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STAFF APPRAISAL REPORT

MEXICO

FORESTRY DEVELOPMENT PROJECT

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Country Department II
Latin America and the Caribbean Regional Office

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CURRENCY EQUIVALENTS

Currency Unit	=	Mexican Peso (Mex\$)
US\$1.00	=	Mex\$ 2519 ^{1/}
Mex\$1.00	=	US\$ 0.00039
Mex\$ 1 million	=	US\$ 396

WEIGHTS AND MEASURES

The metric system is used throughout this report except for some forest products measurements which are expressed in American units such as board feet.

m ³	=	cubic meter of wood (solid)
1000 bf	=	one thousand board feet or .442 m ³
ha	=	hectare (about 2.5 acres)
km ²	=	Square Kilometer
mt	=	metric ton (1000 kg or 2200 lbs)
tpy	=	tons per year of wood pulp
dbh	=	diameter, breast high (used to measure tree size and calculate useable wood volume)

FISCAL YEAR

Government of Mexico	=	January 1 to December 31
States of Durango and Chihuahua	=	January 1 to December 31

^{1/} Average exchange rate at the time of appraisal was Mex\$2,260 (September 1988)

GLOSSARY OF ABBREVIATIONS

BANRURAL	-	Banco Nacional de Credito Rural (National Rural Credit Bank)
BANXICO	-	Banco de Mexico (Bank of Mexico)
DGNF	-	Direccion General de Normatividad Forestal (General Directorate of Forestry Norms)
FAO/CP		Food and Agriculture Organization of the U.N. Cooperative Program with the World Bank
FICART	-	Fideicomiso para Credito en Areas de Riego y de Temporal (Trust Fund for Credit in Rainfed and Irrigated Areas)
FIRA	-	Fondo de Garantia y Fomento para la Agricultura, Ganaderia, Avicultura y Fidecomisos Agricolas (Agricultural Trust Funds in Bank of Mexico)
FODEF	-	Fideicomiso del Fondo para el Desarrollo Forestal (Fund for Forestry Development)
GIRA	-	General Interest Rate Agreement
ICGA	-	Institutional Capacity Gap Analysis
IDB	-	Inter-American Development Bank
INI	-	Instituto Nacional Indigenista (National Amerindian Institute)
IVA	-	Impuesto de Valor Agregado (Value-Added Tax)
MDS	-	Metodo de Desarrollo Silvicola (Silvicultural Development Method)
NAFIN	-	Nacional Financiera (National Financing Agency)
OCC	-	Oficina Central de Coordinacion (Central Coordinating Office)
PCU	-	Unidad Coordinadora del Proyecto (Project Coordination Unit)
PF	-	Programa Forestal (State Forestry Programs in SARH Delegacy)
PROFORMEX	-	Productos Forestales Mexicanos (Forestry Parastatal in the State of Durango)

PROFORTARAH - Productos Forestales Tarahumarah
(Forestry Parastatal in the state of Chihuahua)

PRONABOSE - Programa Nacional de Bosques y Selvas
(National Forests and Tanbles Program)

RCCR - Residencias de Conservacion de Caminos Rurales
(Rural Roads Maintenance Field Offices)

SARH - Secretaria de Agricultura y Recursos Hidraulicos
(Secretariat of Agriculture and Water Resources)

SCT - Secretaria de Comunicaciones y Transportes
(Secretariat of Communications and Transport)

SECOGEF - Secretaria de la Contraloria General de la Federacion
(Secretariat of General Controllers of the Federation)

SEDUE - Secretaria de Desarrollo Urbano y Ecologia
(Secretariat of Urban Development and Ecology)

SFF - Subsecretaria de Fomento Forestal
(Subsecretariat of Forestry Development)

SHCP - Secretaria de Hacienda y Credito Publico
(Secretariat of Finance and Public Credit)

SPP - Secretaria de Programacion y Presupuesto
(Secretariat of Programming and Budget)

SRA - Secretaria de Reforma Agraria
(Secretariat of Agrarian Reform)

UAF - Unidad de Administracion Forestal
(Forestry Administration Unit)

UCE - Unidades Coordinadoras Estatales
(State Coordinating Units)

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FORESTRY DEVELOPMENT PROJECT

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MAP IBRD No.20757

This report is based on the findings of a pre-appraisal mission and an appraisal mission which visited Mexico during April and August 1988 respectively. The missions comprised Messrs. W. Beattie (mission leader), S. Davis and F. Camara (Sociologists/Anthropologists), A. Gonzalez-Malaxechevarria (Financial Management Specialist), J. Talbot and M. Lennartz (Consultants-Environmental Impact), A. Tobelem (Institutions Specialist), P. Drake (Industries), J. Velez (Consultant-Credit), and B. Meinders (Consultant-Roads).

MEXICO

FORESTRY DEVELOPMENT PROJECT

I. LOAN AND PROJECT SUMMARY

Borrower: Nacional Financiera, S.N.C.

Guarantor: United Mexican States.

Beneficiaries:

- Secretariat of Agriculture and Water Resources (SARH)
- Secretariat of Communications and Transport (SCT)
- Secretariat of Urban Development and Ecology (SEDUE)
- National Amerindian Institute (INI)
- Agricultural Trust Funds in Bank of Mexico (FIRA) mainly for onlending by commercial banks
- Trust Fund for Credit in Rainfed and Irrigated Areas (FICART) for onlending by BANRURAL.

Amount: US\$ 45.5 million

Terms: Repayment in 17 years, including five years of grace at the standard variable interest rate.

Intermediaries: Banco Nacional de Credito Rural and Commercial Banks.

Onlending Terms: The Borrower would transfer the proceeds of the loan to the Guarantor (Government) for carrying out the non-credit components and further transfer to FIRA and FICART for the credit component. Subloans to credit beneficiaries would be in local currency and at terms specified in General Interest Rate Agreement (GIRA).

Project Objectives The project has the objectives of: (a) improving productivity and environmental protection by introducing rational forest management practices, rehabilitating the forestry road network, monitoring forestry activities, strengthening parks and reserves administration and financing research and protection of endangered species; (b) increasing the efficiency of forestry activities in Durango and Chihuahua by financing equipment and technical assistance to improve forest management, harvesting, and industrial technology and to permit the vertical and horizontal integration of forest producers' operations; (c) improving the quality of life by increasing rural and urban employment and family income, especially in the traditionally impoverished Amerindian communities; and (d) strengthening the management and coordination capabilities of federal and state forestry and conservation institutions.

Project Description: The Project would finance (a) a line of credit for forest producers to finance the equipment for improving forest management (and therefore the natural regeneration and productivity of the forests) logging, transport, road maintenance and wood processing and for seasonal log purchase; (b) the rehabilitation of existing forestry roads; (c) institutional development including training and technical assistance for beneficiaries of the credit line and for staff of the executing agencies; (d) environmental protection consisting of (i) monitoring of the impact of road rehabilitation and forest harvesting activities, (ii) research into endangered species of flora and fauna, and (iii) improvements in infrastructure and development of management plans for national parks and reserves in the project area; and () special studies including (i) pre-feasibility studies for pulp mills in Durango and Chihuahua, (ii) testing of the pulpability of native oak species, (iii) an environmental baseline study and aerial photo coverage of the project area for monitoring and management purposes, and (iv) preparation of a second phase forestry development program.

Project Risks: Project risks center on three areas: (a) institutional capacity for implementation and coordination; and (b) availability of adequate counterpart funds. Close monitoring and evaluation and strong technical assistance are included in the project design to ensure that proper attention is paid to the first issue. Project design has been kept as simple as possible to minimize institutional staffing and coordination risks. Government assurances were obtained for adequate counterpart funding.

Total Project Costs and Financing

<u>Estimated Project Costs:</u>	<u>Local</u>	<u>Foreign</u>	<u>Total</u>
	(US\$million)		
Forestry Credit	<u>43.3</u>	<u>4.0</u>	<u>47.3</u>
Forestry Development	31.3	3.5	34.8
Forestry Road Maintenance			
Equipment	5.1	0.5	5.6
Working Capital	6.9	0.0	6.9
Forestry Road Rehabilitation	<u>23.1</u>	<u>2.5</u>	<u>25.6</u>
Durango	9.3	1.0	10.3
Chihuahua	13.8	1.5	15.3
Institutional Strengthening and Training	<u>3.1</u>	<u>0.9</u>	<u>4.0</u>
Environment Protection	<u>1.6</u>	<u>1.0</u>	<u>2.6</u>
Special Studies	<u>0.4</u>	<u>0.5</u>	<u>0.9</u>
<u>Total Baseline Costs</u>	<u>71.5</u>	<u>8.9</u>	<u>80.4</u>
<u>Contingencies</u> ^{a/}	<u>9.2</u>	<u>1.5</u>	<u>10.7</u>
Physical Contingencies	4.7	0.8	5.5
Price Contingencies	4.5	0.7	5.2
<u>Total Project Costs</u> ^{b/}	<u>80.7</u>	<u>10.4</u>	<u>91.1</u>
<u>Financing Plan:</u>			
Government	37.2	0.0	37.2
IBRD	32.1	10.4	42.5
Subborrowers	4.1	0.0	4.1
Financial Intermediaries	<u>4.3</u>	<u>0.0</u>	<u>4.3</u>
Total	<u>80.7</u>	<u>10.4</u>	<u>91.1</u>

Estimated Disbursements:

<u>Bank FY</u>	<u>1990</u>	<u>1991</u>	<u>1992</u>	<u>1993</u>	<u>1994</u>	<u>1995</u>	<u>1996</u>
	----- (US\$ millions) -----						
Annual	5.9 ^{c/}	7.8	8.5	8.5	8.0	6.0	0.8
Cumulative	5.9	13.7	22.2	30.7	38.7	44.7	45.5

Retroactive Financing: US\$4.5 million equivalent retroactive to 12 months prior to loan signature to cover eligible expenditures under the project.

Rate of Return: n.s.
Map IBRD No. 20757

- ^{a/} No contingencies included for the line of credit for forestry development. Physical contingencies for the other components are 7% of baseline costs while price contingencies are 6% of baseline costs plus physical contingencies.
- ^{b/} Excluding about US\$14.0 million in taxes (principally consisting of value-added tax-IVA) and duties.
- ^{c/} Initial deposit in Special Account of US\$2.5 million.

II. THE FORESTRY SUBSECTOR

Background and Issues

2.01 Mexico has a total land area of about 197 million ha, of which some 39 million ha (or 20%) are covered with dense forests. Of these, roughly 27.5 million ha are temperate forests located mostly in the Sierra Madre Occidental mountain range extending from the U.S. border to southern Mexico. The remaining 11.4 million ha are tropical hardwood forests located mostly in the Yucatan peninsula and the state of Chiapas. In addition semi-arid shrub and brushlands cover 29.3 million ha and 56.1 million ha respectively, while deforested areas amount to an additional 17.8 million hectares, for a total area of all forest types of 142.1 million or 72% of Mexico's total land area. Of these forests lands about 70% is owned by the Government but "held" by ejidos under essentially permanent concessions, 25% is owned by individuals and the remaining 5% held by Amerindian communities.

2.02 The 27.5 million hectares of temperate forests within which the Project area falls, consist of pine/oak associations (68%) and pure pine stands (32%). The total timber volume in Mexico is estimated at over 3.0 billion m³ of which nearly 2.0 billion m³ are in these temperate zone species. The annual growth of this coniferous wood is estimated at 27.3 million m³. Unlike the situation in many tropical rainforest areas worldwide, little forest conversion takes place in these temperate forests (since 1978 about 1.4 million ha of tropical hardwood forests in the south have been deforested and converted to other land uses as the result of land settlement activities) since the soils are largely unsuitable for agricultural activities and since the land tenure situation is well defined. Deforested areas in the temperate regions regenerate naturally for future wood production. With proper management, these forests can have vigorous natural regeneration and much higher productivity, thereby greatly improving their value in both environmental and economic terms.

2.03 After several years of steady growth, sawlog production in Mexico dropped 10% to 8.3 million m³ in 1986, largely as the result of the economic crisis in Mexico that year. Sawn lumber accounts for 61.6% of all production, followed by pulpwood, with 26.9%. Firewood accounted for 5%, ties, posts, and pilings for 4.6% and millwork and mouldings for 1.9%. In 1986 the apparent consumption of forest products came to a total of 8 million mt round wood equivalent, just slightly under production. Commercial lumber (which includes sawn lumber, posts, pilings and sleepers) accounted for nearly 4.2 million mt while pulp and paper products accounted for the remaining 3.8 tons.

2.04 The total economically active population (EAP) in Mexico for 1987 was estimated at just over 23 million. The primary sector EAP accounted for 27.5% of that total and forestry's share was about 3% of that. That share, however, has been growing in recent years as forests are being more intensively managed.

2.05 The balance of trade in forest products has traditionally been negative for Mexico because of its dependence on imported pulp as raw material for its paper industry. That dependence has resulted from wood

supply problems which have impeded construction of costly pulp mills (para. 2.06, 2.29). This component of the deficit has increased sharply in the past two years with the increase in pulp prices (para. 2.29). The overall deficit, however, had been rapidly decreasing (from US\$598 million in 1980 to US\$293 million in 1985 and just US\$55 million in 1986) largely as the result of increased competitiveness of Mexican forest industry. This, in turn, has resulted from both the sharp devaluation of the peso in those years and the increased value-added of Mexico's forest exports. This trend is expected to continue, in spite of Mexico's adherence to GATT, which has led to tariff reductions on lumber from 33% in 1987 to 20% in 1988. By 1989 those tariffs will be phased out completely. In spite of continuing devaluation of the peso, Mexican forest industry will nevertheless have to become increasingly efficient to maintain its competitiveness in the markets that have developed.

