies are constrained by limited budgets and personnel. Consequently, they are increasingly open to collaborative approaches that allow them access to local skills and resources (interviews: 3/14). In the Terminos Lagoon region, there is a strong sense of place among locals: fishers have an intimate connection to local fish species, the Carmen municipal government uses shrimp as a symbol of local identity, and environmental groups identify with charismatic species such as dolphins (interviews: 5/14). While these groups were not always integrated, they share symbols and have in common an identification with the local environment. These similarities facilitated the formation of alliances when the crises occurred. Both the impacts of oil development and fisheries decline are long standing sources of tension, but it was not until the 1996 crisis surrounding the *Petróleos Mexicanos* (PEMEX) drilling project that local people organized to demand a greater say in managing the protected area.

Postagreement Conditions: ***Absent*** The enabling conditions of formal agreement and progressive development of management responsibilities were completely absent in TLPA. If one considers the February 1997 press conference as the agreement to comanage the protected area, this agreement was neither formal, nor written. Without formal agreement the council had no binding rules or long-term vision, could not be legally recognized, and its purpose was open to interpretation. While actors gave their verbal support to the Consultative Council, they could abandon the council whenever they felt it did not meet their expectations. No attempt was made within the Consultative Council to

gradually develop capacity for performing management responsibilities. The timetable included in the management plan describes that all parts of the plan were to be implemented simultaneously and promised to be all things to all people. Local actors, meanwhile, tried to do too much with too little. Assuming the protected area was to be locally managed, local actors experimented with a range of responsibilities without necessarily possessing the needed skills or resources to do so.

Management Characteristics: ***Limited*** While present, the enabling conditions related to management conditions were restricted. The Consultative Council's use of external support was poorly directed, without an equitable sharing of costs and benefits among actors, and the council was ineffective at resolving conflict. The council made use of academics for consulting services. This external support was cost effective, as it was partially funded by government agencies, but the council was less able to direct researchers´ efforts towards meeting the council's needs. Instead, academics had relatively free reign to base research on personal interest, rather than information gaps identified in the management plan (interviews: 2/14). While PEMEX and the government supported the council's operating costs, local actors enjoyed the benefits of playing protected area manager. While the company was initially willing to absorb this cost to avoid social unrest and protest, PEMEX tired of the council once its flaws became apparent. When allegations surfaced of financial mismanagement within the council, PEMEX found an alternate means of funding the protected area (interviews). As discussed above, the council's inability to resolve certain conflicts contributed to its failure. Without any formal agreement to grant the council authority, actors could unilaterally ignore any solutions the council proposed. To enforce its decisions, the council would have had to rely on government intervention that was not forthcoming (interviews).

Participants: ***Limited*** The enabling conditions related to participants were present, but limited, as the council's membership was far from clear, leadership was divided, and there was a limited sense of ownership over the comanagement process. The council tried to be too inclusive. Not only did this management body have an enormous number of members,

there was no clear distinction between who was and who was not considered a potential member. The initial proposal for the council's membership to include all the actors that had participated in developing the management plan implied that all actors with an interest in the protected area could participate, no matter how narrow their interest. Meanwhile, there was undoubtedly a core of leaders in TLPA, but these individuals more often than not represent particular interests rather than a vision of the common good. Many of those individuals that once possessed such a vision have retired from management or abandoned their vision over time.

There is much frustration and mistrust among the respondents interviewed and social capital will need to be rebuilt if the comanagement initiative in TLPA is to be revived. Some respondents were critical of the management plan, but all were proud of the dialogue that was involved in its creation. At one point or another, all referred to TLPA as "our " protected area (interviews: 8/14). Clearly, there is buy in to the general idea of comanagement, but there is great discontent among all actors over the failure of the Consultative Council. Respondents referred to management as activities they have personally performed, or activities performed by the organization they represent. Apart from the management plan, participants did not describe management as "we did this" inclusive of other actors that one would expect if there were a strong sense of social capital and working together.

