Report No. 18153

# Mexico
# The Transport Sector in Mexico
## An Evaluation

June 30, 1998

Operations Evaluation Department

Document of the World Bank

**THE TRANSPORT SECTOR IN MEXICO:**
**AN EVALUATION**

## Currency Equivalents

Currency Unit = Peso (MEX$)
End-of-year

| | | |
|---|---|---|
| US$1.00 | = Mex$25 | 1982 |
| | = Mex$150 | 1983 |
| | = Mex$168 | 1984 |
| | = Mex$257 | 1985 |
| | = Mex$612 | 1986 |
| | = Mex$1378 | 1987 |
| | = Mex$2273 | 1988 |
| | = Mex$2461 | 1989 |
| | = Mex$2813 | 1990 |
| | = Mex$3018 | 1991 |
| | = Mex$3100 | 1992 |
| | = Mex$3116 | 1993 |
| | = Mex$3375 | 1994 |
| | = Mex$6419 | 1995 |
| | = Mex$7599 | 1996 |
| | = Mex$7914 | 1997 |

## Weights and Measures

| Metric | | British/US Equivalent |
|---|---|---|
| 1 meter (m) | = | 3.28 feet (ft) |
| 1 kilometer (km) | = | 0.62 mile (mi) |
| 1 kilogram (kg) | = | 2.20 pounds (lb) |
| 1 metric ton (m ton) | = | 2.205 pounds (lb) |
| 1 liter (l) | = | 0.27 gallon (gal) |
| 1 hectare (ha) | = | 2.47 acres |

| | | |
|---|---|---|
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# Abbreviations

| | |
|---|---|
| AADT | annual average daily traffic |
| BANOBRAS | National Bank for Public Works and Services (Banco Nacional de Obras y Servicios Públicos) |
| CAPUFE | Federal Road and Bridge Toll Authority (Caminos y Puentes Federales) |
| DGCC | General Directorate for Maintenance (Direccin General of Construction y Conservation) SCT |
| DGCF | General Directorate for Federal Highways (Direccion General de Capacitation Sectorial) SCT |
| DGP | General Directorate for Ports (Direccion General de Planeaccion) SCT |
| DGP | General Directorate for Ports (Direccion General de Puertos) |
| DGPl | General Directorate for Planning (Direccion General de Planeacion) SCT |
| DGTT | General Directorate of Land Transport (Direccion General de Transporte Terrestre) SCT |
| DPE | Directorate for Programming and Evaluation (Direccion de Programacion y Evaluation) |
| ERR | economic rate of return |
| FNM | Mexican Railways (Ferrocarriles Nacionales de Mexico) |
| GDP | gross domestic product |
| GDTR | General Directorate of Toll Roads |
| HDM | Highway Design Model |
| ICB | international competitive bidding |
| IDB | Interamerican Development Bank |
| IMT | Mexican Transport Institute (Instituto Mexicano de Transporte) |
| NAFTA | North American Free Trade Agreement |
| NCB | national competitive bidding |
| NBF | not bank financed |
| OECF | Japan bilateral cooperation agency |
| SCT | Secretariat for Communication and Transport (Secretaria de Communicaciones y Transportes) |
| SEDESOL | Secretariat for Social Development (Secretaria de Desarollo Social) |
| SHCP | Secretariat for Finance and Public Credit (Secretariat de Hacienda y Credito Publico) |
| SIMAP | Mexican Model for Highway Project Analyses |
| SIPUMEX | Mexican Model for Bridge Management System |
| SISTER | Simulation Model of Highway Maintenance Strategies (Simulation de Strategies d'Entretien Routier) |
| SPP | Secretariat for Programming and Budgeting (Secretarial de Programacion y Presupuesto) |

# Fiscal Year

Government: January 1 to December 31

**The World Bank**
Washington, D.C. 20433
U.S.A.

ROBERT PICCIOTTO
Director-General
Operations Evaluation

June 30, 1998

**MEMORANDUM TO THE EXECUTIVE DIRECTORS AND THE PRESIDENT**

**SUBJECT: THE TRANSPORT SECTOR IN MEXICO: AN EVALUATION**

Attached is the Operations Evaluation Department (OED) report *The Transport Sector in Mexico: An Evaluation.*

The report evaluates the performance of World Bank lending and non-lending activities in Mexico's transport sector. In particular, it assesses Bank support for cost-effective investments, institutional development, and an effective policy framework. Based on this evaluation, the report suggests areas where the Bank could effectively focus its future activities in the sector.

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# Contents



This report was prepared by H. Levy (Task Manager), with contributions from B. Reja, (OEDST), J. Gómez-Ibáñez, K. Clare, and J. Holsen (consultants), and J. Ruster (PSD). The report was reviewed by C.Willoughby and V. Hogg, and edited by W. Hurlbut. The survey was done by MORI International.

# Preface

This evaluation assesses the relevance, efficacy, and efficiency of World Bank assistance to Mexico's transport sector. The study, conducted by the Bank's Operations Evaluation Department (OED), covers the period from 1982 to 1997. Despite the broad time span, the evaluation team focused on current issues, intent on providing helpful insights for the Bank's work in Mexico and in the world, today and tomorrow.

The evaluation is timely because demand for transport services in Mexico has grown with the further opening of the national economy in recent years—particularly since 1995's North American Free Trade Agreement. In addition, Mexico offers an opportunity to evaluate Bank strategy in a country that, starting in 1989, undertook fundamental transport policy reform. The country's experience, especially in privatizing its transport infrastructure, offers some valuable lessons. The Bank contributed through its lending and sector economic advice. This report reviews the Bank's participation in both areas.

The study is based on Project Completion Reports, Implementation Completion Reports, Performance Audit Reports, Transport Sector Reports, Supervision Reports, assessments by the Bank's Quality Assurance Group on current projects, and project files. The evaluation team conducted two missions to Mexico in November 1996 and June 1997. The team interviewed Mexican officials and private sector representatives in Mexico and Bank staff in Mexico and Washington. Their kind cooperation and valuable assistance are appreciated. OED is grateful for the government's review of an earlier draft of this report.

## Executive Summary

1. Mexico is among the World Bank's largest borrowers, and transport is among the Bank's most important sectors in Mexico. From 1982 to 1997, the Bank lent the country more than US$2.7 billion for transport projects—about 14 percent of total lending to Mexico in the same period—encompassing urban transport, railways, highways, and ports. The Bank also prepared analytical studies under its economic and sector work programs. This review yields useful insights—not only for the Bank's continuing relationship with Mexico in the transport sector but also for its overall country strategy.

2. This sector evaluation assesses the relevance, efficacy, and efficiency of the World Bank operations in Mexico's transport sector. It assesses the Bank's performance in encouraging or supporting cost-effective investments, developing institutions, and creating an effective policy framework. It accounts for economic, institutional, and political constraints, and compares the Bank's Mexico activities with those in other countries and with prevailing Bank policies and strategic directions.

3. The study covers the years 1982 through 1997, but gives special attention to the more recent years. There are three main parts to the report: a review of Bank lending and sector work, a review of the Bank's role in railway and toll road privatization programs, and an in-depth survey of Mexican transport stakeholders.

**Mexico's Transport System Today**

4. *Institutional organization.* Mexico's transport system has some institutional components that are very modern and others that have changed little in 20 years. The national railway, most of whose lines are currently run by private operators, is at the forefront of the system's modernization. This places Mexico among a vanguard of nations, including Argentina, the United Kingdom, and Brazil, that have concessioned national rail networks to the private sector. Mexico also is moving fast to privatize port operations and has already concessioned a number of container terminals and some general cargo terminals to private operators. While the Bank currently has no railway or port projects in Mexico, its influence continues to be felt. Through a technical assistance project it is providing valuable assistance to the railway privatization program. In port privatization, the actions taken over the past three years have been those encouraged by earlier Bank work.

5. Mexico has been slower to modernize its highway management. In this subsector, the institutional organization has changed little since the 1980s. But Mexico is not alone in this and, aided by Bank-financed projects, it has significantly improved its management tools. Worldwide, modernizing the road sector has proved considerably more difficult that privatizing transport parastatals. Very few countries, notably New Zealand and the United Kingdom, have substantially reformed the management of their highway systems. They have succeeded by corporatizing highway agencies and creating distinct management entities to separate system

funding and planning from maintenance and management. Mexico's privately operated toll road system (the world's longest network of this kind) launched about a decade ago outside Bank operations, has been a mixed technical success and a financial disaster. Mexico has been particularly slow in devolving management of parts of the federal road network to the states.

6. *Sector performance.* Mexico's transport infrastructure (127 km of roads and 14 km of railways per square kilometer) is less dense than most advanced countries (the United States has 666 km of roads and 30 km of railways per square kilometer). Its highway network is about half as dense as Brazil's (228 km/sq. km). Until the early 1980s, with Bank assistance, Mexico built substantial new infrastructure. Thereafter, the only significant additions have been a privately built toll road network totaling some 6,500 kilometers. Operating performance is inconsistent. In the railways, until privatized, overall operating efficiency was better than most railways in developing countries but substantially inferior to those in the industrial economies. For example, availability of locomotives was about 75 percent, while it exceeds 90 percent in Europe and the United States. Performance of highway maintenance as reflected by road condition has only recently been measured. Although it is likely to be better today than it was 10 to 15 years ago, it remains disappointing: over 50 percent of the federal road network was rated as being in poor condition as recent as 1997 (compared, for example, to less that 20 percent rated poor in Brazil using a similar yardsticks).

**Lending**

7. The focus of the Bank's lending operations changed between the early and later parts of the period reviewed. From 1982 through 1988, Bank-financed projects concentrated on strengthening transport facilities and existing institutions. Then, from 1989 through 1997 the Bank-directed increasing assistance to reforming the institutional framework for land transport: first for deregulation of road transport services then for privatization of the railways. The Bank stopped lending for ports and railways as the private sector became more active in those areas, but lent more for highways and for urban transport.

8. During the period under review, the Mexican economy suffered two major crises, the debt crisis, which started in 1983 and lasted through most of the 1980s, and the 1994 financial crisis. Bank transport lending helped fill budget gaps only marginally, as such lending represented on average less than one percent of budget expenditures. On the contrary, the macroeconomic situation made loan implementation difficult, as counterpart funds were systematically below requirements.

9. *Relevance of the transport portfolio.*

- *The projects were highly relevant to Mexico's development agenda.* Most had government support and were consistent with Bank policy.

- *Transport lending followed the direction of Mexico's macroeconomic policies and socioeconomic requirements.* Three factors demonstrate the evolution of this lending orientation. First, a strong concentration in state enterprises (railways and ports) in the early period gave way to highway investments, trucking deregulation, and urban transport later. Second, investments that increased system capacity (ports and highways) gave way to those that improved operational efficiency, asset maintenance, and safety. Finally, projects that focused mainly on physical

investments gave way to those supporting organizations, regulatory frameworks, institutional development, air pollution control, and developing standards for trucks operating international routes.

10. *Performance of transport projects.* For the transport projects covered by this evaluation, 71 percent had satisfactory outcomes, 57 percent were likely to be sustainable, and 43 percent had achieved a substantial institutional development impact. These numbers are broadly similar to Bank-financed projects in all sectors in Mexico and to Bank transport project worldwide. Bank performance in Mexico's transport projects (100 percent rated satisfactory at identification and at supervision and 71 percent at appraisal) was consistently better than for all Bank projects in Mexico and for Bank transport projects worldwide.

11. *Lending efficiency.* Most investments were for clear economic priorities and had high ex-post economic returns (average of 36 percent rate of return for all Mexican transport projects approved since 1982 and already closed). The exceptions were those few railway investments that in the face of declining demand sought to increase capacity rather than lower operating costs.

12. Other findings by subsector are:

- Port and railway projects, while having satisfactory outcomes, had only modest institutional development impact.
- Highway and highway transport projects had substantial institutional development impacts.
- Project investments and benefits appear to be sustainable, except for the failed Chiapas rural roads project.

13. The key outcomes of the transport portfolio were to prevent transport bottlenecks, improve the management of public agencies, improve system performance, and support government's broader aims.

14. *Prevention of bottlenecks.* At the beginning of the 1980s, after a decade of rapid economic growth, bottlenecks in the transport sector were expected to constrain growth severely. Although GDP has grown slowly since then, the demand for transport services has continued to increase, as shown by the 6.9 percent annual growth in the Mexican truck fleet between 1980 and 1990. Bank support for infrastructure improvements and regulatory reforms have helped the sector meet these increasing demands and avoid serious transport bottlenecks.

15. *Pricing, reform, and privatization of public sector agencies.* The privatization of railways, partial privatization of ports, deregulation of road services—supported through the 1990 sectoral adjustment loan—and improvements to the system of road user charges led to better pricing policies for transport infrastructure and services, and more efficient management of the transport system. These changes improved competitiveness in the transport sector and lowered the logistics costs of domestic and international trade, a key component of Mexico's economic strategy in the 1990s. The Bank supported all of these changes. The state road agencies and municipal government agencies responsible for urban transport received less attention from the Bank and modernized the least during the 1982–97 period.

16. *Transport system performance.* Bank assistance was most effective in the highway subsector, although it was limited to the federal system. The assistance's major contribution was to improve the efficiency of highway maintenance and rehabilitation by encouraging the contracting out of these activities. Between 1987 and 1996, contracting out expanded from 30 to 85 percent for reconstruction works, from zero to 80 percent for periodic maintenance, and from zero to 20 percent for routine maintenance. Bank-financed projects also were effective in helping to introduce a pavement management system for the federal road network, including the rating of road condition. Bank assistance also positively affected other aspects of roads and road transport, improving cost recovery and traffic safety and developing standards for international road freight vehicles engaged in trade under the North American Free Trade Agreement (NAFTA).

17. The principal effect of the Bank-financed railway projects, particularly the most recent ones, was to slow the decline in railway performance. Operational and financial targets aimed to reverse the decline were not met. By the closing of the last railway project in 1990, the railways' operating costs (including depreciation) were 50 percent higher than the revenues, while the expectation had been that revenues would cover all costs. However, without the substantial assistance of the Bank-financed projects, the performance of the railways would have been worse and railway assets would have been less well preserved. In retrospect, the Bank's efforts were a holding action until the government took the more drastic step of privatization in 1995, to which the Bank also contributed extensively.

18. Since 1984, port efficiency, service quality and rate policy have improved. In the 1980s the Bank influenced these favorable trends by funding equipment and technical assistance for port operations and management. Extensive privatization of port activities in the 1990s—when the Bank was no longer active in the subsector—has had a major positive influence on port performance.

19. In the urban transport subsector, the Bank's most notable accomplishment is its assistance in improving air quality in the Mexico City area. An innovative Bank project helped tighten emission control standards, monitor air quality, and replace old buses. In the medium-size cities participating in the Bank's other urban project, there are now better traffic flows, increased speeds, and better vehicle efficiency as a result.

20. *Government macroeconomic and socioeconomic objectives*. Bank transport activities had a mixed record on the government's broader aims.

- *Trade.* Improved transport infrastructure and more competitive trucking services reduced transport costs, thus helping both domestic and international trade. Improved vehicle standards will better position the Mexican transport industry to compete under NAFTA.
- *Fiscal performance.* Improved cost recovery from highway users and the privatization of the railway will positively affect the country's fiscal performance. Conversely, the large program of private toll road concessions—not financed by the Bank, but with macroeconomic and transport implications important for Bank work in Mexico—required a major fiscal bail-out.

- *Decentralization.* Bank-financed highway projects contributed only marginally to decentralization and did not support state agencies, even though a sector report had proposed a state highway project as early as 1987. Lending to enhance municipal

governments' institutional capacity to improve urban transport delivery was not successful.

- *Rural poverty.* The only rural transport project, in Chiapas, failed in the face of increasing civil disturbances in the region. A port project was innovative in assisting regional economic development in areas with high numbers of poor people.

- *Monitoring and evaluation.* The development and use of performance indicators were generally weak, except for railway projects.

**Sector Work**

21. The Bank's transport sector reports reveal an evolving agenda on policy and management matters. During the 1970s and 1980s these were mainly investment planning; pricing, including cost recovery and user charges; and funding of transport investments and maintenance. During the late 1980s and 1990s the main concerns were regulation and decentralization policies. The sector reports were generally relevant, of good quality and touched on key current issues. They also consistently pursued these issues over a long period. But they were timid in suggesting radical reforms or novel institutional and policy ideas. This evaluation concludes that sector reports undertaken for sophisticated borrowers like Mexico should be cutting edge, should illustrate recent, novel worldwide experiences of special relevance to the country and should provide guidance on how such experiences can be adapted and applied.

22. An important contribution of Bank sector work was the identification of marginal investments included in national investment plans. Since transport investments often are large, government officials valued this advice highly in the opinion survey conducted for this evaluation.

**Privatization**

23. Mexico has been a pioneer in involving the private sector in the financing and operations of the transport sector, particularly in railways and roads. Mexico's experience in these two subsectors, and assessing the Bank's role, is important as the Bank seeks to expand its role in facilitating private sector participation in the development and management of infrastructure.

**Railways**

24. The Bank's experience with railway privatization in Mexico has been mixed. On the negative side, the Bank performance was dubious in two key areas. First, while Bank missions broached the issues of overstaffing and work rules and made practical suggestions, the Bank appeared reluctant to tackle these fundamental issues formally during the project cycle, and progress was only made when the railway management launched its program of structural change. Tackling these issues was essential to make the railway a commercially oriented enterprise with satisfactory finances. Second, the Bank could have highlighted the privatization option early in the 1990s, when the Bank already had gained some experience in Argentina and experiences from several European railways were becoming known.

25. On the positive side, the Bank was successful in helping Ferrocarriles Nacionales de Mexico keep its facilities in good order. This became important during the concessioning period as reflected by the high bid prices—on the order of US$2 billion for the two main lines

accounting for some 50 percent of FNM's network length and about 80 percent of its traffic. (By comparison, the FY85 Bank railway loan, the only one approved during the period under review, was for US$300 million.) The Bank also instigated important business reforms, such as tariff restructuring and improved information systems. The Bank was quick to support the government's privatization program, providing advice and funding for consultants.

26. The Bank felt compelled to protest post-bidding negotiations for one major railway concession, souring relations with its client. This illustrates the perils facing the Bank when it advises on privatization, and specifically on concessioning bids. At least three factors make this role especially difficult for the Bank. First, procurement of Bank-financed goods and services follows the value-for-money principle, which translates essentially into cost minimization. In contrast, privatization concessions aim to maximize government revenues. Second, in Bank-financed procurement, the borrower is contractually obligated to comply with Bank procedures, whereas on privatization the Bank acts only as a good faith advisor, whose advice can be accepted or rejected. Third, post-bid negotiations between government and the bid winner, including revising original bidding conditions, appear to be an established practice in concessioning infrastructure, while it is precluded in Bank-financed procurement.

**Toll Roads**

27. Mexico's large, privately financed toll road program, launched in 1989, could not cover costs from toll revenues. The asset value of 38 Mexican toll roads requesting such restructuring in 1997 alone was about US$14 billion, or about 50 percent of worldwide private investment in road projects between 1984 and early 1997. The Bank's highway projects after 1989 did not finance toll roads, but concentrated instead on highway sector planning, management, and pricing issues.

28. This huge program was ignored by the Bank until it was four years old and billions of dollars already were at stake. In August 1997, the government launched a $7.5 billion bailout to temporarily re-nationalize 25 roads and bridges carrying practically no traffic. The apparent reason for the Bank's disinterest in the program was its lack of involvement in the financing. Still, the Bank was deeply involved in helping Mexico recover from a financial crisis, poured billions of dollars into budget support operations, and invested in the country's highway sector. The Bank missed an important opportunity to assist. It could at least have suggested a slowdown in the pace of the concessioning program and a reduction in the maximum tolls on new concessions, (which were 2-4 times higher than in the US) a pivotal factor deterring traffic and constraining toll revenues.

**Opinion Survey**

29. This evaluation carried out an opinion survey of 65 Mexican transport stakeholders during July and August 1997. Participants in the survey included federal government officials, transport sector agencies and banks and private companies working in the sector. Six main conclusions can be drawn from the survey.

- Those in charge of, and participating in, the development of the Mexican transportation sector are familiar with the Bank's activities, believe Bank-financed infrastructure is consistent with the country's priorities, believe the Bank's recommendations on transport policies are adequate, and trust the Bank's actions.

