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ENVIRONMENTAL EFFECTS OF THE NATIONAL TREE CLEARING PROGRAM, MEXICO, 1972-1982

EFECTOS AMBIENTALES DEL PROGRAMA NACIONAL DE DESMONTES, MÉXICO, 1972-1982

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Acronyms and Abbreviations

	English	Spanish
AGN	Mexico´s National General Archive	Archivo General de La Nación
AHA	Historical Archive of Water	Archivo Histórico del Agua
ALICAPVER	Indigenous People's Alliance of the State of Veracruz	Alianza Indígena, Campesina y Popular del Estado de Veracruz
BANRURAL	National Rural Credit Bank	Banco Nacional de Crédito Rural
BNM	Mexico´s National Library	Biblioteca Nacional de México
CCI	Independent Campesino Central	Central Campesina Independiente
CECODES	Center for Eco-Development	Centro de Eco-Desarrollo
CETENAL	Commission of Studies of the National Territory	
CIES	Inter-American Economic and Social Council	Consejo Interamericano Económico y Social
CIESAS	Center for Research and Higher Studies in Social Anthropology	Centro de Investigaciones y Estudios Superiores en Antropología Social
CNA	National Water Commission	Comisión Nacional del Agua
CNC	National Campesino Confederation	Confederación Nacional Campesina
CNIA	National Center for Agricultural Research	Centro Nacional de Investigaciones Agrarias
CODELPA	Papaloapan commission	Comisión del Papaloapan
CONACYT	National Council of Science and Technology	Consejo Nacional de Ciencia y Tecnología
CONAFOR	National Forestry Commission	Comisión Nacional Forestal
CRG	Grijalva river commission	Comisión del Río Grijalva
DAAC	Department of Agrarian Affairs and Colonization	Departamento de Asuntos Agrarios y Colonización
ENA	Mexico´s National Agricultural School	Escuela Nacional de Agricultura
HNM	Mexico´s National Newspaper Library	Hemeroteca Nacional de México
IBUNAM	UNAM´s Institute of Biology	Instituto de Biología de la UNAM
IDB	Inter-American Development Bank	Banco Inter-americano de Desarrollo
IGUNAM	UNAM´s Institute of Geography	Instituto de Geografía de la UNAM
INIFAP	National Institute for Agricultural and Livestock Research	Instituto Nacional de Investigaciones Forestales, Agrícolas y Pecuarias

LFPCCA	Federal Law on the Prevention and Control of Environmental Pollution	La Ley Federal para Prevenir y Controlar la Contaminación Ambiental
MAIZ	Indigenous Zapatista Agrarian Movement	Movimiento Agrario Indígena Zapatista
MAPDER	Mexican Movement of People Affected by Dams and pro the Defense of Rivers	Movimiento Mexicano de Afectados por las Presas y en defensa de los Ríos
MDB´s	Multilateral development banks	Bancos de Desarrollo Multilateral
NAFIN	---	Nacional Financiera
PCh	The Chontalpa Plan	El Plan Chontalpa
PRONADE	National Tree Clearing Program	Programa Nacional de Desmontes
SAG	Ministry Of Agriculture and Livestock	Secretaria de Agricultura y Ganadería
SAGARPA	Ministry of Agriculture, Livestock, Rural Development, Fisheries and Food	Secretaria de Agricultura, Ganadería, Desarrollo Rural, Pesca y Alimentación
SARH	Ministry of Agriculture and Hydraulic Resources	Secretaria de Agricultura y Recursos Hidráulicos
SEDESPA	Ministry of Social Development and Protection of Environment of the state of Tabasco	Secretaría de Desarrollo Social y Protección Ambiental
SEMARNAT	Ministry of Environment and Natural Resources	Secretaria de Medio Ambiente y Recursos Naturales
SHCP	Ministry of Treasure and Public Credit	Secretaria de Hacienda y Crédito Publico
SRH	Ministry of Water Resources	Secretaria de Recursos Hidráulicos
SSa	Health Ministry	Secretaria de Salud
TUA	Agrarian Tribunal	Tribunal Unitario Agrario
TVA	Tennessee Valley Authority	Autoridad del Valle de Tennessee
UACh	Autonomous University of Chapingo	Universidad Autónoma Chapingo
UNAM	National Autonomous University of Mexico	Universidad Nacional Autonoma de México
USAID	United States Agency for International Development	Agencia de los Estados Unidos para el Desarrollo Internacional
UV	Veracruz University	Universidad Veracruzana
WB	World Bank	Banco Mundial

Summary

The history of the National Tree Clearing Program (in Spanish PRONADE), a recurring but little known theme in the narrative of deforestation in Mexico, is investigated within this thesis. The PRONADE was introduced and executed as a public policy.

Within this thesis several properties of the PRONADE like duration and extension, the faced adversities, results, relationship with other public policies and long-term effects are recapitulated and analyzed. The political discourse surrounding the PRONADE is also investigated. Analyses are made from the perspective of environmental history not only to understand PRONADE´s social, economic and environmental effects, but also in hopes to get rid of myths and distorted perceptions of the past.

It is concluded that the only institution in Mexico that holds some of the original PRONADE documents is the AHA[1], while the lack PRONADE documents is the result of an official deliberate concealment. Before the official creation of the PRONADE a pilot program in San Fernando, Tamaulipas was conducted in 1970. It intended to open 100,000 ha of tropical forest to cultivation and cattle ranching. Despite it was considered a huge failure it was taken to a national level.

The PRONADE officially started operations in 1972 with the aim of opening 24,598,797 ha of what then was considered idle land (mostly tropical forest) to agriculture and intensive cattle ranching. The PRONADE was implemented in two stages, the first from 1972 to 1974 which intended the clearing of 320,325 ha in nine states. The second started in 1974 and intended to clear 85,000 ha in five states, but no finishing date of the second stage was found. It is concluded that the PRONADE went beyond this two stages and financed clearings in a total of 15 states within the Mexican republic. It is still unclear when the PRONADE was terminated. Information never before seen is also provided in this paper, these are: The legal process it had to follow to seek approval clearance, the methodology followed during the clearing work, its internal rules of operation and sources of funding.

To complement the information two case studies are analyzed, Plan Chontalpa and Uxpanapa, both development projects in which the PRONADE financed extensive clearings of vegetation. In both cases their historical process and environmental effects are analyzed to this day.

In theory these programs had the objective to modernize, increase income, improve nutrition and diminish emigration in the poorest rural communities. All throughout the application of technology packages, the installment of a new social order (Collective Ejidos)., industrialization and the building of social infrastructure. Both projects were financed in part by international development institutions.

In reality, crop performance with technology packages never had positive results and the situation for rural population did not improve at all. For example cattle ranching remained extensive and became the dominant activity, housing projects were not functional, urban infrastructure was left unfinished, traditional food sources were lost and a strong process of acculturation and gentrification occurred. While running, programs faced a strong popular and academic opposition but dissent was never listened.

[1] AHA - Historical Archive of Water

Three basic elements that underpin the implementation of these programs in an international context were: The regional economic planning theory, the implementation of the 'Green Revolution' as an ideological instrument to crush rural riots and the funding of multilateral development banks.

Regarding the national context, six interrelated causes are analyzed. The historical structural inequality in the Mexican countryside, the ideological training of the technicians who created and implemented this program, the racial discrimination in Mexico, the inadequate legal framework to regulate the clearings, the lack of ecological knowledge in Mexico and the pursuit of the expansion capitalism in the most remote places.

It is concluded that the pilot program in San Fernando, the PRONADE, the Plan Chontalpa and Uxpanapa are examples of what is called *deteriorating development* because living conditions and environmental conditions in those regions experienced a tremendous decline after the implementation of these development programs.

Finally it is reflected about what might have been the fate of these regions if it had not been applied the PRONADE and related programs. In this context a list of more than a dozen PRONADE-like programs from all over Mexico is provided. It also reflected on the future and possible options to pursue.

Resumen

La historia del Programa Nacional de Desmontes mejor conocido por su acrónimo PRONADE es investigada en esta tesis. El PRONADE es un tema recurrente, pero en realidad poco conocido en la narrativa de la deforestación en México. Este es frecuentemente definido como una política pública.

Dentro de este trabajo, propiedades del PRONADE como su duración y extensión, adversidades que enfrentó, sus resultados, su relación con otras políticas públicas y los efectos a largo plazo que tuvo se recapitulan y analizan. El discurso político que rodea el PRONADE también es investigado. Los análisis se hacen desde la perspectiva de la historia ambiental no sólo para comprender los efectos sociales, económicos y ambientales de PRONADE, sino también con la esperanza de deshacerse de los mitos y las percepciones distorsionadas del pasado.

Se concluye que la única institución en México que contiene algunos documentos originales del PRONADE es el AHA[2]. Mientras que la carencia de documentos del PRONADE es el resultado de una ocultación deliberada oficial. Antes de la creación oficial del PRONADE un programa piloto en San Fernando, Tamaulipas se llevó a cabo en 1970. Este tenía la intención de abrir 100,000 hectáreas de bosques tropicales para el cultivo y la ganadería. A pesar que desde un principio se consideró un gran fracaso, este fue llevado a un nivel nacional.

El PRONADE inició oficialmente sus operaciones en 1972 con el objetivo de la apertura de 24,598,797 de hectáreas de lo que entonces se consideraba la tierra ociosa (la mayoría bosques tropicales). para la agricultura y la ganadería intensiva. El PRONADE se llevó a cabo en dos etapas, la primera desde 1972 hasta 1974 que pretendía la tala de 320,325 hectáreas en nueve estados. La segunda comenzó en 1974 con la intención desmontar 85,000 hectáreas en cinco estados, no fue encontrada la fecha de finalización de la segunda etapa. Se concluye que el PRONADE fue más allá de estas dos etapas y financió clareos en un total de 15 estados de la república mexicana. Aún no está claro cuando el PRONADE se dio por terminado.

También se proporciona información nunca antes vista, el proceso legal que se tenía que seguir para solicitar la aprobación los desmontes, la metodología que se seguía para la realización de los trabajos de desmonte, sus reglas internas de operación y sus fuentes de financiamiento.

Para complementar la información se realizan dos estudios de caso, el Plan Chontalpa y Uxpanapa, proyectos de desarrollo en los cuales el PRONADE financió extensos clareos de vegetación. En ambos casos se analiza su proceso histórico y situación medioambiental actual.

En teoría, estos programas tuvieron el objetivo de modernizar, aumentar los ingresos, mejorar la nutrición y reducir la emigración en comunidades rurales más pobres. Todo a través de la aplicación de paquetes tecnológicos, la instalación de un nuevo orden social (ejidos colectivos)., la industrialización y la construcción de infraestructura social. Ambos proyectos fueron financiados en parte por instituciones internacionales de desarrollo.

[2] Archivo Historico del Agua

En realidad la situación de la población rural no mejoró en absoluto, el rendimiento de los cultivos con paquetes tecnológicos nunca tuvo resultados positivos, la cría de ganado se mantuvo extensa y se convirtió en la principal actividad, los proyectos de vivienda no eran funcionales, la infraestructura urbana se quedó sin terminar, las fuentes de alimento tradicionales se perdieron y se produjo un fuerte proceso de aculturación y el aburguesamiento. Durante su ejecución, los programas enfrentaron una fuerte oposición popular y académica, pero la disconformidad nunca fue escuchada.

Además se analiza que llevo a la aplicación del PRONADE en México y de programas similares en el resto del mundo. Se ubican tres elementos básicos en el contexto histórico internacional los que sustentaron el PRONADE, la planificación económica regional, la aplicación de la revolución verde como instrumento ideológico para aplastar revueltas rurales y el financiamiento de los bancos de desarrollo multilateral.

También se ubican seis elementos nacionales interrelacionados que sustentaron su aplicación. La histórica desigualdad estructural del campo mexicano, la formación ideológica de los técnicos que crearon y aplicaron este programa, la discriminación racial existente en México, un marco legal inadecuado para regular los desmontes, la falta de conocimientos ecológicos en México y la búsqueda de la expansión capitalista en los lugares más remotos.

Se concluye que el programa piloto de desmontes en San Fernando, el PRONADE, el Plan Chontalpa y Uxpanapa son ejemplos de lo que se llama desarrollo deteriorante puesto las condiciones de vida y las condiciones ambientales sufrieron un tremendo deterioro después de la aplicación de estos programas de desarrollo.

Finalmente se reflexiona acerca de lo que pudo haber sido el destino de esas regiones de no haberse aplicado programas como el PRONADE. También se reflexiona sobre el futuro y las posibles opciones a seguir. Además se da un listado de más de una decena de programas paralelos y relacionados con el PRONADE que se llevaron a cabo en México y se hace un llamado a estudiarlos formalmente.

Zusammenfassung

Die Geschichte des Nationalen Baumrodungsprogrammes (Spanisch: PRONADE), ein wiederholt auftretendes aber dennoch weitgehend unbekanntes Thema in der vergangenen Forst- und Landwirtschaft von Mexico, wird in dieser Abschlussarbeit untersucht. Die PRONADE wurde seinerzeit als öffentliche politische Strategie eingeführt.

Innerhalb dieser Arbeit sind verschiedene Eigenschaften der PRONADE wie Dauer und Ausmaß, auftretende Widersprüche, Ergebnisse, Verbindung zu anderen politischen Maßnahmen und Langzeiteffekte rekapituliert und analysiert. Ebenso wird der poltische Diskurs beleuchtet, der mit der Einführung der PRONADE auftrat. Analysen chronologisch werden aus Sicht der ökologischen Geschichte geführt, nicht nur um die sozialen, ökologischen und umfeldgebundenen Auswirkungen betrachten zu können, sondern auch in der Hoffnung Mythen und fehlgeleitete Vorstellungen der Vergangenheit eliminieren zu können.

Zurückblickend kann gesagt werden, dass das AHA[3] die einzige Institution in Mexiko ist, die noch Originaldokumente der PRONADE zur Verfügung hat. Dieser Mangel an Originaldokumenten ist die Folge eines offiziellen Aktenverschlusses seitens der Regierung. Vor der Einführung der PRONADE wurde 1970 in San Fernando, Paulinas ein Pilotprojekt durchgeführt. Trotz der negativen Ergebnisse wurde das Pilotprojekt im Rahmen der PRONADE national ausgeweitet.

Offiziell begann die PRONADE in 1972 mit dem Ziel 24.598.797 ha Land, welches bisher als brach liegend betrachtet wurde (Regenwald)., in geeignetes Land für Nahrungspflanzen und Rinderhaltung zu wandeln. Durchgeführt wurde die PRONADE in zwei Abschnitten, wobei die Erste zwischen 1972 und 1974 durchgeführt wurde und 320.325 ha Regenwald in neun Staaten gerodet wurden. Die zweite Phase begann in 1974 und hatte das Ziel weitere 85.000 ha in neun Staaten für die landwirtschaftliche Nutzung umzugestalten, wobei das offizielle Ende der zweiten Phase bis heute nicht veröffentlicht wurde. Trotzdem ist es ersichtlich, dass die PRONADE mehr als nur diese zwei Phasen umfasst hat, denn das Roden und die erforderlichen Baumaßnahmen in 15 Staaten wurden seitens der PRONADE finanziert. Es ist bis heute unklar wann die PRONADE wieder beendet wurde. Innerhalb dieser Arbeit werden Informationen veröffentlicht, die bis heute nicht öffentlich gemacht wurden. Dazu gehören die gesetzlichen Rahmenbedingungen der PRONADE, die vorgegebenen Arbeitsschritte für Rodung und Baumaßnahmen, die internen Organisations- und Arbeitsvorschriften sowie die Quellen der Finanzierung.

Um die mangelnden Informationen bezüglich der PRONADE zu ergänzen, werden verwandte Fallstudien untersucht. Diese Studien, Plan Chontalpa und Uxpanapa, wurden seitens der PRONADE finanziert, um große Flächen von der ursprünglichen Vegetation zu befreien und wirtschaftlich nutzbar zu machen. In beiden Fällen wird der chronologische Entwicklungsprozess und die ökologischen Auswirkungen bis zur heutigen Zeit analysiert.

Theoretisch waren die grundlegenden Ziele dieser Maßnahmen die Modernisierung der Region, die Verbesserung der Einkommensverhältnisse der Landbevölkerung, die Verbesserung der Volksernährung und Bekämpfung der Landflucht in den ärmsten ländlichen Gegenden. Erfüllt werden sollten diese Ziele durch Einsatz von Technologie, Errichten neuer sozialer Strukturen (sog.: Collective Ejidos), Industrialisierung und dem Aufbau moderner Infrastruktur. Die dafür

[3] AHA - Historisches Archiv für Wassernutzung

notwendigen finanziellen Mittel wurden teilweise über internationale Entwicklungsorganisationen bezogen.

In der Realität wurden die Ernteerträge der Region durch den Technologieeinsatz allerdings nie verbessert, ebenso wenig verbesserte sich die Lebenssituation der Landbevölkerung. Beispielsweise blieb die Rinderhaltung der dominante Landwirtschaftszweig, Siedlungsprojekte waren nicht funktional, städtische Infrastruktur wurde nie fertig gestellt, traditionelle Nahrungsquellen wurden vernichtet und Prozesse von kultureller Anpassung und Gentrifizierung veränderten die soziale Struktur nachhaltig. Noch während der Durchführung der Regierungsprogramme formte sich ein starker öffentlicher und akademische widerstand, der allerdings konsequent ignoriert wurde.

Die Durchführung der Programme wurde auf internationaler Ebene unterstützt und gefördert was sich stark in drei grundlegenden Elementen zeigt: Die Theorie der regionalen ökologischen Planung, der Einbindung der ‚Grünen Revolution' als ideologisches Instrument Auf- und Widerstände zu bekämpfen und der Errichtung multilateraler Entwicklungsbanken wie der Weltbank.

Im nationalen Kontext werden sechs Faktoren untersucht, die sich durch einen starken Einfluss auf die Entwicklung der Regierungsmaßnehmen auszeichnen: Die geschichtlichen Ungleichheiten innerhalb der mexikanischen Bevölkerung, die ideologische Ausbildung und Schulung der eingebundenen Techniker, der nationale Rassismus, die unzureichenden gesetzlichen Vorgaben betreffend der Durchführung der Programme, der Mangel an ökonomische Wissen in Mexiko und der sich stark ausbreitende Kapitalismus.

Abschließend kann gesagt werden, dass sowohl das Pilotprojekt in San Fernando, als auch Plan Chontalpa und Uxpanapa sowie die PRONADE selber Beispiele verschlechternder Entwicklung sind. Sowohl die Lebensbedingungen der Landbevölkerung als auch die ökonomischen Umstände in den betreffenden Gebieten erfuhren eine rasante Verschlechterung nach und während der Einführung dieser Entwicklungsprogramme.

Abschließend wird ein Ausblick gegeben, wie sich die betreffenden Regionen entwickelt haben könnten, wenn sie nicht den Regierungsprogrammen ausgesetzt gewesen wären. In diesem Zusammenhang wird eine Liste mit mehr als einem Dutzend ähnlicher Programme in ganz Mexiko vorgestellt. Letztlich werden Auswirkungen auf die Zukunft abgeleitet und mögliche Vorgehensweisen angeboten, um die Situation nachhaltig zu verbessern.

Introduction

The National Tree Clearing Program

Before going headlong into the issue, it must be cleared that this research project was born out the researcher´s personal interest during her time as a biology student in the National Autonomous University of Mexico.

It all started during a field trip to the Chamela Biological Station located in the state of Jalisco, Mexico, that research aimed to study vampire-bats reproduction cycles.

Before arriving to the mentioned station, the bat research coordinator appointed that all vegetation surrounding the biological station was not the original vegetation. He explained that the landscape in sight was the result of a secondary succession process, caused by a massive deforestation event.

But what caught the attention of this author was the event that had triggered the deforestation process. After asking what had happened, it was explained to her that this was the result of a federal program called the “Programa Nacional de Desmontes”.

Before translating what “Programa Nacional de Desmontes” means, it must be explained to the reader, that the meaning of the word *desmonte* is even hard to understand for someone who speaks Spanish as a first language.

The *desmonte* term comes from the word *monte* which in Spanish most common acceptation is a hill between 200 and 700 meters high. But the word *monte* has another less used acceptation which refers to any uncultivated land covered with wild vegetation.

The use of the second acceptation is only common in rural areas, in opposite to urban areas. Not even the author of this thesis had heard the term *monte* before that moment in Chamela, Jalisco.

But the two meanings are rarely used separately; so the term *monte* comprises not only the land but also what covers it, the vegetation and fauna. So the only English word that really comes close to the meaning of the word *monte* is wilderness.

So when the prefix *des-*, which denotes negation or reversal of meaning, is added to the word *monte*, the word *desmonte* acquires a whole new meaning. It means the replacement of wild natural areas in order to practice cultivation. It can also be understood as a synonym of the word deforestation but with a positive connotation.

So despite the fact that throughout the thesis the translation given to the “Programa Nacional de Desmontes” is the “National Tree Clearing Program”, the term *desmonte* has a much deeper meaning than just *tree clearing*.

In the field trip mentioned above, it was explained, that during the decade of 1970´s the "National Tree Clearing Program", also known under the acronym PRONADE[4], had the goal to replace all tropical forest by grasslands for cattle ranching.

This statement stroked the author hard, for her it was unthinkable, why the replacement of the entire tropical forest was a laudable goal. Who was involved in the decision process, what were the motivations and how it was possible that the PRONADE was actually executed?

After pondering a while over this subject, the idea to study the PRONADE formally emerged. But while trying to find someone to support this idea, the author faced a common answer. A research of that kind would not be scientific, at least not scientific enough to obtain a degree in biology.

Soon the idea to study the PRONADE was forgotten, until the author came across with literature related to political ecology and environmental history. Both are interdisciplinary sciences that aim to establish a link between political, economic and social factors with environmental issues and changes.

It also came as a nice surprise to find people like the Dr. Miguel Aguilar Robledo or Dr. Teresa Rojas Rabiela actually working in similar topics and to find that there is a place for research like this one, research that is actually very important to understand the reasons behind deforestation.

Environmental History

Environmental history is a rather new discipline that came into being during the 1960's and 1970's (Oosthoek, n.d.). Environmental history originates in conservation movements as a direct consequence of the worldwide growing awareness on environmental problems (Stewart, 1998).

Environmental history is the story of nature´s role and place in the human life, the history of all the interactions that society has had with its non-human past and the environment (Stewart, 1998).

McNeill 2003 recognizes there are three main clusters of issues addressed by environmental history studies. The first realm is the Material, which deals with the way ecosystem changes affect human societies, it proposes to lay intellectual bridges between social and natural sciences. The second one is the cultural-intellectual branch which studies the environmental impact of ideas, e.g the "representations" or "images". The third one, is the political branch which deals with the relations between nature, laws and state policies, being the only one in which the nation-state is the fundamental unit of analysis (McNeill, 2003).

While there are many more categories of environmental history studies (Huges, 2008), it is recognized that most studies follow these three lines (Worster, 1990).

In the case of woodland history, environmental history is the way forest ecosystems have been working in the past and how they were changed by human actions. But also how the impact of human actions on the natural world is causing a feedback that changes our ideas, policies, economy etc.(Oosthoek, n.d.).

[4] **Pr**ograma **Na**cional de **De**smontes - PRONADE

Over the past 200 years, especially during the second half of the 20th century, deforestation has been the result of policies motivated by short-term economic gains. Policies have strongly influenced and continue to influence the environmental management of natural resources. Policies changes and dynamics are the direct result of the 20th century political stages (Lambert, 2008).

Environmental history is also about unmasking myths and distorted perceptions of the past. Myths and false perceptions that are not based on historical facts and can be highly influential, even in the government and scientific circles (Oosthoek, n.d.).

Environmental history can help to understand the mechanisms behind effective and ineffective practices of forest management. Therefore it can provide important lessons for future forest management efforts (Lambert, 2008).

Understanding forest destruction dynamics will also help building strategies to realistically reverse deforestation and restore natural ecosystems (Consejo civil mexicano para la silvicultura sostenible., n.d.).

Public Policy

The PRONADE is defined by Merino 2001 and 2004, as a forestry public policy impounding on the environment.

As the name indicates, public policies are actions initiated by governments on behalf of the public. These actions involve and affect a wide number and variety of people, making the public policies a very controversial subject from the start (Birkland, 2005).

Public policy making involves content and decision concerning specific areas or sectors (Parsons, 1995). The decisions and actions taken are subordinated to the prevailing political situation. Therefore, they are statements of normative social values, statements about goods and services as well as regulations, income, status and other positively or negatively valued attributes (Birkland, 2005; Zube, 1984).

For the same reason public policies change over time, as a function of driving factors like the emergence of new economic or political demands, or other social values (Dube & Schmithuesen 2005).

In a state of law, public policies are based on the jurisdiction of the state with foundation on the constitution. Further they are determined by laws, regulations, rules and other decisions of public authorities (Dube & Schmithuesen 2005).

But policies go further than being laws or regulations that a government issues on a particular area or problem. They keep on existing and reshape as they are implemented (Birkland, 2005).

Policies do not only include government´s intentions, they also cover the actions performed by the administration. For example: Who will practically benefit from polices and who will shoulder burdens as a result. These policies are revealed through texts, practices, symbols, and discourses (Birkland, 2005).

As a result the study of public policies is more than analyzing written laws and rules. It implies analyzing their broader effects on different populations, its discourse embedded in the historical and political time and its associated values. Additionally research focuses on the policies implementation vicissitudes (hardships), results and long-term effects. Those details make the analysis become a very frustrating and important task (Birkland, 2005).

As mentioned above, the implementation of a public policy affects a large variety and number of people. Further it may also affect a very wide range of spheres from markets and trade, over the status of goods and services, ecosystem productivity and feasibility, to other public policies (Dube & Schmithuesen 2005).

This is because most of real problems relate to a myriad of different issues, without respecting the boundaries of political spheres established by law or the formal government authority departments (Dube & Schmithuesen 2005).

When a public policy affects another public policy, it occurs directly or indirectly and the effects of it could be both, positive and negative. Most of the time effects are unexpected due to uncoordinated processes, sometimes leading to contradictory policies (Dube & Schmithuesen 2005).

Sometimes government intervention sends wrong or unintended signals to society, which indicate that certain unsustainable uses of natural resources are correct (Guevara-Sanginés, 2005).

There are in fact certain types of policies who promote economic development, in order to reduce the levels of poverty, which have negative effects on the environment. They can be divided into two groups: Those which aim for increasing poor people´s income through the use of natural resources without replacement, and those policies that have indirect effects on environmental degradation (Guevara-Sanginés, 2005).

Some forestry policies and some impinging on forestry sector have accelerated the drive to clear forested land for agriculture, contributing to uneconomic and ecologically damaging exploitation (Repetto & Gillis 1988).

Such policies were employed to establish worthy objectives: Industrial or agricultural growth, regional development, job creation or poverty alleviation. But typically such objectives have not been realized or have been attained only at an excessive cost (Repetto & Gillis 1988).

The most common policies, outside the forestry sector, that propel deforestation are:

- **Subsides:** Artificial incentives that lower the costs and increase the private profitability of the alternative land uses. Subsides can become so large they encourage activities that are intrinsically uneconomic, or push alternative land uses beyond the limits of economic rationality, establishing inferiors and often unsustainable land uses. Subsides may also take the form of government cost assuming of establishing the new activities (infrastructure) (Repetto & Gillis 1988).

- **Colonization programs:** transmigration government programs move people from populated centers to sparsely populated areas. Many of these new settlements tend to fail due to the inadequate assessment of agricultural soil capabilities (Repetto & Gillis 1988).

- **Indirect subsidies:** Incentivize activities that indirectly encroach on the forest like cattle ranching or agro-industrialization promotion. Subsides are not necessarily of financial kind, they may also come in forms of practical help, like the improvement of infrastructure. Many of these projects have resulted very uneconomic (López & Galinato 2005; Repetto & Gillis 1988).