With the brief existence of the Consultative Council, and the potential represented by the CTAs, Mexico joins the club of countries experimenting with protected area comanagement. Whereas protected area comanagement in Canada and Australia emphasizes the rights of native people, in Nepal, Costa Rica, and now Mexico such initiatives center more on the rights of local people, regardless of ethnicity, and represents a more developing world model of protected areas comanagement. TLPA has even more in common with other tropical coastal areas such as to the Soufriere Marine Management Area in St. Lucia and the Saloum Biosphere Reserve in Senegal suggesting that these protected areas could learn from sharing their experiences. All three protected areas have sizable populations of people living within the protected area that rely predominantly on

fishing for subsistence or income. The Soufriere Marine Management Area also faces the presence of a national imperative for earning foreign exchange, only within St. Lucia the driving external force is tourism rather than the oil industry. Similar to TLPA, the management system in the Soufriere Marine Management Area lost legitimacy among local people when significant decisions were made by the government agency without public consultation (Sandersen and Koester 2000). Whereas the decision of the National Institute of Ecology (INE) to permit the drilling of oil wells within the protected area helped the formation of the comanagement initiative in TLPA, arbitrary decision making by government undermined public respect for the comanagement initiative in Soufriere. Interestingly, the comanagement initiative in Soufriere also lasted three years before encountering a severe crisis resulting from confusion over jurisdiction, rights, roles, and responsibilities (Sandersen and Koester 2000). Similar confusion is also reported to exist in the Saloum Biosphere Reserve in Senegal (Diop et al. 1999). Clearly, the presence of an integrated management plan or zoning map is insufficient to ensure success of protected areas comanagement. The TLPA experience instead suggests that the success of protected area comanagement depends more upon the organizational structure of management and clear understanding among actors of each other's rights, roles, and responsibilities.

Table 10: Terminos Lagoon Report Card as an Example of Comanagement

Presence of the characteristics: A = Complete, B = Strong, C = Partial, D = Limited, F = Absent

Criteria	Grade	Qualities	Areas for Improvement
Scale of Management	F	None.	Must clarify which resources are to be managed within the protected area.
Preagreement Conditions	C	Local groups had a strong sense of place and government agencies were being decentralized at the same time.	*Not applicable.*
Postagreement Conditions	F	Informal agreement to create Consultative Council reached in February 1997.	Need a formal, written agreement to clarify the council's purpose, and need to start with a smaller number of management responsibilities and work up.
Management Characteristics	D	Council brought together a diversity of interests and used academics to provide biophysical information.	Increase capacity for resolving conflict, more guidance for external support, and increase equity in distribution of costs and benefits of management among actors.
Participants	D	Council membership very inclusive and actors feel strong sense of ownership over the protected area and management plan.	Clarify conditions of membership, build social capital among members, and cultivate a vision of the common good / common goals.

8.0 Lessons Learned

This chapter considers the relevance of the Terminos Lagoon Protected Area (TLPA) for comanagement theory and other protected areas. This discussion begins with a brief description of how recommending policy differs from implementing policy, and a summary of how TLPA is a unique example both within Mexico and among comanaged protected areas in other countries. The chapter concludes by suggesting lessons for comanagement, and lessons for other protected areas that may unknowingly face challenges similar to those encountered in Terminos Lagoon.

The Challenge of Policy

While recommending a policy for collaborative management is relatively easy, implementing such a policy is much more challenging. In the clean world of theory, the advantages of collaborative approaches in protected area management are so obvious that one cannot imagine why there would be any difficulty in getting everyone to agree to such a policy. Indeed scientists and politicians can easily recommend a collaborative approach, only to be surprised when the experiment fails to live up to expectations. In the messy world of practice, policies never implement themselves. No matter how clear the advantages appear, a major effort is always required to carefully craft policy to match the local realities, and to ensure good communication of a policy's goals. Just as the existence of the management plan did not ensure the success of a collaborative approach in TLPA, policy is meaningless if it is not continuously supported by the commitment of those involved. No one actor was responsible for the failure of the Consultative Council. Yet blindly embarking on an experiment of collaborative management, without understanding the difficulties of implementing that policy contributed to its failure.