- The Bank is generally regarded as funding useful projects. Although it has emphasized infrastructure over the environment and poverty alleviation, respondents are not very upset about that.

- Bank lending conditions and contracting policies often seem to be excessively rigid and inconsistent with Mexican practices, making implementation unnecessarily hard.

- Bank staff are technically competent and helpful, but problems arise from high turnover.

- Reports are sometimes useful in summarizing information, providing new ideas and framing the debate. Some sectoral reports are remembered (road user charges and maintenance), but most are forgotten.

- The more knowledgeable respondents are about the Bank, the better their opinion of the Bank in all areas covered by the survey.

30. In contrast to a worldwide, multisectoral survey OED recently conducted as part of an assessment of the Bank's appraisal process, Mexican transport stakeholders believe that design of Mexican transport projects is mainly done by the government (with the Bank playing a substantive but subsidiary role). This, they believe, confers on Bank-financed projects a high degree of government ownership.

**Directions for the Future**

31. *Bank-government relationship.* Disagreements have sometimes strained Bank-government relations in the transport sector, particularly early in the period reviewed. Among the most notable issues was resource allocation in the highway sector, where the Bank sought a shift of focus toward maintenance. Another contentious issue was the need to encourage transport parastatals to operate on commercial basis, especially regarding the pricing of services, staff levels, flexibility on the mix of services offered and contracting out. Bank and borrower views have converged in most policy areas since the economic reforms of the late 1980s. This convergence certainly will not prevent occasional flare ups, as has happened with the bidding for railway concessions and with the resettlement documentation for the federal roads project, which led to protracted negotiations. Overall, though, the improved policy dialogue should facilitate future Bank operations in the sector.

32. *Highways.* The Bank should continue its role in Mexico's highway system. It should continue to help strengthen the management of the federal system, supporting the introduction of modern management techniques and especially helping federal authorities prepare for devolving a part of the network to the states. The Bank should also provide direct support to state highway authorities, ideally through lending operations specifically aimed at individual states.

33. *Privatized transport: railways and toll roads.* The Bank, through its worldwide operations in these areas, is well placed to offer the government help on three fronts. First, advise on the short- and long-term problems of private infrastructure concessions. Some recent problems (such as an unrealistic bid for the Northeast railway concession and the bailout of the insolvent

toll road concessions) were solved without the Bank's participation, but similar issues are likely to arise in the future.

34. Second, help government deal with the last stages of railway privatization. The government's plan to sell most of the railroad in three trunk concessions and the Mexico Valley Terminal line is well advanced. But some of the remaining freight short lines and passenger services may be difficult to privatize or to close without political or social repercussions.

35. Third, help rationalize the relationship between the privately built toll road system and the large network of untolled trunk highways. The two systems compete with one another to some extent because the Mexican constitution requires that a parallel free road be available as an alternative to a toll road. The US$475 million Bank highway project approved in 1997 will help to modernize some of the untolled trunk highways, but there is little evidence that the reciprocal effects of the project and the system of private toll road concessions have been given enough consideration.

36. *Multimodal operations.* The expansion of international trade, and the integration through common ownership and concessions of different transport modes into competing multimodal operators, will lead to a substantial increase in multimodal transport operations. While the private sector will do most of this, the government will need to expand its expertise in this area, as there will be considerable interaction between private and public infrastructure. For example, multimodal cargo centers will likely be established near major highway-railway crossings. These will have major impact on transport demand over key road axis. The Bank's experience in multimodal transport projects in other countries (for example, China and India) will likely be useful to Mexico.

*"Our country has serious deficiencies in its infrastructure—*
*they are most evident in the communications and the transport sectors."*
[Mexico, National Development Plan, 1995–2000]

# 1. Introduction

1.1 Mexico is among the World Bank's largest borrowers, and transport is among the Bank's most important sectors in Mexico. From 1982 to 1997, the Bank lent the country US$2.7 billion for transport sector projects—about 14 percent of total lending to Mexico in the same period. As much of the total lending was policy-based, that percentage underestimates the importance of transport in overall investment in Mexico. The size of this investment matches the considerable scope of the Bank's work.

1.2 Bank involvement in the Mexican transport sector encompassed urban transport, railways, highways, and ports. The instruments used included both lending and non-lending activities (primarily economic and sector work). Lending consisted of both physical investments and technical assistance. Given the size and scope of the Bank's investment in Mexican transport, a review of the work should yield useful insights—not only for the continuing relationship of the Bank and Mexico in this sector but also for overall Bank assistance to the country.

1.3 This Operations Evaluation Department (OED) study therefore reviews World Bank operations in Mexico's transport sector, assessing their relevance, efficacy, and efficiency. The study's broad focus on an entire sector reflects OED's increasing emphasis on evaluating the performance of entire programs rather than individual projects. In this evaluation the assessment of Bank performance centers on its role in encouraging or supporting cost-effective investments, developing institutions, and creating an effective policy framework. It accounts for economic, institutional and political constraints, and compares the Bank's Mexico activities with those in other countries and with prevailing Bank policies and strategic directions.

*Macroeconomy and Transport*

1.4 In 1982 a debt crisis struck Mexico and precipitated a long period of negative or minimal growth rates that continued through most of the 1990s. As a result, the country's average annual growth rate was 1.1 percent for the 1984–1995 period. This crisis profoundly affected investment policies, the availability of counterpart funds for externally financed projects, and the need for balance of payment support. These were all important parameters for Bank operations in the country, and all affected the transport sector.

1.5 Since the 1970s, macroeconomic management in Mexico has primarily sought to manage interest rates and foreign exchange rates. The government has considered this manipulation necessary to control inflation, manage the balance of payments and external debt, and restore and maintain an adequate rate of overall economic growth. The ability to accomplish all three objectives simultaneously, however, has eluded the government. In the 1980s and 1990s this had important consequences for the transport sector.

1.6 During the 1980s the government succeeded in bringing the balance of payments and debt under control, but hyperinflation ensued (the exchange rate was devalued 268 percent in 1982) accompanied by stagnation of the economy. Following a substantial change in policies and

the launching of tripartite labor-business-government agreement (the Economic Solidarity Pact) in 1988, the inflation rate dropped and real output began to recover. The new administration (Salinas government) that took office in November 1988 continued policies to support these objectives. The subsequent rapid rise in imports was fueled by an exchange rate that appreciated by 74 percent between 1987 and 1993. In this climate the balance of payments quickly became unmanageable and the period ended with the financial crisis of 1994. The policy response to the crisis brought dramatic improvement in the balance of payments current account, but an acceleration of inflation and a decline in real output accompanied the improvement. When the annual rate of exchange depreciated by 33 percent between 1993 and 1995, many banks and enterprises experienced serious financial distress.

1.7 The currency devaluations over this period seriously affected trade and, as a consequence, the demand and supply balance for some transport modes. For example, the large differences in the high and low peaks of Mexico's export and import cycles affected trucking, which carries most of the foreign trade between Mexico and the United States. In addition, contractors and associated financial institutions involved in a major program of privately financed toll roads also suffered from the devaluation and the ensuing crisis. Their problems further weakened the banking system.

1.8 Bank lending for transport during the 1980s and 1990s helped support balance of payments and fill budget "gaps." In this sense, the lending helped the managers of macroeconomic policy while financing particular investment activities. While long-term loans from the Bank were of some assistance, however, Bank lending for transportation projects simply was not large enough to have been a significant factor. On a commitment basis, such lending averaged less than US$200 million annually during 1982–1997, or less than 1 percent of budget expenditures and less than 0.5 percent of payments for imports.

1.9 The more obvious impact was in the other direction. The macroeconomic situation made loan implementation difficult. The Second Highway Sector Project, for example, had a 100 percent time overrun due to a lack of counterpart funds. As a result, many investments intended for 1984–1986 were only made after 1991. In another example, only about half the loan for the Lazaro Cardenas Industrial Ports project was ever disbursed. This was largely because the project had been planned and appraised in a period of optimism, but it had to be implemented in a period of austerity and financial stringency.

1.10 Through conditionally in its loans as well as via the economic sector dialogue, the Bank tried to influence tariff policies and to help improve the efficiency of public and parastatal sector organizations. Such efforts only started to become effective toward the end of 1988, however. It was only then that the authorities were prepared to undertake major reforms.

*The Transport System*

1.11 Mexico has developed an extensive system of transport to serve its economy. Approximately 200,000 kilometers (km) of roads, 20,000 km of railways, 30 ports, 58 airports, and 32,000 km of pipelines serve thousands of motor vehicles and hundreds of ships and aircraft. The major railway lines were developed several decades ago to link principal cities and centers of mining and manufacturing. Later, extensive roads were built and road transport not only connected towns served by the railways but also provided access to thousands of other communities. Because the population of Mexico is concentrated on the plateau of central and

southern Mexico, the network of roads became especially dense in that area. Veracruz, on the Gulf of Mexico, has been the principal port of Mexico for centuries. Another more recent Gulf port of importance is Tampico, which was developed largely as a result of the discovery of oil in the hinterlands and the subsequent growth of the oil industry. While the transport system is many-faceted, road transport has become the predominant mode in Mexico and for cross-border trade with the United States.

1.12 Urban transport has developed rapidly, following the nation's sharp trend toward urbanization. Mexico has one of the most urbanized societies in the world: 68 percent of the country's 75 million people live in urban areas. The Mexico City Metropolitan Area, which includes the Federal District and some parts from the State of Mexico, is home to nearly 20 million people, or 26 percent of the country's population. Intermediate and secondary cities, meanwhile, are increasing in importance as the economy decentralizes from the traditional large metropolitan areas to smaller cities. This trend results from a combination of market forces and government policies. Trade liberalization, for example, fueled more economic activities in export-oriented cities along the US-Mexican border. The high cost of doing business in the large metropolitan areas forced businesses to relocate to less-congested cities. And, finally, government measures sought to redress regional disparities and devolve more power to municipal governments.

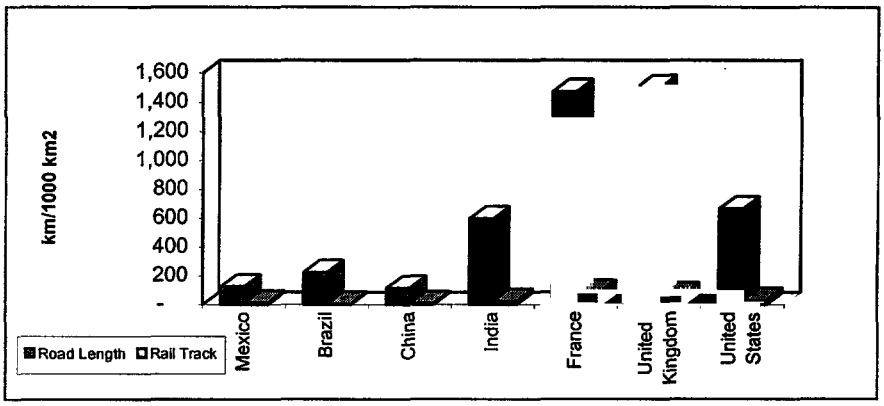
1.13 *Institutional organization.* Mexico's transport system has some institutional components that are very modern and others that have changed little in 20 years. The national railway, most of whose lines are currently run by private operators, is at the forefront of the system's modernization. This places Mexico among a vanguard of nations, including Argentina, the United Kingdom, and Brazil, that have concessioned national rail networks to the private sector. Mexico also is moving fast to privatize port operations and has already concessioned a number of container terminals and some general cargo terminals to private operators. While the Bank currently has no railway or port projects in Mexico, its influence continues to be felt. Through a technical assistance project it is providing valuable assistance to the railway privatization program. In port privatization, the actions taken over the past three years have been those encouraged by earlier Bank work.

1.14 Mexico has been slower to modernize its highway management. In this subsector, the institutional organization has changed little since the 1980s. But Mexico is not alone in this and, aided by Bank-financed projects, it has significantly improved its management tools. Worldwide, modernizing the road sector has proved considerably more difficult that privatizing transport parastatals. Very few countries, notably New Zealand and the United Kingdom, have substantially reformed the management of their highway systems. They have succeeded by corporatizing highway agencies and creating distinct management entities to separate system funding and planning from maintenance and management. Mexico's privately operated toll road system (the world's longest network of this kind) launched about a decade ago outside Bank operations, has been a mixed technical success and a financial disaster. Mexico has been particularly slow in devolving management of parts of the federal road network to the states.

1.15 *Sector performance.* Mexico's transport infrastructure (127 km of roads and 14 km of railways per square kilometers) is less dense than most advanced countries (the United States has 666 km of roads and 30 km of railways per square kilometer). Its highway network is about half as dense as Brazil's (228 km/sq. km) (fig1.1). Until the early 1980s, with Bank assistance, Mexico built substantial new infrastructure. Thereafter, the only significant additions have been a

privately built toll road network totaling some 6,500 kilometers. Operating performance is inconsistent. In the railways, until privatized, overall operating efficiency was better than most railways in developing countries but substantially inferior to those in the industrial economies. For example, availability of locomotives was about 75 percent, while it exceeds 90 percent in Europe and the United States. Performance of highway maintenance as reflected by road condition has only recently been measured. Although it is likely to be better today than it was 10 to 15 years ago, it remains disappointing: over 50 percent of the federal road network was rated as being in poor condition as recent as 1997 (compared, for example, to less that 20 percent rated poor in Brazil using a similar yardsticks).

**Figure 1.1. Land Transport Networks for Selected Countries**




1.16 In its National Development Plan 1995–2000, the government of Mexico notes some important deficiencies in the transport system.[1] These are as follows:

*In the road system*

- Maintenance, improvement, and expansion of federal roads lags behind demand
- Many federal roads go through important cities; bypasses should be built
- Road access to ports and border crossings is inadequate
- The interregional network is incomplete; many regions lack adequate connections
- The secondary and rural road network is small and has low quality of service

*In the railways (currently being privatized)*

- Loss-making operations require large subsidies
- Freight and passenger traffic is steadily being lost

*In the ports (partial privatization currently under way)*

1. The National Development Plan 1995–2000 (1995) was prepared by the executive branch of the government and submitted to the Mexican Congress in accordance with the Mexican constitution. It does not cover urban transport, since this is the responsibility of the local authorities.

- Freight-handling capacity at most maritime ports is inadequate
- Signaling and navigation aids are inadequate

1.17 The Bank's main intermediary for all transport operations except urban transport has been the Secretariat for Communications and Transport (SCT). With the deregulation of road transport and domestic air services, the development of private toll roads, and concessioning of the national railway company to private operators, SCT's role has evolved during the 1990s toward policy making and monitoring of concessions and contracts. It now has fewer direct operational responsibilities than it had in the past. Other key agencies for Bank operations are the Secretariat for Finance and Public Debt (SHCP) and the National Bank for Public Works and Services (BANOBRAS), an agency that intermediates Bank lending for the transport sector, including urban transport.

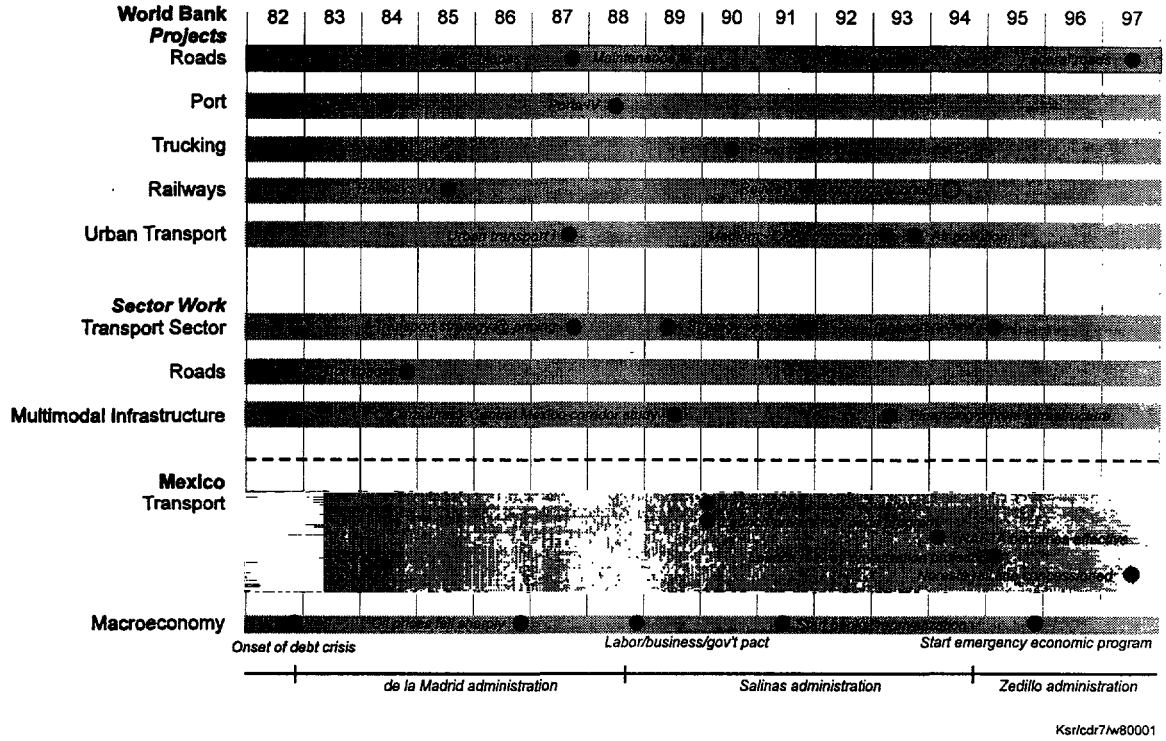
**Objectives of Bank Assistance**

1.18 The objectives of Bank assistance in Mexico's transport sector were (a) increase transport capacity to meet the demands for service; (b) improve the quality of service; (c) improve the efficiency of transport, thus lowering the cost of the service. While these objectives were common to all forms of transport, their relative importance varied by mode. From 1982 to 1997, objectives (b) and (c) were important for railways and ports, while objective (a) was less so, although it remained vital for specific services and locations. In road infrastructure, traffic was increasing rapidly and many roads needed upgrading to enhance their capacity; thus objective (a) was critical. In road transport, however, a restrictive regulatory system led to high costs and poor quality of services, thus objectives (b) and (c) were a priority. Even more significant in that period was the need to improve the quality of the road network, which depended heavily on improving maintenance operations. In urban transport, all three basic objectives were vital as many cities struggled to expand the capacity of local transport, improve service, and lower the cost of service.

1.19 Bank assistance in the past decade shifted considerably toward helping strengthen the sector's government institutions. These entities included both state-owned enterprises and government agencies responsible for planning, regulation, and other functions. Other objectives were (a) promote cost recovery in the field, especially road user taxes; (b) enhance transport safety; (c) lower air pollution attributable to motor vehicles; (d) facilitate international trade; and (e) alleviate poverty and other adverse social problems. All of these objectives represented priority needs of the Mexican transport sector.

1.20 Bank lending and sector work activities, together with key events in Mexico's economy directly related to transport, are summarized in Figure 1.2.

**Figure 1.2 Timeline of Bank Activities and Mexico Events**




1.21 The study has three main parts. These are as follows:

- *Assistance instruments (Chapters 2 and 3).* Lending and transport sector work are the two basic instruments in Bank assistance. This review considered both. Lending includes financial assistance such as investment and technical assistance loans targeted at specific development objectives. Sector work consists of analytical work done to support subsequent sector operations or to assist the policy dialogue.

- *Privatization review (Chapter 4).* The study reviews two key privatization programs in Mexico's transport system. First, it looks at the concessioning of Mexico's railway company, Nacionales de Mexico. This process, launched in 1996, has already seen some bidding, and one concession has already been awarded to a private group. Second, it looks at a massive, privately financed toll road program initiated in 1989 that required major financial restructuring arranged by the government in 1997.

- *Opinion survey (Chapter 5).* The study includes a survey of key government officials and other stakeholders to assess their perceptions of the Bank's activities in Mexico's transport sector. This survey was conducted with the assistance of a market research firm.

1.20 The same chapters also selectively review indicators of transport system performance in Bank projects. The scope of the analysis was limited to railways and highways, where Bank involvement was system-wide and where it is possible to track performance indicators over time.

In the case of ports and urban transport, successive Bank projects assisted different locations and cities, and it is not possible to take a longer-term perspective beyond a single project.