The PRONADE

As a matter of fact, the PRONADE is a frequently occurring topic in Mexico´s deforestation literature. It is also a common theme in academic discussions and non specialized mass media. The most common statements that surround the PRONADE are that it was a huge economical failure and it had major negative effects on the environment and social interactions in the regions of México that was implemented.

Still, despite its recurrence, in the accessible literature and in the academic world there is no real consensus on what really happened. To illustrate how unknown the history of the PRONADE is and how much disagreement is surronds the topic, a few examples are given next.

Relative to the length of the PRONADE, Chiñas-Córdova, 2011 suggest that the PRONADE was born near the year 1953 to support the “Idle lands law” (la ley de tierras ociosas) to help relief land demand and promote agriculture and livestock.

While the SARH, 1994 in the National Forest Inventory 1992-1994, sets the start date of the PRONADE in 1960.

The author Meli, 2006 mentions that during the decades of 1960 and 1970 the National Commission for Tree Clearing (another name for the PRONADE) and the Committee for Planning Tree Clearing promoted the Plan Chontalpa 1966 and the Plan Uxpanapa 1975 resulting in the lost 423,000 ha of jungle. Still the author gives no hint about from where she obtained the information.

Azarcoya-González, n.d. states that during the decade of 1970 the PRONADE and the National Commission for Cattle Ranching instituted an aggressive campaign for the removal of forests resulting in the disappearance of 80 percent of the rainforests in México.

Limón-Aguirre, n.d., despite giving no specific date for the start of operations, states that from its beginning until 1982, the PRONADE deforested more than 1 million ha mainly in the states of Tabasco, Campeche, Veracruz, Jalisco and Chiapas. At an average of 50,000 ha deforested each year. He also states that the PRONADE did not require any kind of authorization for the tree clearing. The way it operated was simple, after an area was selected workers and heavy machinery cut down vegetation, then wood was piled and burned in the same place. In case valuables wood were found, these were extracted, transported somewhere else and a record of existence was issued.

Guevara et al. 2004 citing Toledo et al. 1985 mentions that between 1972 and 1977, the PRONADE cut more than 400,000 ha of rainforest in the country. He in part attributes the severe state of deforestation in the Los Tuxtlas, Veracruz also to the PRONADE.

For Carbale et al. 1997 the PRONADE was responsible for the destruction of 28 million cubic meters of wood in only five years. This author then states that the volume of wood destroyed, was almost equivalent to the domestic production during the same period. But he does not provide any time range or source from where he obtained the information.

Castillo et al. 2009 argues that the PRONADE was also implemented in the state of Jalisco in the northwest of Mexico, where it impacted the tropical dry forest. Additionally it is the reason why the biosphere reserve "Chamela-Cuixmala" is currently surrounded by suburbs, private ranches and landless people.

Carabias et al. 2008 places the PRONADE between the years 1972 and 1977, she states the PRONADE had the purpose of incorporating the humid tropics into agricultural activities and turn the region into México´s Granary.

The newspaper *El Universal* calls the PRONADE an example of the "social construction of disaster". Points out this program originated in the decade of 1970 and lasted 10 years; it also states the PRONADE forced the Campesinos to clear the vegetation in their plots in order to recognize them as the owners of the land (Gómez-Durán, 2010).

In an interview with the news paper La Jornada, Alberto Cardenas Jimenez, then the official director of the National Forestry Commission tells that in the past the biggest enemy of the forest in Mexico was the government itself. He also stated that the PRONADE initiated in 1970 and lasted a total of 10 years (Gómez-Mena, 2003).

As seen above the supposed start date for the beginning of operations of the PRONADE ranges from 1953 to 1972 (19 years of diference), while the end date ranges from 1977 to 1982 (five years). The covered area and motivations also vary widely between the sources. Facts that only show how little is really known about the PRONADE.

Justification

While analyzing the examples above, something that highlights immediately is that, despite the PRONADE is shown as a very large and important factor for environmental degradation in Mexico, no author provides precise temporal or spatial data. Not even a clear legal framework is presented. Data in some cases is even contradictory.

If, the PRONADE was such an important factor of deforestation in Mexico, as it is usually claimed, it is necessary to sharpen the knowledge about it and that action can only be done by providing precise data.

Another thing standing out is that the PRONADE is always mentioned within the motives of the disappearance of the tropical zones in México, technology transference programs or Mexico's actions to increase food production. Despite its importance in the narrative of deforestation and the collective imagination of the Mexican academy, the PRONADE has not been studied as a phenomenon of its own.

That is why this work focuses on studying the PRONADE as a phenomenon of its own to provide some outstanding answers. This study also aims to provide information for the implementation of future cattle or forestry policies and to be used as a tool for future environmental restoration efforts.

Research Questions

The superficial treatment and lack of sound evidence, given to the subject by equally high impact publications, the academic media and mass media, causes a lot of impounding questions to emerge.

- What was the real temporal and spatial scope of the PRONADE?
- What was the reasoning behind the PRONADE implementation?
- What was the national and international background that allowed such a program to exist?
- During the time of the implementation of the PRONADE, were there different opinions and perceptions surrounding the program? Was there consensus or were there conflicting views? Was there any confrontation between the different perceptions? And if so, how were they solved? Did those perceptions change in time? If they did, why?
- Which were the vicissitudes behind its implementation?
- Were there cases of corruption during the implementation of the PRONADE?
- Was the PRONADE related to any other programs?
- What are the long term effects of the implementation of the PRONADE?

Objectives

Overal Objective

To reconstruct the history of the PRONADE in Mexico

Specific Objectives

- Provide unknown information about the PRONADE
- Identify the PRONADE´s goals
- Identify the PRONADE´s real temporal and spatial scope.
- Identify and analyze the links between the PRONADE and some other simultaneous programs
- Identify the reasoning behind the PRONADE implementation, the motivations and the values of national and international stockholders.
- Identify and analyze of the different views surrounding the PRONADE, their changes over time and their relation to a changing discourse.
- Recognition and description of the vicissitudes (difficulties or hardships in the path) during the PRONADE´s implementation.

Hypotheses

1. Divergent opinions about how the PRONADE was implemented and how it should have been implemented are expected. Also, decisions taken are expected to be the outcome of different and in some cases contradicting values of the PRONADE stakeholders.

2. In the official discourse, people living in the zones were the PRONADE was implemented, are described in two ways. The first one describes them only as passive objects that due to inability or simple ignorance were forced by the circumstances to deforest. The second describes them as subjects more than willing to deforest in order to be granted land. Both official descriptions a challenged, a bigger role for the people living in the PRONADE zones is expected. This thesis hypothesizes that people were not only passive objects but also historical subjects able to transform their reality and to create history.

3. Since the PRONADE was carried out in México and probably involved the management of large budgets, an amount of cases of corruption is expected. Since corruption is one of the major causes of deforestation in developing countries (Koyunen & Yilmaz 2009). A connection between the two will also be considered.

4. National and international historical moments are expected to have great incidence not only in the decisions leading to the implementation of the PRONADE, but also in the way the PRONADE was implemented.

5. Ecological values in the decade of the 1970´s were very different from the present ones. That is why a change of mind and a new set of values are expected at a stakeholder and at an institutional level. Accordingly, actions done in that sense are also expected.

6. A distinctive story of deforestation is also expected, not only for the PRONADE but also for México. Since causal factors and local conditions (ecological, cultural, and economical) vary from region to region; these factor work synergistically making the final result very complex, unique, hard to assess generalizations (Merino-Pérez & Hernández Apolinar 2004 ; Barton Bray, & Klepeis 2005).

Method

Based on the fact that PRONADE is a past event and little and no research has been done concerning its history, techniques of contemporary historical research are employed in this thesis.

An historical approach represents a key source to profound insights about the nature of the social and natural world. Unlike approaches that focus only on a present view, the historical approach highlights essential insights, by taking the past into account as well. Historical research allows describing a little known phenomenon, through collecting small pieces of information. It is like building a puzzle of information whose final image is still unknown (Mayan, 2001).

So far most of the data and information concerning the PRONADE is tangled up in a big pile of books, papers and other sources. Employing such inductive approach will enable this research to provide a structured picture of the PRONADE itself, its motivation and consequences. This research technique does not impose any preexisting anticipations, but allows the relevant themes to emerge from raw data as the study and data analysis proceeds.

The sources to reconstruct environmental history are administrative documents of public authorities (normative and day-to day sources), sources of a personal or individual nature (diaries, logbooks, letters), and non-written sources (*e.g.* paleoecological information, historical geography and oral history) (van Dam & Verstegen 2009).

This research focuses on the search and analysis of written sources created within and around the PRONADE, scientific reports and oral history of the actors provided by participants in the execution of the policy.

Combining historical reconstructions will allow increasing objectivity, confidence and better understanding about the social factors governing tree clearing (Swetnam et al. 1990).

The analysis and comparison of multiple historical sources will increase the objectivity of this research. Further, it will provide confidence to makee statements and give a better understanding of the social factors that lead to deforestation (Swetnam et al. 1990).

Archival research

Following the goal to find key pieces of information about the PRONADE, this research is based on the quest for written sources and their analysis. The sources were found in the following archives, collections and libraries:

- Forestry Library of the National Forestry Commission (CONAFOR)
- Historical Archive of Water (AHA)
- Library of the Autonomous University of Chapingo (UACh)
- Library of the National Institute for Forestry Agricultural and Livestock Research (INIFAP)
- Mexico´s National General Archive (AGN)
- Mexico´s National Library (BNM)
- Mexico´s National Newspaper Library (HNM)
- Ministry of Environment and Natural Resources (SEMARNAT)
- National Rural Credit Bank (BANRURAL)
- The Library System of the National Autonomous University of Mexico (UNAM)

Since most authors set the starting date of the PRONADE around the year 1970. The quest for documents centered within the time scale from 1970 to the present day.

Oral History

The advantage of researching the second half of the 20th century is that it is possible to interview people involved in the events being studied (Oosthoek, 2001).

Oral history can supplement an incomplete written record. Because it makes it possible to recognize never recorded management decisions taken at different levels and evidence power struggles, political games and personal animosities that also affected decision making (Oosthoek, 2001).

A semi-structured questionnaire was created to obtain not only concrete information from the interviewee but also to obtain unknown underlying facts. Therefore people known to have experienced the PRONADE or somehow related were interview (Appendix I).

Results and Discussion

I. - Consultation of document collections, libraries and interviews

Given that the present thesis studies a Mexican government program no longer existent, the PRONADE, the research was based on the attendance to various documentation centers located in and outside Mexico City, in addition to conducting interviews.

Rescuing information about the PRONADE proved to be a challenging task. Therefore the following paragraphs give a brief explanation how the information was gathered, in hopes to support the making of related research projects.

Since the National General Archive (AGN) is the oldest and biggest historical archive in Mexico, it was intended to be the first source for this paper. Unfortunately there was almost no accessible information concerning the PRONADE. According to AGN staff members, they never have seen PRONADE related documents, the reason is that official documents dated between 1970 and now are not yet sorted and archived. Accordingly the PRONADE was established during the administration term of President Luis Echeverría Alvarez (1970-1976), so related documents are not available.

The second approached official institution was the Ministry of Environment and Natural Resources (SEMARNAT). It was founded in 2000 and has the mission to establish and enforce the state´s policy of environmental protection, to reverse the trends of ecological deterioration and found the basis for a sustainable development in the country. Surprisingly there is no public library at SEMARNAT and it´s historical archive is not open for public, therefore it could not be used as a source either.

The third approach was aimed at the National Forestry Commission (CONAFOR) and the National Institute of Agricultural and Forestry Research (INIFAP), both located in Viveros de Coyoacan. According to the engineer Tereso Zaldivar (2011, pers. comm., 13 May) the CONAFOR unsuccessfully tried to gather information concerning the PRONADE. He suspects affiliated documents were “disappeared on purpose”. A further research in the INIFAP library brought no valid results, only name definitions like in a dictionary.

Then CONAFOR staff proposed to visit the facilities of the Ministry of Agriculture, Livestock, Rural Development, Fisheries and Food (SAGARPA). Library access was denied for this research due to the fact it contained only material for diseases and pests. Staff members at the main location of SAGARPA near downtown Mexico City stated the institution does not have public libraries or documentation centers. In the section of citizen’s requests it was mentioned that other visitors have electronically requested information about the PRONADE, but there was no data to be found.

Similar situations arose in the National Rural Credit Bank (BANRURAL) and the National Water Commission (CNA), where employees declared that the absence of documents may be related to the fact that institutions only have the responsibility to keep records for 15 years and after that, documents are destroyed.

A breakthrough in this research occured by consulting the Historical Archive of Water (AHA), an entity established and administered by CNA and the Center for Research and Higher Studies in Social Anthropology (CIESAS) since 1994. This repository combines the data storage of two dissolved ministries, the Ministry of Hydraulic Resources (SRH) and the Ministry of Agriculture and Hydraulic Resources (SARH) The AHA consists of seven separate collections:

Shallow water uses	(AHA-AS)
Technical advisory	(AHA-CT)
Grijalva river commission	(AHA-CRG)
Papaloapan commission	(AHA-CODELPA)
Hydraulic infrastructure	(AHA-IH)
National waters	(AHA-AN)
Photographic collection	(AHA-CF)

Within the files of AHA-CRG and AHA-CODELPA a series of documents that refer to PRONADE were found, especially in the section concerning the Uxpanapa drainage district (Distrito de Drenaje Uxpanapa). These documents indicate a direct relationship between the PRONADE and two development projects: Plan Chontalpa (PCh) and Uxpanapa, but it's hard to say what level of rapport they achieved, since many governmental agencies had overlapping functions.

Once it became certain that the projects PCh and Uxpanapa were related to the PRONADE, the research was refocused onto finding information about these programs and their developement.

The National Autonomous University of Mexico (UNAM) must be mentioned as a helpful source mostly on thesis, books and scientific articles. Furthermore the Autonomous University of Chapingo (UACh) provided mostly promotional material created by the PRONADE itself.

Another major breakthrough came by attending the facilities of the National Library of Mexico (HNM). This library stores the weekly magazine *Tiempo* (the Mexican equivalent of *Time magazine*), a magazine that served as the non-official governmental organ for information dissemination until the 1980s.

Parallel to the literature research mentioned above, a lot of information was gathered by interviewing people who somehow were connected to the programs. During those interviews a lot of unexpected information came up that made further questioning necessary. Above all it showed that the PRONADE program was much more expanded and included more people and organizations, than assumed before this research.

The first interviewee was Dr. Maria del Rosario Casco Montoya, who had worked in the defunct National Center for Agricultural Research (CNIA) and the Center for Eco-Development (CECODES). Both were government institutions arbitrarily eliminated by the administration of president Carlos Salinas de Gortari (1988-1994) Dr. Casco Montoya had performed the first socio-environmental assessment of the results of the “desmonte” in San Fernando, Tamaulipas and the PCh, while working for those institutions.

The second interviewee was engineer Lorenzo Rubio Espinoza de Los Monteros, who had worked in 1971 as the supervisor of clearing in San Fernando and from 1972 to 1975 acted as the chief of the national monitoring department of the PRONADE.

Initially, it was intended to interview more people involved in the PRONADE and employ the snowball method in the process. The snowball method, locates first the oldest stakeholders, because they are the oldest living source of information and are capable of remembering ancient abundances, then these people are asked about other possible informants who could be interview, the new informants are interview and ask for new informants, the process stops until the names start to reappear (Watts & Halliwell 1996).

But in practice many of the contacted refused to grant an interview. Others performed delaying tactics to avoid being interviewed or like the case of engineer Amador Téran y Téran and some of his contemporaries, they had simply passed away by the time the research was done.

II.-Pilot Proyect and the PRONADE

Pilot Project in San Fernando, Tamaulipas

Before the formal existence of the PRONADE, in 1970 a pilot project of “desmonte” was conducted in the municipality town of San Fernando, Tamaulipas. It was called "Project for Integral Development" and funded by the Rural Bank of the Tamaulipas State, which aimed to open 100,000 ha of tropical forest to cultivation. The already present farming population was intended to be employed as workers (Casco-Montoya, 1980; Martínez-Saldaña, 1991).

The municipality of San Fernando boarders in the north on the municipalities of Rio Bravo and Matamoros, while in the south on Abasolo and Soto La Marina. In the east San Fernando ends at the limits of Laguna Madre and the Gulf of Mexico. The western boarded is shared with the municipalities Mendez, Burgos and Cruillas. It has a total area of 6,091.36 square kilometers, which represent 6.88% of the total area of the state of Tamaulipas (Enciclopedia de los Municipios de México, 2005).

To carry out the “desmonte” plan, two companies, with the technical ability to do so, were hired. These companies undertook the project from designing, setting up agricultural structures, organization of producers up to the first sowing (Casco-Montoya, 1980). The company contracted to execute the clearing work was ICA[5], which imported most of the machinery from the U.S. border (Casco-Montoya, 2011, pers. comm., April).

The original project, based on a number of previous studies, determined that 40% of the area would be use for cultivating sorghum (*Sorghum spp.*) and the other 60% to plant Buffel Grass (*Cenchrus ciliaris*) The Buffel Grass was intended to feed Cebu and American Cebu Brahma cattle (Casco-Montoya, 1980).

This project would only “benefit” Campesinos[6] in the area, with the idea of increasing their income and consequently prevent them from migrating to the United States (Rubio-Espinoza de los Monteros, 2011, pers. comm., April; Casco-Montoya, 1980). Private industry committed to provide cattle breeding stock and some financial support for the program (Rubio-Espinoza de los Monteros, 2011, pers. comm. April).

Due to their distrust towards government agencies Campesinos rejected the project. During the persuasion dialogs, people presented such a strong opposition to the project that they manage the modification of it. The original dominant percentage of forage crop (60%) was reduced to 28%, and land to be cultivated with sorghum was increased to 72% (Casco-Montoya, 1980).

In order to clear the first 30,000 ha 800 people worked fifteen hours a day. The work continued for 225 days with the use of 43 Caterpillar D-8 tractors at a total price of 1,000 *pesos* per hectare (Casco-Montoya, 1980). During this time a series of huge dust storms stroked Ciudad Victoria and Matamoros slowing down activities (Martínez-Saldaña, 2011, pers. comm. June).

[5] Ingenieros Civiles Asociados, founded since the 1940´s ,is the largest construction company in Mexico and Latin America.
[6] Broad term, use in Mexico to describe the poor rural population. A deeper explanation of the term is provided in the section of National Motivation.

Feeling threatened by the program and the possibility of reversing the unjust social conditions of the region, private industry declined to provide the cattle breeding stock. As a consequence of the missing cattle on the grazing land, the cleared land started to turn into acahual[7] (Rubio-Espinoza de los Monteros, 2011, pers. comm. April).

Since the installation of grassland could not keep up withn the "desmonte" program, to compensate the reduced capacities and prevent secondary succession the government used planes to plant the sorghum seeds. Ejidatarios[8] on the other hand decided to use the vacant areas designated for cattle to grow sorghum with previous permission of the National Credit Bank for Ejidos (Casco-Montoya, 1980; Casco-Montoya, 2011, pers. comm. Apri).

Starting from 1972 on, the clearing works in San Fernando were founded by the PRONADE, the total clearing of the 100,000 ha was not completed until the late 1970s (Andrade-Limas et al. 2010). In 1980, Casco-Montoya made an assessment of the socio-environmental situation in San Fernando and reached the following conclusions:

- Erosion increased and several were crops lost, because the regional climate, like strong winds and torrential rains caused by tropical cyclones, was not taken into account (Andrade-Limas et al. 2010).
- The clearing with heavy machinery caused soil compaction which later limited root penetration and created a drainage problem. Further it caused the disappearance of the local fauna that was strongly included in the diet of the Campesinos.
- With the introduction of a cash crop like sorghum Campesino got inevitably linked to the regional and national markets, turning them dependent of inputs and removing their decision power over the crop.
- Mechanization reduced the need for labor, leaving many of the Campesinos and their children jobless, unable to go beyond the subsistence level. Many Campesinos were forced to grow corn and beans in little amounts for self-consumption, although the possible farming area was majorly reduced by the "desmonte" project.
- Casco-Montoya warned that unless solutions, consistent with the environment and the lifestyle of the "Campesinos" were created, this situation would cause a national catastrophe.

Because of this program and the increase of illegal deforestations, Tamaulipas soon became one of the largest producers of sorghum in the country (Andrade-Limas et al. 2010). Still this increase did not reflect in an increase of the local living standard. Since the late 1990s several regional, domestic and foreign companies entered to the region, seeking to extract its natural resources. Since then, cancer cases proliferate in the region and it is rumored that the reason is water pollution caused by those companies. The whole area became internationally infamous because of the mass murder of more than 183 people between 2010 and 2011 at the hands of organized crime (Osorno, 2010).

[7] The term "acahual" refers to secondary plant communities in process of regeneration, represented mainly by rapid growth heliophilous species, acahuales differ markedly in their composition and species diversity, depending on its successional age, management history and proximity of the potential sources of propagules (Ibarra-Manriquez, et al., 1997).

[8] Ejidos are communal property in which members have usufruct rights, usually in the form of a parcel of land, the term refers not only to land but also the community of Campesinos who possess it, the ejidatarios. Both terms are explained further in the National Motivation section.

PRONADE

Although the pilot "desmonte" project in San Fernando, Tamaulipas was considered a failure right from the start, it was decided to take this model and apply it to the rest of the country (Rubio-Espinoza de los Monteros, 2011, pers. comm. April). The following chapter is chronologically structured and presents how the PRONADE was founded and scaled up to a national level:

On April 10, 1972 president Luis Echeverria Alvarez received a letter signed by the agronomical engineer Amador Téran y Téran and 14 others specialists for agriculture and livestock, most of them graduated from the UACh. In this letter they recommended the creation of a "National Commission of Clear Cutting to boost Agricultural Development", attached to it came a business plan and a draft decree (Téran-y-Téran et al. 1972).

On May 24, 1972 Luis Echeverria answered the request via a telegram, there he stated that a hearing was in process and a date would be arranged soon (Téran-y-Téran et al. 1972).

The business plan and draft decree stated that in order to complete the agrarian reform, beyond the distribution of land, it would be necessary to use in the agricultural resources an integrated way. This could only be achieved by fostering a healthy and balanced industrial development in all its aspects (Téran-y-Téran et al. 1972).

Their proposed strategy to achieve this work in the shortest time possible, with minimal investment and with a social and economic benefit to the Campesino class (Téran-y-Téran et al. 1972), was to increase production through the opening and preparation of new land (Maldonado-Betanzos, 1976).

From the onset the business plan expressed its inclination disposal to livestock rising. It was argued that according to global forecasts, developed countries in North America and Europe would increase their meat consumption from 50,259 to 64,445 tons in 10 years. At the same time, only little possibility to increase production in those nations was predicted, which could be a benefit for Mexico, since it still had huge natural resources available to increase the beef production. Thereby Mexico could obtain large financial gains that would help it´s development, only possible if the Mexican government would be willing to financially support the farming project (Téran-y-Téran et al. 1972).

According to the study 60% of the workforce in rural areas was unemployed. The program aimed to employ those Campesinos in the intensive livestock sector. So far this sector only comprised 5% of the national production; therefore new land had to be opened (Téran-y-Téran et al. 1972).

The newly-cleared land would be located in warm climate and unproductive forest areas with minor wood quality. As a positive side effect the wood cut down that still had a certain value could be sold to reduce the financial effort of the desmonte project. The low quality wood would majorly used for purposes like coal production, fence posts or industrial uses (Téran-y-Téran et al. 1972).

The document also pointed out that the bad situation of agriculture and livestock rising in Mexico was the result of the lack of a central authority or a decentralized official agency responsible for organizing production, which other countries actually did have. Therefore Mexico had to create one in order to implement a comprehensive program for land clearing and preparation of the new land for agriculture and livestock purposes. The suggested name of that institution was "National Commission of Clear Cutting to boost Agricultural Development" (Téran-y-Téran et al. 1972).

The creation of this decentralized federal agency would eliminate the problems caused by concessioner companies. They usually lacked of proper equipment and trained technicians, which resulted in poor quality and expensive land openings (Téran-y-Téran et al. 1972).

In this regard, the Secretary of Water Resources at this time, Leandro Rovirosa Wade, mentioned in a political event to an audience of "Campesinos" of Baja California:

"When President Echeverria ordered the creation of the desmonte trust and established it as a fundamental principle that was owed to the Mexican Revolution. How could the Ejido produce, if no infrastructure projects were done in the field? Desmontar, meaning also the leveling of the land and establishing grasslands so the Campesinos could raise livestock, so they could actually have at least minimal conditions for the use of their own resources in the Ejido.[Instead of only growing maiz] Echeverria is the president who precisely created the desmonte trust, the president which clearly stated that from that time on and gradually, the government of the Republic will support the Ejidatarios, so they can produce what the country needs, so nobody can point out that the Ejidatarios in Mexico do not produce, as it is their historic duty. "(Tiempo, 7 January,1974).

With these actions, Mexico would also be attending its commitments related to rural development in front of the Inter-American Economic and Social Council (CIES). Mexico would achieve substantial and sustained economic growth, increase agricultural productivity and boost the integral agrarian reform (Téran-y-Téran et al. 1972).

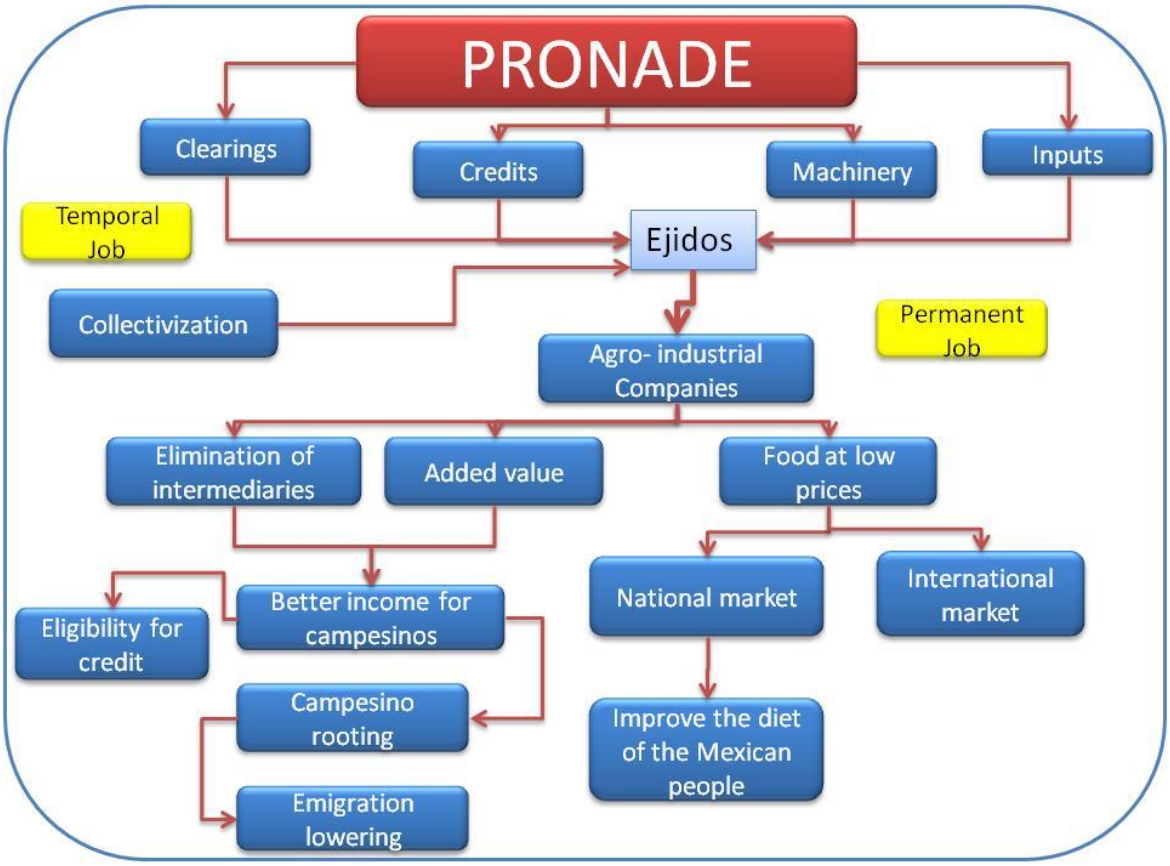
Later in 1972, by presidential decree, the National Program to Open New Land to Agricultural Production (Programa Nacional de Apertura de Tierras a la Producción Agropecuaria) was created, it used several other names like the National Commission for Tree Clearing (CONADE), Trust 581 and the best well known National Tree Clearing Program (PRONADE). This entity was coordinated by the Ministry of Agriculture and Livestock Raising (SAG), the Department of Agrarian Affairs and Colonization (DAAC), the National Campesino Confederation (CNC), the National Bank of Ejido Credit and the governments of the states where the PRONADE program was going to be applied (Tiempo, 12 February, 1973).