Uniqueness of Terminos Lagoon

Terminos Lagoon represents a unique situation within Mexico. Although other Mexican protected areas have experimented with collaborative approaches, the presence of the oil

industry and the complexity of management issues in TLPA distinguish it from other areas. The Sian Ka'an Biosphere Reserve located in Quintana Roo State has also been upheld as an example of collaboration (Brandon and Wells 1992). At first glance, it is similar to TLPA. A civil association, Friends of Sian Ka'an, was created to involve local people and NGOs in management responsibilities and provide information regarding the protected area. Compared to Terminos Lagoon, Sian Ka'an is more remote, making it more feasible to control access to the area and placing fewer external pressures upon the area's resources. Additionally, the land included in the Sian Ka'an is predominantly state property and fewer people live within its boundaries. More importantly, however, there are fewer resource conflicts in Sian Ka´an and a common understanding exists regarding the rights, roles, and responsibilities of each actor. These factors have generated stable political support for Sian Ka'an from all levels of government and facilitated the creation a mutually acceptable list of management priorities. Thus, the outcome of Sian Ka'an differs from the situation in Terminos Lagoon in many ways.

Compared to comanaged protected areas in other countries, TLPA is again distinguished by the complexity of management, the presence of outside interests, and confusion over rights, roles, and responsibilities among actors. In both the Gwaii Haanas National Park Reserve in Canada and the Kakadu National Park in Australia, protected areas management is restricted to conservation goals. Neither park is currently subject to the invasive interests of oil or mineral exploration. Although tourism is present in both parks, neither country is as dependent on tourism revenue as Mexico is on oil revenue. In both parks, comanagement is a matter of joint control between native people and government agencies. Even if indigenous rights are not fully defined and focus of continuing debate, the existence of these rights is acknowledged. In contrast to Canada and Australia, management in TLPA embraces both conservation and social development goals, the oil industry is active within the region, and a larger number of actors claim a role in management with fewer defined rights.

Lessons for Comanagement

The TLPA experience suggests three lessons for comanagement. These concern the need to build upon all five categories of enabling conditions, the need for agreement over rights, roles, and responsibilities, and the detrimental importance of complexity in management and resource conflicts. Lessons for comanagement that emerge from this study include the following.

The probability of success in comanagement is proportional to the distribution of enabling conditions among the categories of scale of management, preagreement conditions, postagreement conditions, management characteristics, and participants.

The probability of success in comanagement may not be proportional only to the number of enabling conditions present in any comanagement initiative. Rather, the enabling conditions that are present need to be distributed among all five categories of enabling conditions. In TLPA, the enabling conditions that facilitated comanagement were concentrated in the categories related to preagreement conditions and participants. The comanagement initiative was ultimately inhibited by the absence of enabling conditions from the remaining categories. Not much can be done to create enabling conditions in the category of preagreement conditions as such facilitating circumstances are either present or not. In the remaining four categories, enabling conditions can be created through negotiation and careful policy implementation prior to embarking upon comanagement. It is more useful to consider comanagement as a process rather than a product, and actors should endeavor to develop enabling conditions in categories that are relatively weak. If any one category of enabling conditions is absent altogether, a comanagement initiative will likely experience great difficulties.

The degree of difficulty in comanagement is proportional to the level of disagreement over rights, roles, and responsibilities.

Comanagement can be greatly facilitated if the actors involved reach agreement regarding the extent of each other's property rights over the natural resources in question, the role each actor is to play in management, and which management responsibilities each actor is to fulfill. Comanagement in TLPA was complicated by the existence of a variety of formal and informal property rights that were never well defined and never fully accepted by all actors. Each actor was allowed to define his or her own role because the council never formally defined the rights, roles, or responsibilities of its members. Without an appreciation for the rights of others, each actor interpreted the Consultative Council to represent the level of participation that best justified the role he or she desired. These individual interpretations formed the basis of each actor's expectations of the council and influenced how each group interacted with others. When actors felt others did not respect their particular role, they were apt to argue over details, abandon their responsibilities, or ignore the council.

The degree of difficulty in comanagement is proportional to the complexity of management and resource conflicts.

Management complexity is directly related to the scale of landscape, natural resources, and policy areas involved in management. There is a critical point where the scale of a protected area has less in common with natural resource management and begins to resemble a governance process. On the west coast of Vancouver Island in Canada, the Clayoquot Sound Central Regional Board is a comanagement institution that manages a diversity of policy areas including forestry, community development, and environmental planning. The biophysical scale and breadth of policy issues is more than that faced by a simple comanagement institution, and the Central Regional Board's development has been described as a process of collaborative governance (Abrams 2000). While TLPA is characterized here as a coastal management effort and comanagement initiative, the variety of resources and conflicts involved made the Consultative Council more akin to a process of collaborative governance. In both collaborative management and collaborative governance, there is a reduced role for government as power is distributed among nongovernmental actors. Collaborative management can be defined as the joint control

over narrowly defined and bounded natural resources, and collaborative governance can be defined as the sharing of a wider variety of powers over multiple natural resources or policy areas.