# 2. Evaluation of Instruments: Lending

**Overview**

2.1 Between 1982 and 1997, the World Bank lent the government of Mexico US$2.7 billion for 12 transportation projects. At 14.4 percent of the total Mexico portfolio, transportation has been second only to agriculture in lending volume. In the same period, the Bank also provided substantial assistance for public sector management and, as part of multisector lending, for economic management and trade policy reform. This chapter reviews and assesses the full range of the Bank's transportation lending for the period. The underlying question in this review is: did the Bank lend for the right things, and did that lending emphasize priority institutional and policy issues?[2]

2.2 The opening of Mexico's economy in the past decade, the country's membership in NAFTA, and the challenges facing its exports from globalized competition, have underscored the importance of having an efficient transportation system that makes the best use of roads, railways, ports, and aviation. During the 1982–1997 period, and even before the economic reforms, Bank lending for transportation had taken this comprehensive view, excluding only air transport for which it has traditionally been reluctant to lend (Table 2.1). In more recent years, with the privatization initiatives in ports and railways, transport loans have concentrated on highways and urban transport. This shift is also explained by the importance of highway transport, which accounts for about two thirds of total transport service in Mexico, and by the increasing government attention to urban issues.

**Table 2.1: World Bank Loans for the Mexico Transport Sector, 1982–1997**

| *Project Name* | *Approval* | *Closing* | *Loan Amount (US$ m)* |
|---|---|---|---|
| *COMPLETED* | | | |
| Highway Sector II | 1984 | 1991 | $ 200 |
| Chiapas Roads | 1985 | 1991 | $ 22 |
| Road Transport/Telecom | 1990 | 1991 | $ 380 |
| Ports III | 1984 | 1993 | $ 76 |
| Railway V | 1985 | 1994 | $ 300 |
| Ports IV | 1988 | 1994 | $ 50 |
| Highway Maintenance | 1988 | 1995 | $ 135 |
| | | Total | $1,163 |
| *ONGOING* | | | |
| Urban Transport I | 1987 | 1997 | $ 125 |
| Transport Air Pollution Control | 1993 | 1997 | $ 220 |
| Highway Rehabilitation and Safety | 1993 | 2000 | $ 480 |
| Medium Cities Transport | 1993 | 2000 | $ 200 |
| Federal Road Modernization | 1997 | 2004 | $ 475 |
| | | Total | $2,663 |

2. A more pointed question—To what extent did Bank lending achieved its physical and institutional objectives?—could not be addressed because there were no performance indicators for the period.

2.3 Nearly all transport projects had four objectives in common: carry out physical investments, encourage sound competition, mobilize domestic resources by improving the pricing of transport services and infrastructure, and help improve the management of transport sector institutions. The projects' objectives and their relevance and achievements are discussed below by subsector.

**Highway and Highway Transport**

*Investments*

2.4 The highway projects focused on maintenance and financed:

- only investments in the federal road system, that is, Mexico's trunk road system;
- mainly the backlog of deferred maintenance, especially of pavement;
- investments in road safety.

2.5 The focus on maintenance has a strong economic rationale. First, with Bank assistance, Mexico had substantially expanded its road system during the 1960s and 1970s. Second, the economic crisis that started in 1982 tightened fiscal expenditures, including those for road maintenance, risking severe deterioration of the network and its main highways. Third, most of Mexico's traffic, domestic and international, flows through key links of the national road network.

2.6 These highway projects represent a sustained and persuasive Bank effort to shift government expenditures from new construction to the conservation of road assets. When the Bank first attempted to induce this shift, in the late 1970s, it was not successful. Later, the economic crisis and the increased importance of the macroeconomic dialogue with the Bank helped shift government policies toward the maintenance focus.

2.7 The government in 1989 launched an ambitious program of privately financed toll roads. By 1994, about 5,500 km of expressways had been or were being built under this program. While the Bank was not involved in this program, the unintended but foreseeable implications it had for Mexico's national budget, and the relationship between the newly built toll roads and the rest of the road network, are of interest to the Bank. This matter is discussed in Chapter 5.

2.8 *Rural roads*. The Bank's only attempt to help improve Mexico's rural roads, a project for the state of Chiapas, one of the poorest states in the country, ended in failure. The project aimed to improve access to the rural areas and offer employment opportunities by promoting labor-based construction techniques. The main reason for the failure was lack of state government support for the project. That lack of support stemmed from a perception that the loan was merely a substitute for federal funds but that it carried onerous procurement rules and conditions.

2.9 Overall, the Bank's highway investments in Mexico were appropriate and relevant to economic conditions for two reasons. First, they focused on new construction during a period of economic growth and at a time when the road system was clearly underdeveloped. Second, they shifted to maintenance as the economic depression tightened infrastructure budgets and threatened continued deterioration of the road network. The Bank's failure to develop a successful rural roads project was rooted in the very difficult socioeconomic environment of

Chiapas. The Bank, in this case, may have lacked resilience to learn from its experience and look for other opportunities to develop rural roads projects.

*Institutional Objectives*

2.10 The institutional objectives of the highway projects strongly correlate with the policy issues identified in the Bank's transport sector reports. The list of issues is long—they range from microeconomic concerns about reducing price distortions and the efficiency of public sector investments (highly important considering the magnitude of the highway investments) to the institutional organization and management of the road system. This section analyzes the relevance and achievements of the institutional objectives of the highway projects.

2.11 *Investment planning.* Nearly all highway projects included studies or technical assistance intended to improve highway planning organization, methods, and skills. Despite these efforts, and the Bank's claims of progress,[3] only in the late 1980s did significant results begin to appear. This coincided with the introduction of two important models, both of them based upon but simpler and more user-friendly than the Bank's Highway Design Model. The first was a life-cycle model, which was used for early planning of investment projects. The other was the SISTER (Simulation Model of Highway Maintenance Strategies) model, which was used for planning maintenance and rehabilitation works. Mexican officials have called SISTER one of the most important institutional improvements resulting directly from technical assistance financed by a Bank project.

2.12 *Budget allocation for maintenance.* Over time, the government shifted its budgetary priorities from new construction toward maintenance. The increasing focus of highway projects on maintenance was probably a factor encouraging this change.

2.13 *Cost recovery: tolls and other user charges.* Starting with the early highway projects, cost recovery was a major Bank concern. Initially, the aim was to ensure that tolls on the public (CAPUFE) toll roads, which had received Bank funding, were high enough to ensure financial viability. Later highway projects focused more broadly on the system of road user charges for the whole road network. These efforts paid off. Revenues from user charges today largely cover the annual expenditures in highway maintenance and in publicly financed new construction.[4] However, current user charges appear to be inequitably distributed, with trucks, especially heavy ones, underpaying. Efforts to correct this situation are being pursued under the ongoing highway maintenance project and the Federal Road Modernization project. The projects also did not aim (and probably missed an opportunity) to link the increased payment from road users into a regular, sustainable source of finance for road works independent of the national budget.

2.14 *Contracting out.* Increased contracting out of works in the federal highway network has been one of the most notable sector-management achievements of the Bank-financed highway

3. For example, in 1979 the appraisal report of the First Highway Sector project noted: "advances in planning and project analysis have been successful enough to allow consideration of a sector loan for the eighth highway project." Yet, the OED audit of that project was skeptical about the sector lending approach and the capacity for planning. It said: "there is no evidence that the increased flexibility of the sector approach led, in this case, to a more rational investment process, particularly in terms of fixing priorities."

4. The 1994 sector report noted that 1994 revenues from user charges had reached US$2.6 billion, while maintenance expenditure reached about US$400 million and publicly financed invested reached slightly more than US$500 million.

projects. Between 1987 and 1996 the increases were significant: from 30 to 85 percent for reconstruction, from zero to 80 percent for periodic maintenance, and from zero to 20 percent for routine maintenance. In a seeming contradiction, the Bank also financed equipment for strengthening in-house capabilities for carrying out maintenance works (see Box 2.1).

**Box 2.1: Contracting and In-House Capacities: Conflicting Bank Objectives?**

While the Bank promoted maintenance by contract, it also financed equipment for the Secretariat for Communication and Transport (SCT). The 1987 highway project provided US$10.8 million for the purchase and repair of SCT maintenance equipment, thus encouraging SCT to carry out maintenance operations directly rather than contracting it out. Although private contractors were to carry out project-financed civil works, the project did not include systemwide targets for contracting out. The 1993 project still included funds for SCT maintenance equipment, US$25 million (of a US$480 million loan). A condition under this project was that SCT carry out at least 70 percent of rehabilitation works by contract. In view of Mexico's well-developed construction industry, which has adequate capacity to carry out these works, this seems a modest requirement. An explanation for the project's limited objectives in contracting could be that SCT had enough personnel in its payroll to carry out part of the rehabilitation works—if that was the case, the project failed to review SCT staffing levels.

2.15 *Sector management and operations.* Highway projects also helped achieve improvements in other areas of road sector management, notably:

- reorganization of the road maintenance administration;
- development and implementation of highway maintenance management systems;
- decentralization of SCT by transferring responsibilities from headquarters to SCT centers in the states.

2.16 Highway safety. Only with its 1993 highway rehabilitation and highway safety project did the Bank start paying direct attention to highway safety.[5] This operation focused on improving hazardous road locations known as "black spots" in highway jargon.[6] It included training, information campaigns, technical assistance to review safety laws and regulations, and the black spot program. A 1997 project continued the Bank's support to highway safety.

2.17 *Trucking: deregulation and standards.* The 1990 road transport and telecommunications sector adjustment project supported government actions to deregulate trucking that had started in 1989. The government achieved deregulation through three main actions: reaching agreement with the trucking association to modernize and deregulate the industry; eliminating many restrictions on entry;[7] and abandoning tariff ceilings.[8] In its audit, OED noted that although the

5. However, an earlier project (1990) had financed a study of highway safety and prepared an action plan.

6. A "black spot" is any road area where accidents occur with exceptional frequency. These can result from a wide variety of engineering problems.

7. Government decree, July 1989.

8. Government decree, January 1990.

project achieved its institutional objectives[9] it could have paid more attention to preparing SCT for its new role following deregulation. Areas that needed more attention, the audit said, were redefinition of the agency's role, reorganization, changes in staff assignments, and staff retraining.

2.18 Under the ongoing highway rehabilitation and safety project, the Bank has continued to assist the trucking industry, this time helping it meet NAFTA standards.

2.19 *No assistance to state road organizations*. During the period under review and until now, the Bank had no project with a state highway agency. A state highway project was proposed in a sector report as early as 1990, but the project never entered the pipeline. In retrospect, the Bank may have missed an opportunity to help local authorities take over responsibility for managing a substantial part of the current federal road system and improve management of the state road networks. The recently approved Federal Road Modernization project includes an objective to help federal highway authorities devolve part of the federal highway network to the states. By comparison, in Brazil the Bank started state highway projects in 1987 with a loan to the state of São Paulo, and it has approved three state highway projects so far.

*Performance Indicators*

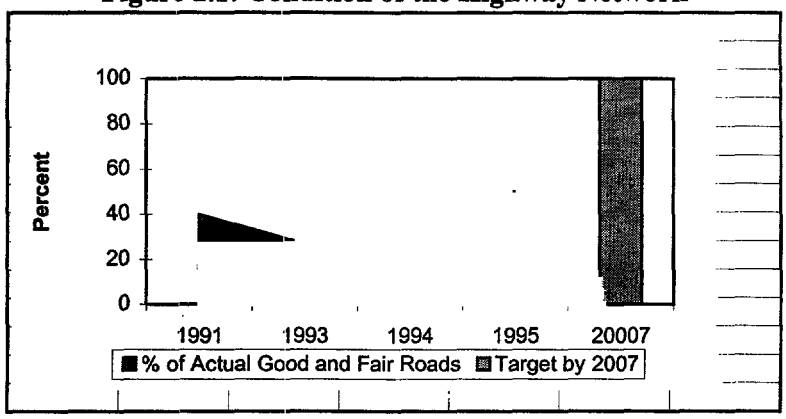
2.20 The Bank made almost no use of performance targets in its Mexico highway projects until its 1997 loan. This project contains baseline and target levels for the condition of the network (Figure 2.1). In part, the delay in using performance indicators is because Mexico did not develop a satisfactory network rating system until 1990, when it introduced the SISTER pavement management system.[10]

2.21 Bank efforts to improve the condition of the federal road network during the first half of the 1990s (Figure 2.1) had disappointing results. Even in the best year, 1995, only about 50 percent of the network was in fair and good condition. The target in the 1997 project calls for achieving 100 percent by year 2007. Judging by experience, and considering the lack of maintenance funding targets (see below), the absence of a sustainable highway finance mechanism, and the difficulty of implementing the decentralization process, this goal is highly optimistic.

9. Several measures complementary to deregulation were achieved as a result of the project. These included increasing the 1991 budget for highway maintenance; increasing the price of fuel by more than the 10 percent required by the loan; increasing railway rates more than the 25 percent required by the loan; introducing a system of vehicle inspections.

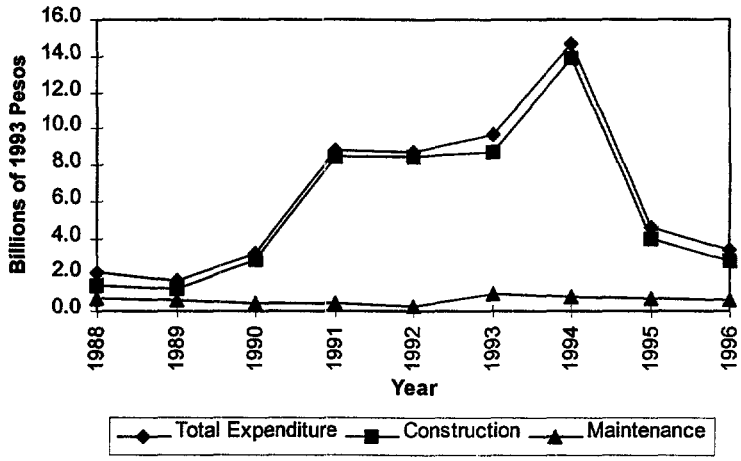
10. The compulsory linkage between project objectives and performance indicators introduced in the Bank's appraisal reports in 1997 through a standard, logical framework should ensure that adequate performance indicators are available and used at the project appraisal stage.

**Figure 2.1: Condition of the Highway Network**




2.22 Another important indicator of road system management is the budgetary allocation for road maintenance. As Figure 2.2 shows, it reached a minimum level in 1992 and has increased thereafter. The high level of investments in 1991–1993 reflects the peak of new construction in the privately financed toll road program. No targets for future maintenance funding levels appear to have been established under the ongoing highway projects.

**Figure 2.2: Road Expenditures: Investments and Maintenance**




2.23 *Highway Transport.* The survey of major shippers conducted for the 1994 Bank transport sector report (Chapter 3) showed a general satisfaction with the quality and price of road transport. This favorable opinion can be attributed to the considerable improvements in road freight services following the deregulation of trucking.

## Railways

### *Investments*

2.24 Railway projects in the 1970s and 1980s aimed to improve railway efficiency and reduce operating costs by financing rehabilitation of tracks and railway equipment. The 1985 project, the last Bank-funded railway project, also included centralized traffic control, telecommunications

equipment, and purchase of locomotives, freight cars, and passenger coaches. A railway restructuring project appraised in June 1993 was dropped when the government decided to privatize FNM.

2.25 Despite these investments, railway traffic declined steadily by about 10 percent between 1980 and 1997. This suggests that some investments made during this period (fourth project) and aimed at improving line capacity were not economically justified.[11] At the same time, those investments that focused on reducing operating costs (fifth project), such as track maintenance and the purchase of spare parts when FNM decided to curtail new investments severely, were economically justified despite the continued drop in traffic.[12]

2.26 The economic importance of Mexico's railway system, and the long-term involvement of the Bank with this mode, is underscored by the success of the current privatization program in fetching high prices for the parts of the railway system being concessioned. Bank-financed investments helped keep railway assets in good shape, an important factor in attracting concession bidders (see Chapter 4).

*Institutional Objectives*

2.27 All railway projects, especially the most recent two, aimed to improve operational efficiency, improve planning for assessing infrastructure requirements, promote financial self-sufficiency for railway services, and improve the commercial orientation. This section evaluates these objectives. Chapter 5, which discusses these objectives in the context of privatization, analyzes them in more detail.

2.28 *Operational efficiency*. Most projects failed to meet their efficiency targets (Figure 2.3). The exception, the railway sector project, largely achieved its targets for locomotive use and availability and freight car availability. However, traffic decline during the project period led to deterioration of other indicators, such as staff productivity and turnaround time of freight cars.

2.29 *Traffic and investments*. Traffic forecasts systematically overestimated traffic demand, sometimes by a large margin, affecting the selection of investments and financial performance. FNM appears to have put too much effort into producing traffic forecasts with little results. A more effective way to ensure investment efficiency would have pursued two goals: to improve the railways' commercial department and secure long-term contracts with large shippers and to increase the percentage of equipment owned by large shippers or other private operators. In the proposed (and later dropped) railway restructuring project, the Bank had encouraged this commercial orientation.[13]

2.30 *Financial performance*. The most significant failure of railway projects was their inability to improve FNM's financial performance. This was reflected, for example, in high operating ratios, indicating that revenues did not cover total costs (see Figure 2.3). To a large extent financial performance deteriorated because the demand for railway services declined.

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11. Take, for example, some of the investments under the fourth project for track and bridge rehabilitation and centralized traffic control. Fourth Railway Project. Project Performance Audit Report, OED, August 1992.

12. Mexico, Railway Sector Loan, Project Completion Report, July 1995.

13. Based on the draft SAR for this project.

Equally important was the lack of autonomy accorded railway management to make decisions on personnel and tariffs. As a result, during most of the 1980s and 1990s, the railway required fiscal transfers in the range of US$400–$700 million per year.[14] This was a period when Bank railway projects, which mainly tried to improve the management of railway parastatal companies, were doing poorly practically everywhere. Mexico was no exception.

2.31 *Commercial orientation and personnel policies.* Bank projects often identified lack of commercial orientation as a key impediment to railway competition with other modes and to its ability to retain traffic. However, the projects seldom set clear objectives or conditions to remedy this. Only when the government launched its Program for Structural Change (PCS) in 1991 did the railways see significant achievements, notably:

- introducing a competitive pricing policy, which led to more than 90 percent of the freight being carried under negotiated contracts rather than at published tariffs;
- canceling unprofitable passenger services, closing redundant installations, and selling some redundant assets;
- improving personnel policies and work rules.

2.32 *Involvement of the private sector.* Chapter 5 discusses the privatization of FNM, but it is important to note here that while substantial private investment was foreseen in the latest project proposal (subsequently dropped), no attempt was made to involve private operators in running transport services on FNM track. Doing so would have better prepared FNM and potential private operators for the concessioning program launched in 1996. On the other hand, in the early 1990s there was still too little experience with privately run railway services in developing countries,[15] and only some of that experience may have been relevant to Mexico.

*Performance Indicators*

2.33 From the earliest operations, the railway projects consistently included a fairly high number of operational efficiency and financial performance targets. The indicators to which the targets applied were system-wide rather than specifically related to project-financed investments or technical assistance; they were supported by action plans and, in some cases, by performance contracts. The railway projects were clearly preoccupied with performance and setting targets.

2.34 The selected indicators were appropriate, but they were not put to good use in the Bank's decisionmaking process. The Bank, while it monitored the indicators, did not react strongly when targets were not met, for example, by stopping the processing of new projects.

