Indonesia

The telephone Outside Plant Maintenance Center (OPMC) Phase Ⅱ Project

Field survey: August 2003

1. Project Profile and Japan's ODA Loan

Jakarta and Surabaya regions

The Maduin OPMC

1.1 Background

In 1991 Indonesia had one of the lowest telephone density rates at 0.68 per 100 head of population in comparison to other ASEAN countries (Malaysia: 8.87; Thailand 2.32). Moreover, at 29 percent, the call completion rate (CCR), an indicator of the quality of telecommunications services, was also hovering below the levels seen in other ASEAN countries (Malaysia: 46%, Thailand: 40%). The principal reasons for Indonesia's low CCR were: (1) the insufficient transmission capacity between switchboards, (2) deficient traffic management, and (3) the deterioration of subscriber cables, with approximately 70-80 percent of all telecommunications equipment failures occurring on subscriber cables. In consequence, shortening recovery times, reducing the incidence of failure and improving the CCR through upgrading and strengthening the maintenance systems for external equipment (subscriber cables) were perceived to be an urgent task.

This project was the successor to the Telephone Outside Plant Maintenance Center (OPMC) Project that was similarly executed using a Japanese ODA loan (L/A conclusion: December 1990; final disbursement date: December 1995).[1]

1.2 Objectives

In upgrading / strengthening the outside plant facilities maintenance system, the project aimed, *inter alia*, to shorten recovery times, reduce failure rates, and improve the CCR, thereby contributing to improvements in the quality of telecommunications services.

[1] There were 12 OPMCs constructed in 7 cities across the nation (including 5 in Jakarta, 2 in Surabaya, 1 in Medan, Palembang, Makassar, Sumarang, and Denpasar, respectively.)

1.3 Outputs

- Construction of Outside Plant Maintenance Centers (OPMC) (15 locations):
  Banda Aceh, Lhokseumaweh, Pematang Siantar, Padang, Pakanbaru, Jambi, Bandar Lampung, Depok, Bogor, Bandung, Jogyakarta, Solo, Malang, Banjarmasin, and Balikpapan.
- Provision of maintenance equipment and materials (to the 15 locations cited above):
  Measuring devices, work tools, telecommunications equipment (computerized telecommunications systems, wireless equipment, etc.), work vehicles, office equipment (personal computers, copy machines, etc.)

1.4 Borrower / Executing Agency

The Republic of Indonesia / TELKOM Indonesia (P.T. Telekomunikasi Indonesia)

1.5 Outline of Loan Agreement

Loan Amount Loan Disbursed Amount	3,854 million yen 2,451 million yen
Exchange of Notes Loan Agreement	November 1994 November 1994
Terms & Conditions Interest Rate Repayment Date (Grace period) Procurement	 2.6% 30 years (10 years) General untied
Final Disbursement Date	December 2001

2. Results and Evaluation

2.1 Relevance

This project was consistent with the goal of Indonesia's sixth five-year national development plan (REPELITA VI: 1994-1997) "to increase the efficiency and reliability of telecommunications services" and was designed to support the realization of this objective.

At the time of ex-post evaluation of the project, it was consistent with the goal of the country's seventh five-year national plan (PROPENSAS: 2000-2004), i.e. "to develop IT infrastructure and improve telecommunications access", and with the target of the executing agency's long-term business plan (Corporate Strategic Scenario), i.e. "to improve and expand telecommunications services"; both of which are taken to mean that the project has maintained its relevance.

2.2 Efficiency

2.2.1 Outputs

In 1995, the executing agency went through a process of organizational restructuring under which the twelve regional operating units (known as WITEL) were restructured into the seven regional divisions (known as DIVRE) and network divisions of today. This restructuring led to the injection of private-sector resources into all regional divisions with the exclusion of the Jakarta region (DIVRE II) and the East Java region (DIVRE V), and accordingly the project's scope was altered to cover DIVRE II and DIVRE V, i.e. the two regions not targeted by the private sector. As a result, OPMCs were constructed in 13 areas in DIVRE II and DIVRE V where strengthening work was greatly needed.

Table 1: Changes made to project scope

Item	Planned	Actual
OMPC construction	1. Banda Aceh 2. Lhokseumaweh 3. Pematang Siantar 4. Padang 5. Pakanbaru 6. Jambi 7. Bandar Lampung 8. Depok 9. Bogor 10. Bandung 11. Jogyakarta 12. Solo 13. Malang 14. Banjarmasin 15. Balikpapan	[DIVRE II] 1. Depok 2. Cibinong 3. Karawang 4. Legok 5. Ciregon* 6. Serang* 7. Madiun 8. Bogor [DIVRE V] 9. Central Jakarta* 10. West Surabaya* 11. East Surabaya* 12. Malang* 13. Jember*
Provision of maintenance equipment and materials ・Measuring devices ・Work tools ・Telecom equipment ・Work vehicles ・Office equipment	Supplied to the above 15 locations	Supplied to the above 13 locations plus: 1. West Jakarta 2. East Jakarta 3. Bekasi

Source: TELKOM Locations marked with an asterisk were constructed using private funds.