2.06 The forestry sector's share of the gross domestic product in 1986, was 1.8% and 18.6% of the total GDP for the agricultural sector (i.e., crops, livestock, forestry and fisheries). Historically, the total output of forest products has varied little as part of total GDP. The low contribution of the forestry sector to the GDP in spite of a rich resource, is due to several factors: First, there has been a history of long-term concessions in which the forest resources of the ejidos and communities were sold at nominal prices to private sector logging firms and sawmills. The ejidos and communities feel that their lack of knowledge of the value of the resource and the scarcity of technology and capital to allow them to process their own logs, led them into these disadvantageous agreements. The government sought to correct this situation in the early 1970s by establishing two parastatal forestry firms in Durango and Chihuahua, PROFORMEX and PROFORTARAH respectively. These parastatals were to (a) provide technical assistance to the ejidos and communities in managing and harvesting their forests, and (b) establish forest industry complexes to process a large proportion of the logs harvested. The ejidos and communities for their part, were required to sell a portion of their logs to the parastatals through concessions. These state firms, however, proved to be inefficient and ineffective and in 1988 the government decided to sell them off as part of its policy to reduce the government's fiscal deficit through privatization of state-owned enterprises (para. 2.10). Nevertheless, the bad experience which the ejidos and communities had with both private and parastatal concessions, has made them reluctant to enter into any long-term agreements to sell logs to anyone. Also, they are now aware of the high profit margins possible in the manufacturing end of forestry and wish to vertically integrate their operations to obtain those profits. As a result, the log supply to private companies has been restricted and many of those firms are operating at 50% or less of their capacity.

2.07 The second factor in the forestry sector's reduced contribution to the GNP, has been the low productivity of its forests due to lack of management (the forests have largely been "highgraded" for the past 100 years, i.e., the best trees have been systematically removed) and due to the concession problems discussed above (para. 2.06) there has been little financial incentive for for the ejidos and communities to efficiently manage their forests. As a result, the forests are degraded and relatively low in productivity (para. 2.25). Thirdly, the forest industry plant is mostly small-scale, obsolete and inefficient. The general lack of

technical and business skills on the part of many mill managers is a constraint to modernization and expansion into secondary processing. The conversion rate of logs for sawnwood is low (para. 2.28) and the lack of a market for wood waste and smallwood (due largely to lack of wood pulp mills in Mexico - paras. 2.05, 2.29) has further reduced the yields of wood from the forests and the yields of manufactured wood products from the logs processed. Fourthly, the forest road infrastructure in Mexico is in a bad state of disrepair. This has drastically increased transport costs and reduced profit margins. Many independent truckers in fact, are losing money. Unable to afford new equipment or even maintain existing vehicles, the logging truck fleet has been steadily decreasing in the past five years creating further wood supply problems. Fifth and finally, the flow of credit for forestry investments has been restricted for a number of reasons. While surveys in Durango and Chihuahua have indicated a strong latent demand for credit (particularly after the Government's decision to liberate ejidos and communities from their parastatal concession obligations and provide the technical assistance needed to allow those groups to manage and harvest their own forests), the reduced promotional capabilities of the banking system (including technical assistance to subborrowers for preparing and presenting project proposals for financing) has limited applications by the target groups. Also, while credit for forestry investments has been available for several years, it has always been included in larger agricultural and agroindustrial credit lines. Due to the long experience of both subborrowers and the banking system with these credit lines, a kind of "lending inertia" has developed by which almost all of the funds available have been channeled to traditional agricultural investments to the detriment of the relatively new and unfamiliar forestry investments.

National Forest Policy

2.08 After years of neglect, the Government has given the forestry sector priority in its development plans through recent policy and legislative developments which establish a basis for systematically addressing the issues (paras. 2.05 to 2.07). Mexican forest policy is embodied in two principal documents: The Forestry Law of April 23 of 1986 (together with its Regulations of June 29, 1988) and the National Forests and Jungles Program (PRONABOSE) 1984-1988. These documents provide the framework for development and conservation of the forestry subsector. The General Law of Ecological Equilibrium and Environmental Protection also of 1988, complements the Forestry Law by providing additional safeguards for the environment including mandatory environmental impact studies in forest management plans.

2.09 To address the problems limiting forestry sector growth, PRONABOSE spelled out the government's forest policy and development strategy with the following objectives:

- to guarantee the efficient supply of logs and other forest products to private and social sector forest industries and to reduce the forestry products trade deficit;
- to improve the socioeconomic well-being of "forest producers" (i.e., ejidos, communities which "hold" forest lands and private forest landowners) by providing them with technical assistance

and financing necessary to vertically integrate their activities and become self-sufficient in protection, management, harvesting, transport, manufacture and marketing of their resources;

- to achieve comprehensive, full and sustained utilization of forest resources while protecting the environment at the same time.

2.10 Furthermore, with respect to forest products exports/imports, the Government has a free trade policy which is gradually reducing barriers in accordance with the GATT (para. 2.05). Finally, the Government has freed many ejidos and other forest producers to better manage their own forests, and compete in the open forest products markets, by liquidating PROFORTARAH, privatizing PROFORMEX and consequently annulling the concessions of those parastatals. The Bank supports these policy changes and believes that they establish a strong base for the sector's development and the effective implementation of the proposed project. The states of Durango and Chihuahua were selected by the Government with Bank concurrence, as the states with the best social and economic environment in which to implement those project components aimed at addressing the issues facing forestry development in Mexico. The ensuing sections present a summary description of the public agencies in the forestry sector, the credit institutions which would channel the forestry credit, and the two states of Durango and Chihuahua within which the project area falls.

Forestry and Credit Institutions

2.11 Forestry Institutions - Within the Secretariat of Agriculture and Water Resources (SARH), the Subsecretariat of Forestry Development (SFF) is the agency responsible for forestry policy and programs. Implementation of those programs including approval of management and harvesting plans within the technical and environmental guidelines established by recent legislation (para. 2.08), is the responsibility of the Forestry Development Program units under the SARH delegates in each state. Most of SFF's conservation responsibilities, however (i.e., national parks administration) were transferred to the Secretariat of Urban Development and Ecology (SEDUE) in 1985. Because of the conflicting pressures to reduce the fiscal deficit and to provide technical assistance to forest producers, the SFF initiated the Forestry Administration Unit system (UAFs) in the late 1970s. The UAFs are groups of forestry specialists (selected with DGNF assistance and paid by the ejidos and communities), who work directly for those producers as in-house consultants. They provide technical assistance in forest management and other forestry disciplines. Finally, under the new Forestry Law of Mexico, the Fund for Forestry Development (FODEF) was given the objective of promoting financing for forestry activities. FODEF will, therefore, complement the forestry credit promotion efforts of FIRA and FICART (para. 3.07).

2.12 Credit Institutions - FIRA, the Bank of Mexico is the trustee for three agricultural trust funds, which are integrated for management and accounting purposes and administered as FIRA. (a) the Trust Fund for Crop, Livestock and Poultry Credit (FONDO), which discounts participating commercial and public banks' short-term subloans for crops, livestock and agroindustry; (b) the Special Agricultural Trust Fund (FEFA), which discounts medium- and long-term subloans for crops, livestock and

agroindustry; and (c) the Technical Assistance and Loan Guarantee Trust Fund (FEGA), which defrays to participating banks part of the cost of subloan evaluation and technical assistance for low-income producers, and guarantees part of the commercial banks' contribution to these subloans. FIRA has nine regional offices, 31 state offices and 90 agency offices for providing technical assistance to the farmers, supervising sub-projects and assisting the participating banks in the evaluation of larger loans (Annex 4). FIRA and the Bank have had a long and fruitful relationship, having satisfactorily completed eight credit projects with a ninth ongoing. FIRA has consistently provided about 35% of all agricultural credit in Mexico by way of discounts to the participating banks. In 1988, FIRA is projected to discount about Mex \$2,665 billion, 71% for short-term credit and 29% for medium- and long-term credit. Low-income producers are expected to receive about 46% of the total. In addition to providing financial resources to the Mexican agricultural sector, FIRA continues to provide technical assistance to producers through its training programs, demonstration centers, and production technicians.

2.13 FIRA is an efficient financial institution with assets at end-December 1987 amounting to about Mex\$851 billion. Throughout the years, FIRA has earned a good reputation, and its management is experienced and of high quality. Their technical assistance, supervision and loan evaluation through their branch offices are effective and efficient. Its net operating cost after recovery from demonstration centers and for productive support through their branch offices has averaged about 2% of its average loan portfolio with administrative costs averaging about 0.5% of its loan portfolio. The banks through which FIRA's funds have been on-lent to agriculture, have also developed a good capacity to appraise subprojects and to recover subloans.

2.14 Until 1981, FIRA consistently earned annual profits sufficient to maintain its equity in real terms. However, in 1982 and 1983, when inflation reached 99% and 80%, respectively, it was decapitalized at an average of about 30% per year because existing subloans were at fixed interest rates and lending rates were below the levels of inflation. As a result of increased profits earned from higher and variable interest rates introduced under GIRA combined with increased Government contributions, the position reversed in 1984 through 1986 when FIRA's equity increased by an annual average of about 52%. However, in 1987 FIRA's equity decreased by about 2%.

2.15 Commercial Banks - Nationalized in 1982, the commercial banks continue to operate in a manner similar to their previous role as private banks and provide the main channel for FIRA's on-lending to agriculture including forestry. As a result of the extensive financial and technical support extended by FIRA, many commercial banks have established agricultural credit departments with agricultural technicians, who are graded and authorized to evaluate and approve subloans at varying levels. In order to promote credit under the proposed project, technicians specialized in forestry operations are to be contracted and trained at the expense of these commercial banks but with assistance from FIRA (the fund for Forestry Development (FODEF) will also promote the forestry credit line in coordination with FIRA - para. 3.07). Officially, commercial bank arrears, as a proportion of their loan portfolio, have been oscillating around 3% since 1984; in December 1986, this proportion was about 2.3%.

Arrears on agricultural commercial banks' portfolios have tended to be higher than for the system as a whole. In December 1987, agricultural commercial banks' arrears were about 7%. Commercial banks' funds account for about 28% of total agricultural credit; and about 92% of FIRA's total discounts in 1987 represented subloans made by commercial banks. About 34% of the amounts discounted were to low-income producers.

2.16 FICART - The other major source of discounting of agriculture credit is FICART, a Government-owned fund which discounts mainly medium-and long-term subloans to largely low-income producers exclusively through the National Rural Credit Bank (BANRURAL). In 1987, it discounted almost 40% of all BANRURAL's medium- and long-term lending. In the ongoing Ninth Agricultural Credit Project, FICART became a direct and main beneficiary of a Bank-financed project; it has also participated previously in satisfactorily executing credit components of four Bank-financed projects and has executed five IDB-financed projects, totalling US\$484 million.

2.17 At the end of 1987, FICART equity amounted to Mex\$292 billion with no significant liabilities. However, since nearly all of its subloans are channeled to low-income beneficiaries at below the Average Cost of Funds (ACF), FICART owed its financial resources largely to the continuous injection of Government contributions, including the transfers of the proceeds of IDB and Bank loans as equity. FICART has consistently earned gradually increasing net annual profits, and in 1987 earned a net profit of Mex\$136 billion which represented about 47% of its equity at the end of that year (Mex\$292 billion). In 1987 FICART discounted Mex\$6.9 billion in 1980 constant prices, about 11% above its peak in 1982.

2.18 FICART has shown a record of continuous improvement in its efficiency. It has progressively reduced its net operating cost from 5.7% (1981) to 3.9% (1987) of its average loan portfolio. It has no arrears, as its subloans are recuperated on due dates from BANRURAL.

2.19 BANRURAL - The largest agricultural development bank in Mexico is the state-owned BANRURAL. It lends directly to producers, mainly low-income producers, and has the most extensive network of bank offices in Mexico. At end-1987, its new lending amounted to Mex\$1.7 billion or about 47% of the total lending to the sector during that year, with medium-and long-term lending accounting for about 11%.

2.20 Although in the past there have been questions about BANRURAL's efficiency, it has shown improvement. Its overall arrears position of 9.5% in 1981 has been progressively reduced to 5.0% in 1987. The Government through the Ministry of Finance, recently carried out an internal review of BANRURAL's operations. As a result, better controls and procedures were introduced to improve BANRURAL's operational efficiency.

The States of Durango and Chihuahua

2.21 General Features - Durango, the fourth largest state in Mexico, has a surface area of 123,181 Km² and Chihuahua, Mexico's largest state, has over 245,000 Km². Together they comprise nearly 19% of the total area of Mexico and are located in the north central part of the country (Map IBRD 20757). Their natural resource base has favored mining, agriculture (principally livestock) and forestry development. The topography of the

two states varies greatly, and the Sierra Madre mountain range, location of the dense pine forests, covers over 30% of the western part of both states. The states are located between the 22nd and 31st parallels where solar radiation is intense and temperatures and rainfall, which vary widely, nevertheless favor abundant natural regeneration and relatively rapid growth of the natural forests.