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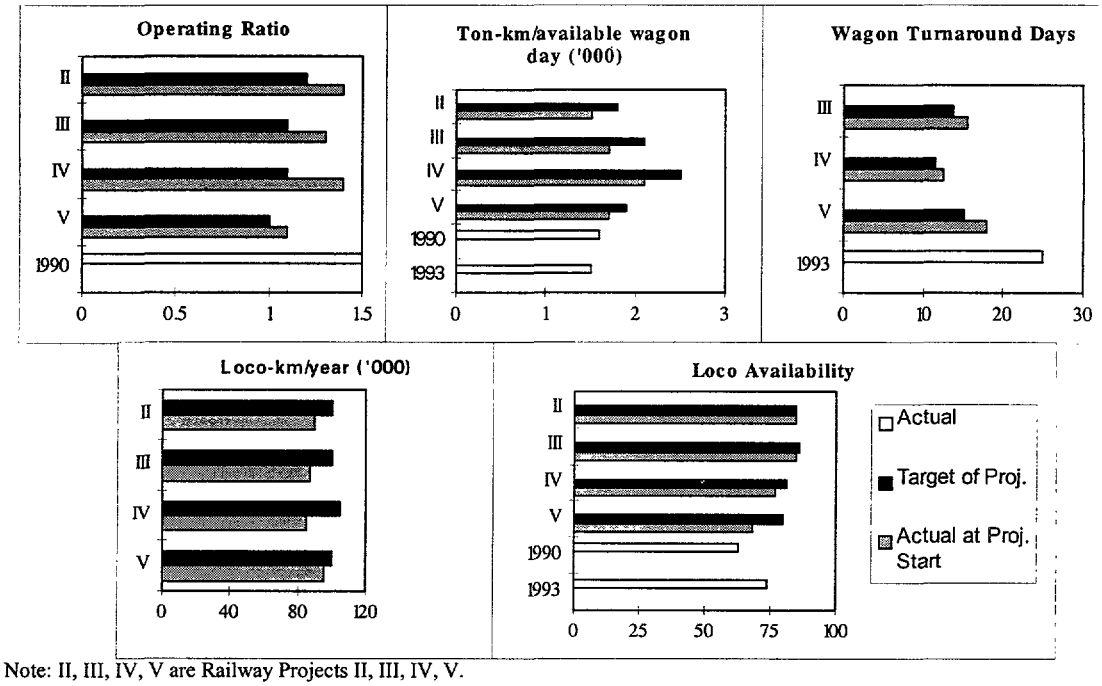
14. Mexico—The End of Transition. A Review of the Transport Sector, May 31, 1994. Prepared by the Bank's Latin America and Caribbean Regional Office.

15. For example, case studies by Hernan Levy and Aurelio Menendez of privately run railway services, of passengers in Thailand, and of freight in Senegal. Published by EDI in 1990. The Senegal case had been the result of a Bank-financed project in FY81.

**Figure 2.3: Performance Indicators in Railway Projects: Target and Actual Values**




Note: II, III, IV, V are Railway Projects II, III, IV, V.

## Ports

*Investments*

2.35 Ports are vital to Mexican trade and therefore to it transportation system. While the country has more than 70 ports, 6 of them carry more than 80 percent of the traffic. Bank projects in the sector were selective and focused on these main ports. The Bank has financed five port projects in Mexico but only two since 1982. The first of these two projects (approved in 1984) assisted the Lazaro Cardenas Industrial port on Mexico's west coast. The project was to be a key element in the government's strategy to use industrial port development to alleviate demographic and environmental pressures on Mexico's central plateau, a region containing Michoacan and Guerrero, two of Mexico's poorest states, by relocating population, employment, and industrial development toward coastal areas. The use of port development as an instrument to assist in alleviating poverty was a relatively innovative concept at the time. The project's physical investments were to increase port capacity by improving road access to the port, providing new equipment, and enhancing the port environment through facilities and equipment for the collection and disposal of solid waste. The project underwent substantial changes as a result of macroeconomic difficulties and the 1985 earthquake, and only some of the investments were made. Those investments had satisfactory returns.

2.36 The second project (approved in 1988), which assisted four major ports, aimed to improve port efficiency by rehabilitating and modernizing infrastructure and equipment. This objective reflected Bank views in the late 1980s that there was no need to expand port capacity in Mexico, the main exception being equipment for handling containers.[16] The main achievement of

16. The project financed a variety of physical investments, including rehabilitation of port infrastructure and equipment, new equipment to replace old and obsolete ones, and spare parts. The project did provide container

this project was the development of container facilities in Veracruz, Manzanillo, Altamira, and Lazaro Cardenas, as well as the rehabilitation of port facilities. These investments had an economic return of 29 percent, surpassing expectations at project appraisal.

2.37 While its port investments remained well focused, the Bank was unable to generate a strong strategic vision for the sector. As a result, after the concessioning of port facilities to private operators was launched a few years ago, the Bank discontinued lending for Mexico's ports.

*Institutional Development*

2.38 The port projects did not have substantial institutional development objectives, and as in other transport subsectors, government reform actions generally led rather than followed Bank projects. The projects' most significant achievement was to help improve the ports' financial performance.

2.39 *Financial performance.* When the last port project closed, the financial performance of three of the four ports covered by the project had improved. They showed satisfactory working ratios and operating ratios, the latter below 85 percent and better than appraisal targets, meaning that these ports generated considerable net revenues even after accounting for depreciation and financial charges. The improvement in financial performance was due in part to the restructuring of port tariffs, which was a project objective.[17]

2.40 *Reorganization of the port sector and involvement of the private sector.* In 1992, the government dissolved its main agency in the port sector, Puertos Mexicanos, and created instead the independent Integral Port Administrations (IPAs). Government plans call for full privatization of the IPAs by 1998. In 1994, the responsibility for regulatory and policy matters pertaining to ports was placed in the hands of a newly created agency.

2.41 By the time the last Bank port project closed in 1995, the government was well advanced in the design of the port privatization program. The project supported this policy by financing a study of alternative strategies for privatization. It also supported the liquidation of a national dredging company and the transfer of those activities to the private sector. The privatization study probably contributed to the formulation of the 1993 law that established the principles and mechanisms for concessioning public port facilities to the private sector. By 1997, container and general cargo terminals in several of the larger ports had been concessioned to private operators.

2.42 For the future, most of the smaller ports probably will not be attractive enough to be concessioned to private operators, and the same may happen with general cargo operations in the larger ports. Thus, the government or state governments will need to continue their involvement with port operations or search for a different framework to involve the private sector in these cases. The Bank is helping other countries address similar issues and is well positioned to assist Mexico if asked.

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equipment for the project ports. These investments were similar to those financed by other Bank port projects in other countries at about the same time of the Mexico project.

17. In pursuing these objectives in Mexico, the Bank was consistent with its port operations in other countries, most of which emphasized improvements in financial management. Changing Role and Functions of Ports: Addressing the Reform Agenda. Work in Progress. H.J. Peters and M.H. Juhel, TWUTD, November 1996.

## Urban Transport

*Investments*

2.43 Mexico's large and rapidly growing urban population makes urban transport especially challenging, even overwhelming. The urban road infrastructure is underdeveloped and has not kept pace with urban growth. Road maintenance is irregular for lack of adequate budget and effective organizational capacity. Modern traffic system management is absent. Together these factors have led to high vehicle operating costs, severe air pollution problems, a disproportionate number of accidents, chaotic traffic jams, and declining productivity of workers and shippers.

2.44 Three urban transport projects (approved in 1987, 1992, and 1993),[18] aimed to increase the transport infrastructure capacity, strengthen institutional capabilities, develop measures to improve air quality, and to a lesser extent, address policy issues. The first project was similar to other Bank-financed urban transport projects at the time, such as those in Brazil, Korea, and Indonesia.[19] The third project was similar to a number of other Bank projects that focused on medium-size cities in large countries like China. The second project, which focused on improving air quality in the Mexico City Metropolitan Area (MCMA), was the most comprehensive of its kind financed by the Bank.

2.45 These projects were consistent with the Bank's urban transport policy, and to a large extent with the needs of Mexico. Surprisingly, however, the first urban transport project did not cover Mexico City. General practice, if not established policy, would have required the Bank to include the capital, which had the most severe transport problems in the country. The Bank's strong opposition to heavy subsidies being provided to the city's rapid transit system in the 1980s led it to exclude Mexico City from the first loan.

2.46 The projects' physical investments helped improve intensively used urban roads in the state of Mexico and to a lesser extent in Nueva Leon. They also supported development of an effective pavement and maintenance management system. Significant progress was made in tackling Mexico City's air pollution. The Federal District acquired and implemented a state-of-the-art automated air quality monitoring network that provides on-line up-to-date information on five key pollutants at 32 monitoring stations in the MCMA. Many vehicle inspection stations have been established, enabling improved enforcement of emission standards. Highly polluting public transport vehicles have been replaced or fitted with lower-emission engines.

2.47 Lack of government commitment and unfavorable macroeconomic conditions constraining counterpart funding have hampered implementation of the urban transport projects. The 1987 project made slow progress, and only in 1994, when new administration took over in the State of Mexico, was a renewed commitment obtained from the state and from the federal government. The 1993 project has faced continued implementation difficulties due to lack of funding for the federal component and high interest rates, which have restrained municipalities' borrowing capacity. As a result, of the 44 medium-size cities qualified to participate in the project, only a handful have begun civil works.

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18. The Bank has financed in other countries project incorporating some of these features, but the Mexico project is the most comprehensive one.

19. Lessons and Practices in Urban Transport, OED, 1997.

2.48 Due to slow implementation progress, the Bank, in its August 1997 portfolio rating, included both the first urban transport project and the medium-size cities project in the category of "projects at risk." [20]

*Institutional Development*

2.49 The institutional development objectives of the urban transport projects aimed to enhance organizational capacity and to help the government with its decentralization effort, while encouraging policies to reduce economic distortions and subsidies.

2.50 *Organizational capacity.* The projects aimed to develop organizational capacity to plan and manage a sustainable, cost-effective urban transport system. Notably, this has included helping the State of Mexico improve transport planning and traffic management and strengthening Mexico City's funding and organization to deal with air pollution.

2.51 *Decentralization.* Since the Mexican constitution was amended in 1983, making provision of municipal services—including urban transport—the responsibility of local government, the federal government started to devolve these services. Municipalities often lacked the institutional and financial capacity to absorb the new duties, however. The Bank's support for devolution of urban transport to municipal governments is exemplified by the Medium-Size Cities project. This support has only been partly successful because the Bank did not have a coherent approach to dealing with municipal finance, which is key to the success of a decentralization effort, and because of the low number of municipal governments participating. Municipal finance should not be addressed through urban transport projects; rather, the Bank should do this in the context of urban or city assistance strategies.

2.52 By comparison, the Bank has been more successful in its support of decentralization and regional development when using stand-alone projects. Two such projects, one completed and one ongoing,[21] have helped the poor and indigenous population gain access to basic infrastructure, social services, and technologies. The projects have also helped in developing institutional capacity for regional municipalities. This does not imply, however, that the decentralization issues faced in urban transport could be better addressed through stand-alone decentralization projects. Rather, there may be lessons in such projects that could be of use in the design of urban transport projects.

2.53 Policy dialogue: subsidies and metros. The Bank's strong opposition to the large government subsidies to Mexico City's metro led to excluding this city from the first urban transport project. Later, when the State of Leon, which received funding under the project, decided to build a rail system, it became a violation of the loan covenant[22] and the Bank suspended disbursement in that state. The lack of accord on metro policies hindered both federal and state commitment to urban transport projects and soured relations with the Bank. The Bank's current, more flexible policy on metros should lead to a better dialogue with the government.

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20. Assessment by the Bank's Quality Assurance Group (QAG).

21. First Decentralization and Regional Project (approved in FY91) and Second Decentralization and Regional Project (approved in FY94).

22. SAR 4.02a, First Urban Transport Project.

2.54 Air quality improvement. The air quality in the MCMA is one among the worst in the world. Eighty-four percent of the total mass pollutant emissions is road-transport related.[23] The high level of transport emission stems from poor vehicle maintenance, inadequate emission standards, unfavorable fuel properties, unpaved roads in the peripheral areas (generating dust), traffic congestion, and the geographic location of the city.

2.55 The Bank's assistance for air quality improvement started in 1989 when it supported, with funds from the First Urban Transport Project (FUTP), Mexico's Emergency Air Pollution Program, and assisted with the preparation of the Transport Air Quality Management Project. This project aimed to reduce the growth of emissions of nitrogen oxides, volatile organic compounds, carbon dioxide, lead, and particulate matter from transport sources; develop a policy framework to support both transport and air quality objectives; and improve the scientific and institutional base underlying development and management of the air quality program. This project, the most comprehensive of its kind financed by the Bank,[24] was consistent with the increasing attention and resources the Bank has devoted to the problem of air pollution in major cities.

2.56 The project's investments and policy measures have resulted in a substantial reduction in overall pollution emissions. Strong government ownership of the project, induced by public pressure to improve air quality in Mexico City has been a key factor. Significant improvements in air quality have been achieved, especially for lead, carbon monoxide, and sulfur dioxide.[25] Control standards have been tightened and enforced thanks to the establishment of vehicle inspection stations. Ozone and particulate matter remain a major problem. Institutionally, the project resulted in the establishment of the Environmental Trust Fund and an effective environmental committee for Mexico City.

**Assistance for Infrastructure Privatization**

2.57 The main objective of an ongoing technical assistance project approved in FY96 is to help the government continue its program of infrastructure privatization. The project includes components on ports and railways.

2.58 For ports the objective is to support privatization preparation activities for terminals as well as for port authorities. This component was not carried out because privatization of the port system was well advanced when the loan was signed in October 1995.[26]

2.59 For railways, the objective is to support privatization plans through a series of studies and advice by Bank staff. The studies will include details of each concession, methods for dealing with current workshop concessions, FNM regionalization, inventory and valuation of assets, plan for resettlement of illegal settlers, environmental assessment of rail facilities, and training for railway staff. The role of the Bank under this component is discussed in Chapter 4.

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23. SAR, Transport Air Quality Management Project.

24. The Bank has financed in other countries urban transport projects incorporating some of these features, but no project has been so comprehensive in dealing with air quality and urban transport as the Mexico project.

25. Supervision Report, December 12, 1995.

26. Supervision Report, March 11, 1996.

2.60 *Performance of Transport Projects.* For the transport projects covered by this evaluation, 71 percent had satisfactory outcomes, 57 percent were likely to be sustainable, and 43 percent had achieved a substantial institutional development impact. These numbers are broadly similar to Bank-financed projects in all sectors in Mexico and to Bank transport projects worldwide. Bank performance in Mexico's transport projects (100 percent rated satisfactory at identification and at supervision and 71 percent at appraisal) was consistently better than for all Bank projects in Mexico and for Bank transport projects worldwide. Ratings of completed and ongoing projects are shown in Annex A.[27]

*2.61 Lending efficiency.* Most investments were for clear economic priorities and had high ex-post economic returns (average of 36 percent rate of return for all Mexican transport projects approved since 1982 and already closed). The exceptions were those few railway investments that in the face of declining demand sought to increase capacity rather than lower operating costs.

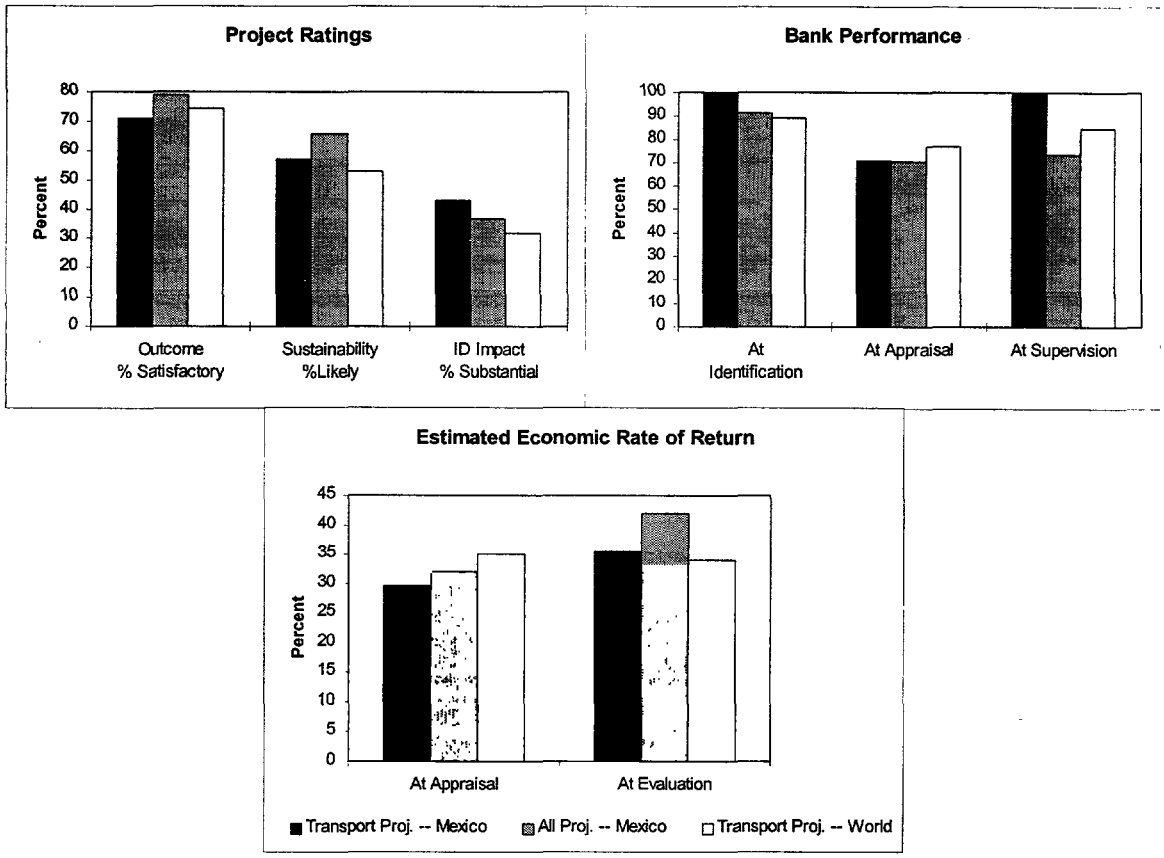
2.62 Other findings by subsector:

- Port projects and railway projects, while having satisfactory outcomes, had only modest institutional development impact.
- Highway and highway transport projects had substantial institutional development impacts.
- Projects investments and benefits appeared to be sustainable, except for the failed Chiapas rural roads project and the railway project.

2.63 As shown in Figure 2.4, the ratings of Mexico transport projects approved after 1982 and already completed are similar (the differences are not statistically significant) to the cohort of Mexico projects in all sectors and to worldwide transport projects. The same comment applies to Bank performance in these projects and to the projects' economic rates of return.

27. OED database for completed projects and latest supervision report ratings for ongoing projects.

**Figure 2.4: Mexico Transport Projects—Comparative Ratings, Bank Performance, ERR (Projects Approved after FY 84)**




## Deployment of Bank Resources

2.64 Since 1982 and until FY97, the Bank's Mexico operations deployed nearly US$20 million (excluding administrative costs) to carry out all operations, both lending and non-lending. The transport operations consumed 17 percent of the resources (second largest sector after agriculture). Overall, the Bank does not appear to have spent too much or too little on its transport operations. The more immediate observation is that the amount of resources allocated to transport varied enormously from year to year (Annex A). During the peak years (1988–1991), expenditures were probably used for the preparation of two projects approved in 1988 (ports and highways) and the road transport adjustment loan approved in 1990. However, this also was the period when the Bank failed to undertake a review of the toll road program, a review that would certainly have had a high payoff.

## Conclusions

2.65 The conclusions drawn from this evaluation of lending for Mexico's transport sector are as follows:

- The projects were highly relevant to Mexico's development agenda. Most had government ownership and were consistent with Bank policy.

- Lending orientation for transport followed the direction of Mexico's macroeconomic policies and socioeconomic requirements. That orientation evolved over time. It started with a strong concentration in railways and ports in the early period to highways, trucking deregulation, and urban transport later. Investments that increased system capacity (ports and highways) were supplanted by investments that improved operational efficiency, asset maintenance, and safety. Projects that focused mainly on physical investments evolved into support for organizations, regulatory frameworks, institutional development, control air pollution, and positioning Mexico to meet NAFTA's international transport requirements.

- Bank projects did not improve transport access for the rural poor.

- The Bank was unable to use its Mexico operations to convey to government officials the potential problems, and suggestions for addressing them, of the toll road program launched in 1989.

- Inflexibility in applying the Bank's subsidy policy led to the omission of Mexico City from the Bank's first urban transport project.

- The Bank persisted in preparing a railway project (the last project, dropped in 1994) that, although supporting restructuring, failed to realize the potential for privatization. It also failed to leverage privatization experience already available from other countries, including some in the Latin American region.

2.65 None of the operations directly supported state highway agencies, even though the devolution of highway system management from federal to state agencies has long been established worldwide and the Bank started projects of this kind in Latin America in the mid-1980s.