Lessons for Protected Areas

Creating a distinction between management and governance is useful for distinguishing the challenge of implementing a collaborative approach in different protected areas. The complexity of any given protected area is the result of its geographic boundaries, the resources the protected area is created to protect, and the mixture of actors involved. The collaborative approach for a highly complex protected area, with a diverse mix of actors and many resources to be managed, will need to be of a more multifaceted design than a collaborative approach for a simple protected area with relatively fewer actors and resources. The collaborative approach for a relatively less complex protected area may be called collaborative management, while a more complex protected area will require collaborative governance.

When a protected area nears the complexity and scale of a governance process, it must either scale down its management plan or evolve beyond the protected area framework as it has traditionally been defined. The TLPA experience provides an example of what happens when actors near the scale of collaborative governance. Government was unwilling, and local actors unprepared, to evolve the protected area into a process of collaborative governance. Instead management within the protected area has been scaled back from the lofty goals of the management plan. The only set of actors that continue to follow the management plan is an alliance of local environmental groups and the Carmen municipal government. Yet if the management plan were to be implemented across the protected area, its responsibilities would likely need to be divided between separate management bodies for the protected area and the coastal zone. In other words, one possible solution to the management vs. governance dilemma is to narrow the set of responsibilities to be handled by protected area management and transfer responsibilities for more regional problems to another management body which focuses on coastal issues. Another alternative would be that the protected area ceases to be simply a conservation

initiative; and instead it could be transformed into a process of collaborative governance that consciously tackles a wider set of problems with expanded powers.

The TPLA experience is a clear warning to actors involved in other protected areas. It is important to be conscious of the scale of management and whether the process they are involved in is collaborative management or collaborative governance. In the Canadian Province of British Columbia, the new marine protected areas at Race Rocks and Gabriola Passage are comparable to TLPA and include coastal zones under environmental stress and conflicting pressures for conservation, recreation, urban development, and fisheries. The similarity to TLPA would be even greater should the current provincial moratorium on oil and gas development in Georgia Strait be lifted and oil companies begin to explore and develop the region's hydrocarbon potential. Already local people have organized to lobby government for greater habitat protection and the creation of protected areas; and both the Race Rocks and Gabriola Passage Marine Protected Areas would likely face similar boundary problems, conflicts, and management complexity as Terminos Lagoon. The TLPA experience suggests that these areas can benefit by clearly defining the rights, roles, and responsibilities of potential management actors and consciously deciding to either adopt a process of collaborative governance, or scale down to a more narrow set of conservation goals.

9.0 Conclusion

This concluding chapter answers the research question and summarizes the lessons to be learned from Terminos Lagoon Protected Area (TLPA). The experiences of a collaborative approach to protected area management were presented and analyzed using concepts regarding public participation and corporate transformation, and theory from coastal management and comanagement (fig. 8). In addition to answering the research question, analysis of this case provides two directions of learning between theory and practice. Comparing the case study to comanagement and coastal management theory — and international examples of protected areas— demonstrates that while the collaborative approach in TLPA was only a partial success, the potential exists to recover this experiment in TLPA and improve upon collaborative approaches to protected area management in Mexico. The TLPA experience also contributes to comanagement theory and provides lessons for other protected areas experimenting with collaborative approaches.