2.22 Economy - Of the 32 Mexican states, Chihuahua and Durango rank, tenth and twenty-first respectively in their contributions to the nation's GDP (2.8% and 1.3% of the total). The breakdown by sectors is as follows: In Durango agriculture produces 24% of the state's GDP (of which livestock activities represent 40%, agricultural crops 39%, and forestry activities 21%), commerce 21%, industrial manufacturing 17%, service sector 14%, banking 11%, mining, construction and transportation 4% each and electric utilities 1%. For Chihuahua the figures are 15%, (40%, 44%, 17%), 28%, 14%, 15%, 9%, 8%, 7%, 5% and 1% respectively. In Chihuahua, the state's proximity to the United States has led to rapid growth in recent years of assembly plants (maquiladoras) near the border which now account for about 5% of the state's GDP and 30% of the manufacturing sector's output.

2.23 Population and Employment - The 1988 population of the state of Durango has been estimated at 1.4 million and that of Chihuahua, about 2.3 million, representing 1.7% and 2.8% respectively of Mexico's 80.8 million people. While the states clearly have low population densities, the rate of growth of that population is rapid (about 2.3 and 2.1% respectively) and its degree of urbanization is high (over 65%). In the forestry municipalities of Durango and Chihuahua there are respectively, 191,000 and 299,000 people of which 19,000 (10%) and 54,000 (18%) respectively are Amerindians. In the state of Durango, the Indian population mainly speaks Tepehuan and is located in the municipios of Mesquital and Pueblo Nuevo. In neighboring Chihuahua, the dominant indigenous group is the Tarahumara, who are known for their relatively intact tribal social structure and their ecologically-sophisticated shepherding and agricultural economy. In the towns of Pueblo Nuevo in Durango and Guachochi in Chihuahua, the two centers of forest industry expansion in the past two decades, population growth has been 3.3% and 5.8% respectively. Development of urban infrastructure has been unable to keep pace and as a result these two "boom" towns have some of the worst social indicators in the two states (e.g., homes without running water or electricity, school attendance, illiteracy etc.) In the forest areas of the two states, a relatively high 53% (Durango) and 32% (Chihuahua) of the population is economically active, although at very low paying jobs. These forestry areas in fact, hold the poorest segments of the states' populations with most laborers receiving below the minimum wage.

2.24 With respect to land ownership, more than 70% of forest lands are "held" by ejidos (they do not own the land but have essentially perpetual concessions from the federal government to utilize them and the resources on them), 26% are in the hands of private owners and the remaining 4% are held by communities (i.e., traditional Amerindian lands). Durango had 450 properties on its 1987 registry of which 142 were ejidos, 274 were owned by private parties and 34 by communities. Chihuahua had 1,438 properties: 268 ejidos, 1,076 private properties, 47 communities and 47 National and Legal Fund properties.

2.25 Forest Resources, Production and Demand in Durango and Chihuahua.

Of Mexico's 27.5 million ha of dense temperate forests, Durango has 4.0 million ha or 15% and Chihuahua 5.1 million ha or nearly 19%. These forests represent 33% and 21%, respectively of their state's total land area. Seventy-four percent of these forests are in the hands of ejidos and communities, while 26% are owned by private individuals (the government owns a negligible amount of forest land). The standing volumes of commercial timber in these forests is estimated at 251.8 million m³ and 257.5 million m³ respectively. The mean annual increment or growth of these forests is 1.8 m³/ha/yr. This very low per-hectare growth is due principally to a lack of proper management. Over the past 100 years these forests have been subject to a "highgrading" system of harvesting in which the largest and best trees have been repeatedly removed from the most accessible areas. This has degraded the forests in terms of both volume and vigor. By adopting proven forest management systems which take advantage of the prodigious natural regeneration of these forests, measurements of managed stands vs. unmanaged indicate that growth rates can be expected to increase to at least 3.2 m³/ha/yr while the costs of harvesting would concomitantly decrease. Reforestation with improved seed stock might further increase the productivity of these forests although the economic viability of plantations is still being tested.

2.26 Total potential wood production ("allowable cut") is estimated at 6.2 million m³ for Durango and 3.7 million m³ for Chihuahua. For Durango, the authorized cut (i.e., the allowable cut in accessible forest stands as determined by state SARH delegations' forestry program technicians - para. 2.11) for 1986 was just 3.3 million m³ while only 2.3 million m³ was actually removed or just 37% of the potential. For Chihuahua, the authorized cut in 1986 was 3.6 million m³ while just 1.9 million m³ was actually removed, or 51% of the potential. Actual removals were below both the allowable and authorized cuts due to the limited production capacity of the harvesting teams of the forest producers. This limitation is in turn, due to inadequate equipment, training and management/cutting plan preparation by those producers.

2.27 In Durango, of the 2.3 million m³ of logs consumed by the forest industry, 62% went to sawnwood, 18% to pulp, 7% to fruit and vegetable boxes, 6% to plywood and other wood panels and the remaining 7% to posts, sleepers and other products. In Chihuahua, the 1.9 million m³ was consumed for sawnwood (45%), pulp (38%), boxes (2%), wood panels (8%) and other products (7%). The two states account for 47% of Mexico's sawnwood production. In both states, the sawmilling and box industries are atomized. Durango has 163 sawmills and 136 box plants. Only 15 of the sawmills have an annual capacity of over 20,000 m³ of log input and the box plants have an annual consumption of just 1,200 m³. In Chihuahua there are 197 sawmills of which only 12 have a capacity of over 20,000 m³. The box plants number 40 and have an annual capacity of less than 1,000 m³. In Chihuahua, the secondary industry is well developed and over 60% of the sawnwood is remanufactured (i.e., kiln dried and finished as high value mouldings, millwork, furniture parts etc.). In Durango, only 13% of the sawnwood produced is remanufactured. Chihuahua has Mexico's largest pulpmill (750,000 m³ roundwood consumption annually) and Durango has two with annual capacities of 300,000 m³ and 250,000 m³ roundwood.

2.28 About half of the sawmills in both states are owned by ejidos and communities while the other half is owned by private firms. The private mills are generally in the urban centers, far from the forest resource. Since much weight (water) and volume (sawdust, slabs and edgings) is lost in the processing of logs, the remote location of private mills and the poor condition of the forestry road network in the two states, has resulted in high transport costs as a percentage of total sawnwood production costs. The private mills, however, are generally more efficient and obtain a higher conversion from logs to lumber (about 50%) than the social sector mills (about 40%). Few of the mills have debarkers and chippers that would permit them to utilize and sell part of the waste to pulpmills. A general lack of technical and business skills on the part of ejido mill managers and the small size of their mills are the principal constraints to modernization. Also, most of the secondary industrial operations are with the private sector, since the ejidos have only recently begun to vertically integrate their operations.

2.29 The imbalance between resource and industry ownership (para. 2.06) has led to serious conflicts between the private and social forestry sectors in Mexico. The private sector complains that the forest owners do not make long-term log supply commitments while the ejidos and communities justify their reluctance to enter into such agreements by pointing to years of exploitation by the private sector under such concessions (para. 2.06). Also, the ejidos and communities which historically have chafed under those long-term forest concessions, now wish to process their own logs and earn the high value added enjoyed by the manufacturers of forest products. Log supply constraints resulting from these problems (paras. 2.06, 2.07) have limited production of the states' sawmills to about 60% of their installed capacity and have been the principal obstacle to private sector investments in wood pulp manufacturing capacity. With the strong increase in pulp prices in the past two years (from US\$415 per ton of North American/Scandinavian bleached long-fiber pulp in January 1986, to US\$727 in June, 1988, a 75% increase or about 33% per annum), this lack of domestic manufacturing capacity coupled with increased demand, will exacerbate Mexico's balance of trade problems.

2.30 All of the pulp, paper, plywood and other boards of both states are absorbed by the national market as are the boxes which are used to ship fruit products from neighboring states (i.e., Sinaloa). However, a large proportion (25%) of the sawnwood is exported to the United States, and in particular, the higher grade secondary products. The rest is shipped to Mexico City (35%), or consumed in Durango and Chihuahua or other states (40%).

Experience with Bank Lending

2.31 In the period from 1976 through June 1989, Bank involvement in the agriculture sector of Mexico consisted of loans totalling US\$3,181 million in 27 projects including nine agricultural credit projects with FIRA, with Bank financing of US\$1,130 million. The most recent operation, an Agricultural Sector Loan of US\$300 million was approved in FY88. In general, implementation of current Bank-financed projects has been slow, mainly because of the lack of counterpart funds and cumbersome financial procedures. Because of the limited investment budget, the Government, in consultation with the Bank, has cancelled two Bank-financed projects, and

reduced the scope of other projects including partial loan cancellations amounting to some US\$337 million in FY87 and 88. In addition, financial control and reimbursement procedures used by the Government have been unwieldy, causing disbursements to lag. However, reforms in these procedures were implemented in 1987 and will facilitate negotiations and implementation of the proposed project. This project is the first forestry development project in Mexico and the first financed by the Bank. Another forestry project is being prepared in the states of Oaxaca and Guerrero for possible financing by the Inter-American Development Bank (IDB). The IDB has reviewed the institutional arrangements for this project and agreed to the same organizational structure for the proposed Oaxaca/Guerrero project. Also, the IFC recently (FY1987) financed a pulpmill in Durango.

Rationale for Bank Involvement

2.32 The Bank has sought to finance the development and conservation of the Mexican forestry sector since it carried out a sector review with FAO/CP in the late 1970's at the Government's request. The Bank's involvement in the sector is consistent with and supportive of the Bank's lending strategy in Mexico, which seeks to improve: (a) environmental protection; (b) productivity, particularly in the use of natural resources; (c) the balance of trade; and (d) the incomes of the rural population, in particular, those of Amerindian communities, by making available more direct financial and technical assistance. It is also consistent with the Government's forestry sector development strategy (paras. 2.08-2.09). The Bank's involvement in the forestry sector is essential in order to make available the financing needed to: provide technical assistance and institutional strengthening, particularly for environmental monitoring and protection; increase credit availability for productive investments in the forestry sector; and improve forest road infrastructure to eliminate erosion and to lower transportation costs. The Government and the Bank agreed that the project focus on the States of Durango and Chihuahua since these had the most promising environment for successful implementation of activities aimed at resolving the issues facing forestry sector development in Mexico (paras. 2.05 to 2.07). The project area is the dense pine and oak forests of the western region of both states in the Sierra Madre range (Map). These activities are not likely to be assisted by other donors, or carried out with the same intensity, without the encouragement provided by Bank financing. The proposed project would be the Bank's first forestry development and conservation project in Mexico (the IFC has financed a small-scale pulpmill in Durango and a forestry project is being prepared in the States of Oaxaca and Guerrero for possible financing by the IDB). The successful implementation of this initial project would allow the Government to replicate it in other states or in a national project which the Bank could consider financing.

III. THE PROJECT

Origin

3.01 In the late 1970's at the request of the Mexican Government, the Bank and the FAO/CP carried out a forestry sector review which confirmed that investments for the development of the renewable forest resource were needed and would have a high rate of return. Benefits would include improvement of rural incomes and employment, enhanced environmental protection and reduction of the forest products trade deficit. Changes of government and fiscal crises in Mexico, however, delayed preparation of a forestry project. In February 1985, a World Bank mission visited Mexico at the invitation of the government to reactivate the preparation process and identify forestry development projects suitable for World Bank financing.

3.02 The mission recommended preparation of a project that focused on expanding the supply of logs to industry, raising the efficiency of existing processing facilities and, consistent with Government policy, assisting the forest producers in the vertical and horizontal integration of their operations. CONAFOR was established in late 1986 to inter alia coordinate project preparation. In November 1987, a Bank-FAO/CP mission went to Mexico to finalize the report with CONAFOR. A Bank Preappraisal mission visited Mexico in April 1988 and appraisal took place in two phases (June and September 1988) to avoid conflicts with the presidential elections which were held in July 1988.

Project Objectives and Description

3.03 Objectives. The project, in addressing the development issues (paras. 2.05 to 2.07), complements recent forestry legislation and policy initiatives in Mexico (paras. 2.08-2.09). It has the specific objectives of: (a) improving environmental protection by introducing rational forest management practices, rehabilitating the forestry road network, monitoring forestry activities, strengthening parks and reserves administration and financing research and protection of endangered species; (b) increasing the productivity and efficiency of forestry activities in Durango and Chihuahua by financing equipment and technical assistance to improve forest management, harvesting, and industrial technology and to permit the vertical and horizontal integration of forest producers' operations; (c) improving the quality of life by increasing rural and urban employment and family income, especially in the traditionally impoverished Amerindian communities; and (d) strengthening the management and coordination capabilities of federal and state forestry and conservation institutions.

3.04 Project Description. The project would finance: (a) a line of credit (about US\$48.1 million or 53% of total project costs including contingencies) for forest producers to finance the purchase of equipment for logging, transport, road maintenance and wood processing and to provide working capital for operations such as seasonal log purchase; (b) the rehabilitation of forestry roads (US\$33.6 million or 37% of total project costs); (c) institutional development (US\$4.9 million or 5% of total project cost) including technical assistance and training for beneficiaries of the credit line and for staff of the executing agencies; (d) environmental protection (US\$3.4 million or 3% of total project costs)

consisting of (i) monitoring of road rehabilitation and forest harvesting activities, (ii) preparation of an environmental profile of the project area and research into endangered species of flora and fauna, and (iii) improving infrastructure for national parks and reserves in the project area; and (e) special studies (US\$1.1 million or 1% of total project costs) including (i) pre-feasibility studies for pulp mills in Durango and Chihuahua; (ii) testing of the pulpability of native oak species; (iii) an environmental baseline study and aerial photo coverage of the project area for monitoring and management purposes; and (iv) preparation of a second-stage forestry development project for possible World Bank financing. The Bank loan would finance US\$45.5 million or 50% of total project costs (US\$91.1 million).