*"One has to look back to the World Bank missions of 1964 and 1970 to find this type of research about [Mexico's] transport system."*[28]

# 3. Evaluation of Instruments: Transport Sector Work

**Overview**

3.1 Early in its involvement with Mexico's transport sector, in the 1960s and 1970s, the Bank prepared several comprehensive reports on the state of the country's transport system. These reports set a standard for rigor and comprehensiveness and became almost classic documents for the study of the country's transport system.[29]

3.2 A hiatus following that early work lasted until the mid-1980s, when the Bank again undertook transport sector work in Mexico. Since then, the Bank has prepared a half-dozen reports (Table 3.1). Two sector reports (1987, which included a volume on transport pricing, and 1994) became vehicles for transport policy discussions with the government. Other reports covered rural roads (1984), toll roads (1987), and a multimodal corridor study (1989). A 1989 report updated the 1987 sector report, but the Bank never released the document to the government.

3.3 In some cases, Bank studies having a broad focus also covered issues directly involving the transport system. Of special importance is a review of Mexico's private infrastructure and its financing (discussed in Chapter 4), which the government requested during Bank President Lewis Preston's 1993 visit to Mexico.

**Table 3.1: Bank Transport Sector and Related Reports**

| *Year* | *Subject* | *Focus* | *Final Report Cover* | *Comments* |
|---|---|---|---|---|
| 1984 | Roads | Rural roads | Green | Chiapas case study |
| 1984 | Roads | Toll roads | Green | |
| 1987 | Transport Sector | Sectoral Strategy | Green | |
| 1987 | Transport Sector | Pricing | Green | Covered road user charges, rail and port freight rates, and dues. |
| 1989 | Transport Sector | A specific region | Yellow | L. Cardenas Port-Central Mexico Corridor |
| 1989 | Transport Sector | Sectoral Strategy | | Update of 1987 report |
| 1993 | Infrastructure | Privatization Issues | White | Special report prepared at government request. Within transport, it covered railways, toll roads, and ports |
| 1994 | Transport Sector | Review of sector after liberalization | Green | Includes survey of large transport users |

28. Preface to Victor Islas Rivera, *Structure and Development of the Transport Sector in Mexico* (in Spanish), El Colegio de Mexico, 1992 (second edition).

29. As noted, for example, in the book cited above. Islas Rivera is a well-known Mexican transport planner and academic.

**Relevance and Quality**

3.4 The Bank has produced many economic reports to provide a theoretical understanding and framework for the stabilization and liberalization of the Mexican economy. These reports, which emphasized monetary and fiscal discipline, and more recently, promoted private sector development, became important guides for preparation of the transport sector reports.

3.5 The Bank transport sector reports have two distinct periods. In the first, during the 1970s and early 1980s, the Bank was mainly concerned with investments, pricing (including cost recovery and user charges), and funding of highway maintenance. In the second, during the 1980s through the 1990s, and closely reflecting the government's new economic reform policies, transport sector work shifted focus to decentralization policies and regulation.

3.6 This evolution had a strong rationale. During the first period, the transport sector was characterized by heavy involvement of the government, both as an investor and operator of transport facilities. At the time, there were few well-trained Mexican professionals in these areas, thus the importance of the Bank to provide well-reasoned advice in areas of immediate concern to the government.[30] The Bank's shift of focus in the second period was fully consistent with the government's new economic liberalization policies and much strengthened capacity of government agencies in investment, pricing, and finance analysis.

**The Traditional Issues: Investments, Pricing, Funding**

3.7 *Investments.* The Bank consistently advised fiscal prudence and the need to ensure efficiency in public expenditures. The 1984 *rural roads* report called attention to the large size of Mexico's rural road construction program, inadequate attention to maintenance, and the lack of a sound methodology for establishing investment priorities. The 1987 and the 1989 reports took a similar position regarding ports and urban transport. For *ports* they emphasized that institutional reforms, particularly the strengthening of port service companies, were more necessary than building new facilities. For *urban transport* they raised the issue that proposed investments focused on new construction while neglecting maintenance and measures to maximize capacity of the existing road network.

3.8 In some cases, the Bank reports identified investment proposals that appeared to have little economic justification. For example, the 1989 report, and later a Country Strategy and Implementation Review in 1991, recommended that the government reconsider its plan to develop the small Gulf port of Tuxpan. The report found that, among other problems, construction of a needed rail connection would be very costly. Similarly, the Bank in its 1987 sector report opposed railway investments in new track and equipment, favoring rehabilitation of the existing assets. Mexican officials and other stakeholders surveyed for this evaluation praised the Bank's strong position against uneconomic investments.

3.9 *Pricing.* The 1987 and 1989 reports called attention to the importance of reducing pricing distortions and seeking a level playing field for competition in the transport sector. In roads,

30. For example, the 1984 road pricing study comprised a detailed, highly practical, and didactic analysis for the calculation of road user costs and the formulation of a model for calculating road user charges for different vehicle types. The analysis and model were used as didactic materials in worldwide seminars offered by the Economic Development Institute during the 1980s.

inadequate road user charges, including low toll-road rates (all toll roads were government-owned at that time), meant that road transport was subsidized and that trucks, especially, were not paying the marginal (maintenance) costs attributable to their use of the highway network. The reports' recommendations to improve port pricing policies and the need to include automatic escalation clauses for tariffs, in the face of recurrent cycles of high inflation, were clearly sound. Pricing was an area where the Bank continually disagreed with the government, to a large extent because the government consistently used control of transport prices as an inflation-fighting tool.

3.10 *Funding of highway maintenance.* Most sector reports called attention to the inadequate funding for road maintenance and to the dangers of road system deterioration. However, only the 1994 report was able to support this concern with statistics, noting that 40 percent of the federal roads were in poor condition. While the diagnosis of these reports was correct, the recommendations were not as sound as they could have been. First, while the reports' recommendations to restructure and increase road user charges were correct from an economic efficiency standpoint, these recommendations included an implicit assumption that budgetary funding for road maintenance would increase in consequence. In the absence of earmarked user charges going into a dedicated road fund, this reasoning was flawed. Second, the reports underplayed the fact that, at a constant level of budgetary resources, more effective maintenance could be achieved through (a) a more optimal allocation of available resources among various kinds of maintenance activities, and among different roads and investment timings, and (b) reducing the cost of maintenance operations by contracting out for them. As noted in Chapter 2, it took the Bank until the 1990s to focus attention on these issues.

**The Newer Issues: From Decentralization to Trade**

3.11 With the economic reforms, and especially the opening of the economy launched by the Salinas administration, the Bank's transport policy concerns shifted to support new government policies. The shift was appropriate, but the Bank was probably too slow in presenting its views in a formal report, since its 1989 report was still too traditional. It was only with its 1994 report, practically at the end of the Salinas administration, that the Bank issued its new transport sector directions. As the title (*The End of the Transition*) of the report suggests, it aimed to identify a post-transition transport strategy for the Bank, rather than one that would assist the transition.

3.12 *Deregulation of trucking and NAFTA.* The North American Free Trade Agreement (NAFTA), a vital piece of Mexico's trade policy, poses an enormous challenge to the country's transport system. If Mexico is to compete with the highly efficient US and Canadian systems, it needs to ensure that its transport system is efficient and meets international technical and safety standards.[31] Trucks, which cross the Mexico-US border at a rate of 20,000 per day, are particularly vital.

3.13 In 1989, the government deregulated trucking, eliminating or greatly reducing route, rate, registration, and contracting controls. The Bank supported this decision, but it had not been an early champion for it. In fact, the 1987 sector report had been uncertain about the need to deregulate, calling for further data collection and analysis. This position appears, in retrospect,

31. This issue is being closely followed in the United States. See, for example, *GAO: Commercial Trucking—Safety and Infrastructure Issues Under the North American Trade Agreement,* GAO/RCED-96-61, February 1996.

overly cautious. As the Fernandez study[32] noted, the regulatory framework of trucking before 1989 was a textbook case of a cartel that resulted in huge welfare losses and monopolistic rents amounting to more than US$500 million every year.

3.14 By the 1989 report, the Bank had changed its view and strongly recommended eliminating tariff and entry controls. It is not possible to ascertain whether the Bank's position was reactive to changes already under way in Mexico, or whether it helped clarify the debate and helped the liberalization process. The Bank did not formally disclose the report to Mexican officials. But it is likely that the 1989 report, as often happens with draft reports, was passed unofficially to a small number of government counterparts.

3.15 The 1994 report emphasized NAFTA transport issues. In particular, it highlighted the treaty's requirement for trucks to comply with minimum standards of vehicle dimensions and weights. The report warned, correctly, that Mexico had highly liberal vehicle standards, and that it was not even enforcing those generous limits. The implication is that Mexican truckers may be seriously restricted in providing services inside the United States and Canada unless Mexico can align and enforce vehicle standards to acceptable NAFTA rules.

3.16 *Decentralization.* The 1994 sector report discussed the issue of devolving to the states responsibilities for feeder and rural roads. The report called attention to the lack of agreement between federal and state authorities regarding how the road works should be financed. The report rightly stated that, "decentralization of responsibility without decentralization of the ability to generate resources will neither improve the condition of the roads nor contribute to economic growth." Despite the excellent and timely attention of the report to decentralization, the Bank in its 1997 road project did not, as noted in the previous chapter, promote such decentralization.

3.17 *Privatization.* The 1994 report supported government proposals for (gradually) expanding private sector involvement in operating the national railways and the country's public ports. As it turned out, only one year after the report was issued, the government decided to increase radically the extent of privatization in both transport modes through concessioning to private operators (a) pieces of the railway networks rather than the more limited involvement of the private sector considered in 1993–1994 and, (b) in the ports, of container and other cargo terminals. Thus, privatization is another area where government actions led rather than followed Bank suggestions.

3.18 *Urban issues.* The Bank's attention in sector reports to urban transport issues has been erratic, in part because responsibility for urban transport has shifted between the urban and the transport divisions. The Bank largely ignored the issues until the 1989 report. This report noted the rapid urbanization trends in Mexico, particularly in the capital city. It highlighted the growing problems of congestion, air pollution, and lengthy commute time. Generally, it was the appraisal rather than the sector reports that discussed urban transport issues in detail.

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32. Arturo Fernandez, *Trucking Deregulation in Mexico, in Regulatory Reform in Transport: Some Recent Experiences,* edited by Jose Carbajo, A World Bank Symposium, 1993.

**Incorporating Users' Perspectives**

3.19 The 1994 sector report included an innovative survey of large transport users in Mexico. This survey was the first documented effort by Bank staff to seek and include in transport sector reports the views of the users. The key conclusions of the report are as follows:

- Respondents were satisfied with the quality and price of road transport but dissatisfied with the quality and reliability of rail transport.
- The physical and institutional facilities for US-Mexico trade through Nuevo Laredo, Mexico's most important "port" accounting for some 60 percent of this trade (including products destined for Japan and Asia), were inadequate.
- Shippers were willing to pay truckers higher rates to use toll roads mainly because of increased security of the cargo.
- Shippers reported that as a result of trucking deregulation tariffs vary widely by route, corridor, and product. Users with a strong bargaining position were able to negotiate tariffs.

**Role of Sector Work in Formulation of Lending Strategies**

3.20 The sector reports' influence in formulating lending programs—including project components and project policies and institutional objectives—varied greatly, depending on the elapsed time to the next project and the specificity of recommendations. As Annex C shows, only two reports contained a section on future lending strategy.[33] In some cases, they identified specific projects and fiscal years. As a sample, Table 3.2 compares the project lending proposed in the 1987 strategy paper with the lending that actually took place.

33. Early drafts of sector reports sometimes contain suggestions for future lending that are taken out in subsequent versions.

**Table 3.2: The 1987 Report: An Example of Lending Recommendations**

| *Lending Recommended in 1987 Sector Report* | *Fiscal Year* | *Actual Lending* | *Comment* |
|---|---|---|---|
| Highway-Maintenance | 1988 | Highway Maintenance | Original Proposal |
| Ports-Rehabilitation | 1988 | Port Rehabilitation | Original Proposal |
| | 1990 | Road Transport Adjustment | New Project |
| Highway-State Highways | 1990 | | Not done |
| Railway-Second Sector | 1991 | | Preparation of Railway Project started, then aborted at yellow cover stage |
| Port Sector | 1991 | | Not done |
| | 1993 | Highway-Rehabilitation & Safety | |
| | 1993 | Transport/Air Pollution | |
| | 1993 | Medium-Size Cities Transport | |

3.21 For business-planning purposes, the Bank needs to develop a project pipeline like the one proposed in the 1987 report. While the planned program turned out to be different from what took place, the first two recommended projects were implemented, and the recommended state highway project was clearly a good concept.

**Other Non-Lending Activities**

3.22 Of special note among other non-lending activities in the transport sector was the collaboration, over several years in the 1980s, between the Economic Development Institute (EDI) and the Mexican Transport Institute (MTI). The activity took two main forms. The first was participation by EDI staff or EDI-financed regional staff as lecturers in newly developed MTI courses. The second was promotion by EDI, in collaboration with the Latin American and Caribbean region and the Africa region (for Spanish- and Portuguese-speaking countries), of MTI courses among transport borrowers, and facilitating the use of project-financed training for assistance to such courses. The current high-reputation of the MTI, the permanence of its courses, and the feedback received from a sample of participants suggest that the EDI/MTI collaboration was a valuable activity.

**Conclusions**

3.23 The conclusions of this evaluation are as follows:

- Sector reports were generally relevant, of good quality, and touched on key current issues. They also persistently pursued these issues over a long period. Some reports, such as the 1994 one, were especially clear, concise, and innovative.

- Sector reports contained useful recommendations that subsequent projects often incorporated.

- The identification of uneconomic investment proposals and suggestions that the government drop such projects was an important contribution of the sector reports. Since transport investments often are large, Bank advice on investments carries special weight in the transport sector.

3.24 Sector work was less successful in promoting new ideas (although this conclusion may be contested on strategic grounds, as discussed in the next paragraph). Bank sector reports do not score high in this respect, and appeared overly timid in suggesting reforms in areas such as deregulation and privatization. In fact, the reports supported such reforms only after the government had made key decisions.

3.25 This evaluation concludes that sector reports undertaken for sophisticated borrowers like Mexico should be cutting edge, should illustrate recent, novel experiences of special relevance to the country, and should provide guidance on how such experiences can be adapted and applied.

3.26 The evaluation of sector work was difficult because these reports were never self-evaluated and because there were no predefined indicators against which to judge the outcome of the work. Too many of the reports remained internal Bank documents, circulated neither to the Board nor to the public, limiting their value.[34] The evaluators recommend that the final version of a report include in its preface a statement about the dissemination and discussion given the report within the government and by other stakeholders.

34. Under the Bank's disclosure policy, all sector reports in gray cover published from 1994 are public documents.

# 4. Privatization Issues in Railways and Roads

4.1 This chapter reviews the role of the Bank in the privatization of Mexican railways and toll roads. As noted earlier, Mexico has been a pioneer in involving the private sector in the financing and operation of the transport sector. Concessioning of the railway to the private sector is currently under way, and the large program of private toll roads, launched almost a decade ago, is at a crossroads. Assessing Bank and government experience with these activities is vital for the Bank as it seeks to expand its role in facilitating private sector participation in the development and management of infrastructure.[35]

**Railways**

4.2 The history of the Bank's involvement in railway reform can be divided into four periods.

- Investment with limited tariff or institutional reform (1954–1982)
- Performance contracts (1982–1989)
- The Program for Structural Change (1989–1994)
- Privatization (1994–present)

4.3 *Investment with limited tariff or institutional reform.* During this period the Bank provided four railway loans for the rehabilitation of equipment and right of way and for selective improvements in the capacity of key lines.[36] Railway freight traffic was growing during this period, so the funded improvements were important to maintaining reasonable service. Yet the Bank's recommendations that the investments be accompanied by pricing and institutional reforms were often ignored, and railroad deficits continued to increase. Freight tariffs were increased only sporadically and never in pace with inflation.[37] The differentials in tariffs among commodities were dictated more by political than by business considerations, in part because the railroad had only primitive costing and marketing systems. The railroad's operating efficiency continued to decline and overstaffing was not addressed.

4.4 *Performance contracts.*[38] In the second period, the government began to experiment with institutional and pricing reforms of the type recommended by the Bank, but without much

35. A detailed, background report prepared for OED on this topic is available on request. This chapter summarizes the contents of that report.

36. The 1954 loan was a modest one for one of the smaller railways; the main loans were in 1972, 1976, and 1980. This description of the early period relies heavily on the OED project completion report for the second through fourth loans (reports 2562, 5777, and 9087) and Lou Thompson, "Contract Planning in Mexican Railways: Convenios or Inconvenios?" 1989.

37. Thompson, "Convenios or Inconvenios?" paragraph 16.

38. This account of the 1982–1989 period is based primarily on World Bank, "Mexico: Transport Sector Strategy Paper," report 6552-ME, February 20, 1987 (hereafter cited as "1987 Sector Strategy Report") and Thompson, "Convenios or Inconvenios?"

success. The change was precipitated by the Latin American debt crisis of 1982, which created serious budget constraints and made the railroad's deficits less tolerable. At the same time, the government's dependence on Bank lending for structural adjustment increased; this also increased its willingness to listen to Bank advice.[39]

4.5 In the railway sector, the government responded by raising tariffs and using performance contracts between the SCT and the railway. With the Bank's help, the SCT reviewed the ongoing and remaining investments under the fourth railway loan to emphasize maintenance over capacity improvements. The Bank approved a fifth railway sector loan in 1985 with the objective of improving railway profitability through a combination of investments to increase equipment and labor productivity and tariff increases. In 1986, the government also merged the three remaining small railroads and the dominant railroad, and created a single national carrier, Ferrocarriles Nacionales de Mexico (FNM).

4.6 The key vehicle for many of the reforms was to be the performance contract. The Bank had apparently advocated the use of such contracts, although it is not clear whether Bank staff contributed to the design of the contracts used. Performance contracts with FNM were signed in 1985 and 1987.

4.7 Both contracts failed to achieve financial self-sufficiency for the railroad, as described in a 1989 report by the Bank's senior railway advisor.[40] The report acknowledged that FNM was one of the best-run railroads receiving Bank loans. It also noted that the contracts had helped increase the dialogue between the railroad and the government and forced a clean-up of the railroad's balance sheets. However, the government's concern about inflation apparently overcame its commitment to setting commercial tariffs. Furthermore, timely monitoring of the railroad's performance was difficult because of weak reporting systems. Finally, the contract incorporated multiple performance targets without indicating priorities. With traffic declining, it was unclear whether the railroad should reduce tariffs to meet its volume goals or sacrifice volume to achieve financial targets.

4.8 *The program for structural change (PCE).*[41] The next period of railroad reform was marked by more significant performance improvements. The economic crisis had worsened with the collapse of oil prices in 1986, and when President Salinas took office in 1988 he greatly accelerated the program of privatization to reduce the budget deficit and revitalize the economy. Although the railroad was not among the public enterprises initially slated for privatization, there must have been a strong suspicion that it would eventually become a candidate.

4.9 In 1992, a new Director General for FNM announced a Program for Structural Change (PCE)[42] to establish a more commercially oriented, financially self-sufficient, and efficient railroad. The program called for concessioning FNM's main workshops to private operators,

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39. World Bank, "1987 Sector Strategy Report," p. ii.

40. Thompson, "Convenios or Inconvenios?"

41. This account of the 1989–1994 period is based primarily on World Bank, "Mexico: The End of Transition, A Review of the Transport Sector," report 12654, May 31, 1994 (hereafter cited as "1994 Sector Strategy Report"); the OED completion report for the fifth railway loan (report 14708); World Bank, "Mexico—Private Infrastructure and Its financing," report of a mission, May 25, 1993, pp. 18–20; and interviews.

42. The Programa de Cambio Estructural, or PCE, is described in the World Bank, "1994 Sector Strategy Report."

contracting out for track maintenance, and selling then leasing back the communications system. The right of way and trains would not be privatized, since the Mexican constitution specified that the railroads should be publicly owned.

4.10 Whether intended or not, the PCE laid essential groundwork for FNM's privatization, especially because of its labor reform. The FNM workforce was reduced from approximately 80,000 to 50,000 largely through a program of voluntary retirements. With the unions' cooperation, moreover, work rules were made more flexible, allowing FNM to increase labor and locomotive productivity.[43] The seven main workshops and three other enterprises were privatized, an experience that allegedly helped convince labor that management was serious about reform and that privatization need not lead to lower wages. Under the PCE the financial performance of the railroad also improved, reversing a deterioration that had occurred since 1988.

