



Extended Annual Review Report

Project Number: 33924
Loan Numbers: 1769 and CF38
April 2008

Philippines: Loan and Complementary Loan to Manila North Tollways Corporation for the North Luzon Expressway Rehabilitation and Expansion Project

In accordance with ADB's public communications policy (PCP, 2005), this extended annual review report excludes information referred to in paragraph 126 of the PCP.

CURRENCY EQUIVALENTS

Currency Unit		–		peso/s (P)	
		At Appraisal		At Project Completion	
		21 August 2000		10 February 2005	
P1.00	–	\$0.0222		\$0.0181	
\$1.00	–	P45.00		P55.12	

ABBREVIATIONS

ADB	–	Asian Development Bank
CFS	–	complementary financing scheme
DENR	–	Department of Environment and Natural Resources
DSCR	–	debt service coverage ratio
EBITDA	–	earnings before interest, taxes, depreciation, and amortization
ECC	–	environmental compliance certificate
EFIC	–	Export Finance and Insurance Corporation
EGIS	–	EGIS Projects S.A.
EHS	–	environment, health, and safety
EIRR	–	economic internal rate of return
EMMP	–	environmental management and monitoring plan
ETC	–	electronic toll collection
FIRR	–	financial internal rate of return
FPIDC	–	First Philippine Infrastructure Development Corporation
FXCN	–	fixed-rate corporate note
GDP	–	gross domestic product
IFC	–	International Finance Corporation
km	–	kilometer
LGU	–	local government unit
MIGA	–	Multilateral Investment Guarantee Agency
MNTC	–	Manila North Tollways Corporation
MTPDP	–	Medium-Term Philippine Development Plan
NCR	–	National Capital Region
NLEX	–	North Luzon Expressway
PNCC	–	Philippine National Construction Corporation
RA	–	republic act
ROW	–	right-of-way
RRP	–	report and recommendation of the President
STOA	–	supplemental toll operation agreement
TMC	–	Tollways Management Corporation
TRB	–	Toll Regulatory Board
VOC	–	vehicle operating cost
WACC	–	weighted average cost of capital

NOTES

- (i) The fiscal year of the Manila North Tollways Corporation ends on 31 December. “FY” before a calendar year denotes the year in which the fiscal year ends, e.g., FY 2008 ends on 31 December 2008.
- (ii) In this report, “\$” refers to US dollars.

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BASIC DATA

Loan 1769/7162: CFS38 – Philippines: Manila North Tollways Corporation

Key Dates	Expected	Actual
Concept Clearance Approval	29 November 1999	29 November 1999
Board Approval	26 October 2000	26 October 2000
Loan Agreement	7 July 2001	7 July 2001
Loan Effectiveness	7 July 2001	7 July 2001
First Disbursement	7 July 2002	7 February 2003
Start of Commercial Operations	February 2003	10 February 2005
Loan Closing	8 November 2004	12 May 2005
Months (Loan Effectiveness to Start of Commercial Operations)	19	43

Note: Drawdown was delayed for a long time by (i) a requirement for a major increase in sponsor equity to replace most of the Philippine National Construction Corporation's original equity commitment, which was deemed not feasible; and (ii) more significantly, the deferral of government acquisition of the right-of-way, which was a critical condition of the loan drawdown.

Type of Mission	No. of Missions	No. of Person-Days
Fact-Finding	1	25
Loan Appraisal/Negotiations	4	23
Project Administration	5	15
Project Completion	0	0

EXECUTIVE SUMMARY

In October 2000, the Board of Directors of the Asian Development Bank (ADB) approved a loan of up to \$45 million without government guarantee and a loan of \$25 million under ADB's complementary financing scheme, all from ADB's ordinary capital resources, to be used to rehabilitate 83.7 kilometers of the North Luzon Expressway (NLEX) in the Philippines (the Project). This extended annual review report of the Project used information gathered from ADB documents, audited financial statements, and operations and business reports provided by the Manila North Tollways Corporation (MNTC).

The Project modernized and expanded the northbound and southbound carriageways of the NLEX. It was completed in February 2005 and commercial operations began on 10 February 2005. Structured as a public-private partnership, the Project was undertaken on a rehabilitate-operate-transfer basis by the MNTC, which took over the operation and maintenance of the NLEX from the Philippine National Construction Corporation (PNCC) in 2005. At the end of the concession period in 2030, the expressway will be transferred without cost to the Government of the Philippines.

The Project was evaluated against criteria that were based on the draft guidelines for the preparation of extended annual review reports for private sector investment operations. Four main criteria were used: (i) development impact, (ii) ADB's investment profitability, (iii) ADB's work quality, and (iv) ADB's additionality.

The development impact of the Project is excellent. This rating is based on four criteria: (i) private sector development, (ii) business success, (iii) economic sustainability, and (iv) environment, health and safety performance. The Project has made an excellent contribution overall to private sector development. The NLEX is the first major expressway in the Philippines to be built, operated, and maintained according to international standards by a private sector company. Because the Project has reaped benefits for the country, other developing countries view it as a model for government and private sector partnership.

In terms of business success, however, the Project is rated only partly satisfactory. Traffic volume has increased significantly since commercial operations began in 2005 but is still below the original projections in the report and recommendation of the President (RRP). MNTC's financial performance is satisfactory. Its revenue in 2006 was higher than the previous year's revenue but below the original projections in the RRP.

MNTC's economic sustainability is satisfactory, while its environment, health, and safety performance is excellent. MNTC has established a management system that keeps policies and procedures within ISO14001 (Environmental Management) and OHSAS18001 (Safety Management) standards.

The investment outcome of the Project is satisfactory. MNTC serviced its debt obligations on time. Meanwhile, ADB's overall work quality is rated excellent on the basis of the following criteria: (i) screening, appraisal, and structuring; (ii) monitoring and supervision; and (iii) ADB's role and contribution. ADB catalyzed commercial financing at a time when banking institutions had no appetite for funding road projects so soon after the Asian financial crisis. And, despite the global economic crisis at the time, the Project achieved financial closing with a broad lending group of international commercial banks, multilateral institutions, and export credit agencies.

Overall, the Project is rated highly successful. MNTC met its primary development objectives of (i) promoting economic development in Central and Northern Luzon, (ii) adding

road capacity to accommodate traffic growth on the major route from Metro Manila to Central and Northern Luzon, and (iii) increasing employment opportunities at and around the tollways.

The main variations from the original RRP projections were (i) the delay in the initial disbursement caused by difficulty in meeting preconditions, thus delaying the start of construction and commercial operations; (ii) a project cost that was higher than planned; and (iii) lower traffic volume and, therefore, lower revenues.

Two main lessons can be drawn from the Project. First, in future projects, ADB must allow for the changing needs of the borrower to fully meet the developmental objectives of the project. Second, better coordination between the lenders, MNTC, and the Government would have avoided delay in the start of construction. Policy dialogue can expedite implementation. In conclusion, the Government-MNTC collaboration was a successful public-private partnership that bears replication in future ADB road sector projects.

I. THE PROJECT

A. Project Background

1. On 26 October 2000, the Board of Directors of the Asian Development Bank (ADB) approved (i) a direct loan of up to \$45 million from ADB's ordinary capital resources, and (ii) a complementary loan of \$25 million to Manila North Tollways Corporation (MNTC) to enable it to rehabilitate, expand, and operate 83.7 kilometers of the North Luzon Expressway (NLEX) (the Project). The Project involved the construction and rehabilitation of 14 interchanges, 24 bridges, and 31 overpasses from Manila to the Clark Special Economic Zone, and the operation of an 8.8 kilometer (km) expressway that was completed in 1996 in the Subic Special Economic Zone.¹

2. The Project was undertaken on a rehabilitate-operate-transfer basis under a supplemental toll operation agreement (STOA) signed in April 1998 by MNTC, the Philippine National Construction Corporation (PNCC), and the Philippine Government through the Toll Regulatory Board (TRB), and approved by the President of the Philippines in June. The STOA granted MNTC a 30-year concession (but not to go beyond 2030) to operate and maintain the NLEX and to collect authorized tolls. At the end of the concession period in December 2030, MNTC will transfer the NLEX back to the Government without cost. The Project constituted phase 1² of the STOA.

3. In the early 1990s, the Government saw the need to upgrade and modernize the 30-year old NLEX, which had fallen into disrepair, with flooded sections, potholes, and traffic congestion. Growth in traffic volume on the expressway was significant between 1992 and 1997 until capacity constraints caused it to falter. The state-owned PNCC, which controlled the NLEX, lacked the financial resources to adequately operate, maintain, and expand it to accommodate current and projected traffic volumes. Strong backing from the private sector was needed. The Government's Medium-Term Philippine Development Plan (MTPDP) 1999–2004, which was designed to encourage private local firms with the financial and project development capabilities to support road transport and other high-priority infrastructure projects, paved the way for private sector participation in the country's development projects. PNCC entered into a joint venture with Benpres Holdings Corporation, a leading development and operation group in the Philippines, for the financing, development, construction, and operation of the NLEX. The joint venture resulted in the creation on 4 February 1997 of MNTC to finance, rehabilitate, operate, and maintain the expressway until 2030.

4. The NLEX is the transportation backbone of several regions, which are expected to benefit from growth in the Philippines. It runs northward from the National Capital Region (NCR) up through Central Luzon in Region 3. Central Luzon has been the beneficiary of the urban sprawl out of Metro Manila, which has limited room for further industrial development. Farther north in Region 3, the NLEX extends through rich agricultural areas in Bulacan and Pampanga provinces and toward the large cities of San Fernando and Angeles. The northern end of the NLEX extends to Sta. Ines, near the former US Air Force Base in Clark Field.

¹ ADB. 2000. *Report and Recommendation of the President to the Board of Directors on Proposed Loans to Manila North Tollways Corporation for the North Luzon Expressway Rehabilitation and Expansion Project in the Republic of the Philippines*. Manila.

² Phase 2 involves the construction of a 22 kilometer (km) circumferential road connecting the Circumferential Road 5 expressway with the MacArthur Highway, intersecting phase 1 near Meycauayan, Bulacan. Phase 3 covers the construction of a new 57 km road linking Subic to phase 1 near San Fernando, Pampanga, and a 5.5 km segment connecting MacArthur Highway to Letre, Malabon City, Metro Manila. Phases 2 and 3 are not part of the Project.

5. The importance of the NLEX is underscored by the lack of major competing infrastructure to support the projected traffic growth in the area in the short to medium term. The only other major road is the heavily congested MacArthur Highway,³ where large volumes of public transport predominantly serve local transport needs, reducing average traffic speed.

6. The Project had the following shareholders: (i) First Philippine Infrastructure Development Corporation (FPIDC), a Benpres Holdings Corporation (BHC) and First Philippine Holdings Corporation (FPHC) subsidiary, with 67.10% ownership; (ii) Leighton Asia Limited, a civil works specialist with extensive accomplishments in toll-road construction, 16.5%; (iii) EGIS Projects S.A. of France, a subsidiary of the EGIS Group, the world's largest toll operator, 13.9%; and (iv) PNCC, 2.5%.