Detailed Project Description

3.05 Credit for Forestry Integration - The project's opening of a specific line of credit for forestry investments, together with the strengthening of credit promotion activities by FIRA and FICART, and specially contracted promoters for the Amerindian communities (paras. 2.11 and 3.07) is expected to tap the demand identified in surveys carried out in Durango and Chihuahua (para. 2.07). The credit component would help finance the purchase of equipment for logging, forest road maintenance, transport and manufacturing to increase production, reduce costs and increase the vertical integration of the forest producers (i.e., ejidos, communities and small private landowners). Surveys of these target groups and an analysis of the forestry and forest industry structure in the two states, led to the development of five investment models considered representative of the investments which would be financed by the credit. The number of beneficiaries refers to the approximate number of persons in the ejidos, communities and families who are expected to take the subloans.

-Model 1: Traditional logging equipment for small producers (i.e., those authorized by the forestry technicians of the SARH state delegations (para. 2.26) to harvest about 3,000 m³ per year) who heretofore have sold their timber on the stump and not engaged in harvesting themselves. Items purchased would be chainsaws, truck-mounted cable winches to pull logs from forest and log trucks. Total average investment cost: US\$105,000. Total number of subloans/beneficiaries over seven-year project life: 100/40,000.

-Model 2: Advanced logging equipment for producers with authorized harvesting levels of 25,000 m³ per year. The equipment would allow current producers to increase production and efficiency of their operations by purchasing a logging tractor (skidder), new, larger logging trucks and chainsaws. Total investment cost: US\$ 458,000. Total number of subloans/beneficiaries: 8/3,200.

-Model 3: Intermediate sized sawmill for forest producers who log but who have no manufacturing facilities. The capacity of the mill is 30,000 m³ log input per year and would include a dry kiln (to increase quality control and value added to the lumber produced) and a chipper (to produce chips for sale to pulpmills. Total investment cost: US\$ 697,000. Total number of subloans/beneficiaries: 10/4,000.

-Model 4: Modernization of existing small sawmill. New, more precise sawing equipment and a dry kiln would be purchased. Total investment cost: US\$ 142,000. Total number of subloans/beneficiaries: 70/28,000.

-Model 5: Box Factory (for fruit and vegetable box production). Capacity would be 4,000 m3 per annum of small logs. Total investment cost: US\$ 89,500. Total number of subloans/beneficiaries: 40/16,000.

3.06 The total investment cost of all models would be US\$ 34.7 million. In addition, the credit line would finance 25% of incremental working capital needs (US\$6.9 million) and purchase of road maintenance equipment by the producers groups' road maintenance units (US\$6.5 million) (para. 3.10). The total investment cost for this component is therefore estimated to be about US\$ 48.1 million or 53% of total project costs including contingencies. The total number of beneficiaries would be just over 90,000 persons or about 20% of the population of the forestry areas of both states.

3.07 Qualified subborrowers would be any forest producer (i.e., ejido, community, cooperative or private forest landowner) in the project area which is applying or agrees to apply acceptable forest management techniques to their lands through an approved management plan. Small private sawmill owners (i.e., those with mill capacities under 20,000 m3 per annum of log inputs) would also qualify for the credit. FIRA, which would channel about 75% of the credit to commercial banks, and FICART, which would channel about 25% of the credit to BANRURAL, would be responsible for administering the credit. FIRA has forestry credit promoters in both States (in fact, the heads of FIRA's agroindustry credit programs, which includes forestry credit, are both forestry specialists), who will be responsible for promoting the credit in collaboration with the staff of FODEF (para. 2.11) and the 20 bilingual promoters contracted to work with the UAFs (under INI coordination) in the Amerindian areas of both states (paras. 3.15 and 4.01(c)). They would also provide technical assistance to potential subborrowers for preparing projects for submission to the credit channeling institutions (i.e., commercial banks and BANRURAL). As in the case of other loan contracts between the Mexican government and the World Bank, FIRA and FICART would finance about 90% of the subloans while the participating banks would provide the remaining amount from their own resources. Beneficiaries, all low-income producers, would have to put up a minimum of 10% of subproject costs from their own resources. This minimum contribution would be reviewed and revised as needed, after six months of project implementation, if the target group of investors (e.g. poor and or Amerindian ejidos) were unable to borrow funds because the minimum contribution of 10% was too onerous. The rediscount rates to be paid by the beneficiaries shall be pegged to the General Interest Rate Agreement (GIRA), as stipulated by the Government of Mexico and the World Bank (Annex 4). For the ejidos and communities who do not have legal title to their forests lands, the guarantee fund established by the Government for such social sector subborrowers without collateral, will provide the guarantees required by the commercial banks and BANRURAL for the subloans.

3.08 With respect to subloan appraisal and supervision, FIRA and FICART have developed, over the years, sound subloan appraisal and supervision procedures. Subloans would be evaluated and approved by designated

technicians from participating banks subject to FIRA's/FICART's approval for subloans above prescribed limits. Under the proposed project, FIRA and FICART would be required to obtain prior approval from the Bank for project subloans in excess of US\$500,000 equivalent which also applies to individual subloans resulting from group activity. No subloan would be made for investment if the amount of the proposed subloan, together with the aggregate amount outstanding under previous FIRA/FICART financed subloans to such a borrower, were to exceed the equivalent of US\$2.0 million. FIRA's Operating Regulations and Procedures Manual and FICART's Credit Operations Manual include the guidelines for subloan evaluations, the determination of producer categories, the level of authority for subloan approval, and the proper utilization of subloan proceeds, which are satisfactory to the Bank.

3.09 During negotiations, assurances were obtained from the Government that: (a) interest rates and conditions stipulated under GIRA would apply to the forestry development credit; (b) participating banks would be required to finance from their own funds the agreed percentages of subloans; (c) it would agree to the margins allowed participating banks as outlined in Annex 4, para. 4 and that any change in those margins would be agreed with the Bank; (d) cause participating banks and BANRURAL to lose eligibility for project participation if arrears of subloans discounted by FIRA and FICART were in excess of 15%; and (e) FIRA/FICART would adhere to the above subloan appraisal and supervision procedures (para. 4.01(a)).

3.10 Forest Road Rehabilitation. The project would finance the rehabilitation and improvement of 1,215 kilometers of existing roads, 728 in Durango and 487 in Chihuahua. The total investment cost for this component is US\$33.6 million or 37% of total project costs including contingencies. It would also finance (through the credit component-para. 3.06) the purchase of road maintenance equipment by producer/industry cooperatives to assure proper maintenance of the roads rehabilitated under the project. The Secretaria de Comunicaciones y Transportes (SCT) would design and supervise the road rehabilitation subprojects for SARH. The actual work would be carried out by contractors selected by SCT through local competitive bidding. The rehabilitation would be carried out using SCT approved design standards to improve drainage, alignment and surface durability. All road rehabilitation subprojects would be submitted to SEDUE to determine the environmental impact of the work.

3.11 Road maintenance would be assured after rehabilitation by the formation of cooperatives among the forest producers. Such coops exist in both states for maintenance and construction and they will be used as models for state-wide application. The groups would collect fees per cubic meter of wood or lumber transported on the roads within their jurisdiction and deposit them into a fund. The fund would permanently finance equipment and road crews salaries for the necessary maintenance work. During negotiations, assurances were obtained from the Government that SARH would enter into such "Fee Convenios" with road users for each section of such road rehabilitated, at the time that the design and bidding process for such section are initiated (para.4.01(j)).

3.12 Institutional Development and Training - On the basis of an Institutional Capacity Gap Analysis (ICGA), a project organization chart and a flow of funds chart have been developed to clarify responsibilities

of project coordination and implementation agencies and to show lines of authority to facilitate project execution (Annex 5). Special emphasis has been placed on institutional aspects of this project in response to the problems resulting from the recent reorganization of government forestry agencies (para. 2.11) and special needs of the Amerindian Communities (para. 3.15). Also, a training program was prepared to address the deficiencies identified in the various implementing agencies (SARH, INI, SEDUE). The training program will include strengthening of the coordinating functions of the Project Coordination Unit (PCU, see para. 3.13). Also, the project would finance technical assistance and training for staff of the expanded Forestry Administration Units (UAFs), which are the principal forest extensionists for the ejidos, communities, landowners and small industrialists. The UAFs principal responsibility is to spread modern forest management techniques among the forest producers to assure increased productivity per hectare and lower costs per unit of wood produced. The Silvicultural Development Method (MDS) would be the basis of the management systems used (Annex 2). The technical assistance for the UAFs would consist of courses and consultancies in the areas of forest management, harvesting, forest road maintenance, transportation, manufacturing and marketing . It would involve mostly locally recruited specialists (and some international consultants) from government, NGOs and the private sector (para. 3.19). As a condition of negotiations, a detailed training program was submitted to the Bank for its review and was approved.

3.13 A detailed monitoring system was prepared and submitted to the Bank. Within that system, SEDUE would be responsible for monitoring the environmental impact of the project, and INI would assist in monitoring the impact of the project on Amerindian groups in the project area. The other components would be monitored by the institutions responsible for their implementation. Basic information would be collected periodically and made available to the evaluation team (para 3.17). This monitoring system would be part of the project's overall monitoring program (para. 3.27) which would be used by the coordinating unit of SARH for the preparation of semestral progress reports. During negotiations, assurances were obtained that, as part of its responsibilities for general project coordination, PCU would prepare and submit to the Bank, an annual work plan for all project components including designs for road rehabilitation work prepared by SCT, no later than October 31 of each year, and semi-annual project monitoring reports no later than March 31 and September 30 of each year (para. 4.01(c)). Also during negotiations, the Government provided assurances that SARH would maintain the project coordination unit at the central level (OCC) and at the state level (UCEs) with organization, structure and functions satisfactory to the Bank, and staffed with personnel in numbers and with qualifications satisfactory to the Bank (para. 4.01(d)). The total investment cost of the institutional development and training component would be about US\$ 4.9 million or 5% of total project costs including contingencies. SARH, with collaboration from the executing agencies, prepared a work plan for 1989 (including design and preparation of tender documents for road rehabilitation works by SCT, and monitoring plans by INI and SEDUE including timely contracting of necessary consultants).

3.14 Environmental Protection- The project would finance (a) the monitoring of the environmental impact of all forest management, harvesting

and road rehabilitation activities, (b) research into and the protection and recuperation of endangered species of flora and fauna and, (c) strengthening of the infrastructure and administration of national parks and reserves in the project area including the preparation of park management plans. Using retroactive financing, SARH would coordinate implementation of these activities with the assistance of consultants, and submit to the Bank for its review and approval by January 31, 1990 an environmental baseline study of the project area and have prepared by consultants, aerial photograph coverage of the project area at a scale of 1:20,000 (para. 4.01(b)). These photos would support monitoring and management plan preparation activities. Total investment cost of this component (less the baseline study and aerial photos which are included under special studies) would be US\$3.4 million or 3% of total project costs including contingencies.

3.15 Amerindian Support Activities. Since 1952, the National Amerindian Institute (INI) has maintained a presence in the Tarahumara area, providing the local Indian communities with legal assistance, schooling, health and other government services. In the early years of forestry production in the Sierra de Tarahumara, INI played a major role in providing technical assistance and training to the Indian forestry ejidos. However, in 1972, when the government formed PROFORTARAH, all technical assistance in forestry matters passed from INI to the parastatal corporation. Today, INI only has two forestry specialists working in the Tarahumara region, and none at Santa Maria de Ocotan, the largest Indian community in Durango. With the growing interest of Indians to participate in industrial forestry production, and with the recent liquidation of PROFORTARAH, INI has reactivated its interest in promoting Indian forestry development. The project would respond to these changing circumstances by strengthening the capacity of INI and the UAFs to provide adequate technical assistance and training to the Indian ejidos and communities in the forestry zones. Among other things, it would provide for the contracting of a total of seven forestry specialists and five lawyers for INI's five Coordinating Centers in Durango and Chihuahua to ensure that the Indian ejidos and communities have adequate technical and legal assistance to deal with outstanding land tenure and resource control issues; and provide for a corps of 20 bilingual forestry credit promoters to work with the UAFs in the indigenous areas of both states. These promoters would complement those of FIRA and FODEF (para. 3.07). Also, an anthropologist would be contracted to coordinate monitoring and evaluation of the activities in the two states. The project would therefore provide the Indian forestry ejidos and communities with direct access to the credit line to increase the scale and level of mechanization of their forestry operations; and, it would strengthen the management, coordinating and monitoring skills of INI. The costs of these activities (about US\$0.5 million) are included in the Institutional Development and Training component.

3.16 Special Studies - Special studies to address problems facing forestry sector development, including the balance of payments deficit in pulp (para. 2.06) and the problems resulting from the imbalance between forest and industry ownership (para. 2.29) would include: (i) a pre-feasibility study for a 60,000 tons per year (tpy) chemical pulpmill in the project area, and a 200,000 tpy bleached pulpmill in Durango, (ii) testing of the pulpability of native oak species, (iii) an environmental baseline

study and aerial photo coverage of the project area, to facilitate development of forest management plans and implementation of monitoring activities; and (iv) the preparation of a second-stage forestry development project for possible Bank financing. During negotiations, assurances were obtained that terms of reference, qualifications and experience of the consultants responsible for the studies would be reviewed by and acceptable to the Bank. The environmental baseline study and aerial photos would be presented to the Bank for its review and approval no later than January 31, 1990, the second phase project proposal no later than December 31, 1992 and the remaining studies (i through iv) no later than June 30, 1991 (para. 4.01(b)). The total investment cost of this component would be US\$1.1 million or 1% of total project costs including contingencies.