4.11 In 1993, once the program was under way, the Bank began to prepare a sixth railway loan to support the effort.[44] Before the loan could be signed, however, it was made less relevant by a change in policy under Mexico's next president.

4.12 *Privatization.*[45] The latest round of reform began after President Zedillo took office in December 1994. The Finance Ministry was reportedly disappointed with the rate of improvement under the PCE and was seeking to identify additional enterprises to privatize. In January 1995, a working group that included SCT and FNM examined privatization options. By April 1995, the legislature had modified the constitution to allow the government to lease the railways' right of way to private operators and had approved the railway privatization law.

4.13 The Bank supported the SCT-FNM team by organizing an early seminar on the international experience with rail privatization; by funding, through a technical assistance loan, the consultants who analyzed the privatization options in more detail; and by participating in discussions about the results. The Bank's very early involvement may have been because the new Subsecretary for Infrastructure at the SCT formerly had been a senior official at SHCP, where he had worked closely with the Bank. As a result, soon after his appointment, he was in touch with Bank's senior personnel working on privatization and on railways.[46]

4.14 One of the key Bank-financed studies[47] was a thoughtful analysis of the restructuring and privatization options.[48] This study rejected the option, followed in a number of European railways, of separating ownership of infrastructure and trains as unnecessarily complex. It recommended the creation of three large trunk freight lines, one each in the northeast, northwest,

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43. World Bank, "1994 Sector Strategy Report," p. 17.

44. OED report 14708.

45. This account of the privatization program is drawn primarily from Secreteria de Comunicaciones y Transportes, "Restructuracion del Sistema Ferroviaria," May 1995; Secreteria de Comunicaciones y Transportes, "Processo de Apretura a la Inversion Privada en el Sector Comunicaciones y Transportes," July 7, 1996; Secreteria de Comunicaciones y Transportes, "Operacion de Compraventa de las Acciones del Ferrocarril del Noreste, SA. de C.V.," February 1997; press clippings; and interviews.

46. Specifically, the Chief of the Private Sector Development and the Railways' Adviser.

47. Financed under the Infrastructure Privatization Technical Assistance Project.

48. Study prepared by Mercer Management.

and southeast of the country. A fourth Mexico City Terminal Railway would provide connections in the metropolitan area; each of the trunk railroads would own 25 percent of the carrier, while the government would hold the remaining 25 percent in case a passenger railroad concession was eventually granted. The study also recommended granting a series of short-line concessions for lightly used branch lines that were specialized or of local interest. The proposed concessions are shown in Annex D. The three main trunk concessions were balanced so that they would compete to some extent with one another. All three connect to Mexico City, for example, and each of the two northern concessions connects with at least one major port on both the Pacific and Gulf coasts, while the southeast concession provides the most direct connection between Mexico City and the important Gulf port of Veracruz.[49] The recommendation also attempted to balance the connections to the critical US market and offer each northern concession a choice of US railroads.

4.15 As of early 1998, the Noreste railway had been transferred to a private operator, following a bidding process that attracted three bids. The Pacifico Norte was to be transferred in early 1998 to the sole bidder.

*Overview of Bank Experience*

4.16 The Bank's experience with the railways has been mixed. On the negative side, the Bank had a dubious performance in three key areas: investments, management issues, and privatization promotion. The Bank financed some capacity-increasing *investments* even in the face of declining demand for railway services. While Bank missions broached the issues of overstaffing and work rules, and make practical suggestions, the Bank appeared reluctant to tackle such issues formally during the project cycle, and progress was only made when the government launched its program of structural change. Addressing these issues was essential if the railway was to become a commercially oriented enterprise with satisfactory finances. The Bank could have, but did not (at least based on sector and project reports, though missions may have raised the issue) *highlight the privatization option* early in the 1990s, when the Bank already had gained some experience in Argentina and experiences from several European railways were becoming known.

4.17 On the positive side, the Bank was successful in helping FNM keep its facilities in good order. This became important during the concessioning period as reflected by the high bid prices—on the order of US$2 billion for the two main lines accounting for some 50 percent of FNM's network length and about 80 percent of its traffic (Annex D). By comparison, the FY85 Bank railway loan, the only one approved during the period under review, was for US$300 million.[50] The Bank also instigated important business reforms, such as tariff restructuring and improved information systems. Finally, the Bank reacted rapidly in supporting the government's privatization program, providing advice and funding for consultants.

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49. Access to major industrial cities would be assured not just through the rights of way allocated to each concession but also through trackage rights. Certain trackage rights would be obligatory and additional trackage rights could be negotiated. The two most important of the obligatory trackage rights would require Pacifico-Norte to allow Noreste to use its tracks to get to Guadalajara and Noreste to allow Pacifico-Norte to use its direct line between Mexico City and Monterey.

50. Interviews with government officials and statements to the press by some bidders confirmed the importance of the good condition of FNM's facilities in attracting private investors.

*Bank's Role Advising on Privatization*

4.18 The Bank's letter protesting the post-bidding negotiations with TFM (Box 4.1) illustrates the issues facing the Bank when it advises on privatization, more specifically on concessioning bids. At least three factors make this role especially difficult for the Bank. First, procurement of Bank-financed goods and services follows the value-for-money principle, which translates essentially in cost minimization. In contrast, privatization concessions aim to maximize government revenue. Second, in Bank-financed procurement, the borrower is contractually obligated to comply with Bank procedures, whereas on privatization the Bank acts only as a good faith advisor, whose advise can be accepted or rejected. Third, post-bid negotiation between government and the bid winner, including revising original bidding conditions, appears to be an established practice in concessioning of infrastructure, while it is precluded in Bank-financed procurement.

**Box 4.1: Perils of Advising During Concessioning Process**

Soon after the opening of the Noreste line bids, TFM, a partner in the winning bid, approached the government in confidence to say it would be unable to meet its bid price in full. The Secretariat for Finance and Public Credit (SHCP) and TFM negotiated and agreed on a compromise where the government would invest US$237 million in the consortium to increase the shares it would hold after the second payment from 20 to 32.5 percent.[51] Moreover, the government would wait up to 81 months to dispose of its shares instead of the contemplated two years. In addition, the government would seek to transfer to TFM a US$81 million low-interest loan that the Japanese had granted to FNM but not yet disbursed. This arrangement was announced publicly on January 31, 1997, the day TFM made its first payment of US$560 million for the railroad. TFM made its second payment and took over the concession on June 23, 1997, slightly ahead of schedule.

When the deal was announced there was widespread speculation in the press that it might set a bad precedent and encourage unrealistic bidding for the remaining rail concessions. On February 28, 1997, the Bank sent a letter to its official SHCP contact, copying it to seven very senior SCT and SHCP officials, protesting that it had not been consulted and expressing concern about the precedent. This letter angered the SCT, which (a) felt under no obligation to consult with the Bank, (b) had obtained legal opinion confirming that the post-bid changes were within the law, and (c) was confident that the modified bid was vastly superior to the second-place bid.

4.19 On the TFM bid, the Bank faced a dilemma. On one hand, the Bank saw the deal as a bad precedent that might foreshadow future problems with TFM. If TFM had bid substantially more than the concession was worth, as many suspected, then it might not have had the financial resources to invest in improved service and efficiency. On the other hand, the Bank should have avoided alienating its client, the government, by proceeding informally through discussions rather than through a letter, as a minimum to comprehend fully the situation from official sources. In addition, it should have taken a broader view of the circumstances. Privatization had been relatively slow under the Zedillo administration, which had recently been forced to back down from the proposed privatization of the secondary products plants of the state-owned petroleum

51. Secreteria de Comunicaciones y Transportes, "Operacion de Compraventa."

company and to slow the privatization of electricity.[52] Railroad privatization had already started poorly with the failure of the Chihuahua al Pacifico sale and a second problem might have been embarrassing. Furthermore, the government could argue that it had only delayed a small portion of the payment rather than reduced it, and that TFM's first two payments for 67.5 percent of the concession were approximately US$500 million more than the second-place bid for 100 percent of the concession.

*Future Bank Role*

4.20 The Bank should continue to offer its advice and support on the railway restructuring and privatization program, focusing on the short lines and passenger services and eventually on the regulation of the freight concessions. The government's plan for concessioning the three trunk lines addresses over 95 percent of the railroad's freight traffic. The short-line and passenger services will probably prove politically and socially more important than their traffic figures alone might suggest, however. Dealing with these remnants of privatization may be more difficult than the government anticipates.

- *Short lines.* The SCT hopes that most of these lines will be of enough interest to a particular shipper or community on the line to attract bidders. It is encouraged by the successful experience of short-line operators in the United States. Nevertheless, some branch lines are unlikely to be sold, and SCT plans to offer those to the states, in accordance with the government's overall decentralization strategy. If there are a large number of lines without buyers, however, the government may have to reconsider its position.

- *Passenger services.* Concessioning these services without subsidy may prove impossible. The government appears willing to subsidize services to the small number of towns that have no bus service, and to subsidize the development of commuter railroad services on existing tracks in the Mexico City metropolitan area to reduce traffic congestion and motor vehicle air pollution.

- *Regulation of freight services.* Regulation of the private freight concessionaires will need to be closely monitored and adjusted if necessary. Disputes are likely to develop among freight concessionaires and between freight and passenger operators over access charges, dispatching priorities, and infrastructure investments. The government will also have to monitor mergers and acquisitions to make sure that anticompetitive combinations do not develop.

4.21 In principle, the Bank is well positioned to assist in these areas. Whether it will retain its comparative advantage, particularly in sophisticated countries like Mexico, will depend on its ability to collect information and draw lessons from relevant worldwide experiences, Bank and non-Bank alike, and do so in "real time." Discussions with senior Mexican government officials indicated that they place high value on well-analyzed, "validated" information on the latest worldwide experiences with privatization. The suggestion was made that there may even be a market for fee-based Bank advice, if the advice meets the above criteria.

52. Millam, "Privatization Program."

**Private Toll Roads**

4.22 As discussed in Chapter 2, the Bank has played an important role assisting Mexico's highway system, both tolled and untolled, but not in the massive program of private toll roads launched in 1989.

4.23 The Mexican toll road program is the largest of its kind worldwide. The asset value of 38 Mexican toll roads requesting financial restructuring in 1997 alone was about US$14 billion, or about 50 percent of worldwide private investment in road projects between 1984 and early 1997.[53] Due to its importance, the Mexican toll road program has been analyzed in journals and the press.[54] The analysis in this evaluation focuses on the role of the Bank, which has not been discussed in other publications.

*Origins of the Private Toll Road Program*[55]

4.24 During the 1970s, when government budgets benefited from high oil prices, the government stopped building toll roads and constructed approximately 3,000 kilometers of untolled expressways. By 1986 a continuing recession and the collapse of oil prices stimulated the government to investigate the possibility of privately financed toll highways. Three pilot toll highway concessions were granted with BANOBRAS (the national bank for civil works), serving as the concessionaire. BANOBRAS financed 50 percent of the construction cost in each concession, while 25 percent was financed by the construction contractor and 25 percent by state governments.

4.25 The success of these demonstrations encouraged incoming President Salinas to launch in February 1989, two months after taking office, a program to build 4,000 kilometers of toll highways as private concessions. This program was seen as essential to stimulating the flagging economy. Given continuing constraints on public sector borrowing from the 1982 debt crisis, private financing secured by tolls was the only possible source of a large road program.

4.26 Under the program, the SCT would select the roads to be concessioned; specify the maximum toll rates, which would be indexed for inflation; provide the preliminary designs, cost estimates, and traffic forecasts; and provide the land for the right of way at no cost. In principle, the projects were to be financed solely from private sources. Contractors were to contribute 25 to 30 percent of the cost largely by discounting their construction bills. This would be attractive because the construction industry was idle. The remaining costs were to be financed by debt from banks or other sources. Concession would be awarded by competitive bidding to the consortium offering the lowest concession period. By law, it could not exceed 15 years, although this maximum was soon raised to 20 years and finally (in 1993) to 30 years.

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53. Based on the Private Infrastructure Project Database of the World Bank, which tracks private infrastructure activity worldwide. The database uses a diversity of secondary sources, which affects the reliability and comprehensiveness of the information.

54. The most recent and comprehensive review of the program is in: "A Retrospective on the Mexican Toll Road Program (1989–1994)," by J. Ruster, Viewpoint, a publication of the World Bank Group's Finance, Private Sector and Infrastructure Network, No 125, September 1997.

55. The account of the origins of the program is based on earlier research summarized in José A. Gómez-Ibáñez and John R. Meyer, Going Private: The International Experience with Transport Privatization (Washington, DC: Brookings Institution, 1993), pp. 151–160 supplemented by interviews on the current mission.

4.27 The government would guarantee construction cost and traffic projections in part. If traffic was less than forecast, or if cost increases were over 15 percent of forecast (or caused by delays or design changes ordered by the government) the concession period would be extended.

4.28 The Bank was not involved at all in the design of this program. According to SCT officials the SCT approached both the IFC and the Bank for financing but with no success. The IFC was not interested in participating because the only form of private infrastructure it was willing to finance at the time was power plants. Moreover, Bank loans required a government guarantee, a condition that was impossible given constraints on public sector borrowing.

*Early Problems with the Concessions*[56]

4.29 By early 1992, concessions for 3,600 kilometers had been awarded and 1,500 kilometers were already open to traffic. At this time, four basic problems were already apparent.

4.30 *Financial feasibility and government contribution.* The concessions with the highest profit potential were generally awarded first. By 1990, as the program expanded to roads with less traffic or more difficult construction, the government began to offer concessions in which it contributed 25 percent of the cost. By 1992, due to cost overruns and low traffic, only 4 out 12 concessions for which a financial rate of return could be calculated had returns of 7 percent or more, while 6 had negative returns.

4.31 *Concession period.* Concessions awarded based on duration encouraged bidding for very short concessions and to charge the maximum toll allowed. The average duration of the first 22 concessions was just short of 12 years and 2 were for only 5 years. Because of the high tolls, some of the toll roads were almost empty while the parallel untolled roads were heavily congested.

4.32 *Quality of feasibility studies.* The SCT did not have the resources to prepare designs or projections carefully for the large number of roads being concessioned. It also did not know how motorists would react to high tolls. In 1988, CAPUFE's average toll was US$0.02 per vehicle kilometer, but in 1991 the average concessionaire was charging US$0.17 per vehicle kilometer.[57]

4.33 *Underbidding and valuation of contractor contributions.* The design of the toll program encouraged contractors to underbid, because concession extensions were possible in the case of cost overruns. Despite a clause in the concession law requiring scrutiny of construction bills, contractors tended to overvalue their contribution to the costs because their partners, mainly nationalized banks that were pressed by the government to lend to the concessions, were not accustomed to monitoring construction bills.

4.34 Despite these problems, the government expanded its commitment to build 4,000 kilometers of concessions by an additional 2,000 kilometers. This decision may have been fueled by the strong recovery of the Mexican economy under President Salinas' program; with the

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56. This account of early problems is based in part on Gómez-Ibáñez and Meyer, Going Private, Gabriel Roth, "Privatization of Transport Activities in the Caribbean and Latin America: First Report," report to the Inter-American Development Bank, April 1991; World Bank, "Mexico—Private Infrastructure and Its Financing," report of a mission, May 25, 1993.

57. Gómez-Ibáñez and Meyer, Going Private, p. 156.

economy growing at 6 to 7 percent per year, more roads would be needed soon. Apparently, there was also political pressure from state governors to add roads in underserved areas. In any event, the federal government eventually awarded 52 concessions (totaling some 5,500 kilometers) between 1987 and 1994 (Annex E), most to private consortia, but some to state governments. The state governments themselves awarded approximately 20 additional concessions, although some of these were never begun or completed for lack of financing.

4.35 Yet the Mexican toll road program was in many respects superior to contemporary programs in other developing countries. Mexico had not made as glaring a mistake as Argentina, for example, the only other Latin American country with an early private toll road program. Argentina had allowed the concessionaires to collect tolls before they invested in improvements, which led to a political revolt by truckers and other motorists. Mexico was also trying to establish a transparent system for awarding concessions based on a single criterion (concession duration), which represented an improvement over other concession programs.

4.36 Up to this point, the Bank played no role in the program. Why this was so and what the Bank could have done is discussed later in this chapter.

*Restructuring the Toll Roads*[58]

4.37 The continuing problems of the toll roads would force several rounds of restructuring during the 1990s. The first restructuring, from the early 1990s until the devaluation of the peso in December 1994, allowed concessions that had traffic shortfalls or cost overruns to petition SCT for relief. The second round started in December 1994, when the devaluation of the peso and the ensuing economic slump, combined with high toll road rates, further reduced traffic levels, worsening the financial position of the concessionaires and of the banks involved in the concessions. In December 1995, the government agreed to grant commercial truckers and bus operators a 40 percent income tax credit for any tolls they paid. In return, 28 of the concessions lowered their tolls. The combination of these two measures was estimated to reduce the effective toll rate by an average of 28 percent.

4.38 The third round of restructuring, required because of the continuing financial problems of the concessions, was made late in 1997. Under the restructuring program, the government assumed all bank liabilities—and temporary ownership—for 23 toll roads. These concessions would be reauctioned to private operators within two years. Government estimates of the cost of restructuring could reach as high as US$7 billion over a 30-year period. This restructuring was especially difficult to decide as it followed the controversial banking bailout.[59]

*Overview of Bank Experience*

4.39 The Bank was only marginally involved with the toll road program or its restructuring. In the early 1990s, the IFC participated in the refinancing of the Mexico City–Toluca toll road. This was one of the earliest and most successful private toll road concessions, however, with reasonable construction costs and heavy traffic volumes. In 1992, the concessionaire and a US investment bank announced plans to securitize the road on the international market and in 1994

58. The account of the restructuring is based primarily on interviews during the study mission.

59. Jose Luis Galan, "Rechazan diputados del PRI el possible rescate carretero ante Ruiz Sacristan," El Economista, April 25, 1997, p. 38.

that sale was completed.[60] Concessionaires' plans for transactions of this type for other roads were halted by the economic crisis following the peso devaluation of 1994.

4.40 The Bank's 1993 mission (see para. 3.3) apparently originated on government's concern that the capital market could not finance all the planned infrastructure investments. On the restructuring of toll road concessions then under way, the mission provided a thoughtful analysis of three options: continue to negotiate case by case, refuse to change the concession terms more than legally required, and reauction the concessions.[61] The mission thought that continued case-by-case negotiations might be the proper course of action if only a few toll roads were in trouble, but that it was undesirable because it was not transparent and left the government, which knew less about the true condition of each concession, at a disadvantage in the negotiations. Refusing to change the concession terms (beyond the legal obligation to increase concession duration where there were traffic shortfalls or cost overruns) was a more market-oriented approach. This, however, would lead to the insolvency of some banks and thereby harm small depositors. Moreover, the government arguably had a moral obligation to the banks since it had pressed them to take these loans before the banks had been privatized. The mission preferred the option of reauctioning the concessions as the most transparent way of determining their value.

4.41 The 1993 Bank mission seemed to have little impact on toll road policy. The mission report seems not to have been widely read or remembered in Mexico. That the 1977 restructuring involved features of the mission's recommended option appears to be a coincidence. The government was probably not prepared to admit in 1993 that a comprehensive restructuring was needed—it would take a new administration and the peso crisis to force these decisions. The mission may not have been remembered after the peso crisis because it did not give clear advice on one of the most politically troubling issues for the government: how and how much to compensate the construction companies and banks involved in failing concessions. In addition, the Bank did not appear to have followed up the mission with additional assistance or advice.

4.42 It is unclear to what extent, or when, Bank staff became aware of the problems with the toll road program. Certainly, Bank staff were in frequent contact with highway authorities, both during the supervision of the highway maintenance project approved in 1988 and preparation of the project it approved in 1993. The 1993 infrastructure privatization mission appears to have originated with the finance ministry rather than with the transport and communications ministry, which was the regular counterpart to the Bank's transport staff.

4.43 Could the Bank have influenced some of the key characteristics of the program had it tried? Some of the features of the Mexican concession program causing the most difficulties were very difficult to change. The short duration of the concessions was forced, for example, by a combination of political and financial constraints. When the Salinas administration was preparing its concession law in 1989, it reportedly faced opposition from legislators to granting private concessions for essential infrastructure like toll roads. The compromise was that the concessions would revert to the state as soon as possible both by requiring in the law that the concessions be awarded to the bidder proposing the shortest duration and setting a maximum duration.[62] Short concessions also may have been thought necessary because of the conditions in domestic

60. "Lehman Rides High on Toluca Bonds," Public Works Financing, July–August 1992, pp. 1–3.