B. Project Features

7. The Project involved rehabilitating, expanding, and modernizing 83.7 km of the NLEX. In all, 14 interchanges, 24 bridges, and 31 overpasses from Manila (Balintawak exit) to Clark Special Economic Zone (Sta. Ines exit) were to be constructed or rehabilitated; toll plazas were to be reconstructed; and an 8 km expressway completed in 1996 in the Subic Special Economic Zone was to be operated.

8. By the end of the Project, 295 lane-km from Balintawak to Sta. Ines had been upgraded, and 138 lane-km from Balintawak to Sta. Rita, Bulacan, had been built. Additional lanes were built in the mainline, with eight lanes in both directions from Balintawak to Burol, Bulacan, and six lanes from Burol to Sta. Rita. Major rehabilitation works were also done on the four lanes from Sta. Rita to Balem, Pampanga, and the two lanes from Balem to Sta. Ines. All the existing 91 toll booths were demolished to give way to 145 new toll booths. Four toll plazas were constructed and expanded in Balintawak, Bocaue (Bulacan), Tabang (Bulacan), and Dau (Pampanga), while 26 permanent exits were widened. The Novaliches flyover and the Dau interchange were added to ease traffic on both ends of the expressway.

9. The NLEX is the main corridor to Central and Northern Luzon, and the principal access to two major special economic zones—Clark and Subic. Beginning from Balintawak, the NLEX passes through the NCR, a commercial and industrial center with close to 10 million people and about 1 million registered vehicles, before it traverses the rich agricultural areas in the provinces north of Metro Manila. The NCR contributed 31.3% of Philippine GDP in 2004.

10. The NLEX now supports 12,000 vehicles per lane per day but can accommodate up to about 25,000. The new NLEX can support about twice as many vehicles, or about 5–10 years' projected traffic volume, depending on the rate of economic development in the area. The new NLEX boasts a modern and fully computerized tollway management system, a traffic management system, and a new tolling system. Motorists on the NLEX are also assured of lower vehicle operating costs and more savings.

1. Tollway Management System

11. A modern and fully computerized tollway management system gives motorists the option of paying in cash or with the electronic collection tag or prepaid swipe cards. The electronic toll

³ The MacArthur Highway runs parallel to the North Luzon Expressway (NLEX). Mostly two-lane, it is connected by spur roads to the NLEX. Side friction is heavy along this road as it passes through town centers or other built-up areas. Traffic is diverse and consists of a high volume of nonmotorized transit at some locations. Pedestrian crossing is also uncontrolled and tends to slow down traffic.

collection (ETC) facilities speed up entry and exit at toll plazas, and make traffic management and control more efficient.

2. Traffic Management System

12. Traffic enforcers patrol the expressway 24 hours a day, 7 days a week. Cameras are positioned strategically along the expressway to allow traffic to be monitored from the Balintawak control room, and traffic enforcers and emergency response teams to immediately provide 24-hour assistance.

3. Tolling System

13. When MNTC took over commercial operations on 10 February 2005, it implemented the first toll rate adjustment under the STOA. The STOA, among other things, defined the following tolling policies: (i) open and closed toll collection systems, (ii) base rates for three vehicle classes, (iii) toll increases, and (iv) toll rate adjustments. The periodic toll adjustment is an automatic authorized adjustment every two years granted under the STOA, subject to review of TRB. As long as the effective toll rate, the actual rate to be charged to the motorists, is within the authorized toll rate it does not need administrative approval.

14. **Open and Closed Toll Collection.** There are two types of toll collection systems in the NLEX: the open system and the closed system. The open system covers a 14.3 km portion from Balintawak to north of Marilao, Bulacan, where traffic congestion is heaviest. In the open system, a flat rate is paid at entry. Motorists stop only once and can take any exit from Balintawak to Marilao. This one-stop toll collection substantially reduces the time spent at toll-booth stops and greatly eases traffic congestion especially during peak hours. The closed system encompasses the northern 70 km section of the expressway, from north of Marilao to Sta. Ines, where there is less traffic. In the closed system, the amount of toll due is based on the distance traveled or on a per-kilometer basis and is computed on exit.

15. **Base Rates for Three Vehicle Classes.** Three classes of vehicles travel, namely: (i) class 1 or light vehicles (cars), (ii) class 2 (buses), and (iii) class 3 or heavy vehicles (trucks). The base rates for the three vehicle classes are based on the estimated volume of traffic and the estimated cost of construction and operation. The base rates for class 1 vehicles are: (i) P0.82 per km in the closed system, and (ii) a flat rate of P14.00 in the open system. At the start of operation in February 2005, MNTC increased its toll rates as provided in the STOA. Economic indices like the consumer price index and foreign exchange rates, in the formula set out in the STOA, were updated to derive the adjusted toll rate. The effective toll rates for class 1 vehicles are given in Table 1.

Table 1: Toll Rates for Class 1 Vehicles^a

System	MNTC	Base Rate	Increase Over Base Rate (%)	PNCC	Increase over PNCC Rate (%)
Close	P2.48/km	P0.82/km	202%	P0.52/km	377%
Open	P42.00	P14.00	200%	—	Up to 13x

— = not available, km = kilometer, MNTC = Manila North Tollways Corporation, PNCC = Philippine National Construction Corporation.

^a Class 2 rates are 2.5 times class 1 rates, and class 3 rates are 3 times class 1 rates.

Source: Manila North Tollways Corporation.

16. **Toll Increases.** The STOA provided for toll increases based on the peso-dollar exchange rate, inflation, and a formula set forth in the STOA. At the start of commercial

operations in 2005, the toll rates increased by 377% in the closed system.⁴ This new tolling policy drew negative reactions from the motoring public. Through public relations and aggressive marketing, MNTC was able to neutralize the initial resistance to the toll fees.

17. **Toll Rate Adjustments.** The STOA provided for periodic toll rate adjustments every 2 calendar years, with the first to be made at the start of operations. Otherwise, the Government is obligated to compensate MNTC for the loss of revenue resulting from the difference between the authorized toll rate actually collected by MNTC and the authorized toll rate that MNTC would have been able to collect had the adjustments been made.

18. The STOA transferred all rights, interests, and privileges of PNCC to MNTC, giving MNTC the right to collect toll fees during the concession period of 30 years so that it can continue to maintain the expressway, recover its investment, repay the lenders that financed the Project and provide reasonable returns to the proponents. After the concession period, the project roads will revert to the Government at no cost.

4. State-of-the-Art Technology

19. The NLEX is equipped with the following international-standard features:

- (i) Traffic surveillance and closed-circuit TV cameras for security and traffic monitoring.
- (ii) Car density sensors beneath the road surface.
- (iii) Road structure safety features, such as reflectorized lane markings, concrete median barriers, and emergency parking areas.
- (iv) Traffic counting stations/weigh-in-motion systems that detect overweight vehicles.
- (v) A 24-hour emergency assistance system, phone operators, first-aid emergency trucks, tow trucks, and traffic patrol teams.
- (vi) Emergency call boxes (every 2 km in the Balintawak–BuroI segment, every 1 km in the BuroI–Sta. Ines segment) for motorists requesting assistance in breakdowns or accidents.
- (vii) Customer service centers where motorists can inquire about NLEX products and services.
- (viii) Rest and service areas.
- (ix) Variable message signs displaying real-time traffic situations and other helpful information along the highway.
- (x) US Interstate highway standards of construction for much of the expressway, with eight lanes through Metro Manila. As it enters the more rural area north of Manila, the expressway narrows to six and then four lanes with a grass median to separate the two carriageways.
 - (a) All signs in English, nearly identical to those on American expressways, with white lettering on a green background and the exit tab in the upper right-hand corner.
 - (b) Distance-based sequencing for numbering interchanges, as in most American expressways. Exits are numbered according to distance in kilometers.

⁴ From P0.52 per km to P2.48 per km. Toll fees for motorists traveling from Balintawak to the farthest part of Sta. Ines increased from P41 to P200 for class 1; from P82 to P500 for class 2; and from P123 to P600 for class 3.

C. Progress Highlights

20. The NLEX was designed and constructed under a fixed-price, date-certain, turnkey contract for 2 years from the first quarter of 2003 to the first quarter of 2005. Leighton Asia Limited was appointed after international competitive bidding. Leighton Asia is an experienced international contractor with an excellent record and a strong financial position. The operator for the toll road was Tollways Management Corporation (TMC), a company owned by FPIDC, Transroute International S.A., and PNCC. Transroute is a French company with expertise in toll-road operations.

21. The Project began commercial operations on 10 February 2005.⁵ The report and recommendation of the President (RRP) had projected a 2003 start but delay in the initial disbursement of the loan, to 1 year and 7 months after the date of the loan agreement, pushed back the construction and rehabilitation of the expressway. Disbursement was delayed because (i) the lenders found it difficult to obtain right-of-way (ROW) from the Government according to their standards; (ii) changes in the composition of MNTC's sponsors led to a new set of conditions from the lenders; and (iii) FPIDC, EGIS, and Leighton Asia had to increase their equity participation to absorb a reduction in PNCC's equity participation in the Project. The first disbursement finally occurred in February 2003 and construction began after that.

22. The rehabilitation and expansion of the NLEX was completed at a total cost of \$384.5 million equivalent, above the budgeted cost during appraisal. The cost estimate during appraisal was \$377.5 million, but design change orders, small additional land acquisitions, and other cost adjustments increased this amount slightly before commercial operations.

23. On 8 November 2006, under a risk management initiative, MNTC reduced its foreign currency risk exposure by restructuring and refinancing its term loans with a P5.5 billion fixed-rate corporate note (FXCN) facility to prepay about 50% of its outstanding indebtedness. ADB participated in the refinancing, resulting in a partial prepayment of ADB's exposure to the Project.

24. On 1 January 2007, MNTC put into effect its first toll rate adjustment (a reduction of about 11%) after the start of toll operations on 10 February 2005. The reduction in toll rates was a result of the foreign currency fluctuation, which had led to adjustments in the toll rate formula set out in the STOA. The change in toll rates from 2006 to 2007 is shown in Table 2.

Table 2: Toll Rate Adjustment on 1 January 2007
(P)

Year	Open System ^a			Closed System ^b		
	Class 1	Class 2	Class 3	Class 1	Class 2	Class 3
2006	42.00	106.00	127.00	2.48	6.21	7.45
2007	38.00	94.00	113.00	2.20	5.49	6.59

a Toll rate per entry.

b Toll rate per vehicle-kilometer.

Source: Manila North Tollways Corporation.

25. The toll rate adjustment contributed to the increase in traffic volume in both open and closed systems during the first half of 2007.

⁵ A certificate of substantial completion was issued by Norconsult, the independent certification engineer (ICE), on 3 February 2005. The certification implied that work was at least 95% finished and conformed substantially to the detailed engineering design, and commercial operations could begin without compromising the safety of the motoring public. The toll operation permit was issued on 3 February 2005 and the material completion certificate on 8 February 2005. The certificate of final completion was issued by the ICE on 4 October 2007.