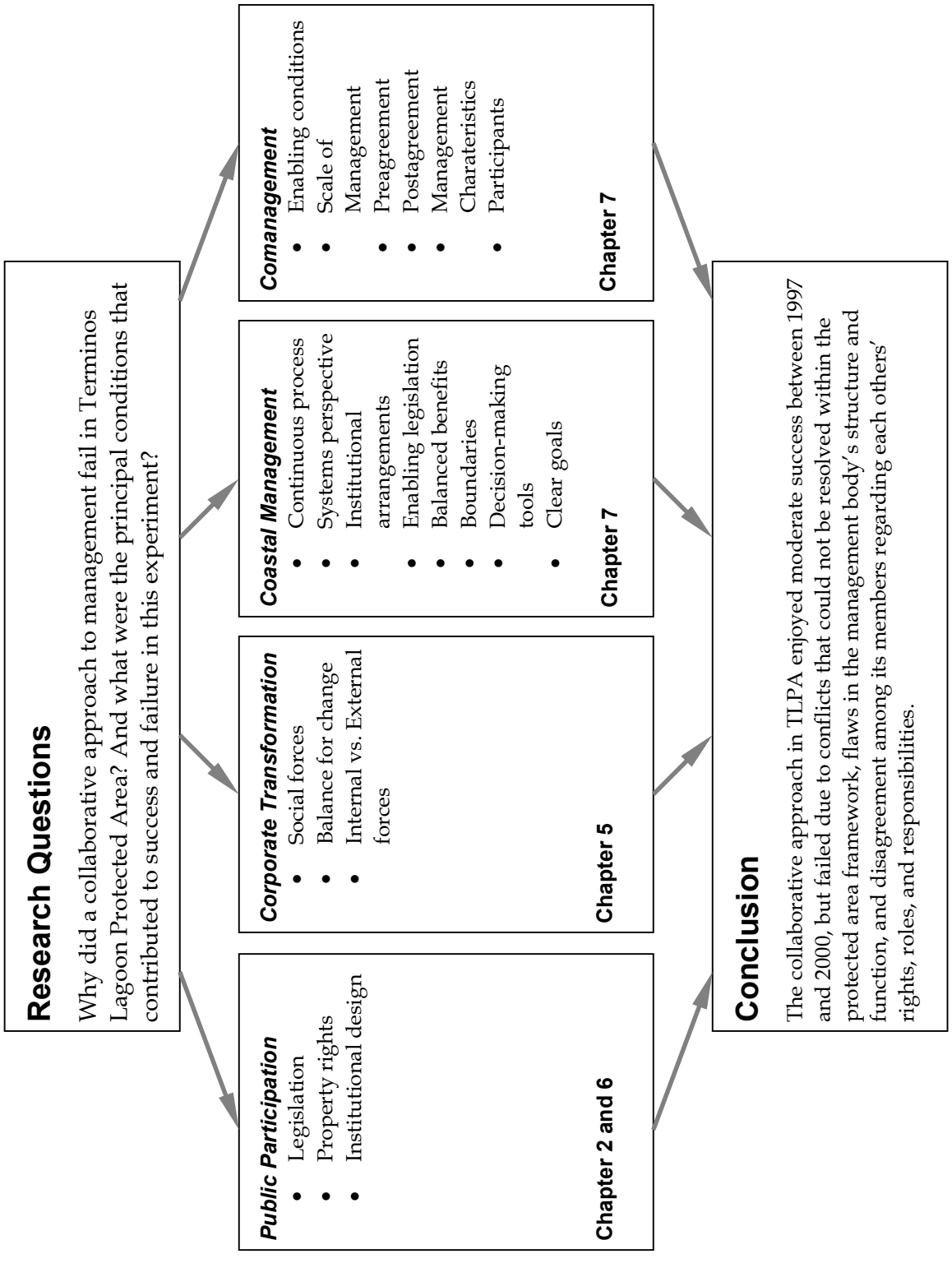

Figure 8: Report Structure and Conclusion

Why did a collaborative approach to management fail in Terminos Lagoon Protected Area? And what were the principal conditions that contributed to success and failure in this experiment?

A collaborative approach to protected area management was attempted in southern Mexico as a solution to civil protests over the oil industry's presence within the protected area. Through the development of a management plan and a joint management body, local people and other actors participated in defining objectives and decision making for the protected area. This collaborative approach would not have occurred without the presence of the national oil company, that both prompted a crisis that led to the joint management body and provided funding that made the work of this body possible. The collaborative approach enjoyed moderate success between 1997 and 2000. But it failed due to conflicts that could not be resolved within the protected area framework, flaws in the management body's structure and function, and disagreement among its members regarding each others' rights, roles, and responsibilities.