61. World Bank, "Mexico—Private Infrastructure and Its Financing," pp. 8–10.

62. Interview with Lic. Francisco Javier Alejo, Director General, CAPUFE, June 20, 1997.

financial markets in 1989. Partly because of the fear of inflation, debt longer than five years was apparently unheard of even for Mexico's largest corporations, so long-term financing was unlikely to be available domestically for toll roads.

4.44 The most useful advice the Bank could have offered during the early years of the program was twofold. First was to slow the pace of the concession program, thereby improving the quality of SCT designs, cost estimates, and traffic forecasting, and give higher priority to the most heavily traveled routes. Second was to reduce the maximum tolls on new concessions, which would have led to extending the concessions. A slower pace might have improved the quality of the SCT designs, cost estimates, and traffic forecasts, and thereby avoided some of the later restructuring and complications. But it is not clear that the government would have accepted a slow program, given its desire to stimulate the economy dramatically and the subsequent pressures brought by governors to add toll roads in their states.

*The Toll Road Program and Bank's Involvement in the Highway Sector*

4.45 The toll roads program is too large and important to be separated from the Bank's involvement in Mexico's highway sector. The Bank, hence, has a built-in interest in the toll road program, as a minimum to ensure that its long-standing investments and advice on the nontolled system remains sound.

4.46 Toll roads and free roads necessarily compete with one another because the Mexican constitution requires that a free road be available as an alternative. As of 1995, 6,287 kilometers of toll road were in operation, of which 5,415 kilometers were concessions to private companies or state governments. While toll roads represented only 12 percent of the paved federal network and a smaller percentage of the state networks, they tend to be located in the most highly traveled corridors and thus probably parallel many important national roads.

4.47 The sheer scale of the resources absorbed by the toll road program undoubtedly has meant that other significant opportunities may have been lost, both in the highway sector and in the economy as a whole. Approximately US$13.3 billion was invested in the 38 most troubled federal concessions alone. The bailout cost to the treasury is close to US$8 billion. The possibility that some of this investment was premature and much of it is now being underused is troubling.

*Future Bank Role*

4.48 The Bank, even if not involved with lending or technical assistance, should still follow closely the toll road program since it will affect the performance of the entire highway system. A key issue is how to coordinate the investment and operations of the tolled and untolled highway systems. The government's focus on reducing the high toll rates is desirable, since diverting traffic from congested free roads to underused toll roads will reduce investment and maintenance requirements. Moreover, this issue is current since the government plans to invest heavily over the next five years in upgrading the free roads on the 10 main intercity corridors in the country. These investments, which the government hopes the Bank will help finance, should be consistent and coordinated with the toll road restructuring program.

4.49 A second and related issue is the organization of the restructured concessions. The appropriate type of concession depends very much on the role the government believes toll roads

should play in the future highway system. If the government plans to expand capacity primarily through free roads, for example, then relatively short operating concessions for individual toll roads may be appropriate. If the government plans continued use of tolls to finance new investment, then longer-term concessions will be necessary at some point. And if the government wants tolls on heavily traveled corridors to cross-subsidize investments in lightly traveled corridors, then regional toll road companies might have some appeal. The key point, however, is that the organization and governance of the toll road system must be designed with the entire highway system in mind. Given its extensive involvement in the highway sector, the Bank would be well placed to assist in this issue.

# 5. Survey of Government and Other Stakeholders

## Introduction

5.1 In July and August 1997, RAC-MORI International conducted an in-depth experts' opinion survey of 65 Mexican transport sector stakeholders.[63] Twenty-five respondents were current or former employees of federal government secretaries; 21 were from agencies working in the transport sector; and 19 were from banks and private companies working in the transport sector. The survey asked questions about the Bank's lending, institutional strengthening, project implementation, staff, and reports.

## Lending

5.2 Survey respondents indicated general satisfaction with the Bank's involvement in project design. In particular, the requirement to consider alternative solutions greatly improves the design. Design is also somewhat improved through the elimination of noneconomic proposals, proposing effective political reforms in the sector, and focusing on the need for institutional strengthening. The Bank's limited flexibility in allowing for future changes, however, was seen as a liability.

5.3 The Bank substantially helps improve the project preparation and evaluation process by acting as a financial catalyst and taking into account its own experience. Respondents cited efficient use of local resources and making the provision of goods and services more efficient as a second aspect of Bank value added during project appraisal. The Bank was less effective, but still helpful, in trying to create consensus inside the country.

5.4 The most important components of Bank projects, according to those surveyed, are investment and studies. Of less importance are loan conditions, expert services, and training. Loan conditions may have a negative impact because they may sometimes hinder project implementation. Nevertheless, loan conditions are useful for carrying out policy and institutional objectives (although some respondents found it difficult to relate policy with economic objectives).

5.5 The survey found that during project preparation and appraisal Bank staff highly encourage government participation and, to a lesser degree, private sector and beneficiary participation. Nongovernmental organizations hardly participate at all.

5.6 Respondents generally considered the Bank-funded projects successful. Those perceived as most successful were in highways, ports, and urban transportation. Railway projects were least successful. Compared to projects in other sectors, survey respondents thought transportation projects were more successful.

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63. "The World Bank in the Transport Sector in Mexico," Experts' Opinion Survey, Prepared by RAC-MORI International, September 29, 1997. This chapter summarizes the findings of that report. The full report is available from OED on request.

5.7 According to those surveyed, the Bank should invest in projects with direct private support. Although greater private sector participation was thought desirable and worth seeking, the role of the government must be strengthened in the planning stages. In addition, more governmental investment in projects that are not attractive to the private sector must eventually be obtained. The Bank should orient itself toward helping to obtain better policy and control because much Bank-financed work is driven by contract (rather than government pressures). In the opinion of those surveyed, the Bank should continue to provide technical and financial advice.

5.8 Regarding ports and railways, where the private sector may manage equipment, Bank projects were thought important to improve management abilities and technical capability and, above all, to guarantee adequate equipment maintenance. The investments are profitable; Bank support would help to reduce interest costs and provide long-term financing, currently nonexistent in the country. Respondents also thought the Bank should be involved in multimodal transportation.

5.9 The Mexico transport survey coincides with the worldwide survey[64] in the high value stakeholders placed on the Bank's requirement for considering alternative project designs and avoidance of uneconomic investments. However, Mexican stakeholders believe the government is firmly in control of project design, while worldwide stakeholders believe the Bank is in control.

**Institutional Strengthening and Country Ownership**

5.10 The Bank's transport projects were perceived as aiming first at promoting economic development. Strengthening institutions and satisfying social needs was the second most-cited aim. Protecting the environment came third, with poverty alleviation coming last.

5.11 The government has the most influence on project design, according to those interviewed. The Bank has significant influence as it can modify project design to some extent. The private sector has some influence. Beneficiaries have little influence; nongovernmental organizations have virtually none.

**Implementation**

5.12 Loan conditions were generally thought to have had a positive impact on project execution, especially on supervision, because the Bank encouraged the SCT to carry out adequate monitoring and execution of contracts. Coordination of the Bank's standards with the laws and standards of the country is essential to ensure that work is completed on time, on budget, and with high quality. Flexibility is necessary, however, as the work may fail to meet specifications when the least expensive bid is accepted. Inflexible loan conditions may have negative impacts. For example, projects that are not completed may be canceled; or excessive environmental impact assessment requirements may slow or even prevent completion.

5.13 The survey found that procurement of equipment and civil works and consultants was sometimes easy and sometimes difficult. In about half the cases, problems with civil works or with equipment occurred primarily because of rigid guidelines, sometimes because of staff's

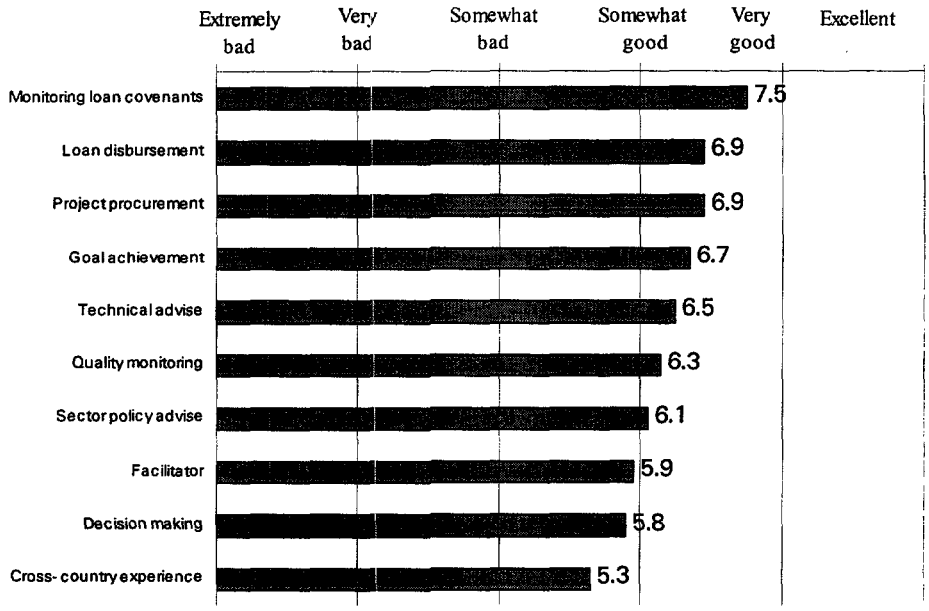
64. Reported in "The Appraisal Process in the World Bank" (OED, 1997).

interpretation of the guidelines, and sometimes for both reasons. Loan disbursement was seen as satisfactory—initially difficult, but smoother during project implementation.

*Portfolio Management*

5.14 The Bank's role was rated highest on monitoring compliance with loan conditions, monitoring the achievement of the project's objectives, providing technical assistance, and helping with disbursements. Less highly rated were assistance with procurement of civil works and equipment, advice on sectoral policies, and monitoring the quality of work done by project-financed consultants. The least important issues were acting as a catalyst in decisionmaking, acting as a facilitator between government agencies and secretaries, and providing cross-country experience.

**Survey Response: Bank Performance**




*Bank Supervision*

5.15 The frequency of missions, although low, was considered adequate. Respondents said that Mexico has considerable experience and the current level of supervision is therefore sufficient. The Bank should reinforce its presence in the supervision of technical and institutional issues and, to a lesser extent, of economic issues.

5.16 In the past, projects involved few Bank staff changes; the number of changes has increased since 1996. These changes usually have little impact on project execution, but they sometimes have an effect, depending on the staff leaving and those arriving.

**Bank Staff**

5.17 Bank staff in Mexico were seen as useful in helping to expedite preparation and appraisal of projects. To a lesser degree, they were useful in helping speed up disbursements and solving procurement problems. In general, respondents said Bank officials were very good.

5.18 The survey respondents were satisfied with the Bank staff's experience on technical issues and their interpersonal skills and experience in institutional issues. They were less satisfied with the team's familiarity with the country and with team membership continuity. The speed of responsiveness was least satisfying. Some respondents suggested that the periodic evaluation of physical and financial aspects should be more frequent during the project.

5.19 The most important attributes, respondents said, are team experience on technical issues, speed of responsiveness, and familiarity with the country. Next in importance come team's experience in institutional issues, continuity of team's membership, and interpersonal skills. The main weaknesses are country knowledge, speed of response, and staff turnover.

**Bank Reports**

5.20 Most respondents (64 percent) were familiar with the Bank's Staff Appraisal Reports and consider the documents somewhat useful. The survey found a lower level of awareness (56 percent) of the sectoral reports. Among those who were aware of them the reports were considered somewhat useful. Few respondents (less than 30 percent) recalled specific reports.

5.21 The (sectoral) study on transportation prices was thought particularly useful, since the concept of the differential user fees as a function of road wear by type of user has helped a great deal: "Those that wear away the most pay the most." From this study, a federal policy for transportation was developed, which led to the transportation sector program of 1989–1994. Survey respondents considered the financial studies included in projects somewhat useful.

5.22 In order of importance, respondents considered the following priority objectives for future improvements in the transportation sector: reduction of economic regulations, reduction in the level of accidents on the highways, and costs of the infrastructure.

**Main Conclusions**

5.23 The survey of stakeholders in Mexico's transport sector found seven main conclusions. These are as follows:

- Those in charge of and participating in the development of the Mexican transportation sector are familiar with the Bank's activities, believe Bank-financed infrastructure is consistent with the country's priorities, believe the Bank's recommendations on transport policies are adequate, and trust the Bank's actions.

- The Bank is generally regarded as funding useful projects. Although it has emphasized infrastructure over the environment and poverty alleviation, respondents are not bothered by that.

- Lending conditions and contracting policies often seem to be excessively rigid and inconsistent with Mexican practices, making implementation unnecessarily hard.

- The projects' institutional strengthening objectives are useful.

- Bank staff are technically competent and helpful but problems arise from high turnover.

- Reports are sometimes useful in summarizing information, providing new ideas, and framing the debate. Some sectoral reports are remembered (road user charges and maintenance), but many are forgotten.

- The more knowledgeable respondents are about the Bank, the better their opinion of the Bank in all areas covered by the survey.

5.24 A list of recommendations provided by various stakeholders is in Annex F.

# 6. Conclusions and Recommendations

**Results of Bank Assistance**

6.1 The review of Bank assistance operations reveals a significant change in focus between the early and the later parts of the review period. From 1982 through 1988 the Bank-supported projects that concentrated on strengthening transport facilities and existing institutions. Then, from 1989 through 1997, the Bank reduced lending for facilities and directed increasing assistance to the facilitation of transport deregulation and privatization of government-owned transport enterprises. In the same period, the Bank stopped lending for ports and railways as the private sector became more active in those areas, but it increased lending for highways and for urban transport. Key outcomes of Bank transport lending are described below.

6.2 *System capacity and prevention of bottlenecks.* At the beginning of the 1980s, after a decade of rapid economic growth, there was considerable concern that bottlenecks in the transport sector would prove a severe constraint to growth. Although gross domestic product growth since then has been low, the demand for transport services has continued to increase with the progressive opening of the Mexican economy. One indicator is the expansion of total merchandise trade, which grew nearly 11 percent in real terms over the period. Another indicator is the 6.9 percent annual growth rate in the truck fleet between 1980 and 1990. Bank support for infrastructure improvements, and regulatory reforms of road transport, contributed to the sector's ability to meet these increasing demands and avoid serious transport bottlenecks.[65]

6.3 *Pricing, reform, and privatization of public sector agencies.* Considerable improvement in pricing policies of transport infrastructure and services, and in efficiency of related public sector organizations, resulted from privatization of railways, partial privatization of ports, deregulation of road services, and improvements to the system of road user charges. The Bank supported these changes through direct lending and advice. Ports are a possible exception, however, because reforms happened when the Bank was not involved in the subsector. The state road agencies and the municipal government agencies responsible for urban transport received less attention from the Bank and modernized the least during the review period.

6.4 *Transport system performance.* Bank assistance was most effective in the highway subsector, although it was limited to the federal system. Here, it made a major intellectual and financial contribution to strengthening Mexico's capacity to plan and implement projects by contracting out the rehabilitation and maintenance of highways. In addition, Bank support of deregulation of the road transport industry profoundly affected competition among truck operators and in turn had a favorable impact on quality of service and rates. Bank assistance also positively affected other aspects of roads and road transport, improving cost recovery, investment planning, traffic safety, and developing standards for international road freight vehicles engaged in NAFTA trade.

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65. A survey of manufacturing firms regarding transport services, carried out in 1993 and described in the Bank's transport sector report of 1994, notes an overall high level of satisfaction with the performance of the transport system, with satisfaction with road transport substantially higher than with rail.

6.5 The principal effect of the Bank-financed railway projects, particularly the most recent ones, was to deter the forces of decline in railway performance. Without the substantial assistance of the major Bank-financed projects, the operational and financial performance of the railways likely would have been worse, and railway assets would have been less well preserved. In retrospect then, the Bank's efforts were a holding action until the government took the more drastic step of privatization. Since 1995, when the government decided to privatize the railways, the Bank has contributed extensively to the privatization process.

6.6 Since 1984, port performance has improved in efficiency, service quality, and rates. The Bank influenced these favorable trends through its assistance in procuring new equipment and the provision of technical assistance for port operations and management. The Bank's influence, however, came mainly in the 1980s. Extensive privatization of port activities in the 1990s—when the Bank has been inactive in the subsector—has had a major influence on port performance.

6.7 In the urban transport subsector, the Bank's most notable accomplishment is its assistance in improving air quality in the Mexico City area. With Bank help, many buses have been upgraded or replaced and their performance has improved accordingly. In the medium-size cities participating in the Bank's other urban project, urban transport performance has been favorably influenced, notably in better traffic flows that allow increased speeds and vehicle efficiency.

6.8 Bank transport activities supported important macroeconomic and other socioeconomic objectives of the Mexican government and of the Bank. While some were very successful, such as the support of trade and environmental objectives, others had a mixed record.

- *Trade.* Improved transport infrastructure and more competitive trucking services reduced transport costs, thus cutting the logistics costs of both domestic and international trade. The improvement of vehicle standards (assuming compliance) will better position the Mexican transport industry to compete under NAFTA.

- *Environment.* Pollution mitigation measures and monitoring of air quality in Mexico City were major accomplishments, likely to serve as best practices for applications in other countries. This was complemented by components in the urban projects that improved traffic flow and reduced pollution-creating road congestion.

- *Fiscal deficit.* Improved cost recovery from highway users and the privatization of the railway will positively affect the country's fiscal performance. The Bank, though not directly involved, should have alerted and persuaded the government to tackle the financial issues stemming from the toll road program.

- *Decentralization.* Bank-financed highway projects only marginally contributed to decentralization and did not have specific operations in support of state agencies, even though a sector report had proposed a state highway project as early as 1987. Urban transport lending's support of municipal governments to improve transport in the city has so far met with mixed results.

- *Rural poverty.* The only rural transport project, in Chiapas, failed. This failure may have been beyond the Bank's capacity to prevent it in the face of increasing civil

disturbances in the region. A port project was innovative in assisting regional economic development in areas with a high proportion of poverty.

- *Privatization.* While the highway projects very successfully promoted contracting out of maintenance operations, projects and sector work relating to ports and railway were followers rather than leaders in introducing privatization. The government authorities appear to appreciate highly the Bank's current assistance for railway privatization.

6.9 The use of performance indicators was generally weak, except for railway projects.

6.10 *Bank-government relationship.* Disagreements have some time strained Bank-government relations in the transport sector, particularly early in the period reviewed. Among the most notable issues was resource allocation in the highway sector, where the Bank sought a shift of focus towards maintenance. Another contentious issue was Bank insistence on the need transport parastatals to operate on commercial basis, especially regarding pricing, staff levels, mix of services offered, and contracting out. Bank and borrowers views have converged on most policy areas since the economic reforms of the late 1980s[66]. This convergence will certainly not prevent occasional flare-ups, more on project-specific than on broad economic policy issues, as has happened with the bidding for railway concessions and with resettlement documentation for the on-going federal roads project, which led to protracted negotiations. Overall, though, the improved policy dialogue should facilitate future Bank operations in the sector.

**Recommendations**

*Bank's Future Role*

6.11 *Highways.* The Bank should continue its role in Mexico's highway system. It should continue to help strengthen the management of the federal system, supporting the introduction of modern management techniques and assisting in devolving part of the federal road network to the states. The Bank should aim to provide direct support to state highway authorities, ideally through lending operations with individual states.

6.12 *The privatized sector: railways and toll roads.* The Bank may have an opportunity to help the government on three fronts.

- *The infrastructure concessions' short- and long-term problems.* Recent problems (such as the Northeast railway concession and the toll road bailout) were solved without the Bank's participation, but similar issues are likely to arise in the future.

- *The remnants of railway privatization.* Beyond the concession program that is well under way, some of the remaining freight short lines and passenger services may be difficult to privatize or to close without political or social repercussions.