2.2.2 Project Period

Under initial plans, all work was scheduled to take place during a 45 month period spanning November 1994 through July 1998; however, the work in fact took 77 months to complete, with the project period starting in November 1994 and ending in March 2001. The delays were mainly attributed to (1) the time required to completed domestic formalities in Indonesia and make the necessary alterations to the package, and (2) holdups in equipment procurement

procedures due to the social and political disruption (riots in Jakarta, a shift in political power) caused by the Asian Economic Crisis.

2.2.3 Project Costs

Final costs were 4,962 million yen (74.9% of the planned budget), against the initial budget of 6,627 million yen. The main reasons for the cost savings were: (1) the crisis-induced depreciation of the local currency, which exceeded inflation, and (2) competitive bidding, etc, which enabled equipment to be procured efficiently.

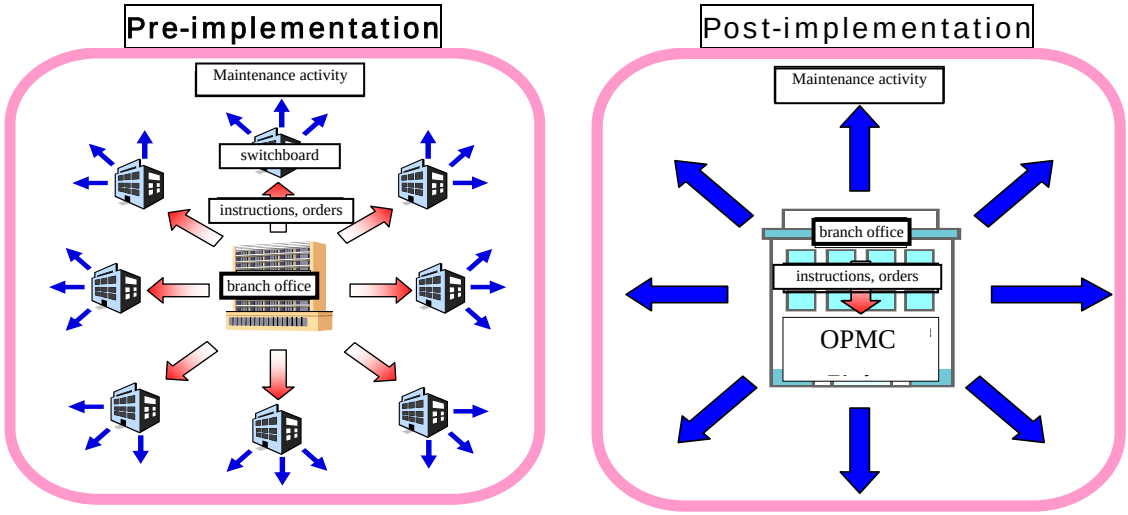
2.3 Effectiveness

2.3.1 Improved Reliability of Telecommunication Services

Figure 1: A vehicle procured via the project

Prior to the implementation of this project, the maintenance workers responsible for external equipment were posted randomly at the various switchboards within the service areas of individual branch offices; however, the construction of OPMC through this project enabled key maintenance personnel to be brought together within purpose-built departments inside the OMPC, making it possible to organize systems under which the work could be managed in a focused and efficient manner and enabling services to be provided flexibly in response to the volume of work. Similarly, since the consolidated management of maintenance equipment also became feasible, working practices became more efficient.

Figure 2: Project-induced increases in the efficiency of maintenance activities: Conceptual diagrams