Terminos Lagoon Learns from Theory

Between 1997 and 2000, the Terminos Lagoon Protected Area (TLPA) encountered moderate success as a coastal management effort and comanagement initiative. As a coastal management effort, the protected area was inhibited by poor institutional arrangements, a lack of continuity, enabling legislation, and clear management goals. Yet coastal management was facilitated by clear geographic boundaries, the inclusion of socioeconomic as well as environmental benefits in management, the use of a systems perspective, and the presence of identifiable decision-making tools in the form of a management plan and zoning map. Whereas the success of comanagement is predicted by the presence or absence of enabling conditions, comanagement in TLPA was inhibited by the absence of enabling conditions related to the scale of management, postagreement, and management characteristics. Yet comanagement was facilitated by the presence of enabling conditions related to the participants and preagreement.

This collaborative approach would not have occurred without the presence of the national oil company, PEMEX, that both prompted a crisis that led to the joint management body and provided funding that made this body possible. PEMEX's contribution to protected area management was partly an investment to avoid the more costly alternatives of continuing civil protests and government sanctions, but it is also connected to a larger process of change within the company.

The collaborative approach in TLPA occurred when there was a fortunate coincidence of conflict, policy, laws, and people; unfortunately the institutions created by the collaborative approach were insufficiently developed and actors´ commitments were short-term. Mexican legislation opens opportunities for public participation in protected area management, yet the federal government did not clearly define actors' rights, roles, and responsibilities critical to the success of the joint management body. While TLPA served as a role model for the country, and its experience can be detected in the new *Protected Areas Regulation*, the Consultative Council promised more than government or PEMEX was willing to support in the long run. The National Institute of Ecology (INE) was open to involving local people in specific management responsibilities, to help fulfill its mandate by accessing local human resources, but the agency was poorly prepared for working with local people.

The potential remains to both recover and improve collaborative management in TLPA. A strategy for improved collaborative management could rely on creating a new management body for the protected area and transferring of some responsibilities to a new forum for coastal management. A technical advisory committee, as outlined in the new *Protected Area Regulation*, could replace the now defunct Consultative Council with the added benefit of providing a formal set of rules for the management body and limiting the number of potential members. With clearer requirements for membership, better selection of members, and the use of a double majority decision rule, the management body could avoid incorporating conflicts between private interests into its structure, and could better foster a vision of the common good among its members. Such a management body would have significant *de facto* powers over activities within the protected area and would continue to provide a local forum for public participation. The tasks of the technical

advisory committee could be simplified by transferring some responsibilities currently included in the protected area's management plan to a coastal management committee for Campeche State. This new committee would be in a better position to address conflicts that extend beyond the protected area's boundaries and could coordinate government actions across a range of programs, reducing the amount of government representation required within the protected area's management body.

Terminos Lagoon Contributes to Theory

Public companies responsible for managing natural resources represent both a danger and an opportunity for collaborative approaches to protected area management. In TLPA, a public company inadvertently initiated a series of events leading to a collaborative approach to management, and was later obliged to fund the new management body that approach created. Examining PEMEX's involvement in TLPA suggests that public companies may transform over time to change their approach to environmental and social issues. The TLPA experience suggests that taking an active interest in protected areas where these companies are active is just one example of this transformation. This behavior is influenced most by change in industry practices internationally and the existence of environmental legislation. Protests, corporate vision, and the independent actions of company employees are the less influential, but also important forces for corporate transformation.

Change occurs within public companies due to the balance of forces that promote or inhibit corporate transformation both within and outside the company. For example, environmental legislation and protests are forces outside the company that promote change, but the impact of these forces is limited by outside inhibiting factors such as national energy requirements and financial dependence on revenue related to natural resource use. New directions in corporate vision, and the initiatives of key employees, are forces that promote corporate transformation, but their impact is limited by inhibiting forces such as older employees content with the status quo and a company culture centered on engineering rather than social or environmental goals. As a result, change occurs at the periphery of company activities while the overall corporate behavior remains

the same. If the social forces acting upon a public company are more external than internal, the company's employees may perceive the transformation as imposed, but necessary for the company's survival.