3.17 Project Evaluation- To complement monitoring activities, which are intended as a management tool, project evaluation would aim to provide SARH with the necessary information to adjust, when appropriate, project strategy and policies. It would also provide key information for the development of comparable forestry programs for other states. Evaluation activities would attempt to formulate and measure the impact of the project on the development of forestry in the two states. PCU would be responsible for coordinating project evaluation which would be contracted to an independent agency. The evaluation would consist of baseline studies, the preparation of annual evaluation reports, and a post-project evaluation. Annual reports would call forestry development trends to the attention of FIRA, FICART and the state executing agencies and would contain appropriate recommendations. A mid-term evaluation would be carried out by the Bank at about the end of the third year of project implementation. It would assess project impact, its success in meeting objectives and make recommendations necessary to correct any shortcomings identified. The post-project evaluation would assess the initial impact of the full project, and would assist PCU in preparing the Project Completion Report. During negotiations, assurances were obtained from the Government that the terms of reference, qualifications and experience of the consultants responsible for project evaluation would be reviewed by and acceptable to the Bank, the annual evaluation reports would be presented to the Bank not later than June 30 of each year for the preceding project year (January-December) (para. 4.01(e)).

Project Cost

3.18 Total project cost over the six and one-half year project implementation period is estimated at US\$ 91.1 million, including a foreign exchange cost of about US\$10.4 million, or about 11%. Taxes consisting principally of value added tax (IVA) of about US\$14 million have been excluded from project costs. No contingencies were computed for the line of credit for forestry development. For other components, physical contingencies total US\$5.5 million, or 7% of baseline costs, and price contingencies total US\$5.2 million, or 6% of baseline costs plus physical contingencies. Price contingencies were estimated in US dollar terms, based on international inflation rates estimated at 3% for 1989 to 1990, and 4.0% p.a. thereafter.

3.19 It is assumed that periodic currency adjustments, estimated on a purchasing power parity basis, would compensate for differences between

projected US dollar inflation and local inflation rates. The project would require about 35 consultant-years of mostly locally recruited specialists for staff training and for carrying out the environmental protection, Amerindian support activities and special studies components. The project cost summary is given in the Loan and Project Summary (Chapter 1), and the yearly phasing is detailed in Annex 1, Table 1.

Financing Plan

3.20 The proposed financing plan would be as in the table below:

Table: Proposed Financing Scheme
(US\$Million)

	<u>Government</u>	<u>IBRD</u>	<u>Subborrowers</u>	<u>Participating Banks</u>	<u>Totals</u>
Credit	<u>15.7</u> ^{a/}	<u>22.6</u>	<u>4.7</u>	<u>4.3</u>	<u>47.3</u>
Forestry Dev't. Credit	13.8	20.0	4.1	3.8	41.7
Road Maintenance Equip.	1.9	2.6	.6	.5	5.6
Forest Road Rehabilitation	<u>12.6</u>	<u>13.0</u>	<u>0.0</u>	<u>0.0</u>	<u>25.6</u>
Durango	5.1	5.2	0.0	0.0	10.3
Chihuahua	7.5	7.8	0.0	0.0	15.3
Institutional Dev. and Training	2.0	2.0	0.0	0.0	<u>4.0</u>
Environmental Protection	<u>0.9</u>	<u>1.7</u>	<u>0.0</u>	<u>0.0</u>	<u>2.6</u>
Special Studies	<u>0.2</u>	<u>0.7</u>	<u>0.0</u>	<u>0.0</u>	<u>0.9</u>
Total Baseline Cost	<u>31.4</u>	<u>40.0</u>	<u>4.7</u>	<u>4.3</u>	<u>80.4</u>
Contingencies ^{b/}	<u>5.0</u>	<u>5.5</u>	<u>0.1</u>	<u>0.1</u>	<u>10.7</u>
Physical	2.5	2.8	0.1	0.1	5.5
Price	2.5	2.7	0.0	0.0	5.2
Total Project Costs	36.4	45.5	4.00	4.4	91.1 ^{b/}
% of Total Project Costs	40.0	50.0	5.3	4.7	100.0

a/ Consists principally of FIRA's own capital funds and some federal budget funds through FICART.

b/ No contingencies included for forestry development credit.

c/ Excluding taxes and duties consisting principal of value-added taxes (IVA) of about US\$14.0 equivalent.

3.21 The Bank loan of US\$45.5 million would amount to 50% of project costs net of taxes. Nacional Financiera (NAFIN) would be the Borrower of the Bank loan. The local cost financing is justified to enable a reasonable Bank contribution to this innovative forestry development program which has a low foreign exchange content but which also has

significant environmental benefits and generates employment and income benefits especially among low-income ejidatarios and Amerindian community members.

3.22 The Government's contribution to project costs would include about 50% of the forestry roads rehabilitation component and the institutional development component. For the special studies and environmental components, government would finance about 25% and 33% respectively. The credit component would obtain about 49% of its financing from the Bank loan, 10% from the subborrower's own capital, 9% from the financial intermediaries (BANRURAL and the commercial banks) and about 32% from both FIRA's own capital resources and the national treasury via FICART. The Bank loan term would be 17 years including 5 years of grace. NAFIN would open a Special Account and would act as the channel for Bank loan disbursements for both the credit component to FIRA and FICART and for all components coordinated by SARH. FIRA would channel credit funds to participating commercial banks and Banrural. During negotiations, assurances were obtained that the lending rates would be positive and consistent with the General Interest Rate Agreement (GIRA) between the Government and the Bank (para. 4.01(a)). In addition, at negotiations assurances were obtained from Government that adequate and timely counterpart funding would be made available for the effective execution of the project (para. 4.01(f)). This has already been provided for in the 1989 federal budget. Finally, as a condition of loan effectiveness the Borrower (NAFIN) would enter into contractual arrangements, satisfactory to the Bank, with the Guarantor (Government) providing for the transfer of the proceeds of the loan to the Guarantor to carry out the non-credit component and for other transfer to FIRA and FICART for the credit component (para. 4.02(a)).

3.23 Retroactive financing of up to US\$4.5 million is recommended to help cover expenditures for project activities, including the environmental baseline study, the aerial photo coverage of the project area and forestry credit disbursements made up to 12 months prior to loan signing, scheduled for September 1989.

Coordination and Management

3.24 General project coordination and the contracting of project evaluation would be performed by PCU through a central unit set up for that purpose (Central Coordinating Office - OCC) with assistance from state-level units (Unidades Coordinadoras Estatales - UCE)). PCU would be responsible for overall monitoring of the project and would produce project progress reports. FIRA and FICART would manage the line of credit including the channelling of funds to participating commercial banks. FIRA and FICART have had experience administering similar credit lines and FIRA has recently begun expanding its staff for forestry credit promotion (para. 3.07) together with FODEF (paras. 2.11, 3.07) and the 20 bilingual credit promoters contracted to work with the UAFs in the Amerindian areas of both states (para. 3.14). SARH would supervise the training and technical assistance components in each state through the DGNF and the state Forestry Programs (PF) in the state delegates' offices.

3.25 The PFs are considered capable of coordinating and managing the technical assistance and training components and SCT has had ample

experience in designing and supervising the rehabilitation of forestry and rural road networks. The UAFs are capable of providing technical assistance in forest management to the ejidos and communities and the training programs built into the project will expand their technical assistance capabilities to the areas of harvesting, road maintenance, transport and manufacturing. The UAFs would also serve a key role in assuring the participation of the project beneficiaries in the formulation, execution, monitoring and evaluation of project activities through their extension activities and constant contact with those beneficiaries.

3.26 By July 31 of each year, each executing agency and each beneficiary participating in project sponsored and financed forestry development activities, would prepare an annual plan (the Amerindian communities would be assisted by the UAFs and INI with the assistance of bilingual technicians contracted specifically for that purpose), detailing the activities and expected expenditures for the following calendar year. These plans would be discussed and reviewed by the PFs in each state and presented to the SSF for their review and approval. The working plan and budget would be presented before August 30 to the SPP to secure adequate funding in the federal budget. Details of the flow of responsibilities and funds can be found in the results of the ICGA (Annex 5). A convenio between SARH and SCT and letters of commitment between SARH and SEDUE, and SARH and INI, specifying the responsibilities of each agency in the project's implementation, were prepared, signed and delivered to the Bank at negotiations. During negotiations, assurances were obtained that the Government would provide to the Bank by December 31 each year satisfactory evidence that adequate funds have been provided for the project (para. 4.01(g)).

3.27 Monitoring. Project monitoring would be coordinated by PCU (para. 3.13) through a unit established for that purpose using information gathered from the monitoring units of each executing agency. The basic information for monitoring would be provided by the field offices of SARH (PFs), the SCT, SEDUE and INI. PCU would prepare semi-annual reports giving details of project progress and expenses. PCU and the executing agency field offices would work closely with the project evaluation team to refine the key indicators and select monitoring data in order to ensure that the evaluation team would have adequate information to perform its task. The SARH monitoring unit would also be responsible for preparing a Project Completion Report. During negotiations, assurances were obtained that the semestral monitoring reports including those of environmental protection and Amerindian activities, would be made available to the Bank by June 30 and December 31 of each year (para. 4.01(h)).

Procurement

3.28 The procurement procedures and amounts for the various project elements are shown in the table below. The range of goods to be financed under the project's credit line for forestry development would be varied and, in the case of most subprojects, would not be suitable for bulk procurement. Also, all contracts are expected to be small. Should any contract be above US\$3.0 million however, it would be subject to international competitive bidding (ICB), according to Bank guidelines. Accordingly, procurement for subprojects would be in accordance with standard practice of private sector enterprises, the main beneficiaries of

the proposed credit lines. Vehicles required by the project are considered to be reserved procurement items and they are not included in the project cost and are not financed by the proposed loan but would be procured by the Government in a timely manner (para. 3.30 and 4.02(j)).

3.29 With respect to the non-credit components, civil works contracts for road rehabilitation, under US\$3.0 million equivalent, would be procured under local competitive bidding (LCB) procedures satisfactory to the Bank. Although no contracts above US\$3.0 million equivalent are expected, should any be above that amount, they would be subject to ICB according to Bank guidelines.

3.30 Almost all equipment, inputs and supplies for laboratories and field work, would be purchased in small quantities (amounting to no more than US\$ 20,000 per contract) at various locations and over the six and one-half year project implementation period. Consequently, these would be acquired through local shopping (at least three quotations). If any contracts for the purchase of equipment, inputs and supplies are over US\$40,000 but under US\$250,000 they would be purchased in accordance with LCB procurement satisfactory to the Bank. Although no contracts above US\$250,000 equivalent are expected, should any be above that amount they would be subject to ICB according to Bank guidelines. The first three LCB contracts for works or goods, irrespective of size, and all subsequent LCB contracts for works over US\$ 1,000,000 as well as any eventual contracts under ICB for goods or works would be subject to prior Bank review of procurement documentation. The balance of contracts would be subject to random post-review by the Bank after contract award. Consultant services would be selected in accordance with Bank guidelines. The Government would make available on a timely basis, sufficient funds (i.e., about US\$ 0.3 million) for the purchase of vehicles necessary for project implementation but not subject to Bank financing and that the procurement procedures outlined in paras. 3.28 -3.30 would be followed.

Disbursements and Special Account

3.31 The proceeds of the proposed loan would be disbursed on the basis of: 70% of the amount disbursed for subloans under the line of credit; 100% of foreign expenditures and 70% of local expenditures for institutional development and training, equipment, materials and consultant services; and 70% of expenditures for civil works. This 70% disbursement would be maintained until the earlier June 30, 1991 or the date on which the aggregate withdrawals under the loan reach the equivalent of US\$15.0 million. Thereafter, the 70% stipulated for all these categories will be reduced to 40%. Loan proceeds would not be used to finance salaries. Disbursements would be made against statements of expenditures (SOEs) prepared by FIRA and FICART in respect of local credit disbursements and disbursements for less than US\$ 100,000 equivalent would be made against statement of expenditures (SOEs) prepared by the other executing agencies in respect of expenditures for the components under their responsibility. Supporting documentation for administrative expenses, credit and construction under force account would not be submitted to the Bank, but would be retained by FIRA, FICART, SARH and SCT and made available for inspection by the Bank during project supervision missions. SOEs would be subject to annual independent audit.

Procurement Arrangements a/

<u>Project Expenditure</u>	<u>ICB</u>	<u>LCB</u>	<u>Shopping</u>	<u>Other</u>	<u>Total Costs</u>
----- (US\$ million) -----					
Civil Works	-	33.6 (17.1)	-	-	33.6 (17.1)
Equipment, Materials & Consultant Services	-	-	0.8 (0.4)	5.8 (3.4)	6.6 (3.8)
Forestry Credit	-	-	-	48.1 (23.2)	48.1 (23.2)
Institutional Development and Training	-	-	-	2.8 (1.4)	2.8 (1.4)
	<u>---</u>	<u>---</u>	<u>---</u>	<u>---</u>	<u>---</u>
Total	-	33.6 (17.1)	0.8 (0.4)	56.7 (28.0)	91.1 (45.5)

a/ Values in parentheses are the estimated respective amount to be financed by the Bank.

3.32 To facilitate Bank disbursements, a Special Account would be opened in the Central Bank with an initial deposit of US\$ 2.5 million. Withdrawals from the Special Account would be supported by the required documentation. The amount deposited in the Special Account may be increased or decreased by the Bank as required for project execution on the basis of average estimated expenditures over four months.