The "desmontes" were regarded as public investment, so they were financed with transfers from the Ministry of Treasure and Public Credit (SHCP) and the National Bank of Ejido Credit[9], as a fiduciary institution with previous authorization of the Ministry of the Presidency (Tiempo, 12 February, 1973). The trust was composed as follows: The federal government was the settlor, the National Rural Credit Bank (BANRURAL) the trustee and the trust was the PRONADE (Maldonado-Betanzos, 1976).

[9] Which in 1975 merged with the National Bank of Agriculture and the National Bank Agricultural Credit, to form the National Rural Credit Bank (BANRURAL)

The PRONADE had several goals beyond the clearing of land for cultivation; clearings were only the beginning of a series of actions. As shown Figure 1, the PRONADE would create jobs for the Campesinos in two ways: temporal on the one hand, because Campesinos would be the workers hired for clearing the forest and building of infrastructure. On the other hand, the PRONADE would create permanent employment because the same Campesinos would usufruct new agrarian infrastructure by the use of financial credits, machinery and other inputs (Maldonado-Betanzos, 1976).

Figure 1.- PRONADE extended goals



Source: *This author*

The increasing degree of industrialization and the collective Ejidos[10] would allow the formation of small collectives, which would enable the foundation of small holding trusts to finally establish agro-industrial companies (Distrito de Drenaje Uxpanapa, 1976).

Those companies distribute a certain benefit to the population. By cutting out the intermediary the financial gain of the agrarian business would be maximized, consequently allowing selling food on lower prices. The reduced food prices, along with increasing income, would allow the population to add certain goods to their diet and therefore improving population´s nutrition (Distrito de Drenaje Uxpanapa, 1976).

[10] Collective Ejidos,- Ejidos where **all** land was supposed to be exploited in a collective way

At the same time the employment of new infrastructure would allow the companies to employ more people and therefore increase the income of the rural community, which should have a decreasing impact on rural depopulation. The increased income of Campesinos would have an additional positive side-effect, since it would enable the people to take bank credits on their own (Distrito de Drenaje Uxpanapa, 1976).

This vision is stated in the PRONADE brochures on several occasions:

"Mexico is a country whose people are malnourished because the market does not provide enough food of animal origin ... To meet market demands, it is imperative to implement immediate programs to establish grasslands and exploit them with cattle" (Programa Nacional de Desmontes, n.d., a).

"... with this it would be possible to produce more food and therefore achieve a better nutritional and intellectual state for the population" (Programa Nacional de Desmontes, n.d., b).

The initial goal was to remove 4 million ha of vegetation in the first five years of the program at an approximate cost of 800 million *pesos* (Téran-y-Téran et al. 1972).

Citing that most agricultural areas purposed for crop and livestock in the country were suffering alarming degradation, the PRONADE set itself the goal to locate land appropriate for agricultural exploitation. These areas should have certain characteristics to guarantee success (Téran-y-Téran et al. 1972).

Therefore, the PRONADE collected data and maps of the Mexican Republic, to analyze and processe them following their own methodology (Programa Nacional de Desmontes, n.d., c) (Figure 2).

- The data sources in this case were the:
- Commission of Studies of the National Territory (CETENAL)
- Ministry of Water Resources (SRH)
- Institute of Geography of the UNAM (IGUNAM).
- National Water Plan of SRH, the Department of Geography and Meteorology of the SAG
- and the Department of Agricultural Economics, also from the SAG

Figure 2.- Methodology followed by the PRONADE to choose areas feasible to "desmontar"

1	Based on the maps, areas with at least an average annual rainfall of annual 700 mm were determined to be suitable for growing corn, beans, wheat, sorghum and grasses.
2	A set of crops and pastures with good opportunities for a diversified cultivation were choosen
3	Soil units were rated and chosen according to edaphological features, conditions for exploitation (agriculture, forestry, fruit and livestock) and the CETENAL rating scale for soil use.
4	Sites with altitudes above 2000 meters are excluded, due to the fact those areas are suited for forestry. Additionally the mostly rugged landform, steep topography (steep slopes) and a strongly undulating relief are unsuitable characteristics for agricultural purposes.
5	The appropriate type of operation according to the slope is defined as follows: 0-8% for agriculture, 8-20% for livestock and 20% or more for fruit farming and forestry purposes.
6	Vegetation types from all over Mexico will be compared due to/considering its potential agricultural use. These vegetations are: Hydrophilic vegetation (mangrove, popal, tulare and reeds), palmar, savannah, tropical forest (high, medium and low), forests (coniferous, deciduous and evergreen), mezquital, chaparral, scrub (sub Montane, crasicaule, rosette – desert and desert-microphyll) and zacatal (grassland and zacatonales).
7	Based on the data above "potential land use" is determined by taking the book "EDAFOLOGIA " by Bonifacio Villanueva Ortiz from 1975 into account.
8	Sites that meet the all the above characteristics are selected.
9	Easy access to the area is also evaluated.
10	Aerial photographs and field trips are done to verify the good theoretical features of the chosen areas.
11	A forecast of the ecological aspects will be done in order to avoid ecological imbalances, especially within tropical climates with high temperatures and plenty of rainfall.
12	Determination of the final location of the area, considering theoretical and practical results.
13	At the same time the uprooting and infrastructure setup are being done socio-economic research will be executed. The research is based onto three separate analyses (basin-, land use- and community-analysis) to understand the locally present level of technology.
	Source: Programa Nacional de Desmontes, n.d., c

PRONADE claims these first technical studies concluded that the types of vegetation suitable for the project were: Oak forest, mezquital, savannah, sub-mountain scrub, palmar, and all the types of tropical forest. It was also concluded that Mexico had a total of 24,598,797 ha (12% of the country) suitable to be cleared, of which 6,100,000 would be priority, because of their good soil quality and their accessibility. The remain (18,498,797 ha) could serve as temporary nature reserves until, according to the needs of the country, they would be incorporated into production. Many of these reserves would be covered by high or medium evergreen tropical forest besides deciduous tropical forest (Programa Nacional de Desmontes, n.d., c).

If those studies were ever done the way PRONADE claims is strongly questionable. Although PRONADE claims to have done the research before the clearing process (started around 1972), the methodology was only published years later around 1976. The publication delay was not further explained by PRONADE. A delay on purpose is a probable, since the first clearings were undoubtedly performed in zones of virginal tropical forest, which caused huge waves of criticism among the population. After the criticism the mentioned studies were published, in which the deforestation was presented as a favor for the population.

The PRONADE also had to follow a complex legal procedure for the clearings to be authorized. The same procedure had to be followed by small landowners, companies and other government agencies who wanted to work the land (Figure 3).

Figure 3.- Procedure for the request and approval of desmontes

1.	Authorization Processing a) Request. - Presentation of a letter to the Ministry of Agriculture, which indicated the identity of the applicant, the reasons why it intends to make a clearing, the location and the size of area to be removed. b) Field verification. - Verification and data collection in the field by the technical staff and a subsequent written report. c) Authorization.-Review and analysis of the field study followed by a reply, positive or negative, to the requester through an official letter issued by the SARH.
2.	Execution a) Granting of permission for the new use and marking vegetation to be cut down for forestry registration and control.
3.	Evaluation a) Subsequent visits to the cleared areas by technicians, in order to evaluate the clearing itself.
	Source: Layseca-Torres, 1989

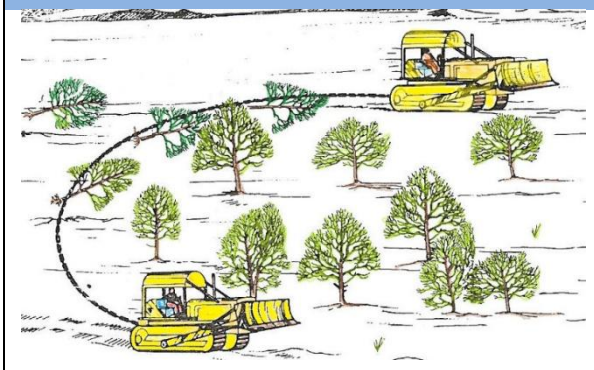
The PRONADE barely followed this procedure since as a government agency it was assumed that they already had the necessary permit. Also at the time Mexico did not have the organizational capacity to execute proper inspections (Layseca-Torres, 1989). Depending on the intended purpose of the new lands, livestock rising or agricultural, the methodology for the clearing process was different for each case (See Fig. 4, 5 and 6) (Archivo Historico del Agua, 1).

Figure 4.- Specifications for the clearing process in areas to be devoted to cattle ranching

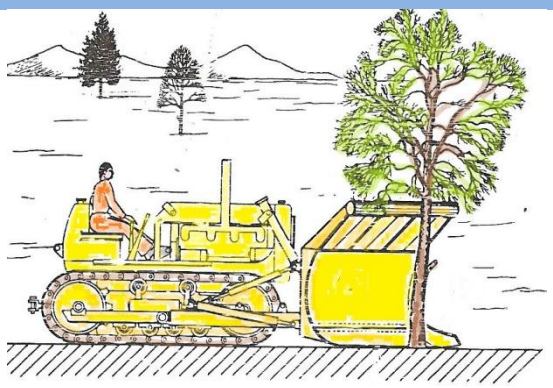
1.-Knock down: (Tumba)	Includes the demolition and uprooting of trees, shrubs and vegetation in general. In special cases trees, that should not be taken down, will be selected and preserved to provide shade for the future cattle. This activity should be done with tractors equipped with a frontal blade with teeth or with a gutter in the ground.
2.-Wood harvest: (Junta)	After the knock down, all vegetal material down should be tied together in cords and collected in banks with a spacing of at least 100 m on flat terrain. This work will be carried as long as the place conditions allow it and is subject to the judgment of the supervisor. The equipment required to do this work will be a tractor with a front blade with teeth or with a gutter in the ground.
3.-Vegetation burning: (Quema de monte)	This means incinerating all plant products derived from the knock down and the wood harvest operations by the means of fire (sic), once the material has dried so to permit the burning. This operation will be done manually and under supervisor approval.
4.-Deep Harrowing: (Rastreo profundo)	Consist on the drawing of the heavy harrow in two directions so the discs can penetrate the ground at a depth and angle indicated by the supervisor. Once this labor is finished, a gathering and burning of the emerged roots will proceed. This activity should be done with a heavy harrow at a weight from 7 to 9 tons with an approximate length of 4 m and equipped with 24 to 28 discs of 40 inches each in diameter. All of the above with the prior authorization of the technicians responsible for establishing grassland, endeavoring that the date of this activity matches the grasses installing season.
	Source: Archivo Historico del Agua, 1

To allow the reader have a better understanding of the different steps that constitute the clearing process graphical examples are given next in the Figure.

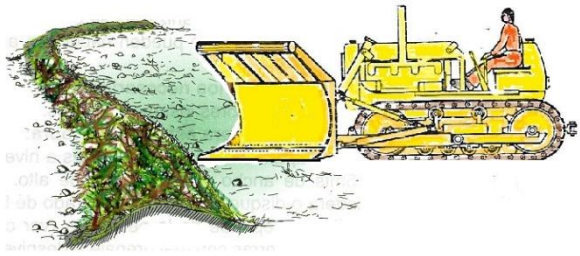
Figure 5.- Graphical examples of the clearing process



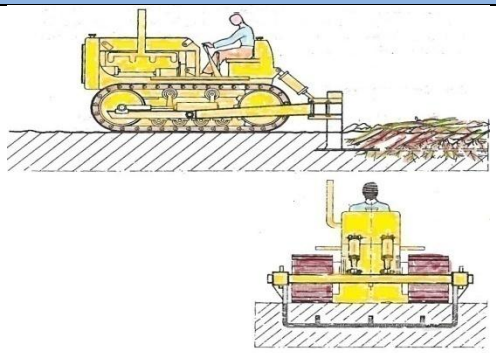
Vegetation knock down with chain



Vegetation Knock down with tractor



Wood and root harvest



Derooting

Vegetation burning

Source: This author

Figure 6.- Specifications for the desmonte work of areas to be devoted to rainfed agriculture

1.-Knock down (Tumba)	Includes the demolition and uprooting of trees, shrubs and vegetation in general. This activity should be done with tractors equipped with a frontal blade with teeth or with a gutter in the ground or a similar one to preserve the top layer of soil.
2.-Wood harvest (Junta)	After the knock down, all vegetal material down should be tied together in cords and collected in banks with a spacing of at least 100 m on flat terrain. This work will be carried as long as the place conditions allow it and is subject to the judgment of the supervisor. The equipment required to do this work will be a tractor with a front blade with teeth or with a gutter in the ground.
3.-Vegetation burning: (Quema de monte)	This means incinerating all plant products derived from the knock down and the wood harvest operations by the means of fire (sic), once the material has dried so to permit the burning. This operation will be done manually and under supervisor approval.
4.-Derooting (Desenraice)	This is the extraction and cutting of roots and any roots system found in the soil down to a depth of 60 cm. To make this work a ripper-tractor with three teeth, spaced at a distance of 50 cm, should be moved in two directions, longitudinal and transverse.
5.- Root harvest (Junta)	All vegetal material resulting from uprooting should be put together. The equipment required to do this work will be a tractor with a front blade with teeth or with a gutter in the ground. Machinery should be use as many times as necessary.
6.- Root pick-up	Once the harvesting of residues and stump is done, all remaining residues in the field should be gathered by hand, so there will not be any element to stand in the way of future agricultural works.
4.-Deep Harrowing (Rastreo profundo)	Consist on the drawing of the heavy harrow in two directions so the discs can penetrate the ground at a depth and angle indicated by the supervisor. Once this labor is finished, a gathering and burning of the emerged roots will proceed. This activity should be done with a heavy harrow at a weight from 7 to 9 tons with an approximate length of 4 m and equipped with 24 to 28 discs of 40 inches each in diameter.
	Source: Archivo Historico del Agua, 1

While within the objectives of PRONADE it was mentioned that the executors of the clearings and work to prepare the land should be the Campesinos, so they could also benefit from the temporary work, the practice was very different. Actually the work order was given to companies or individuals with specialized machinery and the necessary operation capacity (Archivo Historico del Agua, 2).

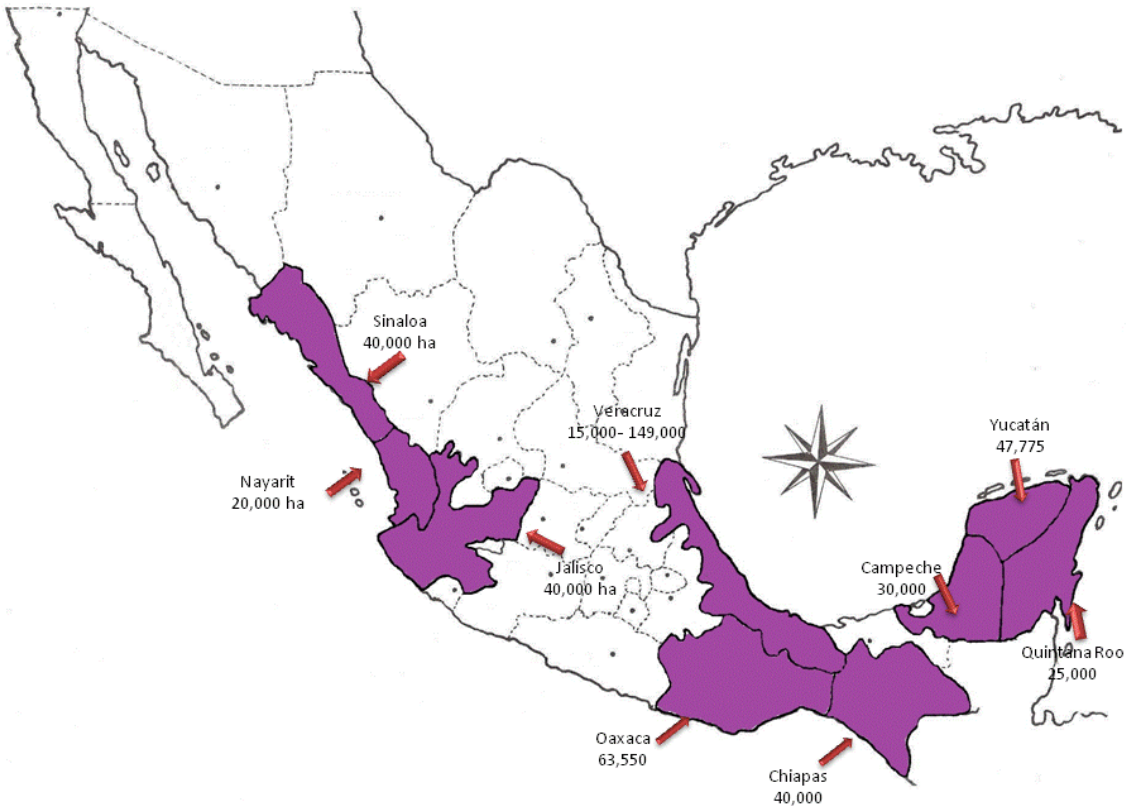
In fact, the recruitment of companies was contemplated by the Rules of Operation of the PRONADE (Appendix II).The eighth, ninth and thirteenth rules mention that companies, besides complying with certain rules, they had to enter an opposition contest. Once approved, the Special Trustee Deputy, based on the conditions given on the sixth rule, would hold contracts to perform the work (Archivo Historico del Agua, 2).

In September 1972, the Secretary of Agriculture and Livestock, Manuel Bernardo Aguirre, officially announced the start of the PRONADE, starting in the states of Veracruz, Oaxaca and Yucatan (Figure 7) (Tiempo, 25 September, 1972).

The first stage of the PRONADE would involve the clearing 320,325 ha for new land, of which 222,000 (70%) would be intended for livestock (Tiempo, 25 September, 1972; Tiempo, 23 October 1972):

- 40,000 ha in Jalisco
- 15,000 ha in Veracruz, although long-term projections extended to 149,000 ha
- 30,000 ha in Campeche
- 46,775 ha in Yucatan
- 25,000 ha in Quintana Roo
- 40,000 ha in Sinaloa, of which 9,000 ha would be intended for irrigated areas, 13,000 ha for rain fed crop and 18,000 ha to livestock. This works would "benefit" 4,250 Ejidatarios of 96 Ejidos.
- 20,000 ha in Nayarit in the municipalities of Santiago Ixcuintla, Acaponeta, Rosa Morada, Tecuala and Compostela. All would be intended for livestock.
- 63,550 ha in Oaxaca, starting with 20,000 ha in the municipality of Matias Romero
- 40,000 ha in Chiapas

Figure 7.- PRONADE first stage



Source: This author

1972 in Yucatán the PRONADE worked along with the Agricultural Diversification Program in the Ejidos of the henequen zone. This program included the installation of three production units in the Ejidos: Pig farming, livestock and fruit cultivation. In the municipality of Halachó the installation of the Ejidal livestock unit was funded by the PRONADE, but most Ejidatarios opposed the plan (Villanueva-Villanueva, 1996).

Besides livestock agriculture being an activity that required little work force, Ejidatarios claimed that the lands were already being used to cultivate the needed firewood and other materials. Despite this opposition, a favored group obtained approval of the amount of land required and the Ejidal livestock unit was financed. It ended up to be used by a consortium of five ranches that occupied an area of 6,134 ha employing only 200 Ejidatarios (Villanueva-Villanueva, 1996).

In the Ejido Cafetal–Limones, in the state of Quinatana Roo, the PRONADE financed the establishment of Campesinos from the states of Guerrero and Tabasco. Each family was suppoused to clear around 50 ha of vegetation (Merino, 2004).

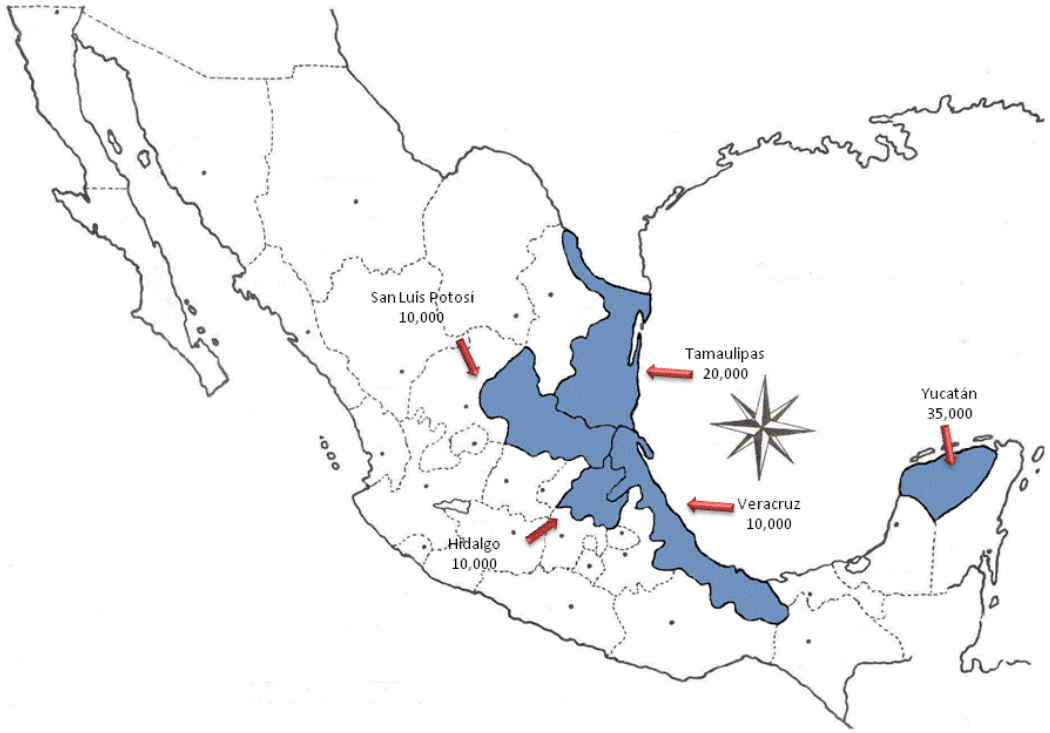
By February 1973, the country had already cleared 30,000 ha intended for livestock and 3,000 for agricultural purposes (Tiempo, 12 February, 1973).

April 1974, the second stage of the PRONADE was officially launched. This included the clearing of:

- 10,000 ha in San Luis Potosí
- 10,000 ha in Veracruz
- 20,000 ha in Tamaulipas
- 10, 000 ha in Hidalgo
- 35,000 ha in Yucatán.

The total cost of those 85,000 ha across the country would reach 120,000,000 *pesos*. This second phase was approved by the SAG and funded by the National Bank of Ejido Credit (Figure 8) (Tiempo, 22 April, 1974).

Figure 8.- PRONADE second stage



Source: This author

Much of the cleared land in Quintana Roo (1974) remained out of work because the Ejidatarios themselves were not interested in planting in these areas. The land was hard and stony, so the land turned into acahual and remained like this until 1979 when it was cleared once again by the Public Investment Program for Rural Development (PIDER) (Velázquez-Torres, 2006) .

In 1979 PRONADE and PIDER and began the clearing of further 1,500 ha in the Ejido La Colorada in Sonora (Bravo-Peña et al. 2010). In August 1979 the clearing of 120 ha in the municipality of San Esteban Atatlahuca, Oaxaca was promoted and proceeded (Archivo Historico del Agua, 3).

Past the year 1979 it was not possible to find any document that mentioned the existence of the PRONADE. Neither it was possible to discover documents stating its termination, so it remains unclear how long the PRONADE program did actually last.

Also data about the PRONADE development and its results at a national level were not available or accessible. But so far, as the evidence provided by Mr. Lorenzo Rubio Espinoza de Los Monteros shows, the PRONADE was instrumented in the states of Campeche, Chiapas, Hidalgo, Jalisco, Nayarit, Oaxaca, Querétaro, Quintana Roo, San Luis Potosí, Sinaloa, Sonora, Tabasco, Tamaulipas, Veracruz y Yucatán (Figure 9).

That minds 15 states of the 31 that states that form the Mexican Republic. With this information one can already conclude that the PRONADE was instrumented in states further to those belonging to the humid tropics region and those mentioned in the first and second stage (Grupo de los Cinco, n.d). (Figure 9)

Figure 9.- States known so far where the PRONADE was instrumented

Source: This author

That is the reason why two particular cases, the Plan Chontalpa (PCh) and Uxpanapa, are presented and analyzed in the ongoing chapters. Those programs were partly founded by PRONADE and are better documented in the accessible literature.

III .- Case Study: Plan Chontalpa

The first case study is the plan Chontalpa (PCh), an agricultural development plan implemented by the Grijalva River Commission (CRG). First an overview of the history of the CRG is given, followed by the history of how the PCh was created; finally the history of its implementation and results is given.

Despite the PCh began in 1966, six years before the beginning of operations of the PRONADE, this last institution financed vegetation clearings in La Chontalpa after the year 1972, clearings that probably only involved secondary vegetation.

In 1952, the CRG was created with the objective to propel the integral development of the basin of this river. It started with the control of heavy floods that frequently occurred in its lower portion (Asteinza-Bilbao, 1997).

Commissions were entities established unilaterally and with absolute preeminence of technical and economic criteria. They had great freedom and autonomy, since they were entitled to display all kinds of actions corresponding to the secretaries of state (Bartra, 1976).

This situation gave them almost the complete control over infrastructure to organizational details. As it will be further shown, the CRG in the case of the PCh took these almost unlimited powers to the extreme and in some respects even went beyond them (Bartra, 1976).

Engineers, lawyers and economists, who prevailed in the CRG, noticed an 800,000 ha vast flat land in the region of The Chontalpa, Tabasco (Arrieta-Fernández, 1992).

At the end of the 1950's decade, the CRG devised a seven stages development project for these flat lands called "Pilot Project, Lemon Plan"[11], which would benefit 3,300 families within the next 14 years. The plan projected to have an extension of 50,000 ha, of which 42% would be devoted to annual crops and 57% to perennial crops. Between 1959-1964, the Malpaso Dam was built in the state of Chiapas. It successfully prevented 350,000 ha in the Chontalpa region from being flooded (Leyva-Peña, 1970).

Due to the distrust towards the tropical environment, livestock was not included in the Lemon Plan. Until the completion of the studies, arrangements to found the program via Nacional Financiera (NAFIN) were initiated, but they were not completed (Leyva-Peña, 1970; Arrieta-Fernández, 1992; Asteinza-Bilbao, 1997).

The results of the CRG economic research highlighted the primitivism of the prevailing social relations, as well as the absence of local capital and entrepreneurial initiative in the Chontalpa zone (Bartra, 1976).

[11] The name refers to the region "El Limón" in the area of Chontalpa

In 1962 it was planned to obtain financing through the Inter-American Development Bank (IDB). To do so, the project was sent to two consultant firms of the IDB: Itarconsult in Argentina and CIEPS in Mexico. Those firms considered it to be necessary to also include social improvement works in the project (urbanization, schools, health service etc.) and to allocate 20% of the area for cattle ranching. Therefore, 47% of the surface would be devoted to perennial crops, 37% to annual crops and 21% to grassland (Leyva-Peña, 1970; Arrieta-Fernández, 1992; Asteinza-Bilbao, 1997).