26. Other factors that contributed to the traffic increase in the first half of 2007 compared with the same period in 2006 were the (i) ongoing rehabilitation works on bridges along the MacArthur Highway, diverting traffic to NLEX; (ii) relatively lower fuel prices in 2007; and (iii) adjustment in the implementation of the Anti-overloading Vehicle Program, promoting compliance rather than enforcement through dialogue and test-weighing demonstrations with various companies.

27. Overall, the NLEX contributed to the economic and social growth of provinces in Northern and Central Luzon. It is now used by an average of 146,000 vehicles per day. Travel time from end to end has been reduced by 50%, and customer satisfaction has reached as high as 98%.

II. PROJECT EVALUATION

A. Overview

28. This evaluation of MNTC's performance is based on four main criteria: (i) development impact, (ii) ADB's investment profitability, (iii) ADB's work quality, and (iv) ADB's additionality. The main categories and subcategories were rated according to the guidelines for the preparation of extended annual review reports for private sector investment operations.

29. This report is based on an analysis of data from previous review missions and site visits, which were assumed to be accurate, and on a review of documents provided by MNTC. An extended annual review field mission was not carried out. The project team's constant visits to the project expressway and regular contact with MNTC rendered a field mission unnecessary.

B. Development Impact

30. MNTC achieved the development impact objectives set forth in the RRP by (i) catalyzing overall economic development in Central and Northern Luzon, (ii) adding road capacity to accommodate current and future traffic growth on the major routes from Metro Manila to Central and Northern Luzon, (iii) inducing private sector investment in the road transport sector, (iv) increasing employment opportunities at and around the tollways, and (v) generating interest from international lenders.

31. The development impact indicators are assessed in detail in Appendix 4.

1. Private Sector Development

a. Impact beyond the Company

32. The NLEX Project is the first major expressway in the Philippines that was constructed and is being operated and maintained according to international standards by a private sector company. It is consistent with the Government's policies and strategies for developing the road transport infrastructure with private sector assistance. The Philippine Government regards the Project as a flagship infrastructure project. President Gloria Macapagal-Arroyo places significant emphasis on modernizing infrastructure as one of her five comprehensive strategies for attaining global competitiveness. The Government is bent on enhancing the competitive advantage of the natural "superregions of the Philippines"—the North Luzon Agribusiness Quadrangle, the Metro Luzon Urban Beltway, Central Philippines, Mindanao, and the Cyber

Corridor (a 966 km information and communication technology channel that cuts across the country from north to south). These priorities of the current administration provide a positive backdrop for greater economic activity in Northern and Central Luzon, thereby increasing traffic volume along the NLEX.

33. The new NLEX has become a catalyst for growth and development in the northern and central regions. Travel to these regions has become easier and faster with smooth, unpotholed roads. The new NLEX has made people more mobile, sped up commodity flow, increased investments, and reduced vehicle operating and maintenance costs.

34. There are no viable alternative routes to Central and Northern Luzon. The only alternative road is the Manila North Road (MacArthur Highway), where traffic is made up mostly of slow-moving public transport vehicles like jeepneys, tricycles, and buses. MNTC has emphasized the benefits of using the NLEX: lower vehicle operating costs, faster travel, and convenience. Even in a period of high oil prices, the NLEX is still the most economical way to travel north.⁶

35. The NLEX supports the development of industrial and commercial activities in the surrounding region. The closure of the American air base in 1992 and the eruption of Mount Pinatubo in 1991 caused widespread unemployment in Pampanga, Tarlac, Zambales, and other nearby provinces. Now with the improved NLEX, and the commercial and business establishments that have sprung up in the area, employment opportunities have increased. Furthermore, the employment and income effects of the development of Clark and Subic will also benefit neighboring areas, including parts of the relatively poorer provinces of Northern and Central Luzon.

b. Direct Impact of the Company

36. MNTC adopted the latest and most advanced tollway technology available and tapped the resources of experienced international companies and project sponsors—the EGIS Group and Leighton Asia—which have transferred advanced technology and know-how to MNTC and TMC staff. Functional training programs have been arranged for MNTC staff in such areas as the effective eviction of illegal dwellers, compliance with safeguard policies, dispute resolution, document control, and project and contract management. Corporate training, in the language of business, business writing, records management, and other areas, has also been arranged. TMC personnel—mostly toll collectors, toll security, traffic patrol, and toll operators—have been trained to operate and maintain the tollway, specifically to carry out good and safe traffic management. Operations and asset maintenance personnel have also received technical and nontechnical training. Other training programs have been conducted before and during operation by MNTC management.

37. Overall, the Project's contribution to private sector development is rated excellent.

2. Business Success

38. MNTC had strong financial results from February to December 2005, its first year of operations. These positive results were sustained in the succeeding years. MNTC generated a healthy and stable cash flow over more than 2 years of operations.

⁶ Parsons Brinckerhoff Philippines, Inc. 2005. *North Luzon Expressway Corridor Traffic Profiling Study*. Final Report. Manila.

39. The FIRR was lower than the figure calculated at the time of project approval, mostly because of lower-than-expected traffic. The projections were accurate for class 2 (buses) vehicle-kilometers, but were only around half of those anticipated in the RRP for classes 1 and 3 (light and heavy vehicles). However, the FIRR still exceeded the weighted average cost of capital (WACC). The business success of the Project is therefore rated only partly satisfactory.

3. Contribution to Economic Development (Economic Sustainability)

40. By offering improved transport facilities to and from Northern and Central Luzon, the rehabilitated NLEX has assisted the development of industrial and commercial activities in the area. It has thereby eased local unemployment and created livelihood opportunities in an economy severely affected by the eruption of Mount Pinatubo in 1991 and the closure of the American air base at almost the same time.

41. The NLEX has also helped decongest traffic from Metro Manila to Central and Northern Luzon and vice versa, aiding the flow of passengers and goods, and the development of trade, along the route.

42. The recalculated EIRR is lower than the original estimate in the RRP, mostly because of lower-than-expected traffic, as already discussed earlier. The Project's economic sustainability is therefore rated satisfactory.

4. Environment, Health, and Safety (EHS) and Socioeconomic Management Performance

43. ADB classified the Project as environment category B and requiring a summary initial environmental examination (SIEE).⁷ MNTC operates 24 hours a day, 7 days a week. As determined at appraisal, the environment is affected by increased noise and pollution from increased traffic. MNTC has put in place an environmental management and monitoring program to address the environmental impact of the Project and monitor compliance with standards set for air quality, traffic flow and vehicular efficiency, and natural waterways and vegetation around the NLEX. Proactive in creating awareness and sensitivity within its organization, MNTC designed the structured environmental management system, which is based on international environment, health, and safety (EHS) standards, to impel MNTC employees to be concerned not only with production goals but also with the efficient use of resources to lessen adverse impact. Policies and procedures must conform to ISO14001 (Environmental Management) and OHSAS18001 (Safety Management) standards. An annual monitoring report is submitted to ADB and posted on the Web in compliance with ADB's *Public Communications Policy* (2005).

44. MNTC has strengthened its alliance with various government units (governors, mayors, and congressmen) and transport and business groups by meeting with them, as well as with local media, and responding to their concerns. It has worked closely with the Department of Environment and Natural Resources (DENR), local government units (LGUs), and communities to maintain a good and sustainable environment around the NLEX. Nongovernment organizations (NGOs) and the public have also been made fully aware of MNTC initiatives and recognize the benefits of the NLEX improvements. Toll rates, the main concern of the NGOs, have been addressed in the various information campaigns of MNTC.

⁷ The SIEE was prepared by the Borrower and circulated to ADB's Board of Directors on 19 June 2000.

45. The social issues currently facing MNTC have to do with illegal settlements in nearby communities and violations of Republic Act (RA) 2000, otherwise known as the Limited Access Facility Law. In addressing the social issues, MNTC continuously conducts the following:

- (i) Strengthening its alliance with various government units, transport and business groups, and others. The concerns are addressed through continuous dialogue with concerned groups.
- (ii) Participating in DENR programs such as Green Philippine Highways and landscaping projects of LGUs, to maintain a good and sustainable environment around the NLEX.
- (iii) Educating nearby communities on the provisions of RA 2000, particularly the prohibitions against pedestrians in the expressway and structures inside the ROW. This campaign is intended to minimize the number of hit-and-run cases on the NLEX.
- (iv) Devising alternative pathways to communities to keep pedestrians out of the NLEX. MNTC is coordinating closely with the LGUs and the communities to solve the problem of ROW access.
- (v) Submitting regular reports and progress updates to regional and local government groups in Central Luzon such as the National Economic and Development Authority (NEDA) Region III, Department of Trade and Industry (DTI) III, and the Presidential Commission on the Central Luzon Growth Corridor (PC-CLGC).

46. MNTC has developed traffic and safety enhancement procedures to ensure a high quality of service and road safety for motorists. Reflectorized pavement markings and signs are installed in various areas and more traffic signs have been put up. Traffic and safety programs and enhancements are continuously being implemented and lane management teams are deployed. From February 2006 to February 2007, the NLEX had a satisfactory safety record, with only three lost-time injuries in the workplace. The lone fatality and two lost-work cases were TMC staff. Corrective measures are in place and safe practices are observed. Organized and well-trained traffic management teams equipped with cameras, radios, and speed-monitoring devices monitor the expressway 24 hours a day and 7 days a week. Among the safety features of the expressway are: (i) smoother road pavement; (ii) visible reflectorized lane markings; (iii) median concrete barriers to prevent head-on collisions; (iv) emergency parking areas; (v) adequate lighting; and (vi) 24-hour emergency assistance, consisting of telephone operators, traffic patrol teams, first-aid emergency trucks, and tow trucks.

47. MNTC gives high priority to EHS requirements. This is evident in the company's ISO initiatives. MNTC has set a schedule for ISO9001:2002 (Quality), ISO14001 (Environmental), and OHSAS18001 (Health and Safety) certification and has formed a committee to lead the preparations. A survey by an external auditor showed that MNTC can apply for ISO9000 (Quality Management System) certification. Hence, MNTC's EHS and socioeconomic management performance is rated excellent.

C. ADB's Investment Profitability

48. The interest rate margin charged on ADB's direct loan reflects the risks associated with the Project and was benchmarked against recent market trends. Construction and operational risks were mitigated, as construction had already been completed and commercial operations had begun. Traffic volume has been lower than projected; however, this risk was mitigated by

the nature of the Project as an expansion of an existing expressway with well-documented traffic. Besides, traffic volume has grown steadily since commercial operations began in 2005. The only alternative route within the NLEX corridor, MacArthur Highway, does not offer an economic alternative to the NLEX for commercial and private longer-distance travel since it is used by large volumes of public transport that predominantly serve local transport needs, slowing traffic. The CFS loan was priced by the commercial banks with the commercial and political risks in mind.

49. Since the start of commercial operations, MNTC has been making principal and interest payments on time. Loan repayment began on 15 December 2004 and final repayment is scheduled for 2014. ADB's investment profitability is rated satisfactory.

D. ADB's Work Quality

50. ADB did excellent work in three categories: (i) screening, appraisal, and structuring; (ii) monitoring and supervision; and (iii) role and contribution.