3.33 Disbursements are expected to occur over about seven years as shown in the estimated disbursement schedule in Annex 1, Table 2. Project expenditures incurred no more than twelve months prior to loan signing would be eligible for reimbursement through retroactive financing up to US\$4.5 million (para. 3.23). The completion date of the project would be December 31, 1995 and the closing date would be June 30, 1996.

Project Accounts and Auditing

3.34 The Central Bank would maintain the funds at the Special Account, based on which NAFIN would prepare a "Statement of Transactions and Availability of Funds" for the year, which would be presented to the audit of an independent auditor acceptable to the Bank and designated by the Secretaria de la Contraloria General de la Federacion (SECOGEF) in accordance with the current arrangements. After the audit and not later than six months after the close of its fiscal year, NAFIN would transmit to the Bank, certified copies of the audited Special Account, together with a certified copy of the auditor's report.

3.35 During the course of annual audits of the FIRA and FICART project funds and the executing agency accounts, the independent auditors would test check SOEs supporting disbursement requests, the internal controls over project transactions and of the implementation of these controls, the supporting evidence for the expenditures and the eligibility of the expenses in accordance with loan agreements. FIRA and FICART should also maintain separate and identified project accounts of project expenditures in accordance with its present chart of accounts. Statements of project accounts of FIRA, FICART and the other executing agencies would be consolidated by and retained in the PCU office in Mexico and made available for Bank supervision. Audit arrangements for FICART, SARH, STC, SEDUE, PCU and INI are summarized in Annex 3.

3.36 During negotiations, assurances were obtained from the Government, FIRA and FICART that: (a) the Special Account, the investment credit accounts of FIRA, FICART and participating banks, and the executing agency accounts mentioned above would be maintained and audited annually according to standards and procedures satisfactory to the Bank and NAFIN; (b) terms of reference for the auditors to be prepared by SECOGEF and acceptable to the Bank would include, inter alia, detailed procedures for the examination and verification of the SOEs for the project accounts and specific information on FIRA and FICART's portfolio structure; and (c) copies of these audit reports would be submitted to the Bank within six months of the close of each project fiscal year (paras. 4.01(i)).

Cost Recovery

3.37 For the forestry development credit line, cost recovery is expected through repayment of the credit by the subborrowers. The technical assistance and training by the UAFs for the forestry producers and small sawmill owners would be paid for directly by those beneficiaries through the existing system of quotas on wood production which pay the salaries and expenses of the UAF staffs. There is not expected to be cost recovery for the technical assistance financed for the training of government agency staff members and training of UAF personnel. However, the line of credit would also be open to financing the costs of consultants by the forest producers to train and/or complement their UAF's staffs (provisions of the new Forestry Law permit use of credit for this end). As in the case of other road investments in Mexico, the investments in rehabilitation of forestry roads would be partially recuperated by existing road user charges (i.e., fuel taxes). The cost of maintenance of those roads would be fully paid for by funds set up by the forest producers in their areas of influence. A quota paid for each cubic meter of wood transported over the roads would be placed in a fund to finance equipment and salaries of road maintenance teams or to pay for the services of an independent road maintenance contractor. Similar schemes have worked well in parts of both states including cost recovery for the "Gran Vision" road program in the state of Chihuahua (paras. 3.11).

Fiscal Impact

3.38 The economic activities generated by this project are expected to provide the States of Durango and Chihuahua and the Federal Government with additional revenue averaging about US\$ 12.7 million per year. These would come principally from the value-added tax of 15% on the incremental

production generated by the project. Additional proceeds would be generated by the higher taxes on the incremental personal income generated by the project and by road user charges for wood products transport (para. 3.37).

Environmental Impact

3.39 Traditionally, the pine-oak forests of Durango and Chihuahua have been Mexico's major timber producing region. Timber harvesting and transport and forest products manufacture will continue with or without Bank involvement in the sector. Therefore, to assure a positive "with project" impact, the project has been designed to reduce and mitigate the negative environmental impacts of traditional forestry and forest industry practices in the two states. The project also strengthens institutions responsible for environmental monitoring, research and conservation. With these components, the project is expected to have a strong positive environmental impact in the project area in both states. Improved forest management techniques will increase per hectare productivity, allowing more timber to be removed from smaller areas to satisfy market demands. Improved harvesting techniques will reduce the logging road density needs, reducing disturbance of soils and concomitant erosion. Rehabilitation of existing forest roads will likewise improve drainage and reduce soil losses and improved maintenance will stabilize these same roads indefinitely. Increased efficiency of sawmills will increase wood production per unit of log volume consumed, reducing waste and demand for raw material from the forest with clearly positive impact on the resource. Most importantly, the project is financing studies of endangered species of flora and fauna with the objective of protecting them and their habitats from further encroachment by forestry or agricultural activities where necessary. Improved infrastructure (i.e., a visitor's center and administrative offices) for national parks and reserves will improve protection for those areas. Finally, a strong environmental monitoring program under the coordination of SEDUE, including mandatory environmental impact statements for all forest harvesting plans and road rehabilitation projects would assure compliance with Mexico's new Environmental Law.

3.40 The improved forest management techniques (para. 3.12) will substitute current highgrading practices which have degraded the forests for the past 100 years and will increase the intensity of natural regeneration and the productivity of the forests. This in turn, will permit forest producers to extract more wood per hectare per year while concomitantly improving the stocking and vigor of the forests. Improved extraction techniques (e.g., use of cable systems and skidders) would reduce roading needs and damage to remaining trees. Road rehabilitation, with improved design and maintenance, would improve drainage, reduce soil movement and reduce the risks of erosion and sedimentation. Improved sawmilling equipment would decrease waste and thus further reduce raw material needs per cubic meter of wood extracted, would improve product quality and extend supplies all of which would be clearly beneficial environmentally. The financing of studies on endangered species of flora and fauna together with the strengthening of SEDUE and, in particular, its administrative infrastructure for national parks and reserves will bring positive long-term environmental benefits to the project area. The monitoring of the project's environmental impact by SARH/PCU/SEDUE and the required environmental impact analyses for all management/harvesting plans

and investment subprojects financed under the project, would assure project compliance with federal environmental legislation. Finally, the efforts to promote credit among the project area's Amerindian population and provide them with technical and legal assistance (the latter to assist in resolving land tenure and resource control issues) would assure equitable participation in project benefits and improved income and employment for these traditionally poorest of rural groups.

Financial and Economic Analyses

3.41 An economic rate of return was not calculated for this project as it is principally a credit operation. However, the rates of return on the indicative forestry credit investment models varied from 24% p.a. to over 100% and the forestry road rehabilitation subprojects had IRRs which varied from 12% to over 100%. It should be noted that some of the project components would have significant benefits that could not be quantified. For example, the technical assistance and training activities are certain to have demonstration effects on other ejidos, communities and small land owners in the two states, particularly since the direct participants represent only about 20% of the total number of forest land owners in Durango and Chihuahua but will be located in almost all of the municipalities of the State, thereby multiplying the chances of diffusion of successful new forestry production techniques. Also, the savings to the Government, in terms of enhanced revenues from the increased forest productivity from credit-financed activities could be significant (para. 3.35). Furthermore, the estimated rates of return do not fully capture the importance of the project to Mexico's forestry sector since they exclude benefits from: (a) the reduced pressure on the natural forests as productivity rises; (b) increased employment, especially in impoverished rural areas; (c) the improved utilization of land resources, and (d) the savings in foreign exchange due to improved balance of trade.

Employment

3.42 Direct employment generated for unskilled laborers in the management, harvesting, transport and manufacturing of forests and forest products under the project, is estimated at 3,080 full-time jobs and that for skilled equipment operators and managers would be about 280. Road maintenance would generate an additional 150 full-time jobs for unskilled laborers and 70 for equipment operators.

Project Risks

3.43 Project risks center on three areas: (a) institutional capacity for implementation; (b) institutional coordination; and (c) availability of adequate counterpart funds. Close monitoring and evaluation and strong technical assistance are included in the project design to ensure that proper attention is paid to these issues. Project design has been kept as simple as possible to minimize institutional staffing and coordination risks. Government assurances of provision of adequate and timely counterpart financing throughout the project would be a legal covenant (paras. 3.22 and 4.02(g)).

IV. SUMMARY OF AGREEMENTS REACHED

4.01 During negotiations, assurances were obtained from the Government that:

- (a) (i) positive interest rates and conditions stipulated under GIRA would apply to the forestry development credit (para. 3.22); (ii) require participating banks to finance from their own funds the agreed percentages of subloans; (iii) agree to the margins allowed participating banks as outlined in Annex 4, para. 4 and that changes in those margins would be agreed with the Bank; (iv) cause participating banks and BANRURAL to lose eligibility for project participation if arrears of subloans discounted by FIRA and FICART were in excess of 15%; and (v) FIRA/FICART would adhere to the above subloan appraisal and supervision procedures (para. 3.09);
- (b) terms of reference, qualifications and experience of the consultants responsible for the studies to be carried out under this project would be reviewed by and acceptable to the Bank. The environmental baseline study and aerial photos to be carried out by SARH would be presented to the Bank for its review and approval no later than January 31, 1990, the second phase project proposal no later than December 31, 1992 and the remaining studies (i through iv) no later than June 30, 1991 (para. 3.16);
- (c) as part of its responsibilities for general project coordination, SARH through PCU would prepare and submit to the Bank, an annual work plan for all project components including designs for road rehabilitation work prepared by SCT, no later than October 31 of each year and semi-annual project monitoring reports no later than March 31 and September 30 of each year (para. 3.13);
- (d) SARH would maintain the project coordination unit (OCC) at the central level and at the state level (UCEs) with organization, structure and functions satisfactory to the Bank, and staffed with personnel in numbers and with qualifications satisfactory to the Bank (para. 3.13);
- (e) the terms of reference, qualifications and experience of the consultants responsible for project evaluation would be reviewed by and acceptable to the Bank, the annual evaluation reports would be presented to the Bank not later than June 30 of each year for the preceding project year (January-December) (para. 3.17);
- (f) adequate and timely counterpart funding would be made available for the effective and timely execution of the project (para. 3.22);
- (g) satisfactory evidence that adequate funds have been provided for the project would be made available to the Bank by December 31 each year (para 3.26);

- (h) semi-annual monitoring reports including those of environmental protection and Amerindian activities would be made available to the Bank by June 30 and December 31 of each year (para. 3.27).
- (i) (a) the Special Account, the investment credit accounts of FIRA, FICART and participating banks and the executing agency accounts would be maintained and audited annually according to standards and procedures satisfactory to the Bank and NAFIN; (b) terms of reference for the auditors to be prepared by SECOGEF and acceptable to the Bank would include, inter alia, detailed procedures for the examination and verification of the Statements of Expenditures (SOEs) for the project accounts; and (c) copies of these audit reports would be submitted to the Bank within six months of the close of each project fiscal year (para. 3.36);
- (j) SARH would enter into such "Fee Convenios" with road users for each section of such road rehabilitated, at the time that the design and bidding process for such section are initiated (para.3.11)).

4.02 As condition of loan effectiveness:

the Borrower (NAFIN) would enter into contractual arrangements, satisfactory to the Bank, with the Guarantor (Government), providing for transfer of the proceeds of the loan to the Guarantor for carrying out the non-credit component and for further transfer to FIRA and FICART for the credit components. (para. 3.22).

4.03 With the above assurances and conditions, the project is suitable for a Bank loan of US\$ 45.5 million with a term of 17 years including a grace period of five years.

August 2, 1989

MEXICO

FORESTRY DEVELOPMENT PROJECT

Statistical Annex

MEXICO
FORESTRY DEVELOPMENT PROJECT
Annual Phasing of Project Costs
(Mex\$ million and US\$ million)

	Year 1		Year 2		Year 3		Year 4		Year 5		Year 6		Year 7		Total		% of Total Baseline Costs
	Mex\$	US\$	Mex\$	US\$	Mex\$	US\$	Mex\$	US\$	Mex\$	US\$	Mex\$	US\$	Mex\$	US\$	Mex\$	US\$	
Credit	3,131.3	1.4	13,966.8	6.2	17,427.1	7.7	23,462.2	10.4	22,986.0	10.2	23,190.5	10.3	2,738.6	1.2	106,896.5	47.3	58.8%
Forestry Develop. Credit	2,746.8	1.2	12,309.2	5.4	15,514.5	6.9	20,784.5	9.2	20,174.8	8.9	20,257.8	9.0	2,356.1	1.0	94,145.7	41.7	51.8%
Road Maintenance Equip.	382.5	0.2	1,657.6	0.7	1,912.6	0.8	2,677.7	1.2	2,805.2	1.2	2,932.7	1.3	382.5	0.2	12,750.8	5.6	7.0%
Rural Roads	1,737.7	0.8	7,530.0	3.3	8,896.5	3.8	12,163.9	5.4	12,743.1	5.6	13,322.4	5.9	1,737.7	0.8	57,923.4	25.6	31.9%
Durango	698.0	0.3	3,024.5	1.3	3,489.8	1.5	4,885.7	2.2	5,118.4	2.3	5,351.0	2.4	698.0	0.3	23,295.4	10.3	12.8%
Chihuahua	1,039.7	0.5	4,505.5	2.0	5,196.7	2.3	7,278.2	3.2	7,624.7	3.4	7,971.3	3.5	1,039.7	0.5	34,657.9	15.3	19.1%
Institutional Development	271.2	0.1	1,175.2	0.5	1,356.0	0.6	1,898.4	0.8	1,988.8	0.9	2,079.2	0.9	271.2	0.1	9,840.0	4.0	5.0%
Environmental Protection	176.3	0.1	763.9	0.3	891.4	0.4	1,234.0	0.5	1,292.7	0.6	1,351.5	0.6	176.3	0.1	5,876.0	2.6	3.2%
Special Studies	0.0	0.0	2,045.3	0.9	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	2,045.3	0.9	1.1%
Total Baseline Costs	5,316.5	2.4	25,481.2	11.3	28,353.0	12.5	38,758.5	17.1	39,004.7	17.3	39,943.6	17.7	4,923.8	2.2	181,781.2	80.4	100.0%
Contingencies a/	398.1	0.2	2,467.3	1.1	2,825.8	1.3	4,710.1	2.1	5,756.0	2.6	6,910.8	3.1	1,022.6	0.5	24,090.7	10.7	
Physical Contingencies	360.8	0.2	1,870.3	0.8	1,804.0	0.8	2,525.6	1.1	2,645.9	1.2	2,766.1	1.2	360.8	0.2	12,333.4	5.5	
Price Contingencies	37.3	0.0	597.0	0.3	1,021.8	0.5	2,184.5	1.0	3,110.1	1.4	4,144.7	1.8	661.8	0.3	11,757.3	5.2	
Total Project Costs	5,714.6	2.6 b/	27,948.5	12.4	31,178.8	13.8	43,468.6	19.2	44,760.6	19.8	46,854.4	20.7	5,946.4	2.6	205,871.9	91.1	

a/ No contingencies were included for the forestry development component of the credit line.

b/ Includes initial deposit in Special Account of US\$2.5 million.