The total cost of 1,638,000,000 *pesos* was supposed to be carried by several sources. More than half of the amount, 846,160,000 *pesos*, should have been provided by the Mexican government. The rest should have been split between an IDB loan of 734,500,000 *pesos* and 57,400,000 coming from investments of the "beneficiaries". However, the project was soon forgotten by the Ministry of Water Resources (SRH) (Leyva-Peña, 1970).

In 1966 the project was reformulated by an expert team of the Federal Republic of Germany, an Israeli expert team and a Mexican technical group, despite none of the first two countries had any experience in managing ecosystems of the humid tropics (Tudela et al. 1989).

The expert group decided to increase the development area and consequently the number of families to be benefited. The project was approved and as a concept of not reimbursed balance 6,696,000 U.S. dollars had to be paid (Arrieta-Fernández, 1992; Asteinza-Bilbao, 1997). Then, the project was reborn under the name of Plan Chontalpa.

Once redesigned, the PCh intended to benefit 300,000 ha, which represented 38% of the Chontalpa region and 12% of the Tabasco state total area (Asteinza-Bilbao, 1997). The PCh was to be implemented two stages, each divided in two phases.

The first stage would go from 1966 to 1976 and cover 140,000 ha on the left side of the Grijalva and Seco rivers. The first stages phases were defined as follows (Leyva-Peña, 1970):

- First phase (1966 - 1970): would start production in 83,000 ha, this would include the clearing of 36,000 ha under "low-yield production" (traditional techniques and acahuales) and the clearing of 41,000 ha of "unproductive vegetation" (virgin forest).

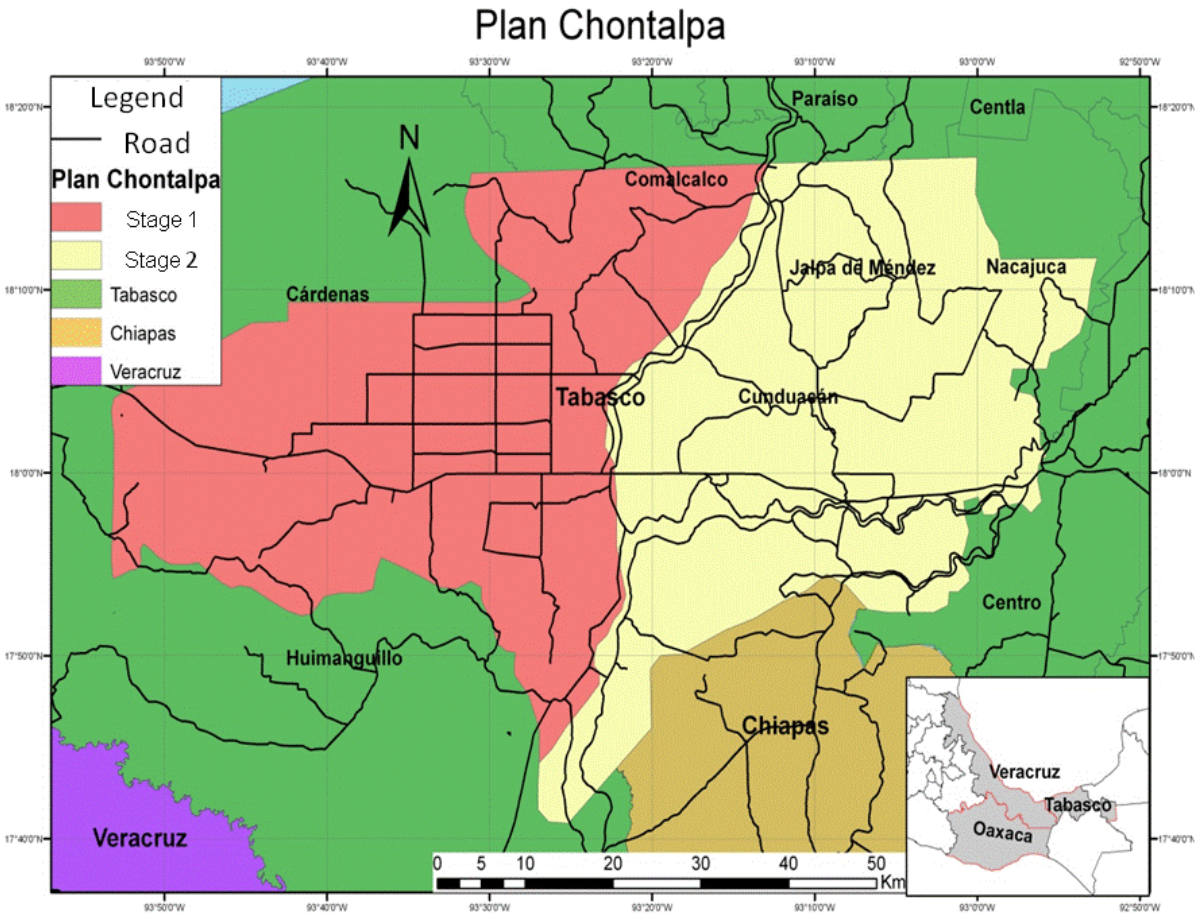
- Second phase (1971 - 1976): would start production in additional 57,000 ha, this would involve the clearing of 30,175 ha (53%) considered to be "low-yield production".

The second stage was neither specified, nor scheduled and its planning was conceived to start when the experiences of the first stage could be gathered. The second stage aimed to benefit the lands on the right bank of the rivers Grijalva and Seco (Leyva-Peña, 1970).

The region of The Chontalpa covers an area of 8,000 km^2; it is located in the western portion of the Tabasco plain within the broad valley of the Grijalva River´s lower basin. The area is limited in the north by a strip of marshes and swamps that separates it from the Gulf of Mexico. In the south it is bordered by the Zanapa River a tributary of the Tonala River, the railroad tracks and the Grijalva River. The Grijalva River also forms the eastern border. In the west the area is limited by the Tonala River (Leyva-Peña, 1970).

The action area of the PCh is located between the parallels 18° and 18° 12’ and between 93° 40' and 93° 27' W (Figure 10).

Figure 10.- Approximation to the localization and planned extension of the Plan Chontalpa



Source: This author, based on a map contained in Leyva-Peña, 1970.

The Chontalpa is at an average altitude of 15 m a.s.l. with an annual rainfall of 2,000 mm and an annual average temperature of 26.5° Celsius. The lowest temperature per year is around 11° C, while the maximum is around 42° C (Arrieta-Fernández, 1992).

The project proposed itself to create a development center through the creation of an intensive and diversified agriculture zone of high performance; this would increase in local production and trading which would lead to economic benefits for the state of Tabasco and the country in general. The PCh's central goals were (Tudela et al. 1989):

1. Initiation of a process of sustained regional growth, which, on the other hand, would contribute to the overall development of the country.
2. Determination of the best applicable techniques for the establishment of projects which can provide support for the agricultural activities in the tropics of Mexico.
3. Improvement of the living conditions of rural populations by the introduction of welfare programs with the necessary elements for cultural, economic, social and moral development. Those welfare programs are closely linked to the transformation of the regional productive structure.
4. Expansion of the agricultural frontier to reduce production shortfalls in some areas.

As justification, it was argued, that for decades the government neglected Ejidatario´s needs which partly had kept the region poor. Consequently, this program in theory only benefited Ejidatarios and Ejidol lands (Bartra, 1976).

A new social organization, collective Ejidos, would be implemented. Envisaged in the 1971 law of land reform in collective Ejidos the Ejidatarios would not longer exploit individual plots, resources would actually be communally and equally exploited. Ejidatarios would only have the right to own private property not bigger than two ha to establish a family farm. In addition, hours worked on communal property would be registered and the profit would be shared among the workers (Diario Oficial de la Federación, 1971).

The determination, of which Ejidos would be exploited in a collective way, was only to be taken by the republic´s president. He claimed areas to be turned in collective, when he considered individual exploitation as wasteful, because of a difficult topography, machinery requirements or operating investments (Diario Oficial de la Federación, 1971). This new organization would theoretically open a new opportunity for greater Campesino participation in the management of the productive enterprise (Bartra, 1976).

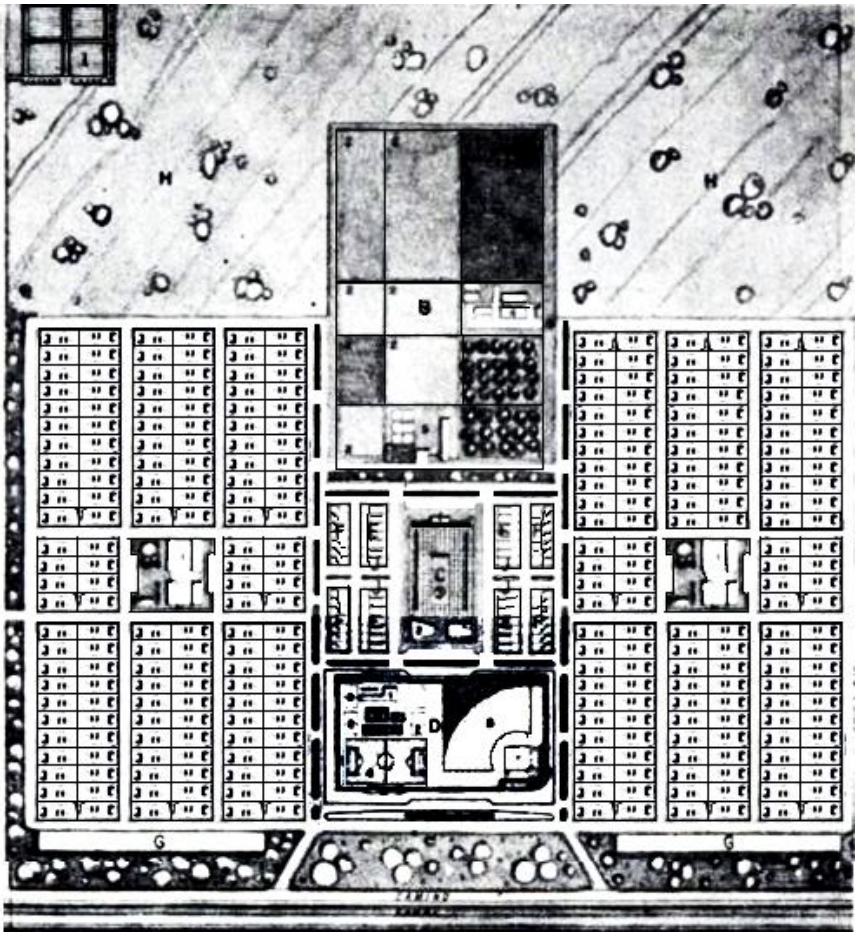
Social works to complement the project were (Leyva-Peña, 1970; Arrieta-Fernández, 1992; Asteinza-Bilbao, 1997):

- Border defense, sewage and drainage systems.
- Irrigation transmission and distribution system, based on a dam and several channels to provide water also in the dry months.
- Establishment and employment of an experimental agricultural station of 1,100 ha in the heart of the area. It was responsible to study, at a scientific and technical level, the agricultural problems of the area. There were activities such as the creation of new varieties of crops, adapted to the ecological environment. Further research on fungicides and insecticides, studying of fertilizers, studies for the production and fattening of cattle, systems and methods for a better implementation of agricultural machinery, etc.

Urban Improvement (Figures 11 and 12):

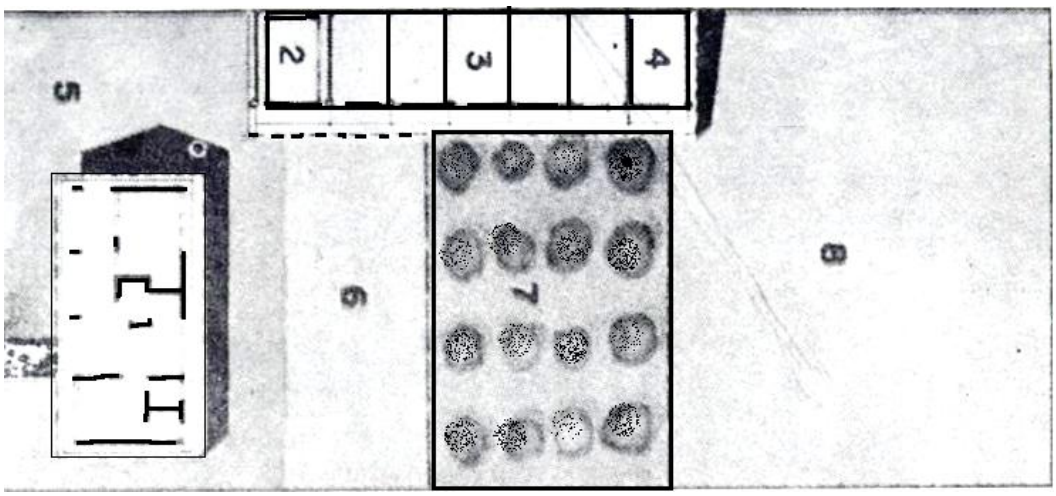
- In order to make the services feasible, rural population was relocated in new and dense rural centers, each of them consisting of 2,000 inhabitants and located near the plots. 22 villages were supposed to be created, one for each Ejido.
- In the first phase 6,242 new houses should be built, each at a cost of 4,200 *pesos*. The second phase contained the setup of additional 4,902 houses at the same price. Each home, unlike traditional housing, would have divided rooms (kitchen, bedrooms, and living room), coated floors, cemented walls and ceiling, as well as windows and toilets. The designers felt that a family sleeping in a single room leaded to promiscuity and prevented children of defining themselves as individuals and being productive members of society (Leyva-Peña, 1970). At this point it needs to be stated, that the sources differ on the estimated prices of the housing project. Further literature states the cost of the houses was the 10,000 *pesos* per home and 2,000 for the additional constructions (Bartra, 1976). Houses were financed with credits to be paid in 25 years, with a 3% annual interest.
- Construction of drinking water and sewerage system.
- Setup of electrical infrastructure.
- Providing of elementary schools with six classrooms for each village.
- Buildup of extensive road network.
- Introduction of health care programs.

Figure 11.-New urban desing in The Chontalpa



Source: Arrieta-Fernández, 1994

Figure 12.- Basic plan for the houses in The Plan Chontalpa



Source: Arrieta-Fernández, 1994

Of the 734,500,000 *pesos* provided by the IDB, 672,000,000 *pesos* (91%) were provided by the IDB ordinary found and 62,500,000 *pesos* (9%) by IDB trust for social progress. The IDB trust for social progress is characterized by a lower annual interest rate than the ordinary found, 1.25% instead of 5.75%. The money provided by the IDB was split into two packets concerning their purpose, first phase and second phase of the project. The first phase was covered by 312,000,000 *pesos* out of the IDB ordinary found and the entire amount of the IDB trust for social progress. The second phase was covered by the rest of the IDB ordinary found (359,500,000 *pesos*). Each loan had its own financing plan for the Mexican government, which are presented in the following tables:

Table 1.-Project first phase financial commitments and deadlines to the IDB ordinary found

Date	1966-1970	1971-1976	1977-1991
Commitments			
Depreciation charge	15.990	90.315	206.195
Interest 5.75%	31.883	89.800	84.953
Commitment fee	5.149	--	--
Total	53.022	180.115	291.148
* Amounts in millions of *pesos* Source: Leyva-Peña, 1970			

Table 2.- Project first phase financial commitments and deadlines to the IDB trust for social progress

First project phase			
Date	1966-1970	1971-1976	1977-1991
Commitments			
Depreciation charge	3.000	15.000	44.500
Interest 1.25%	1.698	3.996	5.247
Commitment fee	0.084	--	--
Total	4.782	18.996	49.747
* Amounts in millions of *pesos* Source: Leyva-Peña, 1970			

Table 3.- Project Second phase financial commitments and deadlines to the IDB ordinary found

Date	1971-1976	1977-1997
Commitments		
Depreciation charge	34 775	324 725
Interest 5.75%	56 136	181 567
Commitment fee	5 895	---
Total	96 806	506 292
* Amounts in millions of *pesos* Source: Leyva-Peña, 1970		

Development of the Plan Chontalpa

To understand how the PCh changed the lifestyle of Campesinos, first one must understand how their lifestyle was before its implementation. In 1966, before the social reorganization, property in The Chontalpa was organized as follows: 64,400 ha were Ejidatario property, 74,500 ha private property, and 1,100 ha belonged to the CRG (Bartra, 1976).

Before the governmental programs, population within the mentioned areas was scattered. Jungle, lagoons and floodplains separated the centers of population one from each other. Therefore communal buildings like schools, chapels and stores were the only population´s meeting places. Generally communication was kept to a minimum and people lived quite isolated (Arrieta-Fernández, 1992).

Like in the rest of the country, most of the land was monopolized: 4.9% of the population (landlords) owned 35.2% of the land, having in average an area bigger than 50 ha. The remaining 81% of the population (smallholders) owned 43.2% of the land, which in average consisted of less than 10 ha per family (Bartra, 1976).

Landlords used the land only partially, for very low-tech and extensive cattle ranching. In turn smallholders and landless people worked on the farms of the landlords to supplement their income or emigrated from the region (Bartra, 1976).

A purpose was given to floodplains, Campesinos sowed criollo maize in March, and thanks to the silts left by the flood, in less than 90 days, an average of seven tons per hectare of maize was produced without any inputs, followed immediately by another cycle that produced four to five tons (Asteinza-Bilbao, 1997).

Plan Chontalpa instrumentation

Since the beginning, the PCh suffered from a series of setbacks. The sequence of events shown below is mainly based on the accounts of Bartra (1976) and Asteinza-Bilbao (1997).

During the restructuring of the land tenure, landowners were paid the whole assessed value of land as well as assets and investments. Campesinos were only indemnified for their plantations and constructions. In addition, only Campesinos were relocated to the new settlements (Bartra, 1976).

Clearing works were done in time, since they were one of the main conditions established by the IDB loan. On the other hand, the establishment of annual and perennial crops was delayed, since loans were often suspended or delayed without any explanation. Without any crops being planted the cleared land soon started to turn into acahual.

To keep the land free of weeds cattle was brought to the fields. Cattle were also brought because it was believed that the credit for livestock would be more fluid and that grasslands could be transformed into farmland later on.

With the expiring deadline for the completion of the first phase (1971), the PCh faced a storm of criticism. The main critics branded the PCh as an economic failure; the lack of planning and the continuous staff changes were also criticized. Technicians were marked as irresponsible or incompetent for making changes on the spur of the moment (Chao, 1976).

Although the plan began in 1966, only one fifth of the work planned had been completed by 1970. In 1974 the first phase of stage one was still being carried out, the second phase did not start until 1975.

Due to the continuing poor performance and permanent delays, it was decided that the PCh should continue as a trust with different holders (July 10th, 1972). Officials argued this transaction would avoid losing 850,000,000 *pesos*. The trust had the authority to study and plan all agricultural activities, grant assets and capital assets loans, help Ejidatarios and promotion of agricultural research.

The trust's initial budget in 1972 was 25,000,000 *pesos*, by 1973 its assets amounted to 51,800,000 *pesos* and increased to 150,000,000 *pesos* in 1974. Finally the assets amounted approximated 200,000,000 *pesos* in 1975. The trust not only managed credit in its monetary form, but also most of the means of production in that it embodies, by 1975 the trust had machinery worth of 36,000,000 *pesos*.

The first five Ejidos established**,** were divided into plots, after 1973 the remaining 17 were established under the decree of collectivization, soon after the first five were forced to join the collectivization (Bartra, 1976).

Like in other projects the government created a forestry agency to capitalize on the precious wood removed during the desmontes. The profits of the forestry agency were never shown to the Campesinos. A after a rush of complains, in 1973 the government negotiated with the Campesinos and as a result the SRH made a payment of 500,000 *pesos* for "derechos de monte" (stumpage) (Bartra, 1976).

The SRH also delivered a saw-mill with a value of 150,000 *pesos* and machinery for a future furniture factory with a value of 90,000 *pesos* (Bartra, 1976).

In 1975, the PCh became predominantly pastoral, since 29,610 ha (65%) were devoted for livestock and only 16,372 (35%) for agriculture. Albeit the PCh sought to develop intensive farming and high yields, livestock in the region remained extensive, with 37,124 animals, at an approximated average of one animal per hectare.

Despite all the events, on March 7th 1976 the water resources secretary Leandro Rovirosa Wade assert that the PCh was, so far, the best essay of a comprehensive agrarian reform. He mentioned that statement in front of the major newspapers and magazines representatives of the country at a news conference (Chao, 1976).

Once the construction of the dam and the deep drainage network were finished, 210,000 ha stopped flooding. Then instead of flooding they began suffer hydric stress in the dry season. To compensate the now created shortfall, at least 80 deep wells and 16 sprinkler irrigation systems were established. On the other hand, during the years of heavy rain, when excesses of the dam had to be released, almost 110,000 ha suffered from floods.

Also, due to the high rainfall the tractor base deteriorated due to the lack of use and maintenance resulting in an increase of costs.

The heavy rainfall also caused the tractors to deteriorate. Then the lack of use and maintenance deteriorated them even more, in an increase of costs.

The rejection of traditional Campesino knowledge also caused trouble, one of the first crops was established on 1,200 ha which, according to Campesino experience, flooded. Despite this, technicians imposed their decision, arguing that the problem had been eliminated by the built drains, as result, lands flooded and the harvest was entirely lost, like the Campesinos predicted (Asteinza-Bilbao, 1997).

Urbanization also suffered severe problems, Campesinos did not like the architectural design imposed. This modern buildings were anything but functional, they did not took into account the climate of the region, they were close to being "ovens", so people decided to cover the roofs with guano or simply build their traditional houses in the backyard (Bartra, 1976).

Urban design also caused social problems because people were used to live dispersed and have little coexistence with their neighbors. The new denser settlements led to constant conflicts and even some murder cases (Chávez-García, 2010; Casco-Montoya, 2011, pers. comm. April).

This urbanization policy belonged to the conviction that the solution to the rural housing problem was the abandonment of any gradual approach. The solution was a radical replacement of the traditional houses (Bartra, 1976).

Over time, the only activity that increased was cattle ranching and it remained extensive and with a low productivity, which led to a minimum requirement for labor and therefore minimal surplus. By 1972, 60% of the potential labor pool was unemployed.

Cultivation of sugarcane was also promoted. During the growth period of the plant, only few workers were required, which resulted in the under-exploitation of the labor force. During the harvest season, due to the work´s nature, lots of additional workers from other regions were required to support the local workers.

By 1975 there were already 500 families of free workers (temporary employees) living in the Chontalpa. The PCh began to suffer from chronic underemployment.

An analysis conducted in 1989 showed that virtually no agricultural project in the PCh had positive results, all projects were unprofitable and if it had not been for the production subsidies, production would have had collapsed (Asteinza-Bilbao, 1997). In fact, in most cases crop yields were higher in the region before the launch of the PCh, (Table 4).

Table 4.- Yield performance in The Chontalpa, before and during instrumentation of the Plan Chontalpa

Yield per hectare	Yields before the PCh ton/ha	Yields after the PCh Ton/ha	Yield performance in experimental fields ton/ha
Crop			
Marceño Maize	7	1.44	2.5
Criollo Maize with nescafé (*Mucuna spp.)*	3-4	1.44	2.5
Maize-Maize, Marceño-Criollo, Quarantine	12 (7+5)	1.44	2.5
Rice	0.4	1.08	4.50
Sugarcane	55-60	62.02	110
Banana	14-18	10.526	20-28
Cocoa	0.300	0.334	0.8-1.5
Source: Asteinza-Bilbao, 1997			

Thus, the first 10 years of the PCh is a story of failures, missed deadlines and constant changes of direction. The CRG soon lost interest in the plan and stopped building numerous works (Bartra, 1976).

People's Uprising

The supposed “beneficiaries" and local elites did not passively accept the new rules imposed by the CRG. Since the beginning, both sectors, tried to influence, each in its way, the decisions made by the CRG, generating an active opposition and resistance to PCh, which in some ways continues to the present day.

Because the plan sought to benefit only Campesinos and was physically distant from the traditional areas of agricultural business and therefore the possibility of interference was low, local elites had no interest in the project to succeed. It is believed that the mysterious delays in the credits and the conversion of PCh into a trust, was due to the influence of national and local power groups (Barkin, 1981).

Campesinos also distrusted the eviction orders and the sweet promises for the future. A rumor that the officials and technicians of the CRG were communists spread. In response, and since the Campesinos correlated this with the expropriation of lands, they declared themselves frenzied anti-communist (Bartra, 1976).

It was said that the days of Porfirio Díaz would return, that Campesinos would be forced to work from dawn till dusk with very low wages and that they would work in order to sell food to the gringos[12] and not to feed themselves. It was also rumored that even to eat a chicken they would have to ask permission to government, that all of them would wear the same clothes, pants and t-shirt for men and women (Arrieta-Fernández, 1994).

Those who owned small and medium plots, opposed with particular strength, because their property to be expropriated were small plantations of cocoa, bananas and other fruits. Plantations that not only reflected a piece of land, but decades of family labor (Bartra, 1976).

One day the Campesinos of the Santana Ejido rioted and surrounded the construction surveyors of the company and seized the machines. The technicians fled to the jungle to hide and had to be rescue by the intervention of the then Governor of Tabasco, Manuel R. Mora (Bartra, 1976).

Typical statements of the people were: "They'll take away everything and will force us to work, we will not be able to grow our maize fields or to raise our pigs ... The revolution has always disappointed us". "Emiliano Zapata gave us this land and now they want to remove it from us and we will never allow that" (Bartra, 1976, p. 69 and 71).

The movement lasted many months and gained momentum. Daily meetings with 7,000 people were organized. One night the rebels burned the camp of the contracting company ICONSA, which was digging the drain “Naranjero”. The people´s movement acquired a "military like organization" and began to operate as a guerrilla, it was even rumored that guerrilla leader Genaro Vázquez was the head of the movement, although he was already dead at this time (Bartra, 1976).

By April 1967, Campesinos threatened to join a university student’s uprising against the Governor Manuel R. Mora. Finally Campesinos took the town hall and demanded the governor to suspend the PCh, he agreed, so the Campesinos returned home jubilant as victors (Bartra, 1976).

[12] Gringo is a slang word used in in Latin America, to denote foreigners, often from the United States.

But allowing an insurrectional mass movement to get away with it would have set a very bad precedent and could be politically costly for the CRG. So the CRG appealed to the SG for a military intervention in the area.

A military expedition was released on April 18, 1967 at 3:00 am, the military took possession of villages and arrested the respective leaders. The leaders were charged with damages to private owners and to the nation, later on, that same day all contractors companies resumed work. The best essay of a comprehensive agrarian reform, which would only benefit Ejidatarios and Ejido lands, began with the use of bayonets. Shortly after, the 57th infantry battalion was founded in the area in order to pave the way for the CRG as many times as it was needed.

To end insurgency, those responsible for the PCh made a strategy of social manipulation which included prestigious local leader's co-optation, manipulation with economic incentives and repression.

After being severely repressed, Campesinos changed their strategy. Campesino groups began to travel to Mexico City in order to demand a higher payment for their backlog and increased unit prices, but they were ignored and nothing happened.

Some farmers consumed their credit unproductively and those who managed to recover it, refused to pay; only 25% of them reintegrated credit. The defeated revenged their defeat at a very low price (Bartra, 1976).

When the Ejidatarios were inevitably incorporated by the PCh, they put a new strategy into action. They rejected the policy of collectivization, because they saw on it a greater loss of control over their future. In response, the official bank denied them credits to pressure them to seek admission to the new partnership.

When Campesinos were informed that they would be the ones to build their own houses and would only receive money for materials, they asked for wages, because they were not willing to do the slightest contribution to an imposed project.