1. Screening, Appraisal, and Structuring

51. ADB took the lead in technical, financial, and legal due diligence, identifying key project risks including traffic volume risk, toll adjustment risk, and political and economic risks, and designing measures to mitigate those risks. It also played a key role in mobilizing commercial financing when funding became scarce in the wake of the Asian financial crisis. ADB attracted financing from IFC, EFIC, Compagnie Francaise d'Assurance pour le Commerce Extérieur (COFACE), MIGA, and commercial banks.

52. The Project was structured as a project finance transaction. MNTC entered into an STOA with the Philippine Government, acting through the Toll Regulatory Board, and PNCC. The STOA gave MNTC the right to finance, rehabilitate, expand, operate, and maintain the Project until 31 December 2030. At the end of the concession period, MNTC will transfer the Project back to the Government without cost. The STOA also gave MNTC the right to collect and adjust the toll rate according to the authorized toll rate formula prescribed in the STOA. ADB's Board of Directors approved the Project on 26 October 2000. Financial closure was achieved with the signing of the documents on 7 July 2001. The first disbursement was made on 7 February 2003. It was delayed by (i) the difficulty encountered by the lenders in obtaining the ROW from the Government according to the lenders' standards; (ii) changes in the composition of MNTC's sponsors) and (iii) the required increase in the equity participation of FPIDC, EGIS, and Leighton Asia to make up for the reduction in PNCC equity. Construction began in February 2003 and commercial operations in February 2005.

53. In November 2006, ADB participated in the refinancing of MNTC's dollar-denominated loans, thereby reducing the company's foreign currency risk exposure. This showed ADB's flexibility in adapting to the changing needs of the borrower.

54. ADB's performance in screening, appraisal, and structuring is therefore rated excellent.

2. Monitoring and Supervision

55. ADB has been closely monitoring the implementation of the Project and keeps in close touch with MNTC through e-mail or telephone. The Common Terms Agreement enumerates the reporting covenants of MNTC, which include submitting audited financial statements, annual budgets, insurance contracts, operating reports, and annual EHS monitoring reports. An MNTC

risk management initiative in November 2006 was aimed at reducing the company's foreign currency risk exposure. The terms and conditions of the loan were later modified and the covenants were relaxed. The Amended and Restated Common Terms Agreement specifies the modified covenants and the timing of submission of the reports. MNTC has complied with all the reporting requirements on time.

56. ADB has been prompt in giving its consent to waivers and requests for amendments to existing agreements, in consultation with various departments including the Treasury Department, the Controller's Department, and the Office of the General Counsel. After Board approval of the Project in October 2000, the Private Sector Operations Department fielded six missions from 2000 to 2005 including a meeting with MNTC and a delegation from Kazakhstan. The first annual desk review was done in 2006.

57. ADB's performance in monitoring and supervision is rated excellent.

3. ADB's Role and Contribution

58. ADB assisted the Government in (i) preparing a national transport strategy⁸ that defined the priorities for investment in 1998–2010, and identifying the components that would be most suitable for private sector investment and operations; and (ii) developing institutional capacity to continue the national transport planning process. The key findings of the strategy were incorporated into the Government's MTPDP 1999–2004. In the plan, the Government committed to continue deregulating and privatizing all infrastructure sectors, including road transport. The MTPDP resulted in the creation of MNTC and the NLEX Project.

59. ADB's role and contribution to the Project is therefore rated excellent.

E. ADB's Additionality

60. In the late 1990s to early 2000, Philippine banks and financial institutions had little or no experience or appetite for toll-road financing. They were unwilling to offer long-term financing for such a risky project. ADB's lead role in the technical, financial, and legal due diligence of the Project provided comfort and drew private sector interest. ADB also extended a complementary loan to the Project and mobilized commercial financing. Despite the global economic crisis, the Project achieved financial closing with a broad lending group of international commercial banks, multilateral institutions, and export credit agencies.

61. The rehabilitation of the NLEX has been immensely beneficial to the country. Other developing countries, as a result, are using the Project as a model for government and private sector partnerships. ADB's additionality is therefore rated excellent.

F. Conclusion and Overall Rating of the Project

62. In conclusion, the Project is rated highly successful. The ratings are summarized in Table 4. The NLEX is the first expressway to be rehabilitated and operated by the private sector. It is considered a model project encouraging private sector participation in the transport sector, which could be replicated in the Philippines and elsewhere. This first project-financed toll-road undertaking in the country showed foreign lenders' willingness to depend less on sovereign support for major infrastructure projects.

⁸ ADB. 1995. *Technical Assistance to the Republic of the Philippines for the Preparation of a National Transport Strategy*. Manila (TA 2487-PHI, for \$1,000,000, approved on 19 December).

63. NLEX's position as a major thoroughfare and infrastructure backbone of the Central and Northern Luzon regions, the supportive concession agreement with an affirmed obligation from the Philippine Government to adjust the authorized toll rate embodied in the STOA, and MNTC's strong operating and financial performance, as well as the cash-generating abilities that it has demonstrated since the first year of operations and that are expected to be sustained or enhanced in the coming years—in view of all these, the Project is rated highly successful overall.

Table 4: Evaluation of the Manila North Tollways Corporation Project

Item	Partly			
	Unsatisfactory	Satisfactory	Satisfactory	Excellent
A. Development Impact				x
1. Private Sector Development				x
2. Business Success		x		
3. Economic Sustainability			x	
4. Environmental Health and Safety Performance				x
B. ADB's Investment Profitability			x	
C. ADB's Work Quality				x
1. Screening, Appraisal, and Structuring				x
2. Monitoring and Supervision				x
3. ADB's Role and Contribution				x
D. ADB's Additionality				x
	Unsuccessful	Partly Successful	Successful	Highly Successful
OVERALL RATING				x

ADB = Asian Development Bank.

Source: Asian Development Bank.

III. ISSUES, LESSONS, AND RECOMMENDATIONS

A. Project Issues

64. Actual performance varied from the assumptions in the RRP in the following key respects:

- (i) The first disbursement was delayed by difficulty in achieving the lenders' preconditions. Construction began in February 2003 and commercial operations in February 2005. The first disbursement was to have occurred within 1 year from the date of loan signing on 7 July 2001, but was made only on 7 February 2003, 7 months late.
- (ii) The delay in the first disbursement also delayed the start of construction and commercial operations by 2 years.
- (iii) The project cost was higher than the original estimate in the RRP but lower than the updated projections after the initial disbursement.
- (iv) Traffic volume was lower than the original RRP estimates, resulting in lower-than-projected revenues. On the other hand, traffic volume and revenues have increased since the start of commercial operations.

65. The traffic and financial projections have been revised several times since the approval of the RRP in October 2002 and continue to be revised depending on fluctuations in GDP, inflation, oil prices, and other underlying assumptions.

B. Lessons and Recommendations

66. **Flexible Approach to Borrower's Needs.** ADB's involvement in the financing of the rehabilitation and expansion of the NLEX was premised on: (i) lack of available financing, (ii) low road capacity for traffic growth, and (iii) lack of economic opportunities in the Northern Luzon region. The intended developmental impact of the Project was fully realized during the first years of implementation. However, as the economic and financial circumstances change for the Philippines as well as for the Borrower, their needs and demands also begin to change. The refinancing exercise that took place in 2006 showed ADB's ability to adapt to the changing needs of the Borrower. When MNTC approached ADB regarding the refinancing, they faced a different set of issues, such as: (i) currency mismatches between outstanding loan and revenue, (ii) increasing competitiveness of local financial markets, and (iii) increasing operational autonomy past the construction phase. Through the refinancing, ADB successfully met the new needs of the Borrower by (i) decreasing ADB's loan amount, allowing for increased use of the local capital market; and (ii) providing more operational autonomy for MNTC while maintaining risk mitigation through strengthened financial covenants. In future projects, ADB should provide this type of flexibility to fully meet the developmental objectives of the project, as well as adapt to the changing needs of its borrowers.

67. **Better Coordination on Safeguard Issues.** The delay in the start of construction was caused largely by the inability of MNTC to obtain ROW consent from the Government according to the lenders' requirements. This issue of compensation and coordination should have been better monitored from ADB's perspective as a senior lender and as a multilateral bank with both public sector and private sector operations. Opportunities for facilitation exist for future projects of a similar nature, where policy dialogue can play a great role in expediting the implementation of the project.

C. Issues to Monitor

68. **Implementation of Phases 2 and 3.** MNTC is embarking on phase 2 starting with segment 8.1 of the Project. Phase 2 involves the design, financing, construction, and operation of the northern sections of Circumferential Road 5 (C5) east of Libis and west of the NLEX to MacArthur Highway and Letre. Because of ROW issues on the proposed alignment of phase 2, MNTC anticipates a delay in implementation versus the schedule given in the STOA. However, MNTC will construct initially the segment between the NLEX and Mindanao Avenue (segment 8.1) to the eastern part of Metro Manila and then the segment between NLEX to MacArthur Highway (segment 9) to the west. The 2.3 km segment 8.1 and the 3.86 km segment 9 will both be four-lane divided toll roads. MNTC will bid out the contract documents for segment 8.1 by 3rd quarter of 2008. Construction will also start by 2008 and will be completed within 2009. The construction of segment 9 is expected to start in 2009 and expected to be completed by the end of 2010. MNTC is also closely coordinating with the Department of Public Works and Highways, the National Housing Authority, and TRB in the acquisition of ROW, after which MNTC will obtain the notice to proceed from TRB. On other fronts, MNTC has been talking to local banks to arrange suitable financing for the Project. Plans for the construction of phase 3 of the Project have not begun, as certain segments of phase 2 must first be completed and ROW availability is uncertain.

69. **Debt Service Capacity.** MNTC pursued a risk management initiative to reduce its foreign currency risk exposure with a P5.5 billion FXCN, which prepaid about 50% of MNTC's outstanding indebtedness. ADB's exposure to the Project may have been reduced but MNTC's debt obligations remain the same. Further, a balloon principal payment on the FXCN is due in 2013 but MNTC intends to refinance the notes before the balloon payment comes due. MNTC, being a utility with stable cash flows and a strong operating record, is not likely to have problems finding creditors to refinance the note. However, close monitoring of MNTC's paying capacity, including compliance with covenants, is recommended.

70. **Acceleration of Traffic Growth.** There are only two viable routes to Central and Northern Luzon—the NLEX and the MacArthur Highway. The MacArthur Highway is a free road. Mostly two-lane, it runs parallel to the NLEX and connects with spur roads to feed traffic to the NLEX. Side friction is heavy along this road as it passes through town centers or other built-up areas. Traffic is diverse and consists of a high volume of nonmotorized transit at some locations. Pedestrian crossing is also uncontrolled and tends to slow down traffic. With the 2006 toll structure and level, 75% of the total corridor traffic uses the NLEX, while 25% uses the MacArthur Highway. At present, there is no adequate substitute road to Central and Northern Luzon. However, a rise in toll fees and the expanded value-added tax (EVAT) in the future may divert traffic to MacArthur Highway and affect traffic volume on the NLEX. MNTC plans to accelerate traffic growth by (i) leveraging the goodwill and brand name of NLEX, (ii) maintaining a high customer satisfaction rating, (iii) facilitating interconnection with the Subic–Clark–Tarlac Expressway (SCTEX)⁹ and other major road projects, (iv) promoting tourism destinations in the north, (v) managing repair and maintenance activities, (vi) increasing compliance with the anti-overloading program, and (vii) stabilizing toll rates. A healthy traffic on the NLEX and high customer satisfaction will provide a solid platform for future expansion projects.