- *The relationship between the 6,500 kilometer toll road system and the large network of untolled trunk highways.* The two systems compete with one another to some extent because the Mexican constitution requires that a parallel free road be

66. This convergence also happened in other sectors, as reportd in the report: OED study of Bank/Mexico Relations, 1948-1992, published April 1, 1994.

available as an alternative to a toll road. The Bank's 1997 highway loan, while not specifically aimed to deal with this problem, may still be a suitable vehicle for this purpose.

6.13 *Multimodal operations.* The expansion of international trade, and the integration through common ownership and concessions of different transport modes into competing multimodal operators, will lead to a substantial increase in multimodal transport operations. The government will need to expand its expertise in this area as there will be considerable interaction between private and public infrastructure. For example, private multimodal cargo centers will likely be established near major highway-railway crossings and will affect transport demand over key road axes. The Bank's experience in multimodal transport projects in other countries (for example, China and India) will likely be useful to Mexico.

6.14 *Urban transport.* The transport-related air pollution problem in Mexico City is aggravated by ineffective traffic system and transport demand management and inadequate infrastructure capacity. A synergistic approach to transport investments and air quality improvements needs to be adopted. Future Bank projects and policy dialogue will also need to include large private sector providers of public transport, mostly *peseros* and *collectivos.* Their operations are fragmented and somewhat chaotic; it will be vital to enhance the quality of their service and formalize their operations.

**Annex A**

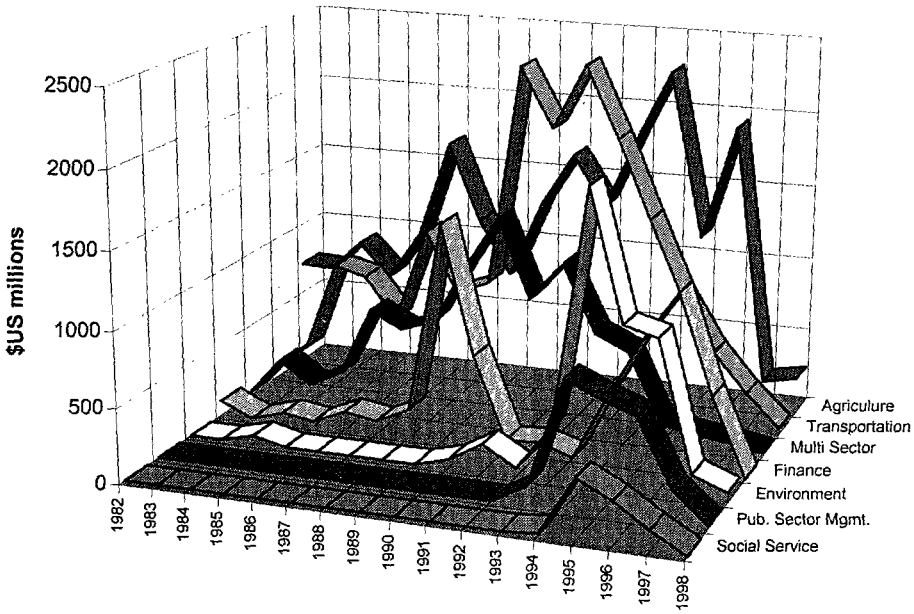
## Ratings of Mexico Transport Projects (Approved after 1982)

| *Loan No.* | *Project Name* | *Approval* | *Closing* | *Loan Amount (US$ m)* | *Disbursed (%)* | *Latest OED Review (date)* | *Outcome* | *Rating Sustain-ability* | *Inst. Dev.* |
|---|---|---|---|---|---|---|---|---|---|
| **COMPLETED** | | | | | | | | | |
| L2428 | Highway Sector II | 1984 | 1991 | 200 | 100 | 2/2/94 | Unsat | Likely | Subst |
| L2525 | Chiapas Roads | 1985 | 1991 | 22 | 5 | 3/1/91 | Unsat | Uncertain | Neg |
| L3207 | Road Transport/ Telecom | 1990 | 1991 | 380 | 100 | 4/21/95 (*) | Sat | Likely | Subst |
| L2450 | Ports III | 1984 | 1993 | 76 | 50 | 6/29/94 | Sat | Likely | Modest |
| L2575 | Railway V | 1985 | 1994 | 300 | 98 | 6/27/95 | Sat | Uncertain | Modest |
| L2946 | Ports IV | 1988 | 1994 | 50 | 92 | 6/28/95 | Sat | Likely | Modest |
| L2875 | Highway Maintenance | 1988 | 1995 | 135 | 100 | 12/5/95 | Sat | Likely | Subst |
| | | | Total | 1,163 | 94 | (*) audited | | | |
| **ONGOING** | | | | | | | DO | IP | RR |
| L2824 | Urban Transport I | 1987 | 1997 | 125 | 66 | | Sat | Unsat | Neg |
| L3543 | Transport Air Pollution Control | 1993 | 1997 | 220 | 44 | | Sat | Sat | Not Rated |
| L3628 | Highway Rehab and Safety | 1993 | 2000 | 480 | 40 | | Sat | High sat | Neg |
| L3559 | Medium-Size Cities Transport | 1993 | 2000 | 200 | 15 | | Sat | Unsat | Subst |
| L4206 | Federal Road Modernization | 1997 | 2004 | 475 | 0 | | N/A | N/A | N/A |
| | | | Total | 1,500 | 33 | | | | |

DO = Development Objectives; IP = Implementation Progress; RR = Risk Ratings.

**Annex B**

**Trend in Deployment of Bank Resources by Sector (Excluding administrative costs)**



**Annex C**

**Evaluative Synthesis of the Transport Sector Work Program**

The table below assesses the influence of the transport sector reports according to several criteria. The time elapsed between the sector report and the subsequent project indicates of the freshness of the sector reports' recommendations for introduction in lending operations. The availability of a lending strategy in the sector report indicates the degree of influence the report had in the formulation of the Bank's lending strategy. The reports are also assessed on the degree of influence they had in the formulation of physical and institutional components of projects and on their impact resulting from the level of dissemination of the report.

## Impact of Transport Sector Reports

| *Year* | *Subject* | *Focus* | *Subsequent Project Mode/Year* | *Elapsed Time to Next Project* | *Chapter on Lending Strategy* | *Lending Impact/ Project Components* | *Lending Impact/ Project Policies/ Institution* | *Dissemination/ Impact in Country* |
|---|---|---|---|---|---|---|---|---|
| 1984 | Roads | Rural roads | 1985 | months | No | High | High | |
| 1984 | Roads | Toll roads | None | ... | No | Low | Low | Medium |
| 1987 | Transport Sector | Strategy | Road Transport/ Adjustment (1990) | 3 yrs | Yes | Medium | High | Medium |
| 1987 | Transport Sector | Pricing | ..... | ..... | No | Low | High | Medium |
| 1989 | Transport Sector | Corridor (specific region) | ..... | ..... | | Low | Low | Medium |
| 1989 | Transport Sector (update) | Strategy | | | | Low | High | Low |
| 1993 | Infrastructure | Privatization Issues | TA Project Infrastructure Privatization (1995) | 2 yrs | No | High | High | Low/High (circulation restricted key officials) |
| 1994 | Transport Sector | Review of sector after liberalization | Federal Roads (1997) | 3 yrs | Yes | Medium | Medium | Medium |

It was not possible to identify for each report the level to which the government "owned" the reports or their recommendations. Interviews with Bank task and divisional managers suggest that local consultants or agencies (such as the Mexican Transport Institute) often contributed to the preparation of the reports. Then, once the reports were issued, Bank missions discussed them with senior government officials. This was particularly the case of the 1994 report—this report also highlighted that the government prepared its review and strategy of the sector for the next administration, and that the government and the Bank reports were undertaken in collaboration and were highly compatible, although they remain independent products of the SCT and the Bank.

**Annex D**

## Proposed Rail Concessions and Current Status

| *Concession* | *Right of Way (km)* | *Traffic (ton/km)* | *Major Industrial Cities* | *Major Ports (P=Pacific, G=Gulf)* | *U.S. Crossing (connecting U.S. railroad)*[a] | *Bids Received* | *Winning Bid US$Billion* | *Railroad Transferred* |
|---|---|---|---|---|---|---|---|---|
| Noreste | 3,960 (19.3%) | 14.0 (37.6%) | Mexico, Monterey, Guadalajara | Tampico (G), Veracruz (G), Lazaro Cardenas (P) | Nuevo Laredo (TM, UP) | 3 | 1.75[c] | 6/97 |
| Pacifico-Norte | 6,200 (30.3%) | 17.2 (46.2%) | Mexico, Monterey, Chihuahua, Guadalajara | Tampico (G), Manzanillio (P) | Piedras Negras (BSF, SP), Ciudad Juarez (BSF, SP), Nogales (SP) | 1 | 0.53[d] | 1/98 (est) |
| Sureste[b] | 2,200 (10.7%) | 2.2 (8.6%) | Mexico | Veracruz (G) | | | | |
| Mexico Valley Terminal | | | Mexico | | | | | |
| Short lines | 7,950 (38.7%) | 2.9 (7.8%) | | | | | | |

Source: Secretaria de Comunicaciones y Transportes, "Restructuracion del Sistema Ferroviaria," 1995

[a] The U.S. railroads are Burlington–Santa Fe (BSF), Southern Pacific (SP), Texas-Mexico Railway (TM), and Union Pacific (UP). After the Mexican government announced its proposed scheme, UP announced its intention to merge with SP, this merger, which was approved by the U.S. Interstate Commerce Commission, gave UP access to SP tracks. Kansas City Southern Railway has track rights to Nuevo Laredo over TM track.

[b] The Sureste concession has been modified since the original proposal as described in the text.

[c] The negotiated price was lower, as the government agreed to invest US$240 million in the consortium.

[d] Price for 100 percent of the concession shares.

**Annex E**

**Concessions Awarded by the Federal Government, 1987–1994**

| *Year* | *Number Awarded* | *Awarded Competitively* | *Kilometers* |
|---|---|---|---|
| 1987 | 2 | 0 | 212 |
| 1988 | 2 | 0 | 92 |
| 1989 | 10 | 9 | 1,194 |
| 1990 | 10 | 7 | 1,234 |
| 1991 | 9 | 6 | 723 |
| 1992 | 8 | 3 | 1,276 |
| 1993 | 9 | 0 | 670 |
| 1994 | 2 | 0 | 85 |

Source: Jaime del Palacio, "La Privatizacion de la Infrastrutura Carretera, " volume 3: "El Programa Nacional de Autopistas, 1989–1994," after p. 194.

For the concessions in difficulty, the SCT began a case-by-case review of the need to adjust the conditions of the contract. Initially, the focus was primarily on granting extensions, as contemplated in the concession contract. But some roads had such severe traffic shortfalls or cost overruns that an extension of the concession would not be sufficient. Of the 29 concessions that were wholly or partly completed and open to traffic in September 1992, for example, the average construction cost was 62 percent higher than the first estimate. Of the 15 concessions for which traffic data were available at that time, only three had traffic in excess of the SCT guarantee; the worst had only 29 percent of the guaranteed traffic. Among the 12 concessions for which financial returns could be calculated, only four had an internal rate of return of 7 percent or better while six had negative rates of return.[1]

1. This analysis of the first 29 concessions completed was reported in World Bank, "Mexico—Private Infrastructure and Its Financing," p. 2.

**Annex F**

**Recommendations Suggested by Stakeholders' Survey**

*Improve the project preparation and appraisal process.* (a) Make sure projects are managed by specialists. (b) Increase involvement of and confidence in local technical personnel. (c) Encourage the publication of technical articles on the appraisal methodology of different types of transportation projects. (d) Speed up the development phases in terms of reporting and evaluation, which are relatively slow. The Bank should have local staff in order to negotiate quickly. It is especially necessary to simplify processes in their initial stages. (e) Ensure that Bank staff are familiar with government transport policies. (f) Carry out intersectoral studies.

*Improve project implementation.* (a) Become familiar with the country's standards for contracting and equipment procurement. (b) Enforce the project implementation timetable. (c) Strengthen local capacity for controlling work quality. (d) Participate as advisors.

*Improve the global effectiveness of Bank activities in the Mexican transportation sector.* (a) Promote a more active and speedier participation of the Bank's staff. (b) Select those transport projects that improve cross-border travel as well as those that help to link the country coast-to-coast. (c) Strengthen planning in accordance with development goals.

*Maintain and ensure project benefit sustainability.* (a) Design and encourage ex-post evaluation. (b) Do more frequent follow-up reviews. (c) Increase communication by giving more attention to follow-up, monitoring, and evaluation.

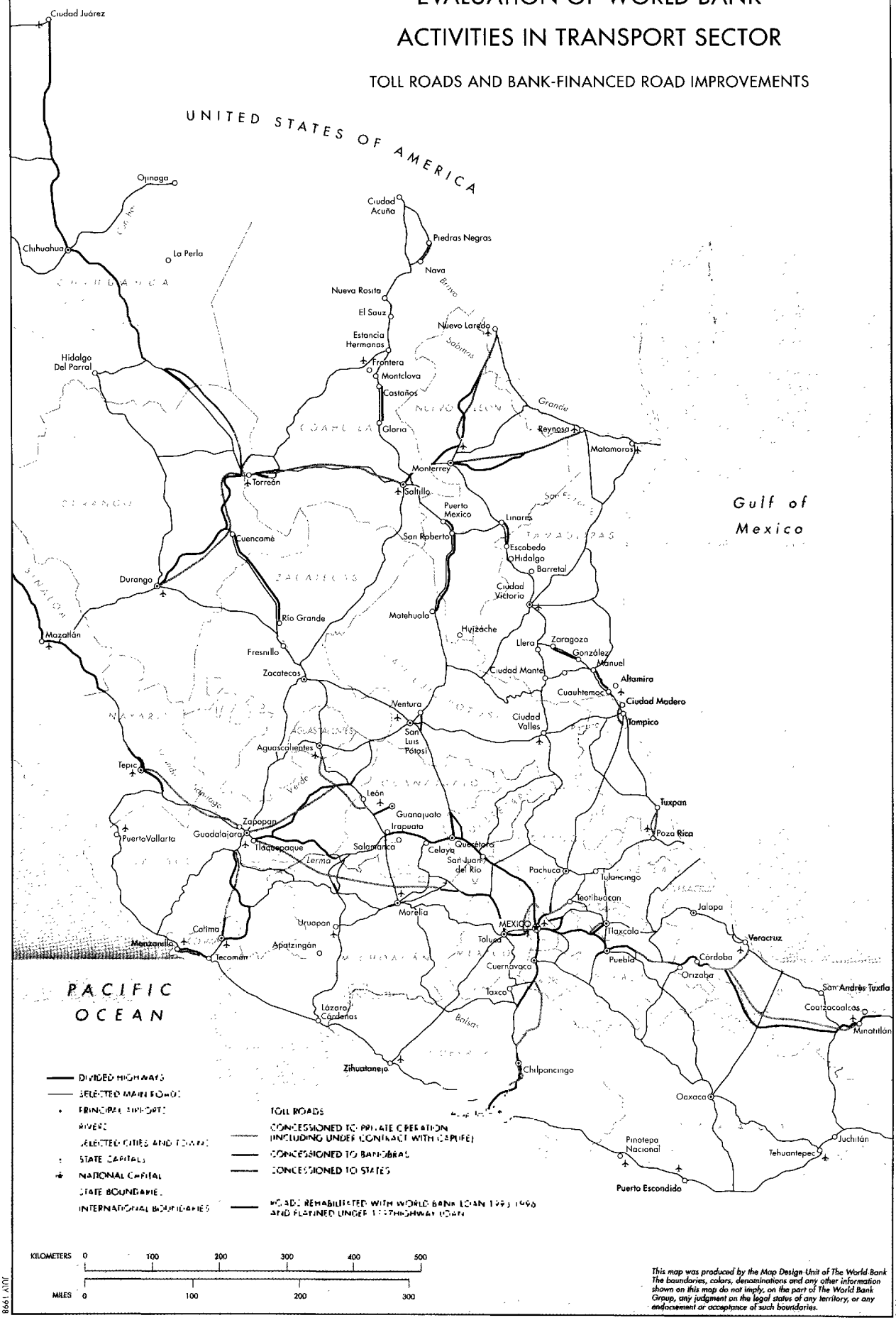
*The coordination between Washington and the country mission should be enhanced,* since it affects the progress of the projects. The responsibilities of local officials with respect to those in Washington are not clear. It is important for the Bank to give out more information on the completed projects and to present its opinion on how the projects are evaluated on a macro level. More feedback from the Bank is needed.

# MAP SECTION

MEXICO

# EVALUATION OF WORLD BANK ACTIVITIES IN TRANSPORT SECTOR

## TOLL ROADS AND BANK-FINANCED ROAD IMPROVEMENTS

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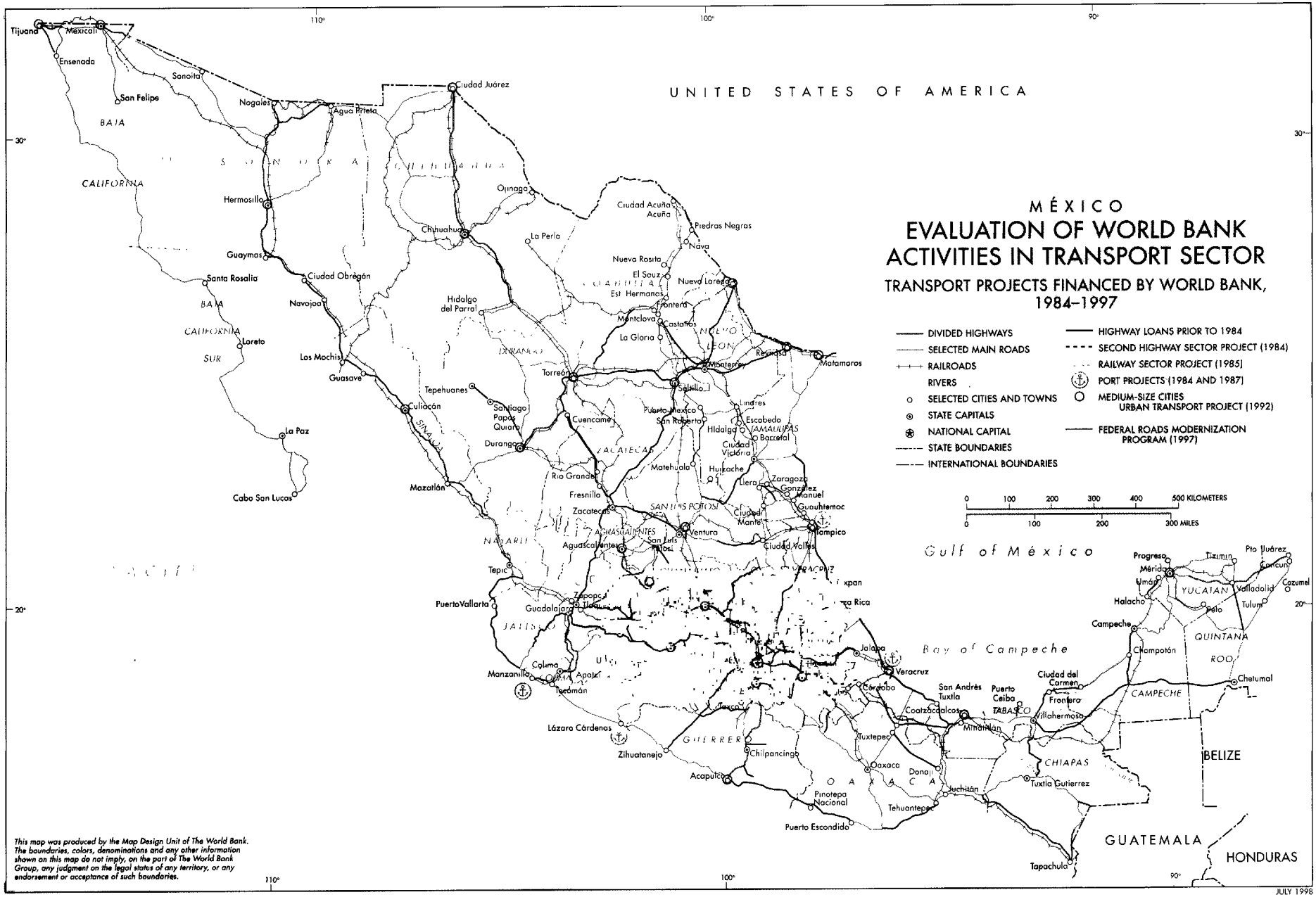


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