Ejidos also often deviated small fraction of its production from the normal channels to obtain goods on their own. This was done more as a theft to the Trust than as an exercise of a right (Arrieta-Fernández, 1992).

While the technical and economic decisions were taken by the CRG, the money invested in the works was always considered as an extension of credit for the Campesinos. When these projects failed, the Campesinos were no longer considered creditworthy and ended up with overdue loans. Thus, the Ejidatarios paid the costs of experimentation and absorbed the losses, while the CRG and later Trust acted as the boss without taking risks and securing its profits.

Campesinos perceived the decisions of the CRG as doubly authoritative, because not only were they imposed, but rather, as failure after failure had shown, they were erratic and ineffective. They perceived and still perceive their life situation as paying an unfair penalty for the mistake of another. Campesinos responded to this situation with the only left instrument of resistance, a refusal to meet the demands of work (Barkin, 1981).

Corruption

While at first facto powers of the region opposed the application of the PCh, soon some saw an opportunity to increase their profits. The following examples are some of the best known examples of corruption in the history of the PCh (Bartra, 1976):

- Some employees of the CRG used their control over the marketing to falsify accounts and pocket some of the earnings.
- During the time of the PCh Trust, each Ejido was given a quota of steers and cows they had to give to the Frigorífico de Tabasco (slaughterhouse). Each animal was paid at a unit price, so Campesinos were not able to know neither the weight of animals nor their real price.
- Although the PCh had its own veterinary clinics and pharmacies, veterinarians opened their own pharmacies or associated with existing and only prescribed medications that the pharmacy of the PCh had not.
- The PCh had a shuttle service to transport Campesinos from their houses to the working plots. The shuttle service was a concessionary company owned by Mr. Juan Córdoba Candelero. The service was expensive and inefficient, so the Campesinos complained and managed to throw out the concessioner. Later he appealed in a trial in Mexico City (without any Campesino representative). In the outcome of the trial, it was agreed to pay him compensation of 5,000,000 *pesos* form Campesino´s money.

Gentrification

At the beginning, the building of infrastructure and the payment of wages created an economic flow that allowed the "beneficiaries" to increase their purchasing power, one that in the past had been practically zero. This situation coupled with the continuing coexistence with the technicians and the military created new needs for the Campesinos and gave them a new vision of life that can only be branded as gentrification (Bartra, 1976).

Another, and probably more important element to the gentrification of Campesinos, was the creation of new social classes. A division between Campesinos and military and bureaucrats arose, since the last two were paid more and had better housing; also the need for temporary workers during the sugar cane harvest generated a wave of spontaneous migration to the region, which created two sectors of working people, Ejidatarios and free workers, Ejidatarios were then pushed by the circumstances to assume the position of bosses, making relations between Ejidatarios and free workers hostile (Bartra, 1976; Valencia- de- la- Rosa, 1976).

But this does not mean that the economic flow improved the quality of life. Tuleda et al. (1989) reported that by 1985 the nutritional status in the region of Chontalpa was worse than before the PCh application, in fact 59% of children and adolescents were malnourished. They further emphasize that this is particularly surprising data for a region that does not suffer at all of overpopulation and is surrounded by cattle farming.

Capitalism

The theory that the new system of collective Ejidos did not sought to improve the lives of the Campesinos, but instead only turn them into cheap agricultural workers is present in various pieces of the literature. Of course it was also present in the mind of the people who rioted and resisted the program (Arrieta-Fernández, 1992; Barkin, 1981; Bartra, 1976).

But this was not an idea that only lived in the collective imagination, a very clear example that collectivization was just a pretext to turn peasants into workers is reflected in the rules of the Ejido C-26, it established that the ones in charge had to keep "a daily record of the labor input of Ejidatarios ... by punching cards and making a daily report, through the assistant secretary of organization, to the accounting department". Later it was stated that "an unexcused absence in the performance of work ... has to be punished with the suspension of salary ... for a week and the punishment has to be doubled for repeat offenders "(Bartra 1976, pg. 84). The character of rural workers reinforced during the era of trust when Campesinos started to receive a salary.

In the various organizational aspects, in addition to the CRG, several groups are notable for their influence and decision making, the PCh trust, the army, the National Sugar Operator (ONISA), PAISA, Nestlé, the union of cattle farmers, the Cocoa cooperative and intermediaries for the marketing of bananas. This only reinforces the idea that the real beneficiaries of the Plan Chontalpa were private companies and bureaucrats (Arrieta-Fernández, 1992).

People's movement

When the failure of the PCh became evident, both technicians and government blamed Campesinos as their last resort. When Campesinos mobilized against the plan they were blamed to resist change, clinging to tradition and have lack of vision. When Campesinos took a passive position they were called lazy, drunk or unable to work because of their adaptation to tropical climate (Arrieta-Fernández, 1992).

While the government and companies were able to abandon the project after its economic failure, the same cannot be said for the Campesinos, since their fate ended up completely linked to the destiny of the PCh (Casco-Montoya, 2011, pers. comm. April).

Now Ejidatarios born and trained under the shadow of PCh fight to see those 1966 promises of development become a reality, since the desmontes destroyed their traditional way of life. They demand to keep alive the PCh as their last resort. This movement could lay the foundations for a self-management alternative as a new social order (Bartra, 1976).

An example of this is that on 16th April 2007, the 22 Ejido presidents had an audience with Mr. Andres Granier Melo, Governor of Tabasco, where they raised the issue of the needs of this agricultural region, so the Governor committed to deliver financial support for the installation of waste water treatment plants (López, 2008).

IV. - Second Case Study: Uxpanapa

"He who does not believe in miracles in Uxpanapa is not realistic ... Let's be realistic, let´s do the impossible"

Slogan adopted by CODELPA when referring to the development project in Uxpanapa

With the objective to prevent floodings in the lower basin of the Papaloapan river, like the sever flood of 1944, the Papaloapan Commission (CODELPA) was created in 1947. Between the years 1958 and 1969 the CODELPA sponsored several studies to design a solution (Distrito de Drenaje Uxpanapa, 1976). CODELPA worked under the idea of developing watersheds as natural units (Ewell & Poleman 1980).

As a result, it proposed a flood control program whose cornerstone was the construction of two large dams Cerro de Oro (today "Miguel de la Madrid Hurtado") and Temascal (today "Miguel Alemán") in the major tributary streams, just above the plain fields. Both dams would form a single dam with a basin of around 700 km^2 and with a maximum water capacity of 13 billion m^3 (Molina-Ramos, 1992).

The Temascal dam was first built (1949-1955) on the grounds that it was the least expensive project. Temascal would control the Tonto river and house an hydroelectric plant with a capacity of 155,000 KW (Ewell & Poleman 1980).

On April 29, 1972, the president of the Mexican Republic decreed the construction of the Cerro de Oro dam over the Santo Domingo River, in parallel the president decreed the relocation of the affected Ejidos via the SRH and the DAAC. The construction of Cerro de Oro took 17 years and was inaugurated in November 1989 (Distrito de Drenaje Uxpanapa, 1976; de-Teresa-Ochoa & Hernández 2000; Velasco-Toro, 1991).

On June 5, 1973, **an** expropriation decree for the area to flood was published, this affected a total of 43 Ejidos, that belonged to the municipalities of Usila, Ojitlan and Chiltepec, all of them located in the state of Oaxaca, whose inhabitants belonged mostly to the Chinantec ethnic group (Velasco-Toro, 1991). Subsequently, to perform the work of convincing, a relocation committee was created (Distrito de Drenaje Uxpanapa, 1976).

Four options for relocation were given: The vicinity of the dam curtain, the Chimalapas region, the region of Los Naranjos (today the municipality of Tres Valles, Veracruz) and the basin of the Uxpanapa River, also in Veracruz (de-Teresa- Ochoa & Hernández 2000). After the vote 28 Ejidos, members of the Independent Campesino Central (CCI) accepted to relocate into Uxpanapa, while nine Ejidos belonging to the National Campesino Confederation (CNC) choose the area of Los Naranjos, which had previously belonged to a failed irrigation project (Table 5).

Table 5.- Outcome of the vote to choose a relocation site

Relocation zone	Number of Ejidos	Number of families
Uxpanapa	28	2,796
Los Naranjos	9	946
Peripheral area	14	-
Choapan	0	0
Source: de-Teresa-Ochoa & Hernández 2000		

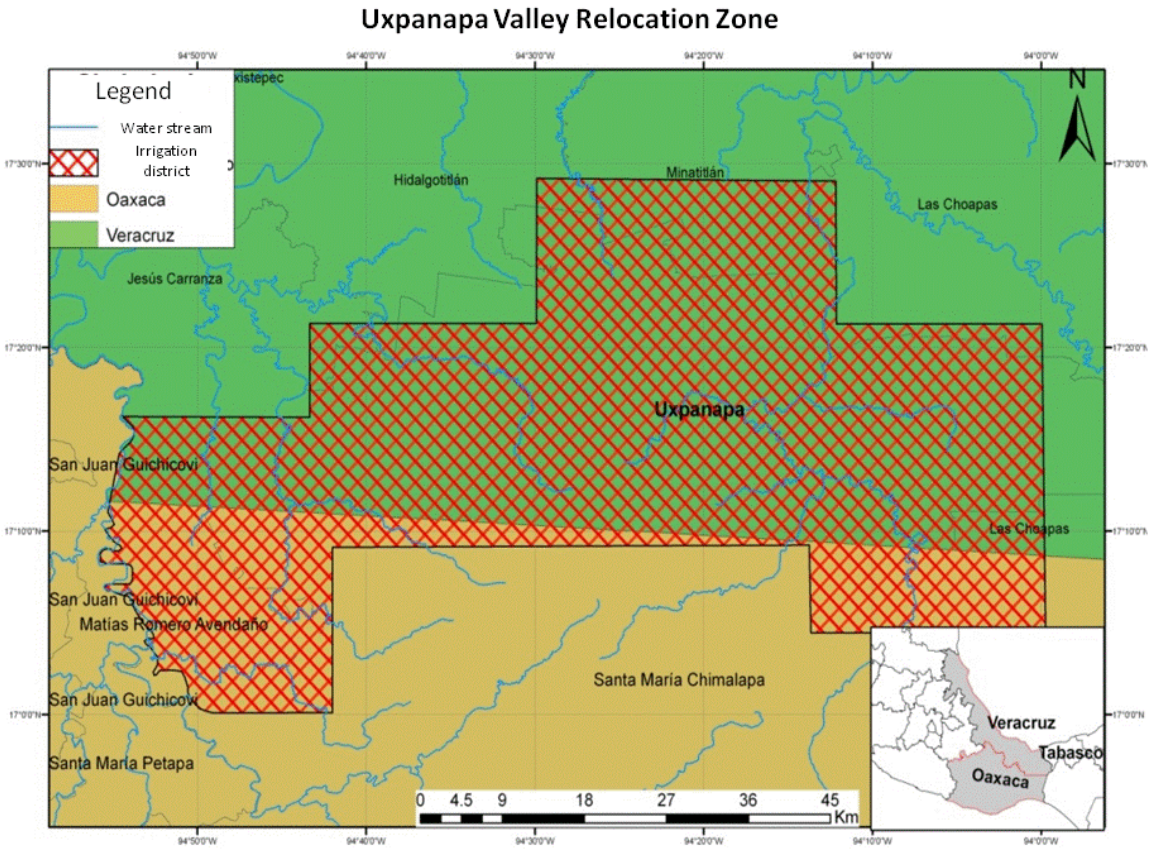
The Uxpanapa Valley is a region far away from the Chinantec historical territory at an approximately distance of 200 kilometers north of Los Chimalapas, which mostly consisted of virgin forest (Weinberg, 2000).

Because of its isolation, it was difficult to secure funding for the relocation. Therefore CODELPA technicians devised the creation of a large agricultural development plan that would help to attract large investments (Ewell & Poleman 1980).

The total investment that the agricultural development plan required was a figure close to 1,500 million *pesos*, of which 1,200 million came from a World´s Bank loan (Toledo, 1978).

The Uxpanapa Valley is located between the parallels 17 °17' and 17 °21 'N and the meridians 94°45' and 94 °05' W, at an average altitude of 130 m a.s.l. (Distrito de Drenaje Uxpanapa, 1976) (Figure 13).

Figure 13.- Approximation to the localization and planned extension of the Uxpanapa **project**



Source: This authors, based on a map contained in Ewell & Poleman 1980

It is a vast area located in the geographical center of the Tehuantepec Isthmus, in the limits of the Oaxaca State. Most of its area (78%) is located in the state of Veracruz and covers the municipalities of Jesús Carranza (228 km^2), Minatitlan (938 km^2), Hidalgotitlan (377 km^2) and Las Choapas (154 km^2). The remaining 22% (572 km^2) is located in Oaxaca State and covers a portion of the municipalities of Matías Romero and Santa María Chimalapa (de-Teresa- Ochoa & Hernández 2000).

Uxpanapa vegetation was classified into four types (Caballero-Nieto, 1978):

1. High tropical evergreen forest, which was the most abundant with a canopy up to 45m and great biotic richness
2. High evergreen seasonal forest, located in limestone outcrops, with shallow soils and rapid drainage and with tree species around 30 m height
3. Medium evergreen forest, located along the river meadows and alluvial soils
4. and Junbal, a bamboo dominated community, located in heavy clay soils and with low organic matter

In addition Uxpanapa housed acahuales and many large mammals and birds.

The new settlers were transported by air or land, from their place of origin to Uxpanapa, costs ran on behalf of the CODELPA (de-Teresa- Ochoa & Hernández 2000).

All men over 16 years were provided with Ejido land rights, whether they had them before the relocation or not (Ewell & Poleman 1980).

According to the technical estimates of CODELPA, 47% of the land in the district was susceptible for farming and the rest was designed as reserve and settlement areas (de-Teresa- Ochoa & Hernández 2000).

The CODELPA choose a midway site between the first and the last village to establish their offices, which they decided to call “Campamento Laguna” (Guzmán-Chávez, 1999).

Relocation to the new settlements was not done one town at the time; the CODELPA decided that the best and fairest way to assign the new plots was through a lottery system (Aguilera-Reyes, 2004) (Figure 14).

The realignment envisioned the building of 16 towns, whereas the building was conducted in three stages:

1. 1974-1978: 1 (Hermanos Cedillo), 2, 2 A, 5,6,7,9 and 10
2. 1978-1982: 11 ,12
3. 13,14 and 15

As seen above, tree villages were not built. The reason is that some of the new residents refused to move to Uxpanapa, others did move, but soon decided to return to Oaxaca (Distrito de Drenaje Uxpanapa, 1976).

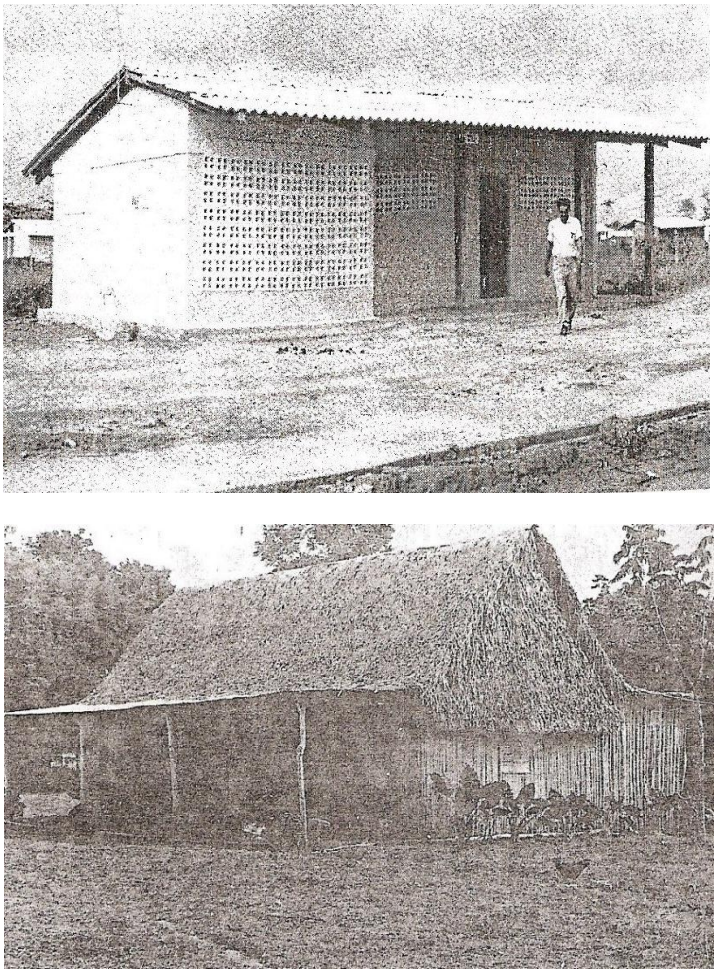
Figure 14.- Campesino family showing their new assigned housing site

Source: Coalición Internacional para el Hábitat, Oficina para América Latina et al. 2010

The housing project, just like the one in Chontalpa, was not connected to the traditional buildings and needs of the Campesinos. The neighborhood plan consisted of a square divided into blocks, each block consisting of four lots of 1,600 m^2 (40m x 40m). On the outer corner of each lot 80m^2 were destined to the building of the house and the rest of the land was supposed to be a patio to grow corn, sesame and other herbs (Figure 15) (Ewell &Poleman 1980; Velasco-Toro, 1997).

For the building of the houses, the government provided a subsidy of 20,000 *pesos* to each family. Although the settlers were free to choose among four basic designs, these were almost identical. A flat ground and six reinforced concrete poles provided the basic structure. The inside had three divisions plus the bathroom, walls were made of irregular blocks locally produced and the ceilings were made of asbestos and metal sheets. Although the toilets were planned within the construction, the settlers thought of it as very unhygienic and built it outside of their homes (Ewell & Poleman 1980).

Figure 15.-Top picture CODELPA house, bottom Chinanteco traditional house



Source: Ewell & Poleman 1980

Although Campesinos were unhappy with their new homes, they decided to build them in order to receive the subsidies. Still at the same time many people built their traditional home in the backyard (Ewell & Poleman 1980).

Each village was built to give housing to an average of 250 families. 150 ha of each village were destined for residential use, 72 for urban and 5,000 for the Ejido plots, in addition the urban plan was to be aligned with the main road (Aguilera-Reyes, 2004).

The design of each town included the construction several public buildings and services (Distrito de Drenaje Uxpanapa, 1976; Guzmán-Chávez, 1999):

A civic or community center
A school of six classrooms
A politic-administrative building,
A building for the Ejido´s meetings,
A post and telegraph office
A health center or clinic,
A garrison building,
Sidewalks,
A drainage and sewerage network
A drinking water network,
and a electrical network

The project also included the building of an industrial area equidistant to the towns within the region, in a point near the Campamento Laguna (Distrito de Drenaje Uxpanapa, 1976). This industrial zone would house:

A rice mill
A steel and forging plant,
An iron plant
A slaughter house with a refrigerator unit
A leather manufacturer
Infrastructure for pasteurization
A shoe factory,
A clothing factory
A wood factory
A gas distribution company
and machinery maintenance shops

In return for this social work, Chinantec people had to take part and be integrated into the new centralized structure that was being established (Ewell & Poleman 1980).

It was also projected to built a "capital" city the in the new town of La Laguna, which would have a civic center, open garden, health services, federal offices, a diversified secondary school, a sports area, zoological and botanical garden and an area for touristic services (Distrito de Drenaje Uxpanapa, 1976).

Only Campesinos were relocated, in the hopes of leaving the majority of the exploiting class behind, the figure of collective Ejidos was implemented here as well (Ewell & Poleman 1980).

The instrumentation of the program started on August 3rd, 1973, with the construction of a six meters wide access gap, which went longitudinally through the relocation zone. The starting point was at the population of Boca de Monte, Oaxaca, which is located at the 112 +000 km of the Trans-Istmican Highway Acayucan-Salina Cruz (Distrito de Drenaje Uxpanapa, 1976).

After four months, this main road was already very damaged, due to the continuous heavy rain (Ewell & Poleman 1980).

In 1975 the cultivation of 3,000 ha of maize and rice began under technical assistance, but crops were never harvested due to pests and diseases (Distrito de Drenaje Uxpanapa, 1976). Due to nitrogen application some rice plants reached such a height that the wind bended and broke them (Ewell & Poleman 1980).

Since the mower-threshing machines found themselves in very different conditions to those they were designed for (USA), they did not work up to a 100%, and consequently delayed the schedule. In fact, the Ejidatarios did the first harvests by hand, where they were paid 40 cents per kilo harvested. The erratic plant pattern, result of the sowing with tractors and airplanes, made the harvest too difficult. As a consequence of both situations Ejidatarios were never able to harvest enough to go beyond the minimum wage (Ewell & Poleman 1980).

Campesinos felt frustrated by the production and in the early years applied their own experience to grow small plots of maize and rice for self-consumption. Others continued to work their land in Oaxaca, so they were able to survive (Ewell & Poleman 1980).

While the traditional maize yields were low, the yields of the mechanized systems were always worse. In fact they were so low that they were never able to recover the costs of production (Ewell & Poleman 1980).

The gaps left by the cutting of large trees and irregularities in the jungle prevented windbreaks to function effectively, so to restore the wind curtains, fast growing trees were planted such as *Melina arborea* (Ewell & Poleman 1980).

Even the technicians began to notice that the hybrid seeds developed into deformed and less resistant plants, while traditional varieties were more resistant to the regional problems and grew better in land cleared by hand (Ewell & Poleman 1980).

In 1976 the first phase of the project was completed, that same year 11,500 ha were prepared for agricultural activities, where once again it was intended to grow rice. The Ejidatarios, the insurance and the banks refused to proceed. But the CODELPA acting in a stubborn way continued the sowing with hired labor (Ewell & Poleman 1980).

The goals for 1977 were advising the establishment and production of 12,632 ha with different crops (Distrito de Drenaje Uxpanapa, 1976).

By 1978 much of the cleared land remained unplanted, it was estimated that 3,060 days were required to complete the job, but simply there were not enough residents (Ewell & Poleman 1980). That same year the government started to distribute hundreds pieces of cattle, which encouraged some Ejidatarios to leave their jobs in the plots and to begin farming cattle on their own, some even asked for loans and these were granted (de-Teresa- Ochoa & Hernández 2000).

In 1978, at the initiative of Mrs. Marta López Portillo de Tamayo, the president's wife, a special program of urban reforestation was implemented, 19,200 individuals of *Pinus tropicalis* and 250,000 of *Gmelina arborea* were used to reforest the lower part of the Papaloapan river (Archivo Historico del Agua, 4).

During the whole time there was a shuttle service which transported the men from their homes to areas of work. The service was characterized for being very unpunctual, so every day many hours of labor were lost (Ewell & Poleman 1980).

The Desmontes

According to an agrological study, Uxpanapa possessed 87,505 ha of first-and second-class land for agricultural activities, thus the desmonte program intended to clear 85,000 ha (Distrito de Drenaje Uxpanapa, 1976).

The desmonte started in 1974 and it was scheduled to be completed by 1979. During the desmonte 40,000 ha were going to be cleared with machinery, 20,000 by hand and 25,000 were going to be kept as timber reserves (Distrito de Drenaje Uxpanapa, 1976).

For the 40,000 ha cleared by machinery, clearing was scheduled in three stages. The first encompassed 10,000 ha and was mostly finished by 1978 (Distrito de Drenaje Uxpanapa, 1976). For the time span concerning the second and third stage no data could be found.

The desmonte grid area was composed of lots of 20 ha limited by meridians drawn every 1,000 meters and parallel windbreakers of 20 meters wide, set every 200 meters (Figure 16) (Distrito de Drenaje Uxpanapa, 1976).

Figure 16.- Aerial shot of the desmontes grid area

Source: Baldazúa Baldo, 2011

The clearing work began breaking new ground by hand every 60 meters, with an approximate north-south direction. First the forestry agency extracted the valuable woods and then when land became more accessible, machines were used to do the clearing. After the completion of the clearing work, two perpendicular dragging works were made, leaving the land ready for cultivation (Distrito de Drenaje Uxpanapa, 1976).

In 1975, due to the fires carried along with the desmontes and an extremely dry year, a large scale fire unleashed and spread through the jungle for several months (Ewell & Poleman 1980).

In 1978 Uxpanapa had a major delay in the desmonte works, to which the CODELPA argue, was due to a significant decline in its budget (Archivo Historico del Agua, 5). In the early 1980's only a third of what was originally estimated had been cleared (Ewell & Poleman 1980).

By 1982, 18,500 ha were being cleared in the Uxpanapa area, 10,000 ha of those for agricultural purposes and 8,500 ha for livestock. Of total area 11,433 ha belonged to land, which was already cleared in the period between 1974 and 1978. The land had already turned into acahual and had to be cleared by hand (Archivo Historico del Agua, 1).

The initially estimated cost of desmonte was 5,000 *pesos* per hectare in 1973, by 1976 it raised to 12,000 *pesos* per hectare and after the peso was devalued during the administration of José López Portillo the price rose to 23,000 per hectare (Archivo Historico del Agua, 1).

Forestry Agency

In order to obtain profits from the valuable wood found in the area, an institution called “Forest Trust" was created in July 1974; its mission was to provide National Railways of Mexico (FNM) with railroad ties to ease the deficit that this dependence was already dragging (Dirección general del inventario forestal, 1979) (Figure 17).

Fifteen private timber companies were employed, trucks and other heavy equipment were provided via credit from the Mexican government to the contractors, seventeen sawmills were installed. The government's initial investment summed up to approximately 80 million *pesos* (Ewell & Poleman 1980).

Figure 17.- *Ceiba spp*. trunks extracted during the desmontes in Uxpanapa

Source: Baldazúa Baldo, 2011

Trees that were not used, some of them taller than 30 meters, were only pulled out of the ground and then burned (Ewell & Poleman 1980).

In 1973, 3,400,000 m^3 of wood were obtained, more than 50% of the country's total production. That same year concessionaire private companies earned more than 720,800,000 *pesos* by sawn-wood and 7 million railroad ties with a value of 514 million *pesos* were built (Toledo, 1978).

On June 30th in 1977, 786,165 railroad ties, built under the current standards and specifications, were delivered to FNM. They managed to cover circa 20% of the national need. Also under the supervision of the forest trust, 330.422 m^3 of roundwood were extracted (Distrito de Drenaje Uxpanapa, 1976). All these extracted woods and railroad ties helped to ease inflation (Ewell & Poleman 1980).

Ejidos received an economic compensation at an average of 48 *pesos* per m^3 of harvested timber, which was called “derechos de monte (stumpage)“ (Toledo, 1978). During the year 1977, the sum of 15,731,470.73 *pesos* was paid to Campesinos (Distrito de Drenaje Uxpanapa, 1976).

Life before Uxpanapa

To understand how the living conditions of the **C**hinanteco Campesinos changed, it is important to be familiar with their life before the relocation Oaxaca to the Uxpanapa Valley. Further, to understand how the Uxpanapa region changed with the arrival of the Chinanteco people it is important to know the history of the region prior to the developing program.

The Chinantecos from Oaxaca had not been greatly affected by the course of Mexican history until the late nineteenth century, when President Porfirio Díaz encouraged Mexicans and foreign interests to install and develop haciendas and tropical plantations in the region. Many Cuban, Spanish and German tobacco growers, who had fled from the first Cuban revolution, arrived to Oaxaca and Veracruz and installed plantations. In 1920 Standard Fruit, a U.S. banana company, established in the region (Ewell & Poleman 1980).

The social structure was made up by direct producers, Campesinos mostly of indigenous ancestry and a small rural bourgeoisie of European and Mestizo ancestry who took care of trade and cattle ranching (Lucero & Avila 1974; Ewell & Poleman 1980). For decades this unequal social structure coupled with the overlapping of fields, generated an environment of social unrest, which resulted in invasions, imprisonments, persecutions, burned down houses and several murder cases (Tiempo, 11 March, 1971).