ANNEX I
Table 2

MEXICO

FORESTRY DEVELOPMENT PROJECT

Estimated Schedule of Bank Disbursements
(US\$ million)

<u>Bank Fiscal</u> <u>Year</u>	<u>Quarter</u>	<u>Disbursement</u> <u>During</u> <u>Quarter</u>	<u>Cumulative</u> <u>Amount</u> <u>Disbursed</u>	<u>Balance</u> <u>of Loan</u>
				45.5
1989	March 31, 1989	2.5 ^{1/}	2.5	43.0
	June 30, 1989	0.0	2.5	43.0
1990	Sept. 30, 1989	0.5	3.0	42.5
	Dec. 31, 1989	0.8	3.8	41.7
	March 31, 1990	0.8	4.6	40.9
	June 30, 1990	0.8	5.4	41.1
1991	Sept. 30, 1990	1.6	7.0	38.5
	Dec. 31, 1990	2.1	9.1	36.4
	March 31, 1991	2.3	11.4	34.1
	June 30, 1991	2.3	13.7	31.8
1992	Sept. 30, 1991	2.3	16.0	29.5
	Dec. 31, 1991	2.3	18.3	27.2
	March 31, 1992	2.5	20.8	24.7
	June 30, 1992	2.5	23.3	22.2
1993	Sept. 30, 1992	2.8	26.1	19.4
	Dec. 31, 1992	2.8	28.9	16.6
	March 31, 1993	2.3	31.2	14.3
	June 30, 1993	2.3	33.5	12.0
1994	Sept. 30, 1993	3.2	36.7	8.8
	Dec. 31, 1993	3.2	39.9	5.6
	March 31, 1994	2.1	42.0	3.5
	June 30, 1994	2.1	44.1	1.4
1995	Sept. 30, 1994	0.7	44.8	0.7
	Dec. 31, 1994	0.7	45.5	(0.0)

1/ Represents initial deposit of US\$2.5 million into the Special Account.

ANNEX 1
Table 3

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Allocation of Loan Proceeds

<u>Category</u>	<u>Items</u>	<u>Amount</u> <u>U.S. Million</u>
I	Civil Works. 50% of expenditures.	15.4
II	Institutional Development and Training. 100% of foreign expenditures, and 50% of local expenditures	1.3
III	Consultant Services	3.4
IV	Equipment and Materials 100% of foreign expenditures, and 50% of local expenditures	0.3
V	Credit 60% of the amount disbursed for subloans	20.6
VI	Unallocated	<u>4.5</u>
	TOTAL	<u>45.5</u>

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Forest Management Practices

1. Until the late 1970s, the pine forests of Mexico had been harvested using a selective system. Cutting rights or concessions, were granted by the Direccion de Aprovechamiento of the Subsecretaria Forestal y de la Fauna of the Federal Government, and an annual allowable cut was allocated to each concessionaire. This allowable cut was determined in accordance with the calculated increment using the National Forest Inventory as a guide. A diameter limit of 45 cm, diameter, breast high (dbh), was usually enforced so that trees below that limit would be left to recover the wood volume lost in the harvest.

2. Since pine forests tend to be even-aged, however this system led to an uneven spatial arrangement of the residual stands, with smaller trees of poor genetic quality (both in rate of growth and in form) crowded together in patches, while in other areas, open spaces were left where broad-leaved species might flourish and hamper regeneration of pines. As a result, while the initial yield per ha is reasonable under this system, poor crops are generally harvested at the subsequent cutting cycles.

3. During the past decade, more scientific systems of management have been on trial, including the Silvicultural Development System (MDS). This system uses updated and more intense forest inventories based on aerial photographs, to divide the forest into stands. Since stand types are controlled to a large extent by topography, it is often possible to use natural boundaries to define their limits, and they can be regarded as "compartments" or units of management. Field surveys are then carried out to determine whether the stands should be subdivided into sub-stands based on the average age and the density of stocking.

4. The treatment consists of a series of thinnings, normally at ten year intervals, with a heavy "seeding felling" when the average age of the trees is about 50 years. The remaining seed trees are felled about ten years later if regeneration has been achieved. The main principle followed in the thinnings is to extract those trees that are older or younger than the average, then thinned sufficiently more to give the better remaining stems room to develop, taking from 25% to 30% by volume at each thinning. The main advantage of this system is that a constant supply of good quality logs is assured, the increment is increased and the growth is on the better quality stems. The quality of future stands is also guaranteed as only the best trees remain as parents to the next crop.

5. Some specific projections have been calculated to show the yields that may be expected under the MDS, taking some of the more common types of stands and some empirical examples. At a fixed percentage increment, these examples demonstrate that this form of management can increase the volume

increment by up to 73% compared to the growth in the unmanaged stand. A further calculation compared the yields and values of products extracted over a rotation under the selection system and the MDS. In the latter case more pulpwood is produced, but also more peeler (i.e., veneer quality) logs. When notional values were given to the types of produce (31 units for pulpwood, 100 for sawlogs and 140 for peeler logs) the total volume extracted under the selection system was 97.2 m³ worth 8,750 units, but under MDS, 125 m³ are extracted worth 9,694 units. The initial stocking of the stand was only 70 m³/ha.

6. At the moment, the Forest Service is pursuing a campaign to extend the application of the MDS. In 1979 some 700,000 ha were said to be under the system yielding 2.1 million m³ and by 1982 there is a target of 3.5 ha yielding 11.2 million m³. This requires training facilities that appear to be adequate, and the extra cost will be mainly in the salaries of the extra professional staff needed to carry out the surveys and planning. Furthermore, as more detailed information becomes available from forest inventories on forest stocking and growth (and, in particular, on growth of residual forest after thinning treatments), and as sophisticated, but easy to use computer programs are developed to project financial returns of different silvicultural treatments, the MDS system will continue to be modified and improved.

ACCOUNTING AND AUDIT ARRANGEMENTS AND RELATED TERMS OF REFERENCE

1. The mission made an overall evaluation of SARH, FICART and FIRA accounting system, internal controls, and management information system under the perspective of their individual role in the eventual operation. In addition, in the case of FICART and FIRA specific information on the structure of its portfolio was obtained.
2. Consistently with the current audit understandings with SECOGEF and the Government authorities, the following audit arrangements are recommended for this operation, which should be communicated to the participating entities and, through CONAFOR, to SECOGEF.
3. It will be two types of arrangements: one involving external audit firms and the other on the basis of the utilization of the Secretariats' Internal Audit Departments.
4. Work to be performed by the Secretariats' Internal Audit Departments
 - a) SECOGEF will coordinate and monitor the audits to be performed by the Internal Audit Departments of the Secretariats of Agriculture (SARH), Urban Development (SEDUE) and Transport and Communications (STC) for the respective intervention in the execution of the project. SECOGEF will subsequently issue a second audit opinion adhering itself - or indicating the reasons for not adherence - to the opinion issued by the Internal Audit Departments.
 - b) In the case of SEDUE, the Internal Audit Department of the Secretariat will cover the responsibility of the Secretariat for the execution of the studies and consultants, the monitoring of the environment impact and the funds spent in these activities. Since it is foreseen that SEDUE will delegate these responsibilities in its States Delegations, the internal audit monitoring should be extended to the States involved. SEDUE's Internal Audit Department will check also that the States Delegations present timely to SEDUE's General Directorate of Natural Resources Ecological Conservation the agreed report regarding the progress achieved with the studies. So, the effectiveness of SEDUE's internal communication network and coordination will be an important feature in the evaluating work of the Internal Audit Department.
 - c) In the case of STC the Secretariat's Internal Audit Department will cover the work performed in the conservation of the roads, and will monitor the Secretariat's involvement in the contracting and supervision of the works, bidding processes, etc. Also, the internal auditors will check the work of roads conservation by the Center Directorates (Direcciones de Centro). These activities must be reported to the delegated offices of SARH.

- d) In the case of SARH its intervention would not be of financial but rather of administrative nature; therefore, the audit will be an administrative one, and it should cover:
- SARH entering an agreement with STC for the execution by the latter of the infrastructural component of the project. (It is foreseen that SARH will execute actions vinculated to the rehabilitation, improvement and conservation of roads under supervision by STC).
 - the joint agreement with FIRA and FICART for the execution of the credit component;
 - the delegation in CONAFOR of its responsibility for the coordination of the execution, supervision and administration of the project through a Coordinating Control Unit which will render periodic reports to SARH Secretary;
 - delivering the works to the beneficiaries through SARH delegated offices in the States;
 - approving the annual working program of the Forestry Administration Units;
 - The SARH Internal Audit Department will also audit CONAFOR performance in the project as the coordinating entity for the execution, supervision and administration of the project through the Coordinating Central Office. CONAFOR will receive the information inputs from the two State Coordinating Units which will periodically inform CONAFOR, and through this to SARH, on the costs, quality and timelines of execution of the project.

5. Special Managerial Internal Auditor. It was further agreed during the August appraisal mission that under FONDEFOR or CONAFOR's Coordinating Control Unit will be an accounting professional which will closely monitor the financial execution of the project by all parties involved: CONAFOR, SARH, SCT, SEDUE, FIRA FICART and INI.

6. Work To Be Performed By Private Audit Firms.

- a) The external auditors must be qualified and acceptable to both SECOGEF and the Bank.
- b) SECOGEF will coordinate the work of the external auditors including preparation of the TOR and monitoring of the planning, executing and reporting of the audit of FICART, FIRA and INI.
- c) In accordance with the institutional map foreseen for the execution of the project, and the flow of financial resources, the fundamental entities in terms of funds mobilization and the related controls are FIRA and FICART (already the subjects of audit in other loan agreements) with NAFIN. as a financial

intermediary, opening the Special Account at Banco de Mexico and requesting the reimbursements from that account in order to recover the resources of the global line of credit that SARH will have at Banco de Mexico for the execution of the project.

- d) Regarding FICART, the audit by the private audit firm designated by SECOGEF is acceptable to the Bank. The audit report would be a short-form report with supplementary information regarding the structure and position of the portfolio, and a management letter. In addition, a separate opinion on the SOE will be required. It is not indispensable, but it would be convenient for the Bank, to receive information on the portfolio situation of Banco Nacional de Credito Rural, S.N.C. (BANRURAL) similar to the one that was requested and obtained by the mission: an annual summary of the loans made by BANRURAL system and an annual comparative analysis of the structure and mora situation of the portfolio. This information can be supplemented by the receipt of the report on BANRURAL prepared by its private firm of auditors, which is acceptable to the Bank.
- e) Regarding FIRA, whose external auditor is acceptable to the Bank, in addition to the annual short-form report on the financial Statements of the trust, a separate opinion on the SOE will be required, prepared by the independent auditors, with pertinent information on the portfolio structure and situation, and a management letter.
- f) Note: CONAFOR's State Coordinating Units will be kept informed by the Instituto Nacional Indigenista-INI about the latter's loan promotion activities. INI use of loan funds requires it to be audited. INI is currently audited by a private firm of auditors which is acceptable to the Bank. A short-form audit report, a separate opinion on SOEs and a management letter will be required.

7. Audit of the Special Accounts. Transactions of the Special Accounts are to be recorded and availability of funds maintained at NAFIN. NAFIN independent auditors, which are acceptable to the Bank, will include in their annual separate audit report on all special accounts, specific information regarding the special account of the Forestry Development Project.