These findings suggest three questions for future research regarding the transformation of public companies. First, further study is required to ascertain the diversity of social forces at work among the different divisions of PEMEX. While this project mentions some of the differences between the PEMEX Corporate and PEMEX Production and Exploration, the findings presented here are based on the actions of these divisions within the Terminos Lagoon Region. An improved understanding of the company would require a more national perspective. Furthermore, the PEMEX family includes three other divisions that were not part of this research. If the differences between the two divisions studied here is any indication, each division is likely to have its own corporate culture and idiosyncrasies. Second, further study could assess to what extent the process of corporate transformation of public companies might be affected by privatization. With the current process of economic liberalization in Mexico, part or all of PEMEX may be privatized in the coming years. Would a move from the public sector to the private catalyze or hold back the company from adopting social or environmental goals? Third, further study could compare the forces of change identified within PEMEX with other public companies, such as Mexico's electrical utility (*Comisión Federal de Electricidad*), or B.C. Hydro in Canada. Cross-company comparisons could test how applicable the findings of this research is to other public companies. While this research and Estrada et al. (1997) document important aspects of the oil sector, it would valuable to see if similar processes are at work within companies responsible for mining, forestry, water, or electricity. Comparisons to public companies in other countries would be especially useful for developing a general framework for understanding the dynamics of corporate transformation. These questions are beyond the scope of this research, but provide a launching point for future investigations into the forces at work influencing change in the corporate behavior of public companies responsible for managing natural resources.

TLPA represents a developing country model to protected area comanagement centered on the rights of local people to participate in management, regardless of their ethnicity.

This model differs from comparable examples in Canada and Australia where comanagement usually includes just two actors — government agencies and indigenous groups — both of whom possess legally supported rights. Meanwhile, comanagement in Mexico has more in common with experiences in Costa Rica, Nepal, Senegal, and St. Lucia where protected areas are often home to a significant number of people dependent on local resources. These developing country protected area also often contain a large number of actors and interests, and the rights, roles, and responsibilities of potential comanagement participants are often poorly defined.

The TLPA experience offers three new lessons for comanagement theory. First, while many authors predict the success of comanagement by the presence or absence of enabling conditions, the TLPA experience suggests that the success of comanagement is proportional to the distribution of enabling conditions among the categories of scale of management, preagreement conditions, postagreement conditions, management characteristics, and participants. If any one category of enabling conditions is absent altogether, a comanagement initiative will likely experience great difficulties. Second, the degree of difficulty in comanagement is proportional to the level of disagreement over rights, roles, and responsibilities. Comanagement can be greatly facilitated if the actors involved reach agreement regarding the extent of each other's property rights over the natural resource in question, the role each actor is to play in management, and which management responsibilities each actor is to fulfill. Third, the degree of difficulty in comanagement is proportional to the complexity of management and resource conflicts. When the number or complexity of resources, interests, or conflicts within a protected area reach a critical point, a collaborative approach must either scale down its management plan or evolve beyond the protected area framework as it has traditionally been defined.

Other protected areas ignore these lessons at their own peril. While the TLPA experience was unique, many other protected areas — both within Mexico and internationally — are experimenting with collaborative approaches and face similar complexity in resources, interests, and conflicts. The lessons to be learned from TLPA can assist these protected areas to improve the structure and function of joint management bodies and to understand

the dangers and opportunities represented by public companies responsible for natural resource management.

The Final Word

In considering the current state of affairs in the Terminos Lagoon Protected Area, a comment of one of the facilitators during the preparation of the management plan remains relevant today:

> There exists the proposal for a Consultative Council, but what else are we going to do? For example, if I am a business leader or farmer, how can I participate? How? At the heart of the issue is the question: How can I ensure that my voice is heard when it is time to make decisions? Because right now, legally speaking, according to the laws and the decree, the Secretariat of the Environment owns the reserve. All this work is to ensure that the management plan considers the opinions of everyone because, in the end, we will all be the beneficiaries or the losers. Ultimately, it is important to ensure that you have a voice and vote in the decisions. (Anonymous facilitator, Mexico, Universidad Autonoma del Carmen 1995)

The Terminos Lagoon Protected Area was established to conserve habitat for endangered species, but over the course of seven years the area came to represent much more. Through conflict, protest, and negotiation, Terminos Lagoon was the stage for an innovative experiment in collaborative management of the Mexican coast in an effort to improve the quality of the local environment through greater local participation in management. This experiment was not entirely successful, but the potential remains for Terminos Lagoon to recover and improve upon its experiences. Regardless of the protected area's future, Terminos Lagoon Protected Area serves as an inspirational example for Mexican society and the international community as to what sustainability could be.