In the case of Uxpanapa, before the relocation the valley already housed a population of less than 2,000 people engaged on shifting cultivation. People were organized into four Ejidos: Rio Alegre, Hermanos Cedillo (Poblado 1), Plan de Arroyo, and Agustín Melgar (de-Teresa- Ochoa & Hernández 2000).

Even more, the finding of "Teleles" (mounds of a pre-Hispanic origin) at Camp “El Elefante " and the discovery of various household tools in caves, are evidence of a previous Olmec occupation in the area. This occupation is dated during the late classic horizon between the sixth and ninth century (Arellanos-Melgarejo, 1990).

People´s opposition

The Chinanteco people were very aware of the impact that the construction of the Cerro de Oro dam would have on their lives. The Temascal dam had been already built and it was visible from Ojitlan in Oaxaca, where the Chinanteco people used to live before the relocation. Temascal had flooded 51,000 ha of the Tonto River Valley and displaced 20,000 Mazatec[13] people from the neighbor village San Pedro Ixcatlán (Ewell & Poleman 1980).

The CODELPA relocated the Mazatec with the assistance of the National Indigenous Institute (INI), but the program was poorly coordinated and many people had to move on their own. Families still remained in San Pedro Ixcatlán when the basin of the dam was filled, because they had refused to leave. The CODELPA was then forced to send boats to rescue victims who survived in the new created islands (Ewell & Poleman 1980).

[13] Mazatec - The Mazatec people are an indigenous people who inhabit an area known as the Sierra Mazateca in the state of Oaxaca in southern Mexico, as well as some communities in the adjacent states of Puebla and Veracruz

While ranchers, merchants and mestizos received a full compensation for their property, the transportation, new housing and other services in the area of relocation were deduced to the Mazatec. When the relocation was over, tyrant chiefs quickly resumed their dominant position in the local economy, by 1977 over 70% of the original settlers had no land (Ewell & Poleman 1980).

Despite the Chinantec and the Mazatec people did not share the same culture or the same language, for centuries they were sister communities and the tragic story of the Mazatec relocation was very well known. Thus by 1972, opposition to the Cerro de Oro dam project had been a key point in all political campaigns for almost a generation (Ewell & Poleman 1980).

In March 1972, during the celebrations of the "Juarez" year, President Luis Echeverria paid a visit to the cities Tuxtepec and Tlacotalpan, in Veracruz. There he faced an anti-dam committee formed by the livestock association, the small landowners association, the sugar cane growers association, the local chamber of commerce and the Lions club[14], despite the opposition the president reiterated that the dam was going to be build (Ewell & Poleman 1980).

An emotional-religious movement began in 1972 when the Virgin of Guadalupe (Mexico´s patron saint) appeared to a Campesino man in a mountain´s cave. He stated that the Virgin came to protect the Chinantec against the Cerro de Oro project because she did not want the Chinantec to suffer what their Mazatec brothers had suffered from. People went to the cave to light candles and pray. Months after the same Campesino stated that an angel had appeared, who claimed to be God´s engineer. He stated that the dam´s building was technically impossible (Bartolomé & Barabas 1990; Ewell & Poleman 1980).

In July 1973 6,000 smallholders, affected by the construction of the Cerro de Oro, complained to Mr. Pedro Rodriguez Sierra, the first member of the Human Relations Commission of the SRH. They appealed that the area to be flooded contained 250,000 pieces of cattle and offered successful annual crops. Each year 330,000 tons of pineapples, 30,000 tons of bananas, 30,000 tons of gum, 1,000,000 tons of sugar canes, 10,000 tons of grapefruits, 2,000 tons of tobacco and 1,000,000 boxes of mango were harvested. This embodied decades of work that would be lost with the construction of the dam. The official replied that the construction of the two dams had been decided 20 years ago to prevent flooding, and the construction of Cerro de Oro would not stop the development of that area (Tiempo, 9 July, 1973).

At the beginning of the clearings in the town Poblado 6, villagers protested against them, claiming that the process took away all first class organic matter and left behind only second and third class organic matter (de-Teresa- Ochoa y Hernández 2000). CODELPA ignored those claims and the desmonte program continued.

[14] Lion´s Club International - Internationally spread service club, founded in Chicago (IL,USA) June 7th, 1917

Academic opposition

While the Uxpanapa draft unfolded, the Institute of Biology of the UNAM (IBUNAM) and the Veracruz University (UV) were conducting ecology, botany and human ecology studies the in the region (Toledo, 1978).

On January 5, 1973, a letter signed by Dr. Gómez-Pompa, M.Sc Antonio Lot-Helgueras, Biol. Jesús Orantes-López and Biol. Mario Vásquez-Torres was delivered to President Luis Echeverria Alvarez. The letter stated that over the last eight years researchers have been making flora and fauna lists of the southern part of the Veracruz state and they considered that the Uxpanapa region was one of the last and least known natural reserves in the country. Therefore they gave a series of recommendations to perform the desmontes, which would guarantee the permanence of that natural zone (Gómez-Pompa et al. 1972).

Researcher's recommendations

1. Preserve as many areas of intact rainforest as possible.

2. Make a minimal and gradual clearance, according with the needs of the indigenous population.

3. Clearance should be done by hand and only with light instruments instead of heavy machinery, in order to prevent deterioration of the already fragile soils of the region.

4. The implementation of a vigorous plan of basic and applied research, in order to exercise new ways of exploiting the forest, which would run according to the needs and experience of the indigenous population.

On October 12th in 1974, Dr. Gómez-Pompa condemned that the CODELPA only ignored the given advice, especially the one about doing the clearings by hand. He also pointed out that most Campesinos were against the mass clearings because it made it impossible for them to grow crops on their own. He also declared that they envisage the clear land to turn into acahual, just like it happened in the Chontalpa region (Exélsior, 1974).

Thanks to the letter, a series of meetings with officials of the SRH, the CODELPA and the National Council of Science and Technology (CONACYT) were held. Within these meetings IBUNAM researchers were asked to propose a research project for the region, which would contemplate the concerns expressed and secondly make recommendations for the project that had already started (Gómez-Pompa, 1979).

But because of some changes in the CODELPA staff and the CONACYT, the IBUNAM project did not start until 1975 (Gómez-Pompa, 1979).

As the IBUNAM investigations in Uxpanapa developed, disagreements about the proper development model arouse and became increasingly irreconcilable. Consequently the proposal for further IBUNAM work and studies was rejected by the responsible of Uxpanapa, which caused many investigations to be left unfinished (Gómez-Pompa, 1979).

While this was itself a negative fact, the decision propelled the desire in researchers to conduct similar research on similar programs in other parts of the Mexican republic, as in the Plan Chontalpa and the Plan Balancan-Tenosique (Gómez-Pompa, 1979).

Researchers in collaboration with the CONACYT also made a documentary for television, which harshly criticized the CODELPA and the development plan for Uxpanapa (Ewell & Poleman 1980).

In 1975 Gómez-Pompa stated: "Sadly Uxpanapa will go down in history as a region that could have incorporated in an organized manner to the national development but unfortunately decisions were taken without taking the potential use of wild resources into account, which exist in the region" (Ewell & Poleman 1980).

Soon after the release of the documentary and the publication of Dr. Gómez-Pompa statements in national newspapers, Dr. Gómez-Pompa received phone calls threatening him, his family and his students. Literally he was told "if you do not keep silence, you will suffer consequences" (Gómez-Pompa, 2011).

In 1975 after Dr. Gómez-Pompa and his team left the Uxpanapa region, U.S. researchers Peter T. Ewell and Thomas Poleman arrived to Uxpanpa with the objective to study and evaluate the agronomic development of the area (Ewell & Poleman 1980).

In 1979, Dr. Gómez-Pompa declared that the research work and the recommendations conducted by the IBUNAM about Uxpanapa were misunderstood, overrated and ignored on purpose. But still, even after the announcement to increase the original clearing area, it was possible to correct the path taken (Gómez-Pompa, 1979). Nothing happened.

Despite the Mexican government handled criticism in a very open way at first, its behavior changed. The threatening phone calls made to Dr. Gómez Pompa only adds to the suspicion that unknown hidden powers enforced the instrumentation of the PRONADE and similar programs.

CODELPA reaction to criticisms

After the people´s opposition and the criticism of the IBUNAM researchers, the CODELPA adopted a very defensive attitude and decided to centralize the project management into the hands of its own staff. These actions marked the beginning of the closed-mindedness that characterized the Uxpanapa program (Ewell & Poleman 1980).

From the beginning CODELPA technicians believed that the IBUNAM proposals were totally impractical and felt personally threatened by the public opposition. Closing its doors and relying only on its own staff allowed the CODELPA to simplify administration and proceed according to the original plan (Ewell & Poleman 1980).

Technicians had the idea, that if they could manage to make the area productive, all work would be justified and costs details and yields would be seen as a real and positive experience. They felt that unlike the Temascal relocation, the Uxpanapa case had found the right solution to a relocation, which if had not justified as a mega development project; it would not have had a budget (Ewell & Poleman 1980).

Like the CRG in the PCh, the CODELPA had extraordinary political and administrative power in Uxpanapa. Actually bigger than any secretary of state, this turned Uxpanapa in some way into a state within the Mexican state. Initially the delivery of basic education and basic health services was in the hands of CODELPA.

As if it was a strategic war zone, the region of Uxpanapa could not be visited without a pass issued by the CODELPA. Identity cards for the Campesinos were also issued and it was very difficult to get permission to receive visits from friends or relatives (Toledo, 1978; Ewell & Poleman 1980).

The control of the area was run by the unconstitutional “Hydraulic Police", an army brigade, which was introduced under the pretext to protect the area from the invasion of landless Campesinos, before the relocation was over. Therefore the only way to get information about what was happening was through rumors, informal conversations and newspaper articles, it was often commented that it was easier to cross the U.S. border than going to Uxpanapa (Toledo, 1978; Ewell & Poleman 1980).

It is likely that the real reason behind the existence of the “Hydraulic Police" was to prevent any popular uprising against the project, like the one in PCh.

Corruption

When interviewees and others were questioned if they considered whether there was corruption within the PRONADE, Uxpanapa or the PCh, there was an agreement on a negative answer, arguing that those technicians who worked in the programs were actually convinced their way was the right way and were completely committed to it.

At the same time, it was mentioned that the only situation that could have been considered as a corruption case, was that the companies contracted for the clearing added an average of 10 to 15% to their rates, but this is a common situation in any building work that is contracted.

However, some of the documents about Uxpanapa found in the AHA, show some irregular processes, which could be considered as corruption.

For example, the official document 5-74-110 called attention to the CODELPA for having paid 100,000 *pesos* to citizen Jacinto Lopez Modesto for the clearing of 180 ha in the Ejido El Moral, Veracruz. This despite he did not finish the works within the official time period of 76 days after June 17, 1974 and the fact that he was hired without making any contest as required in the PRONADE operation rules (Archivo Historico del Agua, 6).

In response the CODELPA argued that the reason it did so, was that the rainy season was very close and someone had to be hired urgently without any kind of competitive process, it is also argued that the same rain season stopped the clearing works and that is why they were not completed within the deadline (Archivo Historico del Agua, 6).

A similar case is pointed out in another document by the *office for contract inspection and public works of the secretary of national assets*. This time Engineer Oscar Garcia de Anda was hired without a contest and received a payment of 2,000,000 *pesos* on July 10th, 1976. (Archivo Historico del Agua, 7). No documents describing any further legal action were found in the AHA. So it is impossible to infer how these cases concluded.

Acculturation

The CODELPA built a brand new social and economic order in Uxpanapa (Ewell & Poleman 1980).

Because the relocation was done through a lottery, the new arrangement ignored previous rivalries between communities, religious affiliation and ethnicity (Guzmán-Chávez, 1999). Entire families were split, but since Campesinos did not want to live among strangers with different language and customs, many swapped their homes (Ewell & Poleman 1980; Weinberg, 2000).

In addition, from 1973 to 1982, several Indio and Mestizo groups established in Uxpanapa: Mestizo (Origin: Oaxaca, Guerrero, Puebla and Veracruz), Nahua (Origin: Zongolica), Otomies (Origin: Huayacocotla and Chicontepec), Popolucas, Tojabales, Totonac and Zoques (all from Chiapas). Different from all those groups were the bureaucrats and teachers brought by the CODELPA (Guzmán-Chávez, 1999). The new multicultural character of the territory only exacerbated the problems between neighbors (Ewell & Poleman 1980).

The Chinantec culture, with more than 1,500 years of existence, had specialized knowledge for a rational exploitation of the tropical forest, it recognized ecoregions and had its own classification of soils. Also, before using any environmental service, people had to ask permission to a protector Chaneque[15]. Soon that knowledge disappeared and many acquired the conception that the tropical forest is only worthy to raise livestock and extract valuable woods (Aguilera-Reyes, 2004).

Cultural conflicts also caused the abandonment of cultural manifestations as the use of traditional dresses and the interest in talking Chinanteco (Aguilera-Reyes, 2004).

One of the most pronounced effects was the creation of privileged sectors, some Chinanteco imposed as the regional oligarchy in association with Mestizo groups, cattle raisers, citrus fruit and rubber growers. This increased competition, regional conflicts and inequality between regions (Guzmán-Chávez, 1999).

[15]Chaneque.- Mexican goblin-like mythological creatures, guardians of the forest and wild life

CODELPA abandonment of the project

In 1982, after eight agricultural cycles CODELPA recognized the failure of the Uxpanapa project. In fact of 11,240 ha only 26.4% were under agricultural production (de-Teresa-Ochoa & Hernández 2000).

By 1984, citing *the experiences and results of agricultural experimental work* (sic) within the region, the CODELPA technicians concluded that in Uxpanapa agriculture should only be practiced as a subsistence activity, while cattle raising should be promoted as the main productive activity (de-Teresa-Ochoa & Hernández 2000).

In 1986 after numerous protests the CODELPA completed the construction of several works. Also towns were elevated to the political range of congregations. In that same year the CODELPA disappeared, leaving a vacuum of power and unfulfilled promises of development. Most of the housing works were left unfinished and the third stage of the project was never carried out (Guzmán-Chávez, 1999).

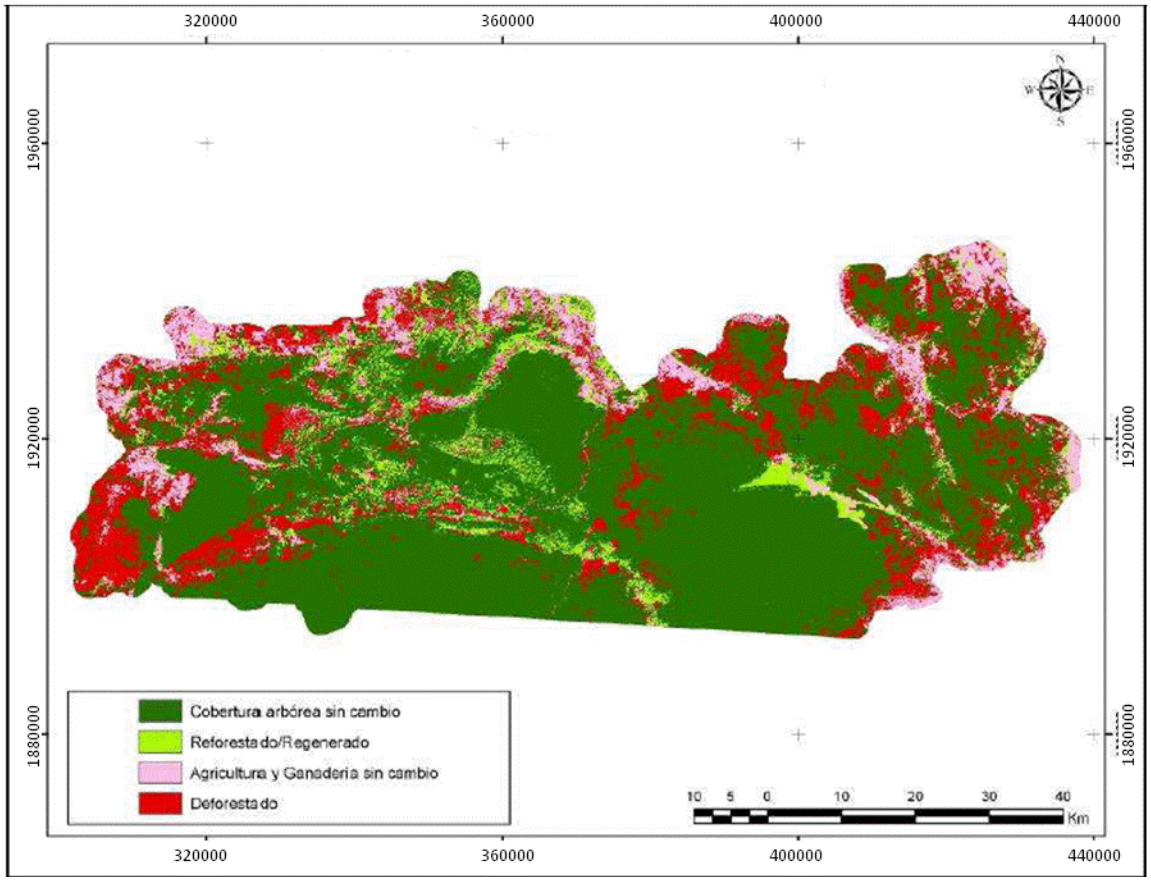
In 1995, almost 20 years after the start of the relocation, a monetary compensation to some affected was paid, with money belonging to a 1975 NAFIN special account. For some other families a compensation for their belongings was never delivered (de-Teresa-Ochoa & Hernández 2000).

After the collapse of the development program most of the land became devoted to cattle ranching. Grasslands are kept open with the use of aggressive techniques, like the cutting down and burning of forests. Wildlife that affected cattle, like the jaguar, **was** called “harmful” and viciously chased (Del-Castillo, 2010).

After these processes Uxpanapa valley joined the list of insolvent communities. With this denomination loans, credits and supports are suspended, except those coming from the INI (Guzmán-Chávez, 1999).

By the mid-1990s 160,900 ha were already deforested in the Uxpanapa region, almost twice the area projected by the original desmonte plans (de-Teresa- Ochoa & Hernández 2000) (Figure 19).

Figure 18.- Change in forest cover from 1972 to 1990 in the region Uxpanapa, Veracruz



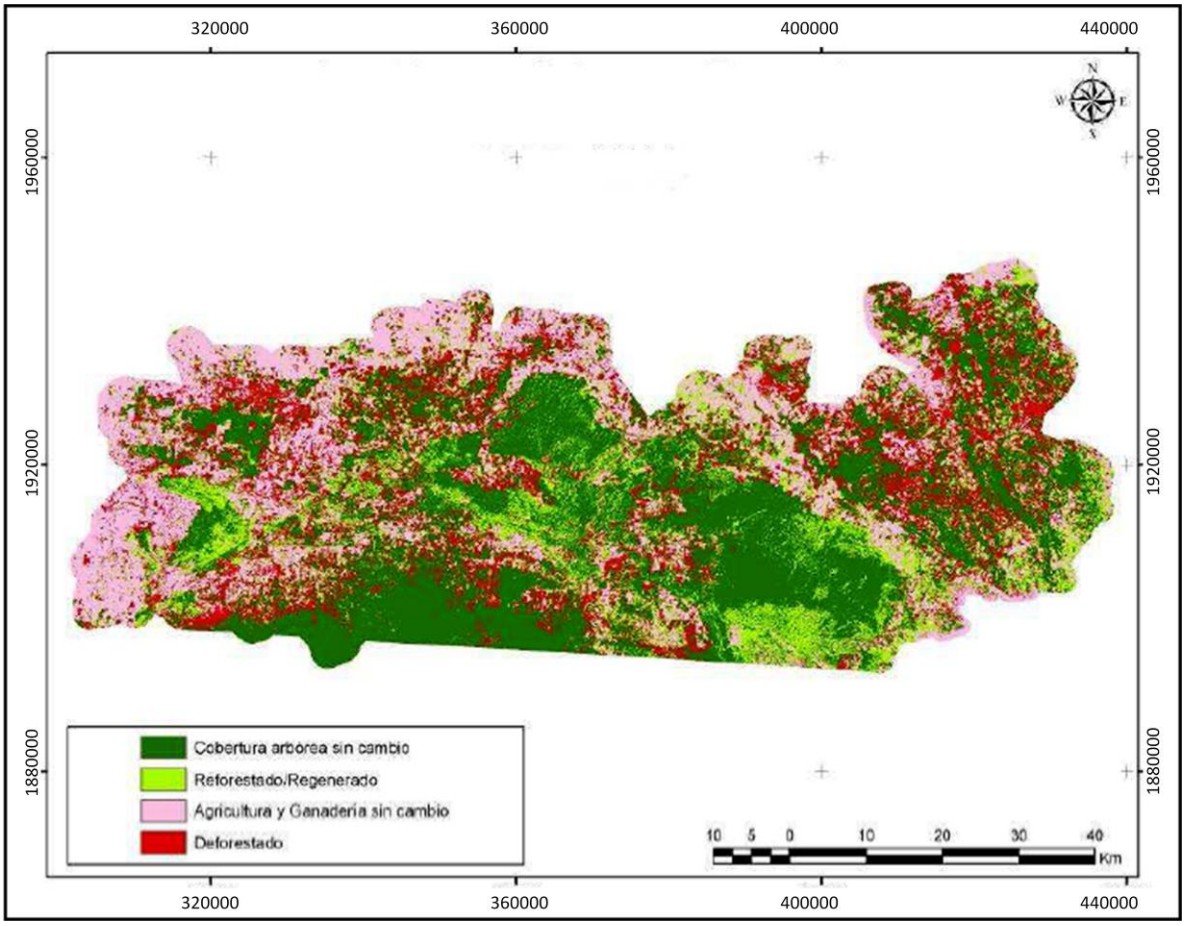
Source: Hernández-Gómez et al. 2011

Uxpanapa today

Currently in Uxpanapa one cannot see the vegetation that had once been a tropical forest, now there are only acahuales, rocky soils, and minimal vegetation (Carvajal, 2011). There have also been conflicts between Ejidos due to the water scarcity (de-Teres-Ochoa & Hernandez 2000).

The Uxpanapa area now covers 194,179 ha, 653,035 ha more than the initial project (260,000) had forecasted, because the spontaneous settlement has gone far beyond the model of agricultural colonization (Hernández-Gómez et al. 2011).

Figure 19.- Change in forest cover from 2000 to 2009 in the region Uxpanapa, Veracruz



Source: Hernández-Gómez et al. 2011

Now 17% of the area is devoted to agriculture, 53.7% for cattle ranching, 21.8% for forestry use and the original tropical forest remains only in dispersed patches (Velasco-Toro, 1993).

Unofficially, the government has conceded right to the IBUNAM researchers that promptly warned against the desmonte. But still the government has not given any sign to want to compensate for the damage done (Restrepo, 2009).

Several urban infrastructure works to this day are still unfinished, the drainage and sewage networks, potable water system has a very small range reaching only a few homes, the electricity supply is irregular and most villages lack of sidewalks, post office and recreation areas (En Privado, n.d).

People's movement continues

In 1981, the third president of the Ejidos association and regional representative of the CNC, Mr. Juan Zamora Gonzáles, had a more critical stand than his predecessors. He took over the CODELPA facilities and requested the compliance of the development promises signed in the presidential decrees. Years later in Isla-Veracruz he came across with the then president of the republic Carlos Salinas de Gortari and requested him to enforce the decrees, but nothing was accomplished (Guzmán-Chávez, 1999).

Inspired by the indigenous Zapatista rebellion of 1994, people in Uxpanapa began to speak about autonomy as a part of an ethnic vindication discourse (Guzmán-Chávez, 1999).

On May 2nd in 1995 the hydroelectric facilities of the Cerro de Oro-Temascal dam were taken over by Uxpanapa inhabitants. Shortly after the leaders, Juan Zamora Gonzáles and his brother Marcos, were arrested and charged with assault and deprivation of liberty against the dam technicians as well as sabotage, damage to the nation, attempted murder and possession of assault weapon (Guzmán-Chávez, 1999).

Juan Zamora was left isolated and tortured for eight days before he was transferred to the Allende prison of Veracruz. His arrest lasted two years and finally Juan Zamora was cleared of all crimes and released (En Privado, n.d).

On February 1st and 2nd in 1997 the First Regional Forum on Human Rights and Ecology in Uxpanapa Valley was carried out, where the request to become an autonomous municipality was ratified (Guzmán-Chávez, 1999).

On May 15th in 1997 the creation of the Uxpanapa autonomous municipality was approved. Finally, on January 28th in 1997 the LVII Legislature of the Veracruz State Congress recognized the creation of the Uxpanapa autonomous municipality, culminating years of struggle and giving the Chinanteco back their legal unit (Guzmán-Chávez, 1999).

While in prison Juan Zamora Gonzáles gave the leadership to his son Juan Pablo Zamora Bonilla, a law student at the UV. Juan Pablo registered the Uxpanapa Indigenous Council (CIUX) at the Ministry of Foreign Affairs in order legalize the movement and continue the fight of his fellow countrymen (En Privado, n.d.).

On September 20, 2005 Juan Zamora González, filed a demand for 3,500,000 *pesos* (about 190 thousand Euros) to the District 40 Agrarian Tribunal (TUA), headquartered in San Andres Tuxtla, Veracruz, to obtain compensation for land flooded and the unfinished construction works promised in the presidential resolution of April 4,1978 and other presidential decrees published on various dates prior to 1976. The lawsuit was filed under case 566/05 (En Privado, n.d).

Campesinos also argued that despite the government claims that 85,000 ha in Uxpanapa were suitable for agriculture, in fact only 10% of the total 260,000 total land in Uxpanapa served for that purpose and those were still of a lower quality than the ones they possessed in Oaxaca (Restrepo, 2009).

On June 15th in 2009 Judge Cobos-Lima, head of the District No. 40 Agrarian, determined that the Campesino demand was inadmissible, arguing that Campesinos lacked of any competency to sue. The decision was taken despite the fact that the official expert's report had a positive outcome for the Campesinos. During the whole trial, the judge showed a racist attitude, and made countless derogatory comments (En Privado, n.d.).

The day of the resolution the judge slapped Ms. Petronila Castro Miguel in the face and yelled to the assistants "Go away from here, you are only Indians who know nothing about the law, this office is not yours, you do not know what will happen here." (En Privado, n.d.).

On May 14th in 2009 the Judge once again expressed his mind when he said: "What rights? What the fuck? What you deserve is jail because you are some ungrateful Indians, with a government that has given you everything“ (Coalición Internacional para el Hábitat, 2010).

After these events, in August 2009 the Uxpanapa Campesinos contacted United Nations Special Rapporteur on the right to food, the one on adequate housing, the one on the rights of indigenous peoples, the one on the Independence of Judges and Lawyers, to denounce the several human right violations that they been subjected, since the beginning of the Cerro de Oro dam construction “(Coalición Internacional para el Hábitat, 2010).

On May 5th 2010 Pablo Zamora junior, Juan Pablo Zamora grandson, as a form of retaliation, was murder by a hitman hired by the cattle rancher Gerardo Cruz (Cruz, 2010).

The community of Uxpanapa has also joined the Mexican Movement of People Affected by Dams and pro the Defense of Rivers (MAPDER), an institution created in 2004 (En Privado, n.d).

They are also part of the National Indigenous Congress (CNI). to the and the Indigenous Zapatista Agrarian Movement (MAIZ) and the Campesino and Indigenous People's Alliance for Veracruz (ALICAPVER) (En Privado, n.d).

They have also constituted a community radio station, which belongs to the national network of community radios, which fights for the recognition of indigenous people rights, to establish their own media (Trujillo-Báez, 2010).

Los Naranjos

As this author corroborated in the AHA, besides the Uxpanapa Valley, the CODELPA administered the Naranjos relocation zone and the VII Rainfed Agricultural District. In which made several clearing works were also done with the founding of the PRONADE.