⁹ A 51 km four-lane expressway that starts in the Subic Bay Freeport Zone in Zambales and ends at its interchange with the NLEX near the Clark Special Economic Zone in Angeles City, Pampanga.

BASIC DATA

Investment Summary

A. Investment Identification		
1.	Country	Philippines
2.	Loan Number	1769/7162
	Complementary Financing Scheme Number	38
3.	Type of Business	Roads
4.	Project Title	North Luzon Expressway Rehabilitation and Expansion Project
5.	Investee Company and/or Borrower	Manila North Tollways Corporation
6.	Amount of Approved ADB Assistance	
	Direct Loan	\$45.0 million
	CFS	\$25.0 million
7.	Extended Annual Review Report Number	PCR: PHI 1023

ADB = Asian Development Bank; CFS = complementary financing scheme.

B. Investment Data			
1.	Concept Clearance Approval	29 November 1999	
2.	Date of Board Approval	26 October 2000	
3.	Signing Date of Legal Documents		
	Loan Agreement	7 July 2001	
	Complementary Loan Agreement	7 July 2001	
4.	Date of Loan Effectiveness		
	In Loan Agreement	7 July 2001	
	Actual	7 July 2001	
	Number of Extensions	None	
5.	Loan Closing Date (end of availability period)		
	In Loan Agreement	8 November 2004	
	Actual	12 May 2005	
	Number of Extensions	Two	
6.	Disbursements		
	a. Direct Loan		
		Initial Disbursement	Final Disbursement
		7 February 2003	12 May 2005
		Effective Date	Original Closing Date
		7 July 2001	8 November 2004
			Time Interval
			825 days
		Amount Disbursed: \$45,000,000.00	
	b. ADB Complementary Financing Scheme		
		Initial Disbursement	Final Disbursement
		7 February 2003	12 May 2005
		Effective Date	Original Closing Date
		7 July 2001	8 November 2004
			Time Interval
			1,220 days
		Amount Disbursed: \$25,000,000.00	
7.	Loan Repayment		
	a. Direct Loan		
		Initial Repayment Date	15 December 2004
		Final Repayment Date	15 June 2014
	b. ADB Complementary Financing Scheme		
		Initial Repayment Date	15 December 2004
		Final Repayment Date	15 June 2014

ADB = Asian Development Bank, LIBOR = London interbank offered rate.

D. Data on ADB Missions

Name of Mission	Date	No. of Person-Days	No. of Persons	Specialization of Members
Fact-Finding Mission	7–11 Feb 2000	25	5	Senior Investment Officer, Senior Policy Specialist, Senior Counsel, Investment Officer, Cofinancing Officer
Lenders' Meeting	26–28 Jul 2000	9	3	Senior Investment Officer, Senior Counsel, Investment Officer
Appraisal Mission	16–18 Aug 2000	12	4	Senior Investment Officer, Senior Counsel, Investment Officer, Cofinancing Officer
Loan Appraisal	18–19 Aug 2000	2	1	Investment Officer
Loan Appraisal	29 Oct–3Nov 2000	6	1	Investment Officer
Loan Appraisal	24–26 Nov 2000	3	1	Investment Officer
Loan Disbursement	21–23 Feb 2002	3	1	Investment Officer
Loan Disbursement	4–6 Mar 2002	6	2	Senior Counsel, Investment Officer
Loan Disbursement	18–19 Apr 2002	2	1	Investment Officer
Negotiations	4–5 Feb 2003	2	1	Investment Officer
Annual Review	Aug 2006	2	2	Investment Specialist, Senior Operations Assistant

Sources: Asian Development Bank mission authorization requests and back-to-office reports.

PROJECT DESCRIPTION

A. The Project

1. The Manila North Tollways Corporation (MNTC) is the project company for the rehabilitation, expansion, and operation of 83.7 kilometers (km) of the existing North Luzon Expressway (NLEX). The NLEX is the Philippines' first expressway to be rehabilitated, operated, and maintained by a private sector in accordance with international standards. MNTC was awarded a 30-year concession to rehabilitate, expand, operate, and maintain the NLEX. The Project comprised the construction and rehabilitation of 14 interchanges, 24 bridges, and 31 overpasses from Manila to the Clark Special Economic Zone, and the operation of an 8.8 km expressway that was completed in 1996 in the Subic Special Economic Zone. The Project was undertaken on a rehabilitate-operate-transfer basis under a supplemental toll operation agreement (STOA) between the Philippine Government and the Toll Regulatory Board (TRB), the Philippine National Construction Corporation (PNCC), and MNTC. At the end of the concession period in December 2030, MNTC will transfer the Project back to the Government without cost.
2. The Project formed phase 1¹ under the STOA. Phase 1 consisted of (i) segment 1 (Balintawak–BuroI–Tabang spur), which spans 28.07 kms; (ii) segment 2 (BuroI–San Fernando), 33.83 kms; (iii) segment 3 (San Fernando–Sta. Ines), 21.84 kms; and (iv) segment 7 (Tigo–Subic Bay Metropolitan Authority), 8.8 kms.
3. The new NLEX is equipped with a fully computerized and efficient toll collection and traffic management system and operates on double the vehicle-per-lane capacity of the old NLEX and a road surface that compares with the best in the region. Complementing its operations is a system-wide closed-circuit television system for closer monitoring of traffic situations inside a centralized operations, maintenance, and control center. Its electronic toll collection (ETC) system ensures continuous and stress-free passage through toll plazas.
4. The design and construction contract was awarded to Leighton Contractors (Asia) Limited, a Hong Kong, China subsidiary of Leighton Holdings Limited, Australia, after international competitive bidding. The design and construction contract was a fixed-price, date-certain, turnkey contract, with appropriate liquidated damages payment clauses to cover MNTC's operating expenses in the event of any delay in completion. Construction started in February 2003 and was completed on schedule in 2 years. Commercial operations began on 10 February 2005.
5. EGIS Projects S.A. was the equipment supplier, providing equipment and installation services worth about \$42 million. The Tollways Management Corporation (TMC), the operation and maintenance (O&M) company appointed by MNTC, is fully responsible for the operations of the NLEX. TMC signed a technical assistance agreement with Transroute International to ensure access to required tollway operator expertise during construction and operations.
6. MNTC, as the employer, engaged Parsons Brinckerhoff Philippines, Inc. as the employer's representative for the construction contract for the engineering, procurement, and

¹ Phase 2 involves the construction of a 22 km circumferential road connecting the Circumferential Road 5 expressway with the MacArthur Highway, intersecting phase 1 near Meycauayan, Bulacan. Phase 3 covers the construction of a new 57 km road linking Subic to phase 1 near San Fernando, Pampanga, and a 5.5 km segment connecting MacArthur Highway to Letre, Malabon City, Metro Manila. Phases 2 and 3 are not part of the Project.

construction of the project works including the design, supply, installation, and testing of the fixed operating equipment.

7. The rehabilitation and expansion of the NLEX was completed at a cost of \$384.5 million, below the revised budgeted cost of \$386.4 million.

8. As of October 2007, MNTC had 108 staff, including 13 directors, 5 of whom are foreign nationals. TMC has 932 local employees, most of whom are toll collectors, toll security personnel, and traffic patrols. TMC personnel were trained in expressway traffic management and safety. Operations and asset maintenance personnel were also given technical and nontechnical training. Several other training programs have been conducted by MNTC management before and during operation. Figure A2.1 shows the composition of the board of directors of MNTC, and Figure A2.2 gives an overview of the company organization.

9. MNTC's project structure, management, and organization are based on classic limited-recourse project finance. The Project was the first project-financed toll road undertaking in the country. It reflected foreign lenders' willingness to depend less on sovereign support for major infrastructure projects. Figure A2.3 shows the NLEX project structure.

B. Project Administration

10. In November 2006, the lenders granted a proposal by MNTC to reduce its foreign currency risk exposure by restructuring and refinancing its US dollar term loans with loan facilities consisting of (i) a P5.5 billion fixed-rate corporate note facility (FXCN), and (ii) a \$110 million term loan (US dollar facility). The tenor and pricing of the loans were retained but there were changes in the terms and conditions of the project agreements. In view of MNTC's strong financial and operational outlook and the Project having passed the construction phase, the lenders consented to the restructuring and refinancing, which also entailed (i) the release of some key project agreements from the security package, (ii) the establishment of an interest reserve account in place of the debt service reserve account, (iii) a reduction in the scope of work of the lenders' technical adviser, and (iv) a relaxation of restrictions on additional indebtedness.

11. In March 2007, the lenders consented to the removal of JP Morgan Chase & Co. (JPM), the security trustee and co-security trustee, and the appointment of Deutsche Bank as the successor security trustee and co-security trustee. JPM had sold its global corporate trust and agency business to Bank of New York Company Inc. (BONY). However, the transition of JPM clients to BONY had not been fully completed. The offshore security trustee function had been transferred to BONY's New York office, but the onshore co-security trustee function remained with JPM Manila. MNTC believed that it would be more beneficial to have a trustee that could provide direct support in both its foreign and local trust operations. Deutsche Bank was found to be a qualified replacement for JPM. Lovells Lee & Lee, the lenders' counsel, advised a change to that effect in the amended and restated trust and retention agreement.²

12. On 4 December 2007, the Asian Development Bank (ADB) confirmed the occurrence of an adjustment event, thereby adjusting the interest rate of the ADB complementary loan from London interbank offered rate (LIBOR) plus 3.15% to LIBOR plus 2.75%. Under clause 4.1(b) of the amended and restated complementary loan agreement between ADB and MNTC of 8 November 2006, an adjustment event occurs when the peso-dollar currency exchange rate is less than P46:\$1 (based on end-of-day exchange rates in Makati City as published by either

² Clause 6.7(c) of the amended trust and retention agreement of 8 November 2006 allows the lenders, after consulting with the Borrower, to remove either trustee and appoint a successor trustee by written notice to the Borrower.

Reuters or Bloomberg) for no less than 50% of the business days in Makati City over 6 consecutive calendar months. From 1 June to 27 November 2007, the peso-dollar exchange rate stayed below P46:\$1 for 78 business days, or for 65% of the total number of business days over the 6 consecutive months from 1 June to 30 November 2007.

C. Project Sponsors

13. MNTC is majority-owned (67.1%) by First Philippine Infrastructure Development Corporation (FPIDC), which in turn is owned by First Philippine Holdings Corporation (FPHC) and Benpres Holdings Corporation of the Lopez Group. Other shareholders of MNTC are PNCC, Leighton Asia Limited (Leighton), and EGIS Projects S.A. (EGIS). Both Leighton Asia and EGIS are heavily involved in toll road development, construction, and operation. A brief profile of each project sponsor follows.