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On-Lending Procedures and Interest Rates

1. The credit component would be on-lent to FIRA/FICART by the borrower, NAFIN, through the Government over a period similar to that of the Bank's loan, in local currency at positive interest rates that would vary with the ACF (an index average cost of funds to multipurpose banks). FIRA and FICART would finance up to 90% of the subloan amount while the participating commercial banks and BANRURAL would provide the remaining amount from their own resources. Low-income producers subloan beneficiaries would be required to finance a minimum of 10% of the subproject costs.
2. Interest rates to the ultimate beneficiary under this project would be governed by GIRA. GIRA provides for the linking of interest rates to ACF, a systematic accounting of subsidies, a gradual phasing-out of remaining subsidies for most beneficiary categories, periodic adjustment of rates and a reduction in the dispersion of interest rates. It has provided a framework for financial sector work, and an agenda for a structured policy dialogue and periodic consultations. Interest rates for short-term and investment credit are subject to monthly adjustments under GIRA and have reached ACF for agricultural lending, except for those to low-income producers. Also, the interest rates for all current lending are highly positive; monthly interest rates for low income producers are above 3% while monthly inflation is currently below 1%.
3. Both the nationalized commercial banks and public banks adhere to the same on-lending rate structure. The most recent interest rates (effective July 1, 1988) agreed under GIRA for medium-and long-term lending are: (a) low-income producers: 95% of ACF and (b) other producers: 100% of ACF. Short-term rates are two percentage points higher than medium and long-term loans.
4. Participating banks are allowed a discount margin between the on-lending rate to the subborrower and that paid to FIRA and FICART of up to 10% of ACF.

MEXICO

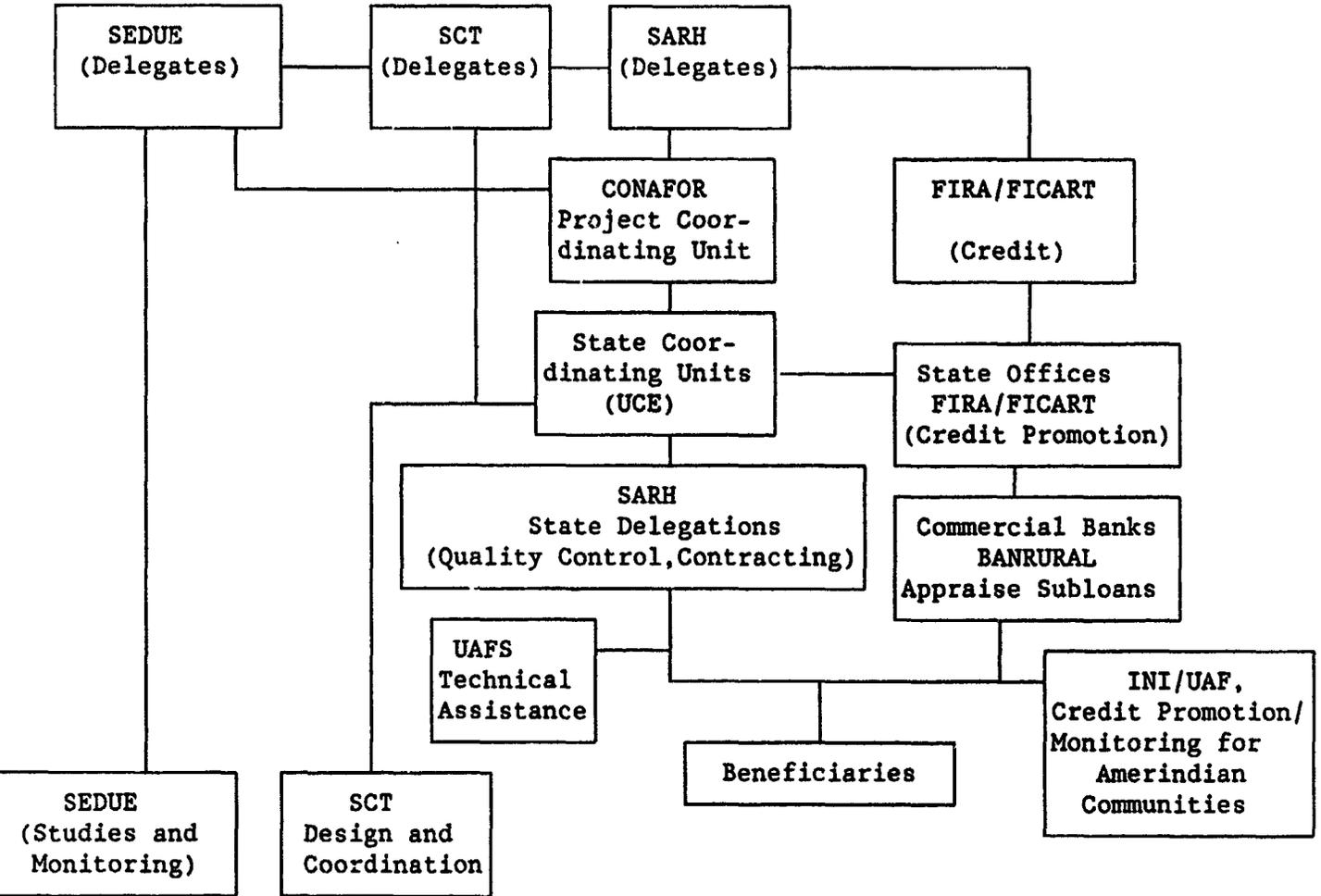
FORESTRY DEVELOPMENT PROJECT

ANNEX 5

INSTITUTIONAL ORGANIZATION AND FLOW OF FUNDS CHARTS

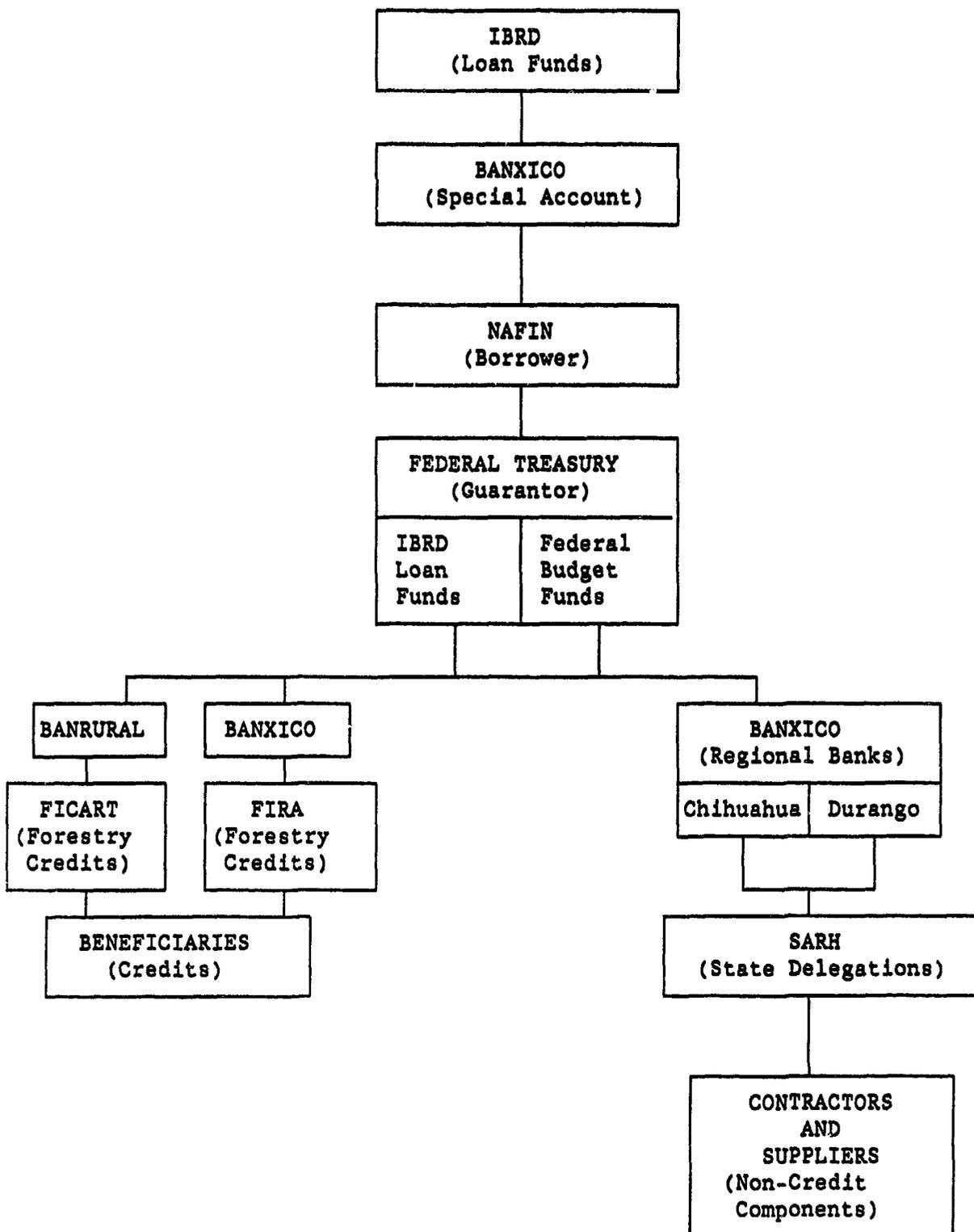
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Organization Chart



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Flow of Funds Chart



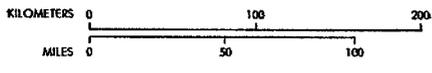
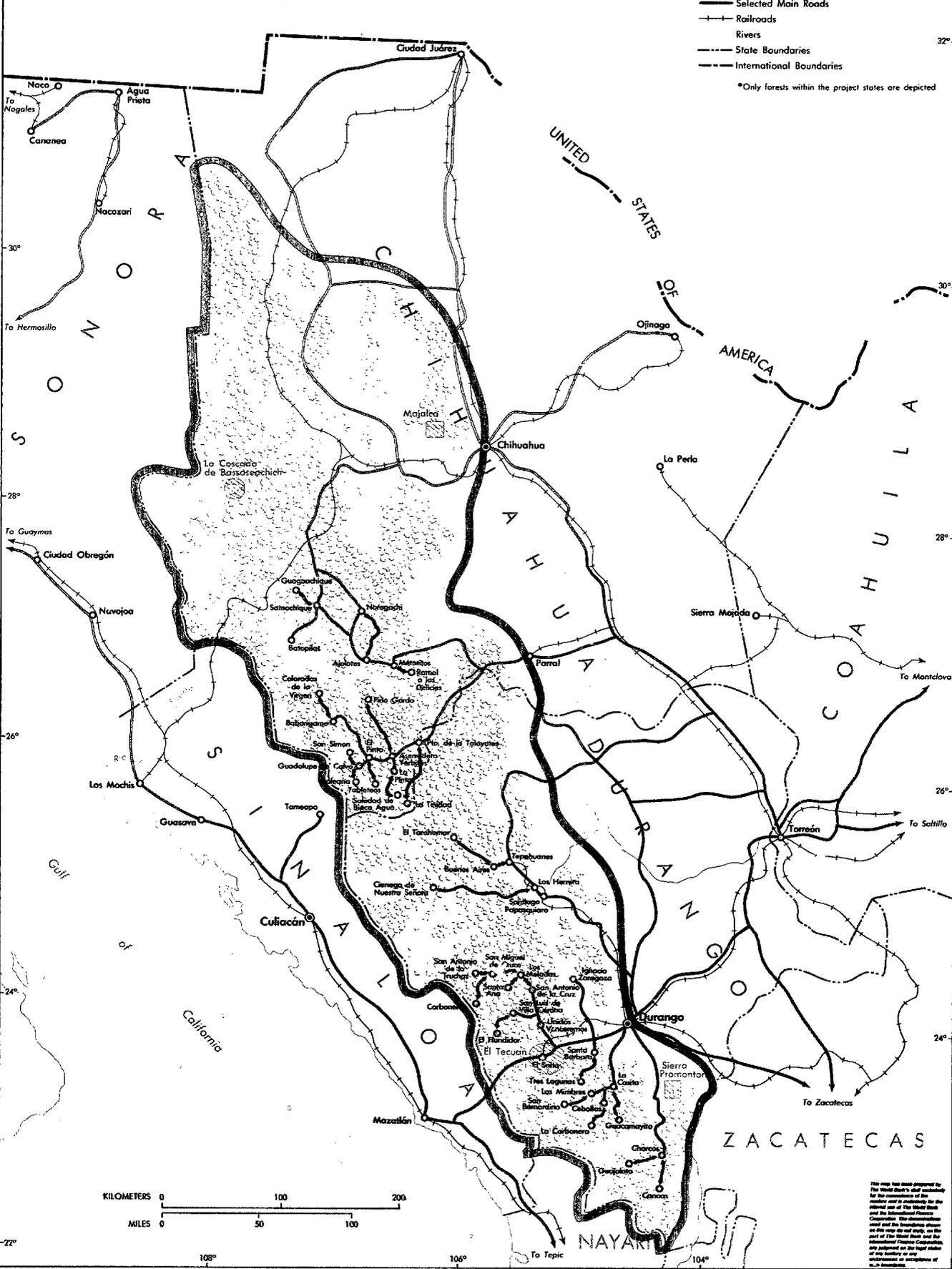
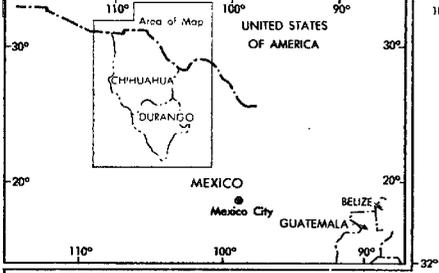
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MEXICO FORESTRY DEVELOPMENT PROJECT

- Project Roads
- Project Area Boundary
- Forests*
- National Parks and Ecological Reserves
- State Capitals
- Principal Cities and Towns
- Selected Main Roads
- Railroads
- Rivers
- State Boundaries
- International Boundaries

*Only forests within the project states are depicted



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