The Naranjos relocation zone is located within the Veracruz portion of the Papaloapan Basin, between the parallels Lat. N 18 ° 18 'and 18 ° 31' and Long., W 96 ° 07 'and 96 ° 14', at an average height of 30 m a.s.l. It comprises two units (Archivo Historico del Agua, 8):

- The Naranjos Unit, in the municipality of Tierra Blanca, Veracruz, with an area of 4,611 ha, comprises the Ejidos of suburbs Ideal de Arriba, Ideal de Abajo and Villa de Ojitlán. The Naranjos Unit is limited to the north by the Seco creek and the river La Estanzuela, south by the Mondongo and Hondo streams, to the west borders by the residential area Nueva Esperanza and to the east by private lands and Ejido Mazamila.

- The Nopaltepec Unit, in the municipality of Cosamaloapan, Veracruz, with an area of 887 ha, includes the Ejidos Mondongo, Los Ángeles, Pueblo Nuevo, La Asunción, Platanal and Piedras Blancas. The unit is limited to the north by the Ejidos Naranjo, Colonia Palmarillo, El Arroyo, El Zapote and private lands, to the south by the Ejidos Loma, San Juan, Colonia Emiliano Zapata, Ejidos la Libertad, el Coyol and Noapaltepec, to the west by the rail road Tres Valles Naranjos and to the east by the Ejido Nopaltepec and private lands.

This research was not able to confirm the original extension forest in los Naranjos. But it is fact that by 1978 a lot of the area had been cleared and only 3,000 ha of tropical forest remained. Agricultural production began in Los Naranjos in the 78/78 spring-summer agricultural cycle with the planting of corn, rice and sugar cane. The pasture area remained constant during 1979 and 1980 (Archivo Historico del Agua, 8).

By 1981 the CODELPA hired the FACSA company to clear 2,150 ha of remnant vegetation in the area. By February 1982 the companies ARCOBI, SESA and FACSA, completed the clearing of 3,549 ha of tropical forest in Los Naranjos. But not all the clearing work was followed by wood harvest, derooting and deep harrowing activities (Archivo Historico del Agua, 9).

VII Rainfed Agricultural District

The Rainfed Agricultural District VII is located in the Veracruz portion of the Papaloapan River Basin. It has an area of 2,054,990 ha, of which in the decade of 1970´s 446,412 were used for agriculture, 789,143 ha for cattle ranching, with induced and natural grassland, 129,649 ha for forestry, 213,596 of marsh, 151,000 ha for urban infrastructure and 324 896 ha for industrial purposes (Archivo Historico del Agua, 10; Archivo Historico del Agua, 11).

The CODELPA divided the area into six artificial units, which in turn were subdivided into sections represented by Ejidos or villages (Archivo Historico del Agua, 10; Archivo Historico del Agua, 11):

- ACAYUCAN: Acayucan Zone, San Juan Evangelista, Sayula de Alemán
- THE TUXTLAS: Hueyapan, San Andrés Tuxtla, Santiago Tuxtla and Ángel R. Cabada
- ISLAND: Rodríguez Clara, Isla and Playa Vicente
- COSAMALOAPAN: Chacaltianguis, Cosamaloapan and Tierra Blanca
- ALVARADO: Ixmatlahuacan, Tlalixcoyan and Ignacio de la Llave
- ORIZABA: Córdoba, Zongolica, Acultzingo and Maltrata

Unlike the Uxpanapa Valley, most of these places had a long history of continuous occupation of at least 4000 years (Laborde, 2004).

In March 1981 the technical committee of the base camp Miguel Alemán approved the clearing of 5,895 ha and the mechanization of 86,245 ha in the area with the funding of FOIRE (Archivo Historico del Agua, 10). On December 2, 1982 the CODELPA proposed to clear 6,046 ha in the municipalities of Talixcoyan and Ignacio de la Llave (Archivo Historico del Agua, 11).

Despite the area of the VII Rainfed Agricultural District is much bigger than the one in Uxpanapa, still no research focusing on the clearing of the area has been conducted. So the total magnitude of the desmontes there is still unknown.

V. International Influence

The PRONADE, Uxpanapa and Plan Chontalpa are ideologically grounded on the theory of economic planning. The planning process includes the planning of all economic activity and production is organized for consumption (Leyva-Peña, 1970).

The Soviet Union was the first country to make a systematic planning of its economic development. After World War II western countries also began to plan their economic activity. Europe adopted the Marshall Plan (officially called European Recovery Program or ERP), a plan created by the U.S. for the reconstruction of European countries. France adopted the Plan Monet to recover its industrial capacity, while Israel adopted measures of collective organization in the countryside (Leyva-Peña, 1970).

The first time when economics were planed regionally on the American continent was with the Tennessee Valley Authority (TVA) in the USA (Leyva-Peña, 1970).

Since the 1940s Mexico started to implement various regional planning programs that intended to control rivers and irrigate lands. Further intentions were the generation of electricity, the supply of drinking water, the building of roads and railways, the habilitation of harbors and the establishment of new population centers. All the activities intended to promote economic development and to improve the living standards of the most backward populations (Leyva-Peña, 1970).

By presidential decree in March 1971 an inter-ministerial commission, formed by the secretary of the presidency and the SHCP, was created. It was responsible for formulating national plans for economic and social development in the short and long term. The planning of the country also included the consideration of regional plans in locations that most urgently needed governmental assistance (Leyva-Peña, 1970).

The CODELPA was created in 1947 and it was the first regional development agency in the tropics of Mexico. While the CRG was created in 1949 but really did not start activities until late the 1950s. All planners involved in the early stages of the projects shared the same a broad vision of social and agricultural development (Ewell & Poleman 1980).

The Green Revolution

In addition to economic planning, the implementation of these programs must be understood within the birth and establishment of the Green Revolution as a new paradigm of agricultural production. Starting in the 1950's "developing" countries of Asia and Latin America began to suffer of a growing dependency on food (Hazell, 2009). Numerous peasant revolts arouse of the communist-socialist type and the social movement intensified in the decade of 1970 (Wolford, 2010).

An example is the 1959 Cuban revolution whose progressive or radical social reforms threatened the balance of power in the Western Hemisphere. It was argued that one way to contain those rural insurgencies in countries like Mexico and India was to generate a comprehensive agrarian reform (Wolford, 2010).

According to the CIES, a comprehensive agrarian reform had to increase production and productivity, formulate a clear policy for agricultural development, make a rational use of land, create basic infrastructure, give the producers capacity to obtain inputs, increase income of the population through the adjustment of prices and diversification of activities, creation of rural industries and the integration of national markets products. Among the most urgent practical measures was governmental intervention for land clearing and pasture establishment at low prices (Téran-y-Téran et al. 1972).

The comprehensive agrarian reform had to improve social justice, but at the same time it had to preserve capital accumulation.

In response the U.S. government, the Rockefeller Foundation and Ford Foundation undertook the task to establish an agricultural research agenda that would bring technology and scientific advances to the developing countries. In theory these actions would bring economic benefits to rural communities (Hazell, 2009).

Joint research programs were established in several Asian countries and Mexico. The agenda included the involvement of ministries, universities, research institutes, extension services of the developing countries, which also had to provide subsidies (Wolford, 2010). Originally the term "Green Revolution" referred only to the development of high yielding varieties of wheat, rice, maize, sorghum, beans and millet. Nowadays the term represents a series of more complex management practices (Hazell, 2009).

The term "Green Revolution" was coined in 1968 in a speech given by William S. Gaud, the administrator of the USAID at that time, to contrast with the term "Red Revolution". The reason was that it not only sought to increase grain production, the Green Revolution was a strategy to pacify, contain and crush the peasant uprisings, which were supposedly incited by the Soviet Union that was capitalizing on the poverty of developing countries (Cleaver, 1985; Hazell, 2009).

The Green Revolution would not only appease the crisis in many countries, it would also bring countries into the sphere of influence and ensure a market for pesticides and fertilizers. As seen above, the Green Revolution, as a development policy, was the result of the influence of international interest groups with political and economic historical power (Wolford, 2010).

Then the enthusiastic application of PRONADE and its sister programs Uxpanapa and PCh correspond to the application of the technological and ideological model of the Green Revolution in Mexico (Pare, 1976). Country in which then did not lacked of rural guerrillas, like the one led by Lucio Cabañas and Genaro Vásquez in the state of Guerrero (Bartra, 2000)

Multilateral Development Banks

As noted above, part of the capital incurred in Uxpanapa and Chontalpa came from international loans, the first from the World Bank (WB) and second from the Inter-American Development Bank (IDB).

These institutions are part of the multilateral development banks (MDBs), international public institutions that grant loans of billions of dollars annually for development projects. Besides the WB and the IDB, are the International Monetary Fund, the European Bank for Reconstruction and Development, the African Development Bank and the Asian Development Bank (Velázquez-Torres, 1997; Velázquez-Torres, 2006; frentebid2009, 2009).

Their role in financing gives them enormous power to influence the policy and the development model of the lender countries. The MDBs look forward to integrate lender economies to the international markets and export (Velázquez-Torres, 1997).

As a result, in the second half of the past century the MDBs have been promoting economic inefficiency and environmental destruction through deforestation, since many of the development projects would have not occurred without subsidies (Rich, 1995 ; Velasco-Toro, 1997).

One of the most notorious and destructive of these programs was the one of trans-migration in Indonesia, where the WB provided 560 million dollars, in seven loans to move landless people from the densely populated inner islands, such as Java and Bali, to Papua, Kalimantan, Sumatra and Sulawesi; islands that were sparsely populated by natives and were covered with virgin forest with the argument of make a better use of natural resources (Fearnside, 1997).

Over 500,000 families were relocated and another 500,000 emigrated spontaneously during the 1980´s. Since then, over 4.5 million people had colonized the tropical forests, resulting in the deforestation of at least two million ha of wood, ethnic problems have also increased due to the imposition of the Java culture in the new territories (Fearnside, 1997).

Voices form a number of environmental groups, both academic and non-governmental organizations criticized the result of these policies. As a result of the pressure the U.S. Congress and Senate held a series of hearings between 1983 to 1985 concerning the disastrous environmental effects of the large scale development projects conducted by the WB and other MDBs (Bowles & Kormos 1995).

The hearings concluded, that the MDBs financed large-scale projects ecologically and culturally damaging, without the consideration of alternatives that could be environmentally beneficial and in some cases, economically less risky (Bowles & Kormos 1995).

Economic sanctions were imposed to the MDBs, they were also encouraged to inform local communities and non-governmental institutions of their activities, make assessments of their current projects and make environmental impact assessments prior to financing projects (Bowles & Kormos 1995).

After the strong criticism the president of the WB decided to establish environmental conditions for all projects. He also increased the number of staff from seven to 23 in the Office of Environmental and Scientific Affairs. Since then the environmental unit of the MDB´s has been the sector with the most growth in terms of staff and budget (Velázquez-Torres, 1997).

But the reports are not encouraging, since environmental offices have been relegated to only advisory role and have no real decision-making capacity (Bowles & Kormos 1995).

While these actions denote an acceptance of blame from the MDBs in global deforestation, particularly in developing countries, the subliminal message remains that, despite the negative effects, these actions have been worthy, since they have brought development to these areas (Velázquez-Torres, 1997).

But since the study cases clearly show life conditions on those areas have only gotten worse and damage repair need work is desperately needed. A true form of redemption for the MDBs would be the forgiveness or reduction of debt result of these so destructive programs. While it is obvious that the MDBs will never be willing to do this action, it is the job of NGOs[16] and people interested in the conservation to demand for it and make it real.

[16] NGO - Non Governmental Organisation

VI. National motivation

To understand the motivation behind programs like the PRONADE, it is important not only to focus on the international influence but also on the national motivation in Mexico.

In that time it was imperative to open more land for cultivation and apply the technology packages of the Green Revolution. This need to increase production is often analyzed as the result of Mexico's attempt to feed an increasing population.

But in reality the introduction of the Green Revolution matches with the decline of food production in Mexico, to know why, it is important to learn a bit of the Mexican history (Sonnenfeld, 1992).

Mexico's agricultural sector has always been polarized into two extremes, rich and big landlords against poor and small Campesinos (Ewell & Poleman 1980).

First one must understand that in Mexico the term "Campesino" is neither equivalent to the European terms "Peasant" or "Bauer" nor to the American or Australian expression "Farmer". The term Campesino refers to smallholders, leaseholders, Ejidatarios, rural workers and landless residents, usually of indigenous or Mestizo decent. On average they work in small plots, not bigger than three hectares, producing for family consumption and sell their surplus to the market at a fraction of its value (Feder, 1981).

The landlords however are people generally of Spanish descent, who own and manage large tracts of land of hundreds to thousands of hectares, very similar to feudal estates. The servants or laborers were not fully free and neither did enjoy hiring. In Mexico these feudal estates adopted the form of haciendas, hatos and estancias. These feudal states possess characteristics such as low yields, "underutilized" land, and low-technology levels.

President Benito Juárez (term: 1858-1864) enacted the reforms laws that sought to broke the local feudal structure by establishing individual ownership of land. While Juarez tried to create laws to improve the position of the poor, his successor, Porfirio Diaz (term: 1876-1911), favored the elites to deprive Campesinos of their land and enlarge feudal estates to immense proportions (Ewell & Poleman 1980).

The Mexican Revolution began in 1910 and was led by Emiliano Zapata and Francisco Villa. It sought to regain land stolen by the landlords and return them to the Campesino community, where resources would be managed by a council of elders (Martínez-Saldaña, 1991).

Despite that Villa and Zapata were defeated; their ideas were imprinted in the constitution of 1917, determining the institutional structure of the post revolucionaria society. The demand for land restitution was resolved through the establishment of the Ejido system and the agrarian reform began (Ewell & Poleman 1980; Martínez-Saldaña, 1991).

Ejidos are communal properties in which members have usufruct rights, usually in the form of a parcel of land. The term refers not only to land but also the community of Campesinos who possess it. The Ejido as a social institution has its own structures: The general assembly, a board of government members, a monitoring committee and, under certain circumstances, a partnership of credit (Stavenhagen, 1975).

The land is divided into individually operated agricultural lands and non-agricultural land (pastures, forests and other types) that can only be exploited communally. The plots cannot be bought, sold, mortgaged, leased or transferred. The only way to obtain ownership rights is through inheritance. These restrictions were designed to prevent the monopolizing of the renewed land and to protect the beneficiaries of the land reform and the Ejido community as a whole (Stavenhagen, 1975).

The postrevolutionary governments of Venustiano Carranza (term: 1917-1920), Alvaro Obregon (term: 1920-1924), and Plutarco Elias Calles (1924-1928) only distributed the haciendas of their political enemies and did not touch the capital of business. They were acting as a kind of sequel to the Porfirio Diaz legislature and the agricultural policy of the 19th century, with some little exceptions (Martínez-Saldaña, 1991).

By 1930 the situation generated a lack of hard currency, falling markets, poverty in the Treasury and growing unrest in rural areas like Veracruz and San Luis Potosi, which indicated the need for a modification and modernization of the system (Martínez-Saldaña, 1991).

In this context emerged a moderate faction of land reform supporters, who opposed the radical leftist leaders and their demand of the total distribution of Mexico. On the other hand they opposed the right winged group that wanted to stop the distribution of land. The moderate faction of agrarians was led by General Lázaro Cárdenas del Río who became México´s president in 1934 (Martínez-Saldaña, 1991).

President Cárdenas (term: 1934-1940) made rural development one of the basic topics of his administration. He accelerated the process of land reform and redistributed, in the six years of his term, three times the amount of land that his predecessors had distributed in the past 20 years. Between 1930 and 1940, the proportion of total arable land in the Ejidos increased from 13 to 48% and the number of landless people declined from 68 to 36% (Ewell & Poleman 1980).

In 1937 Cárdenas restored the official bank for rural areas, which had disappeared during the revolution under the name**s** of the National Ejido Credit Bank and Agricultural Credit Bank, to support Ejidos and small landholders. In addition to the credit, Ejido health services and rural technical schools were created. Additionally he transformed the National Agrarian Commission into the Department of Agrarian Affairs and Colonization (DAAC) (Martínez-Saldaña, 1991).

For the first time in México, the Ejidos were chosen as the way for agricultural development and the so far **dominant** hacienda system was neglected. So in fact Cárdenas modified the country in six years more than the liberal reform and armed revolutionary movement ever did (Martínez-Saldaña, 1991). It seems that during this time the expansion of the agricultural frontier was not at the expense of forest areas (Villafuerte et al. 1997).

While this policy of active government involvement modified the structure of domination in the country, the strong government intervention later became the standard policy, even when policies turned against the interests of Campesinos (Martinez -Saldaña, 1991).

The Cárdenas model of agricultural production, made by the Mexican Revolution agrarian reform, was one of the most successful of the 20th century. With the peasantization of the countryside, Campesinos were able to produce food for themselves and the nearby markets. They did it with such a success, that they were given the task of producing basic grains for popular consumption. A task that they fulfilled until the Cárdenas model was destroyed 30 years later (Martínez-Saldaña, 1991: Barkin, 2002).

Starting with the government of president Manuel Avila Camacho (1940-1946), the power of capital stroked back and agricultural support took a 180° turn. Financial support was now only given to private companies and industrialization was promoted as the way to "development". Many of these supported entrepreneurs supported were the descendants of the landlords expropriated by Cárdenas (Ewell & Poleman 1980; Martínez-Saldaña, 1991).

Although distorted by a state policy of buying at low prices, an ineffective technical apparatus, the lack of credit and no specifically research to support, the Cárdenas sytem remained effective. Mexican Campesinos achieved food self-sufficiency for the country and also a significant increase in nutritional levels of almost all social groups in need (Martínez-Saldaña, 1991; Barkin, 2002).

It took until the mid 1960s that this situation began to take its toll on the rural economy. Those Campesinos, who could, started to produce luxury goods such as vegetables. Some found part time jobs or migrated to the large cities or the United States and others enlarged their families to increase their income. Once Campesinos abandoned the fields basic grains production dropped severely (Martínez-Saldaña, 1991).

This decline in production was perceived as the effect of the Campesino disability and their obsolete productivity systems. They were perceived as uneducated, uncultured and without a will to succeed. While it is true that growing maize stopped being business, it was not for the lack of knowledge or effort from the Campesinos that production went down. Neither their so called stubborn traditionalism prevented them from adapting to the change in natural conditions and policies. Much rather the drop in production was the result of a structural inequality (Barkin 2002).

So, in 1965 a new bureaucratic interest to influence rural productivity through a change in technology arose (Martínez-Saldaña, 1991).

The Collective Ejido was reintroduced as a way of reorganizing the divided parcels into units large enough to allow mechanization (Ewell & Poleman 1980).

The state supported the capitalism at regional and national levels and fostered a specialized and inflexible economy that ignored the millennial long experience among the indigenous population (Toledo, 1978).

These factors should be taken into account, when looking at the nature of the production crisis and the establishing of mega production programs, like the PRONADE in Mexico. The problem is much more complex than a simple race between population growth and food production (Martínez-Saldaña, 1991).

Technicians and the Green Revolution

Since the desmontes were a slow but sustained ecological catastrophe it is worth asking “Who were these technicians who promoted the PRONADE?” and “With which purpose they did that work?” In the following paragraphs a brief review of who these technicians were and where they were trained is given.

The utopia of a Mexican agricultural empire was the product of the intellectual work of the government techno-bureaucratic level. Involved in the drafting were the best trained technicians, -well rather miss-trained-, since they (de) formed according to the established paradigm of their own social practices (Tudela et al. 1989).

The engineer agronomist Amador Terán y Téran and other technicians involved in the creation of the PRONADE belonged to a group of Mexican agronomists, very important historically, nicknamed The Upas (a term that refers to caveman or old), belonging to the 1939-1945 generation of the then National Agricultural School (then ENA and now UACh). For that generation, 16,000 students applied, 122 were accepted and only 85 finished school (Téran, 2008).

In 1943 the ENA began a long term relationship with the Rockefeller Foundation, which supported the transfer of eminent technicians to the office of special studies in Mexico for joined research. Americans found in Mexico very disciplined young professionals trained in the same tradition, which generated an equal treatment resulting in strong bonds of friendship. Agronomists performed various activities together, for example they did athletics and even went hunting together (Terán, 2008).

By 1948 the graduate student Norman Borlaug and his colleagues José Rodríguez V, Benjamín Ortega C., Leonel Robles, Roberto Osoyo Alcalá, Raúl Mercado, Alfredo Campos and Ignacio Narváez created among others the first varieties of wheat resistant to rust (*Puccinia graminis tritici* and *Puccinia triticina*), using hybridization and selection (Terán, 2008).

This fact turned Mexico in the birthplace of the Green Revolution and made it appear as the most advanced country in the area of plant breeding. The Mexican agricultural program was taken by the Rockefeller Foundation, the USAID, the WB and other agencies to other countries and many international professionals went to the ENA to be trained. In 1970 Borlaug received the Nobel Peace Prize thanks to his "contribution to eradicate world hunger". In the 1950´s when Mexico reached the self-sufficiency in many basic grains the fact was attributed entirely to the new technology packages (Sonnenfeld, 1992; Terán, 2008).

Thanks to these facts, the idea that technology could completely control the nature permeated in the mind of the technicians and they began to draft utopic projects of tropical agricultural empires, which were continually compared to the Netherlands, the Nile or the Tennessee Valley (Tudela et al. 1989).

As an example, Chao 1976, pg. 3 expresses in his book "The Chontalpa keeps a particular resemblance to the dikes of the Netherlands, while the Dutch fight against the sea, the Mexican fight against the rainforest but with identical purposes.” However it must be pointed out that none of these regions have weather, social or biological conditions similar to those of Mexico. Therefore the import of foreign expertise and technology made no sense.

The great interest, showed by the various international funding agencies, only reinforced the idea of desmonte programs and created consensus among the technicians and politicians, regarding the optimum suitability of the humid tropics to carry out major projects for agricultural expansion (Tudela et al. 1989).

But, like stated before, between 1965 and 1975, the same time the Green Revolution moved forward in Mexico, the decline of agriculture began and was soon was followed by the loss of self-sufficiency (Sonnenfeld, 1992).

Discrimination

Another important aspect to understand the null value given by the State and **technicians** to the Campesinos traditional knowledge and that this thesis considers is rarely mentioned in literature, is the racial discrimination present in Mexico.

A major example of this is that when it comes to the issue of deforestation, great ecological imbalances have always been caused by the landlords that in search of more land to sustain their cattle ranching and maximize their profits, erode soils, destroy forests and jungles with irreversible effects (González-Pacheco, 1980). But it was not until the 1970´s that authors such as Nations & Nigh started to recognize this fact and started to point out the environmental benefits of the slash and burning system, the system was for many years the scapegoat of deforestation in Mexico (Nations & Nigh 1978).

For example in 1976, Verduzco-Gutiérrez showed a clear example of this attitude. He mentioned that fires, deforestation, grazing, pests and extensive exploitations were the five major factors destroying forests, but immediately after, makes clears that technified desmontes conducted by the state or private companies, do not fall into this category, as these are based on scientific projections, while those carried out by Campesinos following the slash-burning system degraded soils.

This kind of statements are not surprising since the State narratives of environmental degradation of have always been part of a discourse that serves to claim political power over the natural resources (Mathews, 2003). But this attitude should also be understood within the dominant ideology that viewed the Campesinos as a group of underdeveloped Indians that had to be put to produce (Ewell & Poleman 1980).

The expression Indian does not only refer to the native inhabitants, at the same time it marks them as defeated and inferior. Before the Spanish conquest, the dominant-dominated relationship was established by the class differentiation, with the arrival of the conquest, an ethnic characterization was added to the class structure (Gutiérrez-Haces, 1980).

It is imperative to understand the state not as an entity outside the class structure with a semi-autonomous operation. Rather the State is the expression of the class structure and the conjuncture of the class struggle. So as it is expected, state policies contain this ideology and are use as forms of domination (Gutiérrez-Haces, 1980).

The same reasoning can be applied to the technicians who created and implemented these programs. Although many had a rural background, they were trained in universities where education, research and scholarships for studying abroad, had been adapted to benefit national and foreigners' interests, undermining Mexico's ability to conduct independent investigations to examine the rural issues in a broad sense (Feder, 1981).

This educational situation and their new acquired positions in the levels of power quickly led technicians to lose their class identity which in turn caused them to dismiss the Campesino traditional knowledge and adopt as their own the Green Revolution model of development.

A glimpse of this attitude can be seen in some of the documents from those times. The following quote was found in a document stored in the AHA, where one of the technicians responded to the criticism made to the Uxpanapa project:

"Those people that attack without knowledge, without knowing that it was very difficult, and -it is- to **dominate** the jungle, not knowing it is very difficult to relocate and fully satisfy a large number indigenous families uprooted from their original **primitive** means, without knowing that it is very difficult to achieve the collectivization of Campesinos, who are used to **halfway** work under individualistic and **obsolete** systems, without knowing that it is very difficult to lay the groundwork for the world to investigate the prospects and achieve the **conquest** of the Humid Tropics, without knowing that it is very difficult to integrate into the national territory an empty land and that now produces; anyway**" (Distrito de Drenaje Uxpanapa, 1976 pg. 1).**

Similar attitudes are expressed in Téran-y-Téran, 2008 (pg. 121), while reflecting on why the desmontes in Tamaulipas did not improved the lifestyle of the benefited Campesinos: "The vast majority of mayors have been Ejidatarios who can barely read and write without charisma or ability to promote development with investments to revive the regional economy. Men have failed by ignorance, corruption and lack of love for the land".

Legal Framework

Throughout history the legal factors involved with land tenure and land reform have been related to the advancement of grassland for cattle ranching. But only little has been written about the legal aspects regulating vegetation clearing and their relationship with the expansion of grasslands (Bravo-Peña et al. 2010).

Therefore this section discusses the role of laws regulating vegetation clearings and how they affected the development of PRONADE and related programs.

At that time was current the 1960 Forestry Law, it aimed to manage the forest industry at a national level, by regulating the conservation, development and restoration of forests, as well as the transport and trade of forest products (Diario Oficial de la Federación, 1960).

This Law comprehended vegetation clearings since its second chapter called: *About clearing and grazing*:

ARTICLE 44 .- The clearing of vegetation, on land covered with tree or shrub, to open new land for agricultural crop growing or livestock farming, is only authorized by the forestry authority when the slope does not exceed fifteen percent and when soils, due to their thickness and quality, allow to use them permanently and with greater economic benefits than those that can be obtained from logging. Otherwise the land must remain with vegetation.

ARTICLE 45.- The clearings will be only authorized with a prior study to verify the existence of the conditions set in the preceding article. Work for new farms or ranches must be done along the clearings.

ARTICLE 46.– If the clearings are authorized, procedures and deadlines must be set. It must also be determined which vegetation should remain as windbreaks, how to protect water channels and how to ensure the conservation of soil and water.

ARTICLE 85.- Clearings for one purpose exploitations will only be authorized, when land will be devoted to agricultural crops or livestock purposes, to firewalls, for roads and communication lines, for transmission of electricity and other public works that require it, as well as for the control of pests or diseases.

As one can easily see these articles fail to mention the institution responsible for conducting the preliminary study of the ground or in charge of verifying the slope, soils and vegetation to be respected requirements, as well as how these activities will be done. While the law considers the preservation of some environmental services, Articles 44 and 46 only value forests when some type of logging can be done in them.

This law also comprehends penalties for illegal clearings:

ARTICLE 127. - One to ten years of imprisonment and a fine from 1,000 to 20,000 *pesos* will be imposed to:

IV. Whoever clears areas with timber forests that singly or together cover an area larger than five hectares without authorization

ARTICLE 129. - From six months to three years imprisonment or a fine of 100 to 20,000 *pesos* will be imposed to:

II. Whoever clears areas with timber forests without authorization that singly or together do not exceed five hectares.

As one can see this law also has an unintended bias, since most people practicing shifting cultivation would have no permission to do the clearings or any previous study supporting them, while in theory the governmental clearing would possess all the technical requirements to perform them. So only the small-scale forest clearances were criminalized, despite they are the ones causing less damage to the environment.