Endnotes

[1] For a comprehensive history of Mexican conservation and protected areas, see Simonian 1995.

[2] Since December 2000, the Secretariat is known as SEMARNAT, to reflect the transfer of the federal fisheries agency to the agricultural secretariat.

[3] Note that this use of "public good" is synonymous with the common good, and differs from the stricter definition commonly used in the literature on resource management and economics. The term "public good" is normally used to denote a natural resource that cannot be divided into individual portions and individual resources users cannot be excluded from its use. (Air or water quality are examples).

[4] An open search found the keyword "fisheries" in over half of the references listed in the bibliography of Comanagement Research Group at the School of Resource and Environmental Management of Simon Fraser University. The bibliography is available on-line with permission of group at http://www.rem.sfu.ca/comanage.

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Interview: *Collaborative Management of the Mexican Coast*

conducted by Bruce Currie-Alder
School of Resource and Environmental Management
Burnaby, British Columbia

Identification: (*check one*)	___ a representative of my organization, and organization is named
	___ a government or industry or or producer group or NGO respondent
	___ a respondent

It is anticipated that this interview will last between 30 and 45 minutes.

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1) How long have you been involved in environmental management within the Terminos Lagoon Protected Area?

2) Please describe the nature of your involvement.

3) Please describe what you know regarding the establishing the Terminos Lagoon Protected Area. What are the key events in the protected area's development and who was involved?

Event	Participants	Details

4) Once a protected area is established it may be strictly protected, with little use of the natural resources within, or carefully managed to allow multiple use of many resources. In your opinion, what are the key resources within Terminos Lagoon and what are the key challenges regarding their use?

5) Please list the persons or organizations that depend upon or have expressed interest in the natural resources within Terminos Lagoon Protected Area.

Person or Organization	Resource or Area of Interest

6) In your experience, how are decisions made regarding the management of the Terminos Lagoon Protected Area? Please describe briefly the organizational structure for managing the area and the opportunities that exist for public participation.

7) PEMEX appears to be very influential in development of southeast Mexico. How was PEMEX involved in the development of Terminos Lagoon Protected Area?

8) Is PEMEX presently involved in protected area management and, if so, what is its role?

9) How has the PEMEX´s involvement in the Terminos Lagoon Protected Area changed over time?

10) I am testing various ideas for why PEMEX is involved in managing the Terminos Lagoon Protected Area. In your own opinion and on a scale of 0 to 5, please rate the importance of each of the following forces in determining the role adopted by PEMEX in Terminos Lagoon. (0 = unimportant, 5 = very important).

Force	**Importance**	**No Opinion**
Change in federal environmental legislation.	0 1 2 3 4 5	
Demands of local residents for the preservation of their livelihoods.	0 1 2 3 4 5	
Demands of Mexican civil society, including environmental groups, for improved environmental quality.	0 1 2 3 4 5	
Pressure from the federal government.	0 1 2 3 4 5	
Changing practices within the international oil industry.	0 1 2 3 4 5	
Autonomous initiative by PEMEX managers or employees.	0 1 2 3 4 5	
Change in the corporate vision of PEMEX.	0 1 2 3 4 5	

Please answer question 11 only if you are, or once were, employed by PEMEX.
11) From the perspective of PEMEX employees and management, are the forces that influence the environmental role of PEMEX perceived as an obstacle or a benefit for the company?

Please answer question 12 only if you have never been employed by PEMEX.
12) In your opinion, what forces determined the position your group adopted regarding how the protected area should be managed?

Please answer all remaining questions.
13) In your opinion, are the forces that influence the environmental role of PEMEX in the Terminos Lagoon Protected Area a consequence of PEMEX being a public company? Would PEMEX have acted differently if it were a private company?

14) Recalling that this interview is confidential and your identity will not be revealed, would you like to comment on any frustrations or challenges you encountered during your involvement in the Terminos Lagoon Protected Area?

15) Based upon your experiences working in the Terminos Lagoon Protected Area, please describe any suggestions you would offer to benefit other conservation initiatives in Mexico?