1. First Philippine Infrastructure Development Corporation (FPIDC)

14. FPIDC, which is owned by Benpres and FPHC, is a holding company with core investments in power and tollways, and strategic initiatives in property and manufacturing. For the past 46 years, FPHC has been the leading private sector holding company in the development of the country's utilities and infrastructure. Its power generation subsidiary, First Gen Corporation, is now the largest Filipino independent power producer with a capacity of 1839 megawatts. Its power distribution associate, the Manila Electric Company, has a franchise area producing almost 49% of the country's gross domestic product (GDP), with around 31% produced in Metro Manila alone. Its new tollways subsidiary, Manila North Tollways Corporation, modernized and operates the largest toll road in the country with a capacity of 433 lane-km. The company's other businesses have provided employment and generated much-needed foreign exchange earnings for the country.

2. Leighton Asia Limited

15. Leighton Asia is a subsidiary of the Leighton Group, Australia's largest project development and contracting group with project revenues of \$10 billion. With over 25 years' experience in the region, Leighton Asia is one of the most successful Australian companies in Asia and is now one of Asia's leading construction and mining companies. Its key business areas are civil engineering and infrastructure, building, rail, mining and resources, marine engineering, process engineering, and telecommunications. Leighton Asia secures work in each country by developing a distinctive local identity and cultivating relationships with compatible companies and people in the community. The company has the financial resources and industry expertise to undertake large-scale civil infrastructure projects—projects that are often beyond the financial capacity of the region's smaller construction companies. The company's operations encompass Cambodia; Guam; Hong Kong, China; Republic of Korea; Laos; Macau, China; the Philippines; Taipei, China; Thailand; and Viet Nam. The Leighton Group's total revenue, including joint ventures, in 2006, was up 19% to A\$11.9 billion from A10.0 billion in 2005. Revenue for 2007 is forecast to be about A\$13.5 billion.

3. EGIS Projects S.A. (EGIS)

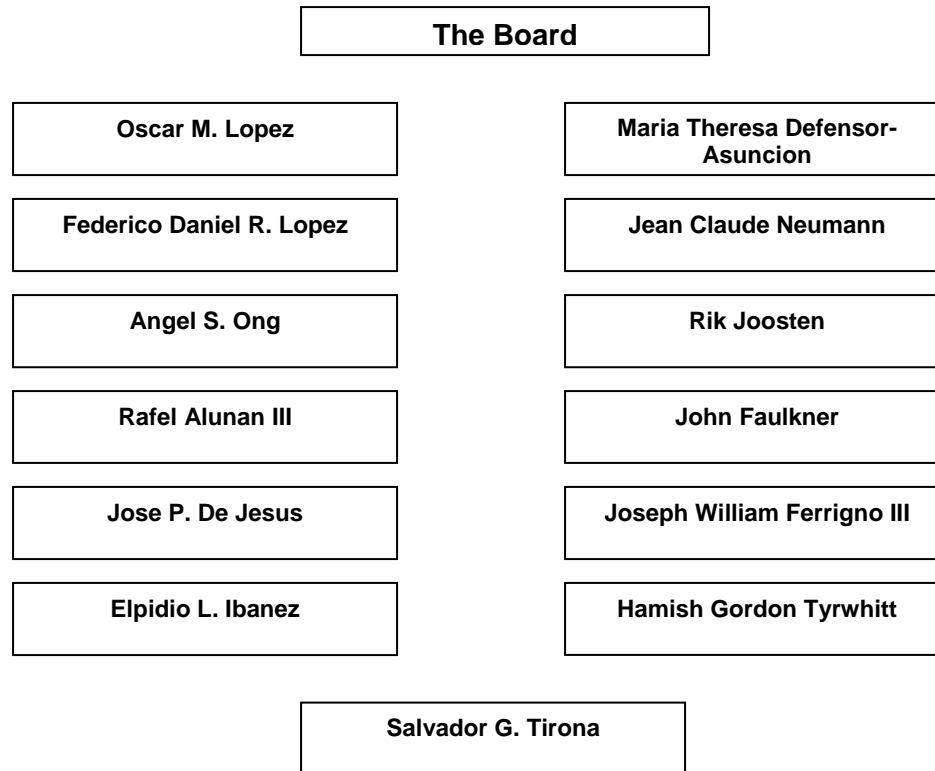
16. EGIS Projects S.A. is the investment and development arm of the EGIS Group, the world's largest toll operator with over 6,000 km in managed tollways and over 40 years of

experience in project sponsorship, design and construction management, O&M, equipment supply, and staff training for toll-road projects.

4. Philippine National Construction Corporation (PNCC)

17. PNCC, a majority-owned by the Government (91.3%), is the largest construction company in the Philippines and in Southeast Asia. It is usually tasked with major construction works, especially in the field of infrastructure. PNCC has extensive operations in the Philippines, and has also been involved in projects and operations in other countries like Hong Kong, China; Indonesia; Iraq; Malaysia; and Saudi Arabia. Established in 1966 by executive order as the Construction and Development Corporation of the Philippines (CDCP), it was granted a 50-year franchise to commission and perform construction works throughout the Philippines. In 1977, Presidential Decree 1113 granted CDCP a 30-year franchise to operate and maintain the various limited-access toll highways in the Philippines. CDCP changed its name to its present name in 1983 after the infusion of additional equity from the Government in 1981. PNCC is now supervised by the Department of Trade and Industry by virtue of Executive Order 331 of 16 July 2004, pending its privatization. Among PNCC's more well-known projects are the San Juanico Bridge, the North and South Luzon Expressways, the Manila Light Rail Transit System, the Manila–Cavite Expressway, and Bay City.

Figure A2.1: Organization of the Board of Directors of the Manila North Tollways Corporation



Source: Manila North Tollways Corporation.

Figure A2.2: General Organization Chart of the Manila North Tollways Corporation

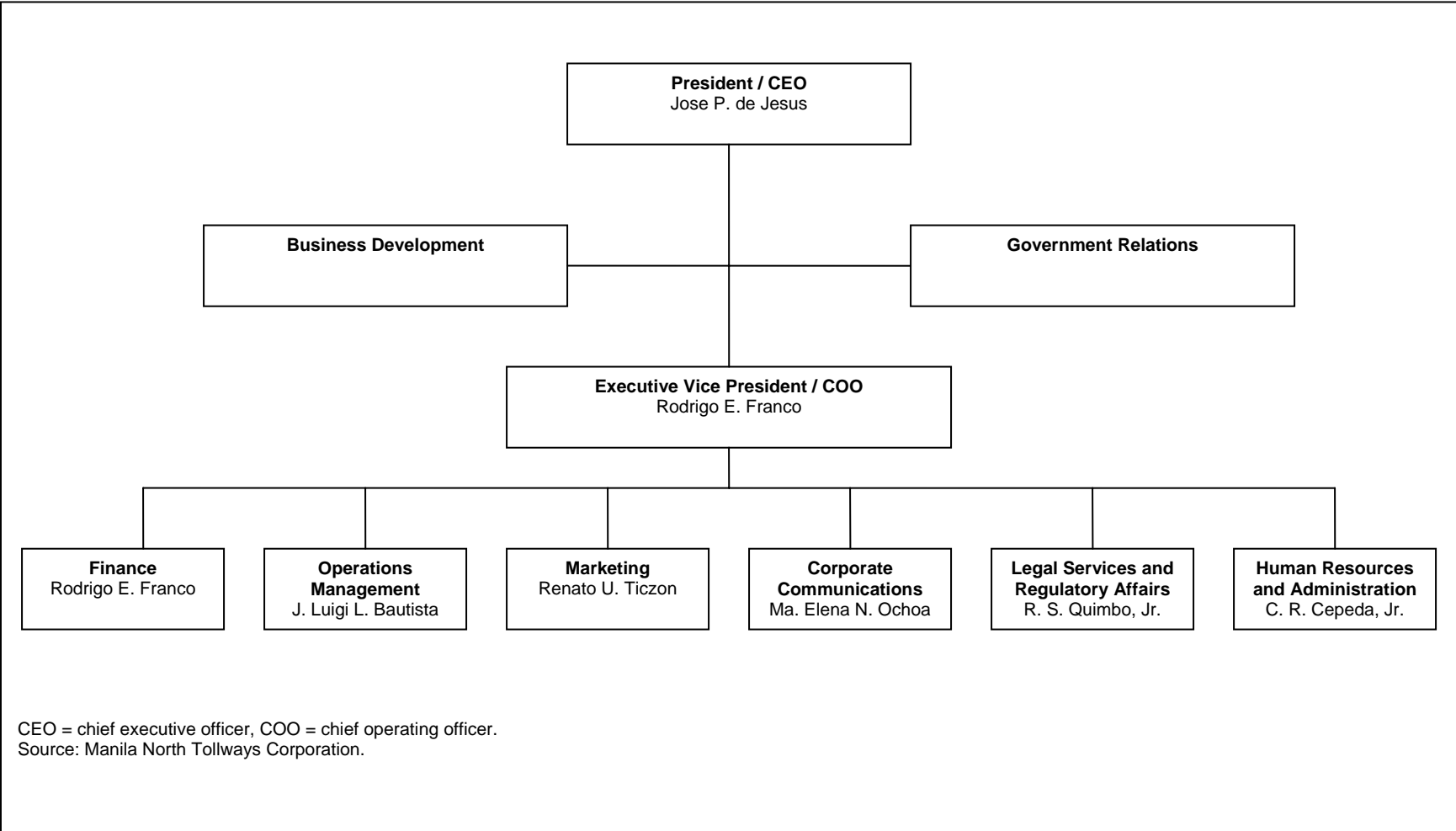
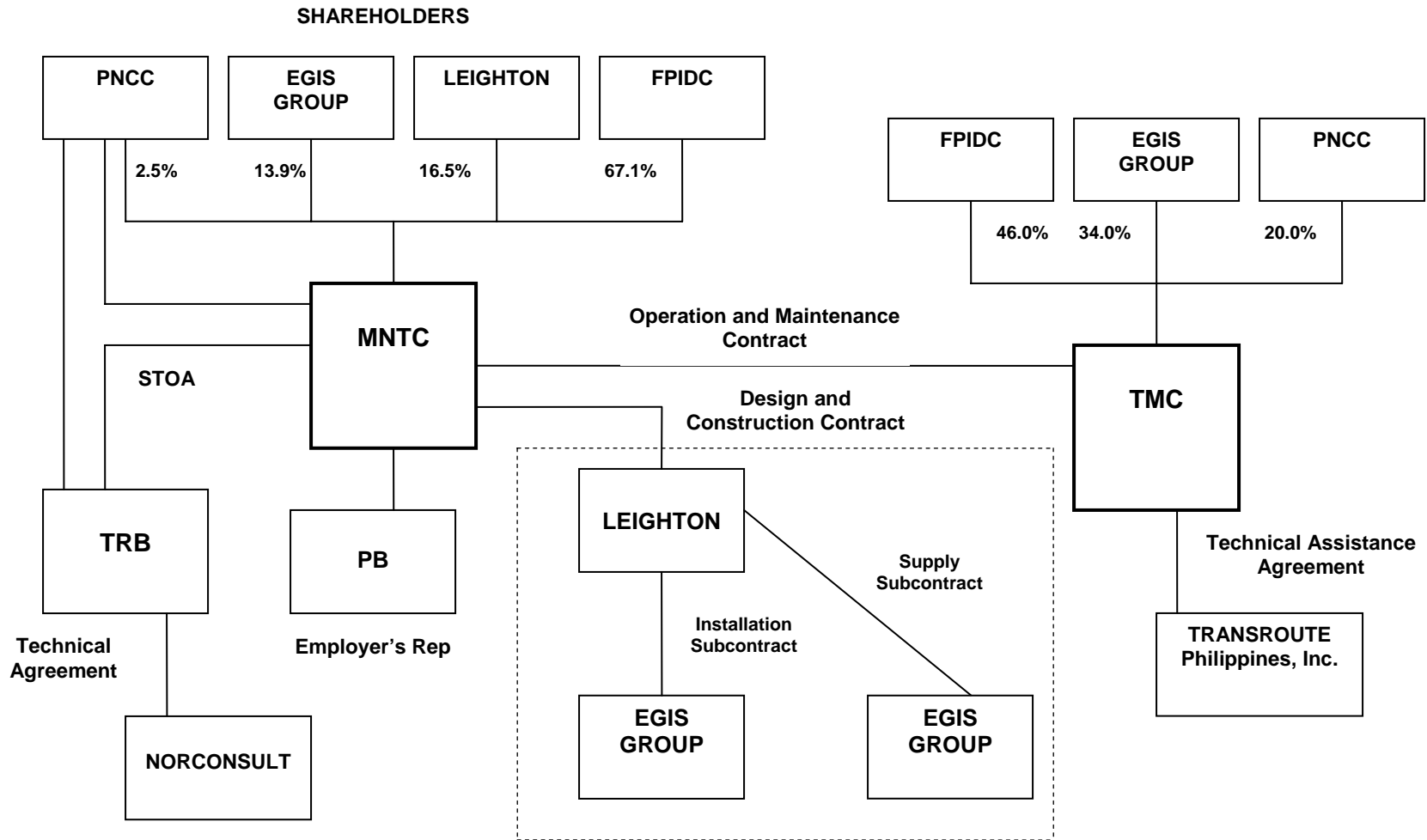