At that time also the Federal Law on the Prevention and Control of Environmental Pollution (LFPCCA, 1971) was current but this only considered the environmental problems from a perspective of human health (Bravo-Peña et al. 2010).

While also then, it was not mandatory to carry out an environmental impact assessment, a similar mechanism was considered in the Article 6 of the LFPCCA and it the indicated that the SAG, SRH, SIC and SSA should "study, plan, evaluate and qualify all projects or work related to urban development, national parks, industrial and aerial work and general zoning to prevent problems associated with environmental pollution ", the text is seen on the idea of environmental planning and the analysis of environmental impacts (INE & SEMARNAP, 2000).

But it was never made explicit the requirement of that evaluation for the performance of vegetation clearings (Bravo-Peña et al. 2010). So it can be concluded that the fact that there was not an adequate legal framework to regulate the clearing actions, contributed the occurrence of the PRONADE environmental tragedy.

Lack of biological knowledge in Mexico

The utopian character of these programs came from the assumption that the humid tropics had extraordinary fertility (Tudela et al. 1989). This idea and dismissal of the intrinsic value of natural ecosystems may have arisen due to the lack of biological and ecological knowledge in general.

Although, prior to the implementation of the programs, a lot of information on economic, social and cultural structure was gathered the project was made people with knowledge of social sciences instead of biological and ecological sciences. This was due to the fact that basic and applied research in Mexico was very limited (Ewell & Poleman 1980).

Gómez-Pompa mentioned to a news paper on August 12th, 1974 that the Smithsonian Institution, the University of Pennsylvania and the University of Harvard had complete studies of the jungles of southern Mexico and had listed the products susceptible to exploitation. At the same time Mexico was unaware of these resources, which was the reason why they were being destroyed. Gómez-Pompa also mentioned that while the IBUNAM had 2,000 specimens of the flora of Mexico, the Harvard University had half a million plants (Becerra, 1974).

Gómez-Pompa suggested that a strategy for prioritizing ecosystems was to train ecologists, to gather and decipher data, because at that time the number of ecologists in the country did not even reach ten, Gómez-Pompa urged the authorities to establish an Institute of Ecology (Becerra, 1974). For example 867 students were accepted for a biology career in 1970. In that same year only 17 students graduated as M.Sc. and 21 reached the degree Ph.D., but the number of them that specialized in ecology is unknown (Hoffmann et al. 1993).For Gómez-Pompa ecologists represented the "conscience" of the decision makers, more than that, they should take part in those decisions (Becerra, 1974).

In response to Gómez-Pompa, in 1972 the Laboratory for Population Ecology was created in the IBUNAM and in 1973 the Laboratory for Ecology was created at the Faculty of Sciences at the UNAM. But it is not until 1996 when the Institute of Ecology at the UNAM was created as well (Hoffmann et al. 1993). In other words, it took 22 years till Mexico began to formally train ecologists after the PRONADE and the ecological disasters of the PCh and Uxpanapa.

Capitalist Expansion

Another explanation, often found throughout the literature for the creation of programs such as PRONADE, is that such programs were intended to introduce the capitalist economy to the most remote places and turn the Campesinos in cheap agribusiness laborers.

Prior to the projects, as mentioned above in this paper, Campesinos lived to be exploited by the local dominant groups and played no active role in the capitalist economy of the time (Gutiérrez-Haces, 1980).

But the enormous diversity of plants and animals in the ecosystems around them allowed Campesinos to extract resources to meet their basic needs without the need for exchange. So even though they were poor, they did not starve. This situation, where use value and a range of isolated, scattered and scanty resources prevailed, represented an obstacle to the capitalist mode of production, based on the massive generation of a few commodities (Toledo, 1978).

There were also legal and political reasons, since the lands had the legal title Ejido it was legally difficult to expand production into those areas. Therefore it is not difficult to understand why "modern and progressive" mentalities devised such plans, since the influence of domestic and foreign capital groups is undeniable (Toledo, 1978; Barkin, 1981).

An example of this vision can be found in the comments that an agricultural official in charge of organization of the Ejidos made: "Campesinos in Mexico are spoiled. Workers at a factory must be on time for work, if they are late one day, they are warned. If they are late again, their pay is deducted. If they arrive late a third time they are dismissed. In the countryside, people have always taken things very calmly. They come to work, observe, work for a while, rest in the shade and go home when they please. Mexico will never progress this way. Discipline and responsibility must be immediately assumed and they have to go to work for real“ (Ewell &Poleman 1980, pg. 24).

The imposing of the Collective Ejido structure and the collective exploitation of the land allowed the introduction of machinery, the establishment of monocultures and the increased need for external inputs. Cooperative organization put Campesinos into a competitive situation, which they had never faced before. It created unequal patterns of income distribution and made them feel as poorly paid laborers, which made them lose all incentive to work well (Ewell & Toledo, 1978; Poleman 1980; Barkin, 1981).

With the destruction of natural ecosystems Campesinos did lose a major source of resources that complemented their nutrition, their traditional way of life as well as their culture and traditional knowledge. But unlike the predictions of the researchers of that time, Campesinos did not become agribusiness laborers. When the development projects failed miserably, Campesinos became unemployed without real living options. They were left in true poverty and hunger. But people did react, by organizing, raising new forms of life, constituting autonomous municipalities and claiming their rights.

As a conclusion, the PRONADE, San Fernando, the PCh and Uxpanapa are the deliberated result of the capitalistic expansion and represent excellent examples of what Tudela et al. 1989 called "deteriorating development," because the living conditions and equality the conditions of the environment suffered a sharp decline after the implementation of programs.

VII. The what if...? and the future

Livestock favoring

It is impossible to say what could have been of San Fernando, the Chontalpa and the Uxpanapa Valley, if those mega development projects would have not been carried out, since the factors associated with the transformation of natural ecosystems to agricultural use air or livestock are complex (Bravo-Peña et al. 2010).

But experience elsewhere in Mexico suggest that those places would have suffered the typical cattle ranching expansion process (Ewell & Poleman 1980).

At first few people practice some form of slash and burn and have a social organization with free community access to resources, where landscape modification is reversible. After some time settlers who practice nascent cattle arrive, but only natural pastures are used. With time the livestock model is promoted and land grabbing begins, grasses expand at the expense of forests and acahuales which prevent secondary regeneration (Paré & Velázquez 1993;Howard, 1998; Léonard, 2001).

The amount of land devoted to slash and burn gets reduced, which prevents the rotation of crops and land rest, the levels land productivity of lower, land is abandoned or fertilized with agrochemicals. Cattle ranchers take advantage of this situation to continue taking over more land (Paré & Velázquez 1993; Howard, 1998; Léonard, 2001).

While this description is not far from the current reality of San Fernando, the Chontalpa and the Uxpanapa Valley, it is possible that if those programs would not been implemented, such a process in such extensions would have taken centuries. Maybe even long enough to have found more sustainable exploitation projects, so it is fair to say that these programs exponentially accelerated the cattle ranching process and environmental degradation in these areas.

While there is consensus that the failure these programs is a complex phenomena, Tudela et al. 1989 recognizes as the major reason behind the failure, the implementation of an inadequate technology package. Aguilar-Robledo, 1995, besides an inadequate technology package recognizes as a reason for failure the contradiction of a model that indented to create social justice while at the same time increase capitalistic accumulation.

Finally, when ask, Casco-Montoya (2011 pers. comm. April) assessed that the reason behind the failure goes beyond the technology package and an unfair system. She stated that even when the IBUNAM ecologists developed a project called “the tropical chinampa” inspired in an ancient Aztec agricultural method, the project was not totally welcome by the Campesinos and thus it failed. For Casco-Montoya making the landscape artificial is the main reason behind the failures.

So in order to find solutions, new ways of improving the life quality of rural populations have to be found, that can also mind not trying to fix what it is no broken. Which in no way minds this papers support the feudal-like social order previous to the development projects, it minds that the solutions have to attain what people perceive as their real problems and find together realistic solutions.

Hope for the Future

The paradigm that sought to build development under the technological advances is still alive, this, despite that the new schools of thought strongly question it, under the light of the evident deterioration of resources. Such outlast is expressed in some schools of agronomy, veterinary medicine, biology and the ones that deal with the water management in agriculture (Olguín et al. 1999).

It is also alive on the different levels of government and other political and social organizations. But due to the lack of millionaire budgets like the ones available in the past, their advancement has been slowed down (Casco-Montoya, 2011, pers. comm. April).

But there are also signs of a change of consciousness on all levels. Examples of it are technicians, the government, educational centers and Campesinos:

From the start, the technicians who applied the programs were very excited about the opportunity to develop an empty area in accordance with a single integrated plan, they were fully committed to find a way to improve living conditions and develop a production model that could be translated to other major regions (Ewell & Poleman 1980).

But when faced with the reality, they became frustrated both with the weather and with the Campesinos, this is partly because most technicians came from northern Mexico and had no experience working in these tropical areas, they did not understood the culture or the native language (Ewell & Poleman 1980).

But the continued coexistence with the environment and the Campesinos caused a shift in consciousness in the technicians, many began to reject the use of machinery and recommend clearings by hand, plus they learned and recommended the traditional forms of cultivation (Espinoza de los Monteros, 2011, pers. comm. April). This change of awareness also occurred in some contractors that after a while refused to perform the clearings arguing that it felt like a crime (Lazos & Paré, 2000; Casco-Montoya, 2011 pers. comm. April).

The State has also had a shift of consciousness because despite that 91% of the total area Uxpanapa has been destroyed it is expected that during the course of this year (2011) the declared Uxpanapa Valley will be declared a Natural Protected Area (ANP) under the guard of the National Commission of Protected Areas (CONANP) in response to the demands of the environmental groups in the region (Hernández-Gómez et al. 2011).

However, the polygon defined for this reserve covers only the area in the state of Veracruz, which has been the most impacted and fragmented by deforestation, and does not include the surrounding area in the state of Oaxaca where there are large tracts of forest preserved (Hernández -Gómez et al. 2011).

Prior to this, in February 8, 1995 the ecological reserve of The Chontalpa was created, by the Ministry of Social Development and Protection of Environment of the state of Tabasco (SEDESPA) it has an area of 277 ha of semideciduous tropical forest, but despite being the last remnant of what once the Chontalpa was, it is now in a state of abandonment (Gálvez, 2008).

With regard to the academic institutions they have also change their perspective, for example the center of tropical research of the UV, in an attempt to assess if anything can be rescued in the Uxpanapa Valley promotes a project name "Evaluation of the distribution, population size and vulnerability of endangered species to determine priority areas and conservation strategies in the Uxpanapa region " (Sandoval, 2009).

At the same time the UACh has become one of the strongest advocates of sustainable development and respect for the autonomy indigenous people (UACh, 2007).

And although their ecological values have been mined Campesinos have keep on demonstrating and mobilizing against the programs, they have established environmental groups and organized several forums to discuss their situation and how to solve it. Example of that is the already discussed, people´s movement in the Uxpanapa Valley, another example, in the Chontalpa environmental groups are building “microjungles” in the most degraded environments to create shelter for animals and plants (Gálvez, 2009).

In fact, the Campesino group is the only one likely of posing a real option of environmental restoration, since their bottom up and participatory approach, would allow them to have the peoples support.

With will and actions is likely that ecosystems will recover to the point of not even showing traces of colonization. Let’s not forget that two of the most important precolombine cultures, the Mayans and the Olmecs, established themselves in the Mexican humid tropics (Ewell & Poleman 1980). And following the demographic tragedy, which the conquest of Mexico meant, by the end of the XVII century the tropical forest recovered to an almost pristine level (Denevan, 1992).

These cases should also serve as a lesson for the future, since Mexico’s economic history is associated with the exploitation and plundering of natural resources at home and abroad, history can serve as a tool to prevent it from happening again.

Future studies

But the PRONADE, San Fernando, Uxpanapa and the Chontalpa are up only a few examples of the same national policy, since 1970 many programs were developed in parallel to those already mentioned, all followed the same methodology and technology model.

The existence of other similar programs is of common knowledge in Mexico (Comisión Nacional del Agua, n.d.), the most talked about are the:

Balancan-Tenosique, La Sierra, Zanapa-Tonala and Sanes-Huasteca in the state of Tabasco
Isla Rodríguez-Clara and Tesechoacán in the state of Veracruz
El Bejuco and Plan Huicot in the state of Nayarit
The Plan Chac in the state of Yucatán
the program of integrated rural development for the humid tropic (Proderith),
Acapetahua, Lacandona, Margaritas-Comitan and Marqués de Comillas in the state of Chiapas
And the Edzná-Yohaltun in Campeche

With the exception of the Pujal-Coy program in Tamaulipas and San Luis Potosí (Aguilar-Robledo, 1995), most of these programs have not been formally studied but assuming their experiences were similar to those in San Fernando, the Chontalpa and Uxpanapa is feasible to assume that these development programs did not achieved their economic goals and had disastrous results for the people and ecosystems in these regions.

But to verify the correctness of these predictions or to asses that these projects followed independent ways of development, further studies are needed.

Conclusions

1. The only institution in Mexico that holds original documents directly related to the PRONADE is the AHA. This lack of documents may be partly due to deliberate concealment of records by institutions and officials, because the program is consider a big mistake.
2. The PRONADE was closely related with the development projects in San Fernando, Plan Chontalpa, and Uxpanapa, and others. That is also the reason of the conflicting data regarding its duration, financing and location. Although 1972 can be asses as the official year for the beginning of operations of the PRONADE its end date is still unknown, since there are not document to endorse one.
3. The PRONADE was the brainchild of several eminent Mexican technical specialists in agriculture and livestock most of them trained in the ENA, now UACh.
4. The PRONADE previous studies determined that Mexico had a total of 24,598,797 ha suitable to be cleared out of vegetation mostly consisting of oak woodland, mesquital, savannah, sub- montane shrubs, palms, and all types jungle.
5. The PRONADE just like any other subject in the country had to follow a legal procedure for the authorization of a clearing. But nevertheless, this procedure was rarely performed.
6. The PRONADE had precise rules of operation, which established clear rules for the granting of the clearing work to private companies.
7. The PRONADE began in 1972, it was conducted in two stages, the first from 1972 to 1974 and the second from 1974 until a date still unknown.
8. The PRONADE financed clearings in 15 states in Mexico. Also beyond the popular idea, clearings were not only conducted in the humid tropics, but also in other climatic zones.
9. The development projects carried out in San Fernando, the Chontalpa and Uxpanapa followed very similar historical processes. This is no coincidence since all of them were conceived under the same development model.
10. In all projects, most crop yields were always lower than expected. An expansive cattle ranching was promoted and no jobs were created, and programs ended up being a complete economic failure.
11. Contrary to the popular idea that Campesinos assumed only a passive role during the application of these projects, Campesinos actively resisted the implementation of those projects since the beginning, because they considered them absurd and unjust. To these days they still try to have an active role concerning their future.
12. The reasons for the application of the PRONADE are complex and there is not only one answer, although the motivations can be understood at a national and international level, the drivers are difficult to disentangle and correspond to a unique historical moment.
13. At an international level the idea of regional economic planning, the use of the technology package as a counterrevolutionary instrument and millionaire loans coming from international institutions were the three bastions for the implementation of programs like the PRONADE.

14. At a national level the conditions that allowed the application of these programs were the decrease of grain production result of an structural inequality, the long life dispute for resources between the landlords and the Campesinos, the expansion of capitalism, the lack of biological knowledge, an inadequate legal framework and the underlying classism and racism of the Mexican State.
15. These programs are a key factor in deforestation, not only at a local level but as a national and international phenomenon. They have swept with local traditional ways of life and left communities in bankruptcy, they are examples of what is called "deteriorating development," because the living and environmental conditions have suffered a sharp decline after the implementation of programs.
16. Many other programs similar to the PRONADE were applied in Mexico and most of them have been not formally studied, that is why future research is needed.

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Appendix

Appendix I - Semi-structured questionnaire

Section I - Interviewer information

Questionnaire	
Name of the interviewer:	
Date:	
Place:	
Register number:	

Section II - Personal Data

Name of the interviewee:	
Gender :	
Age :	
Profession:	
Current work place:	

Section III - Involvement with the PRONADE

1. Did you experience the PRONADE on first hand?
2. Did you experienced the PRONADE from an inside management position? Yes 2.1, No 3
   2.1 How did you get involved in the PRONADE?
   2.2 How long were you involved with the PRONADE?
3. If not, how else were you involved in / did you stay in contact to the PRONADE?
   3.2 How long were you involved in / did you stay in contact to the PRONADE?

Section IV - Information about the program

4. How would you define the PRONADE?
5. When exactly started the PRONADE its activities?
6. How long the PRONADE last?
7. When exactly stopped the PRONADE its activities?

Section V - Reasoning behind the PRONADE

8. What were the driving arguments or motivations behind the PRONADE?
9. Who was the main proponent of the PRONADE?
10. Who was involved in the planning of the PRONADE?
11. Who was responsible for the implementation of the PRONADE?

Section VI - PRONADE goals

12. Which were the goals of the PRONADE?
    12.1 Social
    12.2 Economic
    12.3 Environmental
13. What was the extent of the area planned for clearance?
14. Who was the recipient of the PRONADE?

Section VII - PRONADE management

15. How obtained the PRONADE its financing?
16. How was the PRONADE management structured?
17. Was the PRONADE involved with other simultaneous programs?
18. What were the mechanisms for implementing the PRONADE?

Section VIII - PRONADE implementations

19. Which was the procedure that the PRONADE followed?
20. How was the legal frame concerning the PRONADE?
21. Was there any opposition to the PRONADE implementation?
22. What were the problems behind the PRONADE implementation?
23. Was it possible to provide suggestions or improvements to the project?
24. Do you consider there was corruption in the application of the program?

Section IX - PRONADE results

25. Do you consider the goals of the program were met?
26. How affected the PRONADE the livelihoods of the recipients?
27. What kind of suggestions would you have given / did you give to the PRONADE?
28. Do you consider the PRONADE had any negative effects on the environment?
29. Do you consider there is any relation between current environmental problems and the past implementation of the PRONADE?

Section VI - Final comments

30. Is there anything you would like to add?
31. Is there someone you know who might have important information about the PRONADE?

Apendix II. PRONADE operation rules

Fideicomiso 581, Programa Nacional de Desmontes

Normas de Operación.

Las presentes normas tienen por objeto estructurar en forma coordinada y eficiente la mecánica de operación a que se sujetará el Fideicomiso en la realización de las finalidades que tiene encomendada.

I.- De las operaciones en general

PRIMERA.- Con cargo al patrimonio fideicomitido el fiduciario por conducto de su Delegado Fiduciario Especial, podrá llevar a cabo el programa nacional de desmontes con la finalidad de incorporar a la producción agrícola y ganadera, superficies de terreno localizadas en diversas entidades de la república y actualmente improductivas.

Así mismo, tendrá a su cargo la realización de las obras de infraestructura inherentes al objeto del fideicomiso.

SEGUNDA.- El fiduciario a través de su Delegado Fiduciario Especial presentará, con la debida oportunidad, a la aprobación del Comité Técnico los proyectos de incorporación de nuevas tierras a la producción agropecuaria.

II.- Conceptos de inversión

TERCERA.- Serán conceptos de inversión los trabajos que a continuación se relacionan:

1.- Desmonte Agrícola:

a). Tumba
b). Junta
c). Quema
d). Desenraice
e). Junta y quema de raíces
f). Rastreos
g). Emparejes
h). Nivelaciones primarias

2.- Desmontes ganaderos

a). Tumba
b). Junta y quema
c). Establecimiento de Praderas
d). Cercos

3.- Con aprobación expresa del Comité Técnico podrán realizarse obras tales como: despiedre, perforaciones, baños garrapaticidas, corrales, silos y otros.

III.- Sujetos elegibles

CUARTA.- Serán sujetos elegibles, como beneficiarios de las inversiones señaladas en la norma anterior, los ejidatarios de muy escasos recursos organizados en Ejidos colectivos o cualquier otra forma de organización campesina que esté expresamente reglamentada por los ordenamientos legales en vigor.

QUINTA.- Los beneficiarios deberán reunir las condiciones agrarias legales, a integrar áreas compactas para su explotación y estar adecuadamente organizados y reglamentados.

IV.- Evaluación de programas y solicitudes

SEXTA.- Serán requisitos indispensables para proceder al inicio de las obras programadas, que previamente estén organizados los Campesinos beneficiados y se elabore por profesionistas autorizados la evaluación técnica, para lograr el propósito del desarrollo agropecuario para cada programa o solicitud, de la que se desprenderá la conveniencia de otorgar el apoyo solicitado previa aprobación de que la evaluación se haga por parte del Comité Técnico.

SEPTIMA.- El delegado Fiduciario Especial, hará las gestiones para que se establezca la vinculación de las organizaciones de Campesinos beneficiados, con los programas del Fideicomiso, con instituciones oficiales de crédito, a efecto de que, al término de las obras, reciban los créditos refaccionarios y de avié necesarios para sus explotaciones.

V.- Maquileros y contratistas

OCTAVA.- El fideicomiso contará con un registro de maquileros y contratistas autorizados para los fines perseguidos. El mencionado registro constará de los siguientes datos:

a). Nombre o denominación del maquilero o contratista
b). Dirección
c). Giro
d). Una relación de la maquinaria y equipo con que cuenta el maquilero o contratista para el desarrollo de sus actividades. Dicha relación contendrá los siguientes requisitos:
1. Comprobación sobre la propiedad del equipo, con copias de las facturas respectivas
2. Estado actual de la maquinaria
e). Registro del contratista en la secretaria del Patrimonio Nacional
f). Cédula del registro federal del causantes del maquilero o contratista

El fideicomiso actualizará oportunamente los datos y documentos señalados en los incisos anteriores.
VI.- De los Comités Estatales
NOVENA.- Los Comités Estatales son organismos encargados de sugerir las políticas de diagnostico respecto a las necesidades de los programas del fideicomiso, que se están efectuando dentro del territorio de su entidad.
Las recomendaciones de los comités serán sometidas al Comité Técnico por conducto del Delegado Fiduciario Especial.
DECIMA.- Serán además atribuciones y facultades de los comités Estatales, las siguientes:
a). Recomendar al fideicomiso, las cuotas que se deberán cubrir para las obras y trabajos que se desarrollen en sus respectivas entidades, observando la ejecución de los citados trabajos.
DECIMA PRIMERA.- Los comités estatales estarán integrados por:
a). El titular del ejecutivo estatal o su representante;
b). El titular de la Agencia General de la Secretaria de Agricultura y Ganadería
c). El Delegado Estatal de la Secretaria de la Reforma Agraria
d). El secretario General de la liga de Comunidades agrarias y Sindicatos Campesinos;
e). Un representante del Banco Fiduciario
DECIMA SEGUNDA.- El presidente del Comité Estatal será el titular del ejecutivo de la entidad correspondiente, en su ausencia lo suplirá el Agente General de la Secretaría de Agricultura y Ganadería y en ausencia de ambos el Comité designará al Presidente.
VII.- Contrataciones
DECIMA TERCERA.- El Delegado Fiduciario especial con base en las cuotas señaladas por los comités estatales y estudios a que se refiere la norma SEXTA, celebrará los contratos para la realización de los trabajos y obras objeto del fideicomiso, los cuales serán adjudicados a las personas físicas y corales que cumplan con los requisitos señalados en la norma OCTAVA y en las reglas del concurso que, en su oportunidad, apruebe el comité técnico.
DECIMA CUARTA.- El delegado Fiduciario Especial informará al comité Técnico de los contratos celebrados por su conducto, especificando los conceptos siguientes:
a). Nombre o denominación del contratista
b). Cuotas unitarias
c). Superficie contratada
d). Tiempo de ejecución de los trabajos contratados
e). Las penalidades establecidas para el caso de incumplimiento de contrato
DECIMA QUINTA.- En igualdad de condiciones deberá contratarse con los ejidatarios la mano de obra rural, en aquellos conceptos que lo ameriten, prefiriendo a los que se beneficien en forma directa con los programas.
DECIMA SEXTA.- En todos los casos de contratos que se celebren se utilizarán los formatos que para tal efecto elabore el fideicomiso, los cuales deberán contener invariablemente los siguientes requisitos:
a). Una relación completa de la maquinaria que para la realización de la obra o trabajos se requiera;
b). La declaración formal del contratista de abstenerse total o parcialmente a subcontratar las obras, o de hacerlo será con la previa autorización del Delegado Fiduciario Especial, quien recabará para ello la aprobación del Comité Técnico;
c). Se dejarán claramente asentadas las localización y especificaciones de las obras o trabajos que en cada caso se contraten;

d). Se anexará el calendario de realización de las obras y trabajos contratados, el anticipo que se haya acordado y el calendario de estimaciones;
e). El anticipo que se otorgue al maquilero o contratista, en ningún caso excederá el 20% del valor global de la obra o trabajos contratados;
f). Aceptación de la supervisión de las obras contratadas por parte de representantes del Delegado Fiduciario Especial, del Comité Estatal y Comité Técnico e Institución Fiduciaria;
g). El Contratista se constituirá como patrón y se obligará a inscribir a sus trabajadores en el Instituto Mexicano del Seguro Social, cuando menos, las prestaciones mínimas que señala la Ley Federal del Trabajo, así como responsabilizarse de todo tipo de problemas laborales que se llegaran a presentar;
h). Se incluirán cláusulas penales en las que se señale el castigo que por cada día de retraso, en la entrega de obras, sufrirá el contratista, además de las fianzas y garantías suficientes a juicio del delegado Fiduciario especial y del Comité Técnico.
DECIMA SEPTIMA.- En caso de que por cualquier circunstancia no puedan emplearse los formatos de contrato existentes, la residencia foránea redactará uno adecuado a las caracteristicas específicas de la situación, cuidando que se consigne dentro del clausulado correspondiente los requisitos indicados en la norma DECIMA SEXTA.
Dicho contrato será sancionado previamente su celebración, por el Delegado Fiduciario Especial, el cual informará del la firma del mismo al Comité Técnico.
VIII.- Requerimiento de fondos
DECIMA OCTAVA.- Los fondos necesarios para cubrir el monto de las obras contratadas, se pondrán a disposición de las residencias foráneas a través de los corresponsables del fiduciario al cumplirse los siguientes requisitos:
a). Se remitirá al Fideicomiso, por cada solicitud de fondos, la documentación comprobatoria de cada estimación;
b). Concluidos los trabajos las residencias enviaran al Fideicomiso original y copia del acta de finiquito;
c). Las residencias llevarán a cabo, bajo su responsabilidad, la liquidación final con el contratista en los términos de la regla 19.
IX.- Entrega de la obra realizada
DECIMA NOVENA.- A la terminación de la obra contratada, el finiquito de la misma, a que se refiere la clausula DECIMA OCTAVA en sus incisos b y c, se otorgara por el Fideicomiso, a través de la residencia respectiva, con la intervención de un representante autorizado del Comité Estatal, un representante de la institución fiduciaria y representante de los Campesinos beneficiados, consignándose en el acta que para tal efecto de levante la terminación correcta y recepción de obras contratadas.
X.- Información
VIGESIMA.- Las residencias tendrán la obligación de enviar trimestralmente al fideicomiso, un informe de avance de los trabajos a su cargo y erogaciones efectuadas, obras o trabajos pendientes a ejecutar y erogaciones pendientes de realizar.
Este reporte será sin perjuicio de que el fideicomiso solicita en cualquier momento los informes que estime necesarios o que le pida el Comité Técnico.
VIGESIMA PRIMERA.- Para los casos no previstos en las presentes normas de operación, así como en la interpretación de cualquier duda que pudiera surgir con motivo de aplicación de las mismas, se estará a lo dispuesto por el Comité Técnico del Fideicomiso.
Estas normas de operación fueron aprobadas por el Comité Técnico del Programa Nacional de Desmontes.- Fideicomiso 581 en Acta No. 23 de fecha 6 de marzo de 1975.