Figure A2.3: North Luzon Expressway Project Structure



EGIS = EGIS Projects S.A., FPIDC = First Philippine Infrastructure Development Corporation, PB = Parsons Brinckerhoff, PNCC = Philippine National Construction Corporation, STOA = supplemental toll operation agreement, TMC = Tollways Management Corporation, TRB = Toll Regulatory Board.
 Source: Manila North Tollways Corporation.

ROAD TRANSPORT SECTOR OF THE PHILIPPINES

A. Overview

1. The Philippines has a total land area of 316,294 square kilometers and a population of about 89.5 million. It has 79 provinces, 113 cities, and 1,496 towns and municipalities. Around 80% of domestic passenger traffic and 60% of freight traffic goes by road. About 75% of government expenditures on transport infrastructure go into the road system.

B. Road Transport Network

2. The Philippines is an archipelago consisting of 7,100 islands. It has a total road length of about 161,000 kilometers (km). National roads provide the main trunk-line system connecting major population centers and linking regions. These roads span about 29,288 km, of which around 13,023 km is made of concrete, 7,525 km asphalt, 8,526 km gravel, 118 km earth, and 96 km other materials. Of the total length of 29,288 km, good roads compose only about 5,629 km, fair roads 8,786 km, poor roads 6,081 km, and bad roads 6,124 km. About 2,672 km of roads have not been assessed.¹

C. The Government's Transport Sector Strategy

3. One of the Government's programs is the development of the national road network. The Government places priority on developing the north-south backbone, east-west laterals, and other strategic roads. To support these objectives, the strategy for the road sector has a six-pronged approach designed to (i) strengthen road maintenance activities to preserve existing investments, (ii) rehabilitate existing roads to restore the road network to an economically maintainable standard, (iii) improve selected roads where the existing pavement is unable to carry present and projected traffic volumes, (iv) replace temporary and weak bridges with permanent structures through a nationwide bridge replacement program, (v) gradually upgrade roads to all-weather standards and selectively extend the network in less-developed areas with low road densities and good development potential, and (vi) focus on low-cost but high-return traffic management measures in urban areas to maximize road capacity and give priority to public transport.

4. The year 2006 saw an increase in Philippine revenue collections, which strengthened the Government's fiscal position and renewed the confidence of investors in the Philippine economy. Thus, the current administration has embarked on a massive infrastructure development program outlined in the Medium-Term Development Plan for 2004-2010.

5. The Department of Public Works and Highways (DPWH) is mandated to provide the needed infrastructure, mainly roads and bridges, that would interconnect the Philippine archipelago and thereby open up new economic opportunities, reduce transportation and transaction costs of business, and increase access to social services. DPWH has constructed, improved, and rehabilitated 6,180.79 km of national roads.

6. In 2007, the Government's focus was on transport infrastructure aimed at providing easier access to markets; enhancing peace and order in conflict-affected regions; strengthening national unity, family bonds and tourism by making the movement of people faster, cheaper,

¹ Available: <http://www.dpwh.gov.ph/infrastructure>. Data as of July 2007.

and safer; and facilitating decongestion of Metro Manila. The total budget allocated for roads projects in 2006 was 50% of the total infrastructure program budget. In 2007, roads accounted for 56% of the infrastructure budget.

PRIVATE SECTOR DEVELOPMENT CHECKLIST: INFRASTRUCTURE
Manila North Tollways Corporation

Impact of the Project	Ratings				Justification/ Notes
	Impact to Date	Potential Future Impact (Sustainability) and Risk to Its Realization		Combined Rating ^a	
	Rating ^b	Rating ^c	Risk ^d		
1. Impact beyond the Company					
1.1. Private sector expansion: A pioneering or high-profile project contributes by facilitating in its own right, or paves the way for, more private participation in the sector and economy at large.	Satisfactory	Satisfactory	Modest	Satisfactory	The project expressway was the first expressway in the country to be rehabilitated, operated, and maintained by a private sector entity in accordance with international standards. The Project had state-of-the-art features, which could be used as a model for the development of infrastructure projects in the country. MNTC was awarded a 30-year concession to rehabilitate, expand, operate, and maintain the North Luzon Expressway. The concession agreement (CA) gave MNTC the right to collect toll fees during the concession period. The CA further allowed MNTC to adjust the toll fees without prior approval from the Government as long as the new rates were within the authorized toll rate formula set forth in the STOA. This flexibility in decision making has paved the way for more private sector participation in road concession projects in the Philippines.
1.2. Competition: Places new pressure on public and other sector players to increase efficiency and improve access and service levels in the industry.	Satisfactory	Satisfactory	Low	Satisfactory	The Project was a well-designed project that successfully addressed capacity constraints that existed during appraisal, and the poor operation and maintenance standards of the old NLEX. With its competitiveness and

Impact of the Project	Ratings				Justification/ Notes
	Impact to Date Rating ^b	Potential Future Impact (Sustainability) and Risk to Its Realization		Combined Rating ^a	
		Rating ^c	Risk ^d		
					successful implementation of the concession agreement, the Project serves as a model for other road projects in the Philippines.
1.3. Innovation: Demonstrates efficient new products and services, in areas such as marketing, distribution, tariffs, production, and technology, and ways to cover or contain cost, manage demand, etc.	Excellent	Excellent	Low	Excellent	MNTC has put in place traffic management schemes and advanced methods to mitigate congestion along the NLEX. These involve the use of (i) ETC for quick, convenient, and cashless transactions; (ii) customer service centers where motorists can inquire about NLEX products and services; (iii) emergency call boxes for motorists requesting assistance in case of breakdowns or accidents; (iv) road safety features, such as reflectorized lane markings, concrete median barriers, and emergency parking areas; (v) traffic surveillance/closed-circuit TV cameras for security and traffic monitoring; (vi) traffic counting stations/weigh-in-motion systems that detect overweight vehicles; (vii) variable-message signs that provide motorists with useful updates on the traffic situation and other helpful information along the highway; and (viii) 24-hour emergency assistance systems, including phone operators, first-aid emergency trucks, tow trucks, and traffic patrol teams.
1.4. Linkages: (Relative to investments) Contribute to notable upstream or downstream linkage effects to business clients,	Excellent	Excellent	Low	Excellent	The NLEX has become a catalyst for growth in the north, where the pace of economic activity was slow in the past decade. With the widened roads,

Impact of the Project	Ratings				Justification/ Notes
	Impact to Date	Potential Future Impact (Sustainability) and Risk to Its Realization		Combined Rating ^a	
	Rating ^b	Rating ^c	Risk ^d		
consumers, suppliers, key industries, etc., in support of growth.					improved tollway system, and better service, traveling to the north through the NLEX has become a pleasant experience. Tourism has flourished and several tourist spots in the north have become popular destinations. ^e Further, the well-maintained road has reduced vehicle operating cost, decreased travel time, and sped up the delivery of goods and services, thereby increasing livelihood opportunities. All these factors have strengthened confidence in the future and made people more willing to invest.
1.5. Catalytic element: Contributes by pioneering or catalyzing finance, and mobilizing or inducing more local or foreign market financing and foreign direct investment in the sector.	Excellent	Excellent	Modest	Excellent	In the late 1990s to early 2000, Philippine banks and financial institutions had little or no experience or appetite for toll-road financing. They were unwilling to provide long-term financing for such risky projects. ADB's lead role in the technical, financial, and legal due diligence of the Project provided comfort and attracted private sector interest. ADB also provided a complementary loan and mobilized commercial financing. The Project's successful operations and successful implementation of the concession agreement have created a catalytic effect for more private sector participation in the sector.
1.6. Affected laws, frameworks, regulation: Contribute to improving laws and sector regulation for PPP, concessions,	Excellent	Excellent	Low	Excellent	MNTC's project framework and legal documentation will be used as basis for future concession arrangements in road projects. In addition, the

Impact of the Project	Ratings				Justification/ Notes
	Impact to Date	Potential Future Impact (Sustainability) and Risk to Its Realization		Combined Rating ^a	
	Rating ^b	Rating ^c	Risk ^d		
joint ventures, and build-own-operate-transfer projects and liberalized markets for improved sector efficiency.					Government passed in 2005 an anti-overloading law, which sets a load limit for cargo trucks and haulers. As a result, traffic volume of class 3 vehicles has been reduced as truckers try to bypass the NLEX. On the other hand, controlling the load of vehicles along NLEX will increase the useful life and quality of the road and pavements.
2. Company Impact with Wider Potential					
2.1. Know-how contribution: Contributes to new strategic, managerial, and operational skills with actual or potential wider replication in the sector and industry.	Excellent	Excellent	Low	Excellent	MNTC is currently managed by key executives with vast experience in the industry. It has a total staff complement of 108. Toll collectors, toll security people, and toll patrols are employed by the Tollways Management Corporation (TMC). TMC has 932 staff. Training before and during operations in the use of the various systems used in operations has been undertaken. Benchmarking and immersion training in the operation and maintenance of other toll roads are being undertaken continuously for improvements.
2.2. Demonstration of new standards: As seen in new ways to operate the business and compete, and in investee performance against relevant best industry benchmarks and standards.	Excellent	Excellent	Low	Excellent	MNTC uses the electronic toll collection system supplied by EGIS Projects, a French company known for its expertise in toll-road operations. The system enables fast and efficient recording of toll revenues and provide readily available audit trails of toll transactions almost in real time. Equally important is the deployment of a central traffic management system,

Impact of the Project	Ratings				
	Impact to Date Rating ^b	Potential Future Impact (Sustainability) and Risk to Its Realization		Combined Rating ^a	Justification/ Notes
		Rating ^c	Risk ^d		
					which electronically records traffic data along the mainline carriageway in the central system. The digital recording of images captured by the various traffic surveillance and plaza cameras are also linked centrally to the traffic management control center. These traffic management schemes are widely used in different tollway operations in many countries.
2.3. Improved governance: As evident in standards for corporate governance, stakeholder relations, environmental health and safety, and energy conservation.	Excellent	Excellent	Medium	Excellent	To operate NLEX within international standards, the EHSMS was developed. MNTC has a structured EMS. The management system is based on the EHS program of the Lopez group of companies, which requires policies and procedures to be within ISO14001 and OHSAS18001 standards. MNTC requires its operator, TRB, to have a security group. Aside from this, traffic and safety programs and enhancements are continuously being implemented, such as the putting up of additional traffic signs and the deployment of lane management teams. MNTC has also embarked on an intensive anti-overloading vehicle campaign (AOVP) to ensure that class 3 vehicles comply with Republic Act (RA) 8794, which imposes a penalty for overloaded trucks. Fixed and moving weigh-site teams were created to monitor compliance.
3. Overall PSD Rating: The ratings are not an arithmetic mean	Excellent	Excellent	Low	Excellent	The overall rating of the Project is excellent. The NLEX is the Philippines'

Impact of the Project	Ratings				
	Impact to Date	Potential Future Impact (Sustainability) and Risk to Its Realization		Combined Rating ^a	Justification/ Notes
	Rating ^b	Rating ^c	Risk ^d		
of the individual indicator ratings, and do not have fixed weights. Actual and potential impact (positive or negative) and the risk to its realization need to be considered.					first expressway to be rehabilitated, operated, and maintained by a private sector entity in accordance with international standards. It is a well-designed project that successfully addressed capacity constraints. It has improved the quality of life by (i) increasing road safety, (ii) shortening travel time, (iii) increasing comfort and convenience, and (iv) lowering vehicle operating costs. Furthermore, the new NLEX contributes to the economic growth and development of the central and northern regions of Luzon, as it brings these areas closer to Metro Manila, the center of commerce and trade.

ADB = Asian Development Bank; EMS = environmental management system; EHSMS = environment, health, and safety management system; ETC = electronic toll collection; ISO = International Organization for Standardization; MNTC = Manila North Tollways Corporation; NLEX = North Luzon Expressway; OHSAS = Occupational Health and Safety Assessment Series; TMC = Tollways Management Corporation.

^a The combined rating should weigh future impact and risk to its sustainable realization.

^b Excellent, satisfactory, partly satisfactory, and unsatisfactory.

^c Rating scale as above.

^d Rating scale: High-, medium-, modest-, or low-risk.

^e (i) Subic Bay Freeport Zone, (ii) Clark Special Economic Zone, (iii) Vigan Heritage Village, Ilocos Sur, (iv) Hundred Islands, Pangasinan, (v) Baguio, Benguet, (vi) Callao Caves, Cagayan Province, (vii) Mt. Samat, Bataan, (viii) Pagudpud, Ilocos Norte, (ix) Banaue Rice Terraces, Ifugao, and (x) Barasoain Church, Bulacan.

Source: Asian Development Bank.

ENVIRONMENT, HEALTH, AND SAFETY AND SOCIOECONOMIC MANAGEMENT PERFORMANCE

A. Construction Phase

1. During construction, the environmental and social issues related to the North Luzon Expressway (NLEX) operations that were taken up were based on the five environmental compliance certificate (ECC) permits that are prerequisites for any construction project in the Philippines. To acquire the ECC permits, the Department of Environment and Natural Resources (DENR) provided a set of standards and policies to ensure that the environmental impact assessment and environmental management and monitoring plan (EMMP) were completed.

2. The following environmental and social issues were addressed during the construction phase:

- (i) **Environmental management.** (a) Air quality – air pollution brought about by the use of construction equipment releasing carbon monoxide and dust particles during construction; (b) water quality – possible contamination of natural waterways with waste materials; (c) noise level – loud sounds produced by moving, rotating, and vibrating construction equipment that may affect nearby communities; (d) flora and fauna – negative effect on plants and aquatic life; (e) land use – inappropriate use and contamination of land with improperly disposed waste materials and toxic chemicals.
- (ii) **Socioeconomic management.** Communities that are affected by the right of-way (ROW) clearing for the rehabilitation of the expressway.
- (iii) **Waste management.** Proper disposal and segregation of solid wastes and possible hazardous waste materials from the construction activity.
- (iv) **Environmental sustainability (tree planting and aesthetics).** Negative effects of removing trees and other plants in preparation for construction.

3. To address the above concerns, the Manila North Tollways Corporation (MNTC) formulated environmental management and monitoring programs.

4. **Environmental Health and Safety (EHS) Policy.** This required compliance with the EMMP, summary initial environmental examination (SIEE), and ECC permit requirements. The specific works conducted for this program were the following:

- (i) **Baseline environmental survey.** This was conducted by a third-party consultant, ECOSYS Corp. This was the initial survey undertaken before construction to inspect and gather information on the surrounding environment that would be directly affected by the construction activity.
- (ii) **Quarterly environmental survey.** In compliance with a DENR requirement, third-party quarterly checking of the environmental parameters stipulated in the ECC permits was conducted. Identified problem areas during the construction activity were observed and rectified in the inspection. Monthly joint inspections with the contractor were carried out to prevent and correct any environmental deficiencies in the project activities.

5. **Environmental Impact Assessment.** An impact assessment followed the gathering of data to summarize the possible negative environmental effects of the construction activity.

Mitigation measures were then developed to address the identified effects and ensure complete environmental compliance.

6. **Risk Assessment.** MNTC and the designated contractor identified construction risks, including risks to the environmental health and safety of the surrounding areas and communities. Hazard analysis and mitigation measures were prepared and carried out to address the issues.

7. **Laws and Technical Standards Checking and Compliance.** Together with its loan compliance, legal, and environmental health and safety (EHS) groups, MNTC identified the requirements of the lenders and various government agencies. These were summarized in a checklist for on-site inspections with the designated contractor. MNTC also collaborated with the DENR and the Department of Labor and Employment (DOLE) to ensure compliance with the requirements for the inspections, tree-cutting permit application, safety checking, and implementation of corrective action plans.

8. To ensure continuous environmental compliance during construction, a quarterly monitoring inspection was carried out the following programs were conducted by the operator's maintenance group and a consultant (ECOSYS Corp.):

- (i) **Air quality sampling and analysis (TSP, NO₂, CO, hydrocarbons).** Various samples were taken in the pre-identified sampling stations outside the tollways boundary. The locations were Sta. Ines, Mabalacat, Pampanga; Tabang, Guiguinto, Balacan; and Balintawak, Quezon City. The samples were then analyzed and the air quality parameters, which included particulate matter (PM₁₀), oxides of nitrogen (NO₂), sulfur oxides (SO₂), lead (Pb), and ozone (O₃), were recorded. Individual samples and reports for each sampling station were then presented.
- (ii) **Hydrology and drainage engineering (rehabilitation of drainage systems such as storm drains, ditches, culverts, etc.).** Hydrology and drainage systems were regularly inspected by MNTC and the contractor, and drainage with clogging, possible insufficiency, or other defects was rehabilitated.
- (iii) **Slope protection and stability (vegetation along slopes, talus materials).** Vegetation on the slope embankments was inspected and monitored to prevent soil erosion. Additional landscaping projects on embankment areas and median sections were also undertaken to increase stability and vegetation.
- (iv) **Aesthetics (maintenance of regenerating forest and designated reforestation area).** Tree planting activities were conducted to replace the trees that were cut as a result of the widening of the road.

B. Operational Phase

9. The main environmental concern for the operational phase of NLEX is ensuring compliance with the various environmental laws. In this regard, monitoring and maintenance of the above environmental issues are the primary activities.

10. A quarterly EMMP is conducted by a third-party consultant to provide a detailed overview of air quality, drainage structures, natural waterways, and vegetation along the NLEX. In addition, a separate EHS group was put together to monitor the NLEX and formulate and execute the various environmental programs.

11. The specific programs that are continuously being implemented to address the environmental issues are the following:

- (i) **Implementation of the EMMP.** This is the continuation of the EMMP of the construction phase, in which operational environmental effects are considered and addressed.
- (ii) **Routine maintenance of vegetation along NLEX.** A routine maintenance program by the NLEX operator will ensure that the surrounding vegetation is well maintained.
- (iii) **Routine maintenance of drainage structures.** Regular cleaning and unclogging works are conducted to prevent flooding and water contamination.
- (iv) **Implementation of landscaping projects.** Landscaping enhances environmental aesthetics and ensures a sustainable habitat for plant and animal life.
- (v) **Tree planting.** This involves participation in DENR programs like the Green Philippine Highways (tree planting). Under a tree planting project 3,000 trees were planted along NLEX.

12. In order to operate NLEX within international standards, the environmental health and safety management system (EHSMS) was developed. The EHSMS is a management tool that provides methodically structured and disciplined control over all environmental effects. The system allows business activities to avoid risks and costly confusion (costs incurred during accidents and other emergencies if no mitigation measures are developed) by incorporating EHS measures into daily operations in a consistent, predictable, and cost-effective manner.

13. MNTC has a structured environmental management system (environmental monitoring and management programs), which serves as a driving force for employees to be concerned not only with production goals but also with the efficient use of resources and the reduction of adverse environmental impact. MNTC is proactive in creating awareness and sensitivity within its organization about how the operation relates to the environment. The management system is based on the EHS program of the Lopez group of companies, which requires that proper policies and procedures be within ISO14001 (Environmental Management) and OHSAS18001 (Safety Management) standards.

14. MNTC requires its operator to have a security group that protects its assets. The security operations also involve the local authorities in special cases for implementation of regulatory requirements.

15. Moreover, traffic and safety programs and enhancements, such as the putting up of additional traffic signs and the deployment of lane and speed management teams, are continuously being implemented.

16. The company has also embarked on an intensive anti-overloading vehicle campaign to ensure that class 3 vehicles comply with Republic Act 8794¹, which imposes a penalty for overloaded trucks. Fixed and moving weigh-site teams were created to monitor compliance.

¹ Under Republic Act 8794, trucks and trailers which is loaded in excess of the maximum gross vehicle weight (GVW) should pay a penalty in the amount equivalent to 25 percent of the motor vehicle users charge applicable to the vehicle at the time of violation, provided that the penalty shall be waived for loading exceeding the GVW by a tolerance of less than five percent.