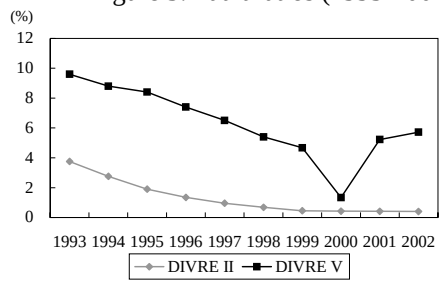


Workers / equipment are scattered: inefficient operations

Workers / equipment are concentrated: efficient operations

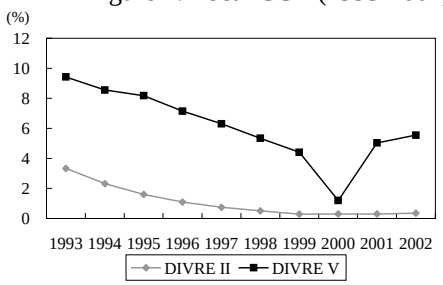
This led to improvements in the fault ratio[2] within both DIVRE II and V. During the pre-implementation period (1993), the fault ratio in DIVRE II was 3.8 percent whilst that in DIVRE V was 9.6 percent; in post-completion (2002), these ratios had dropped to 0.4 percent and 5.7 percent, respectively (see Figure 3). Fault ratios at outside plants[3] also improved dramatically within the same period, with the pre-project ratios of 3.3 percent and 9.4 percent (DIVRE II and V, respectively), falling to 0.4 percent and 5.6 percent, respectively (see Figure 4). Substantial improvements were also made in local CCR, with that in DIVRE II rising from 32.2 percent to 80.0 percent, and that in DIVRE V from 54.0 percent to 79.7 percent during the same period.

Figure 3: Fault ratios (1993-2002)



Source: P.T. TELKOM

Figure 4: Local CCR (1993-2002)



Source: P.T. TELKOM

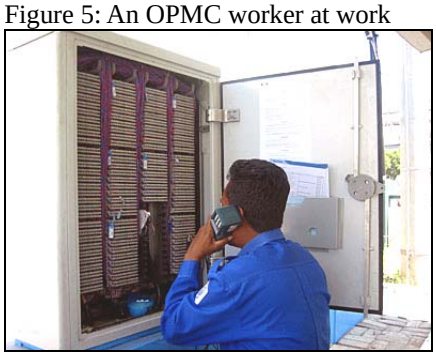
However, a number of other projects were also undertaken in DIVRE II and V during much the same timeframe as this project, including the JBIC funded “Extension and Improvement of Telecommunications Networks in Expanded Jakarta Areas Project (I) (II)” and “Regional Telecommunications Networks in Surabaya and Surrounding Areas Project (I) (II)” and the World Bank funded “Telecommunications Sector Modernization Project”, and the contribution to improvements in the reliability of telecommunications services rendered by these projects is acknowledged. The aforementioned improvements in telecommunications service reliability cannot, accordingly, all be attributed to this project.

[2] Fault Ratio = the number of fault occurrence out of 100 calls made per month

[3] Fault Ratio at Outside Plant = the number which is deduced the number of fault occurring at switchboards from fault ratio

2.3.2 Improved Quality of Customer Services

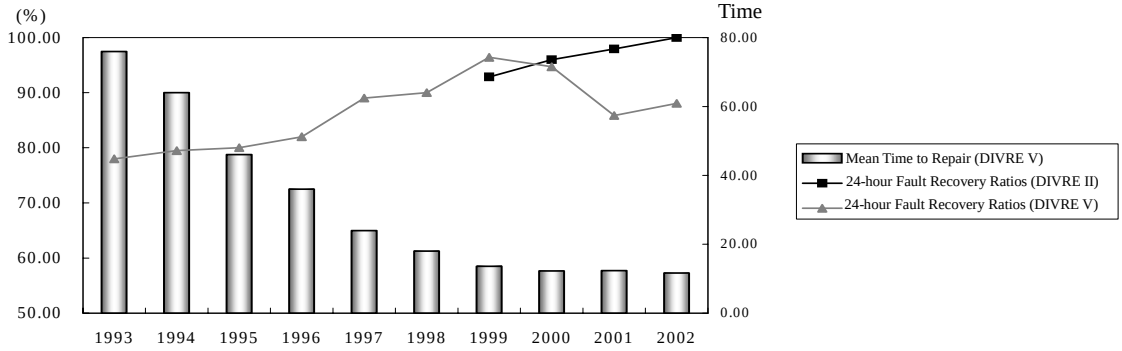
Figure 5: An OPMC worker at work



In much the same way as this project resulted in improvements in service reliability, it also led to sweeping improvements in the quality of customer services. As Figure 6 illustrates, the 24-hour fault recovery ratio[4] improved, and both the mean time to repair [5] and mean time between failures rallied significantly (data are only given for DIVRE II as it was not possible to obtain figures for the DIVRE V region).

A comparison of the 24-hour fault recovery ratio at the pre- and post-project time points (1993 and 2002) reveals that it improved from 78.0 percent to 88.1 percent and also the mean time to repair fell dramatically from its pre-project level of 76.0 hours to 11.7 hours

Figure 6: 24-hour Fault Recovery Ratios / Mean Times to Repair (1993-2002)



Source: P.T. TELKOM

2.3.3 Recalculation of Financial Internal Rate of Return (FIRR)

The FIRR for the project was calculated at 14.3 percent at appraisal. The FIRR was not recalculated during this ex-post evaluation due to the fact that it was not possible to acquire the necessary data for the calculation. However, it can be inferred from the aforementioned improvements that the FIRR is above 14.1% at appraisal.

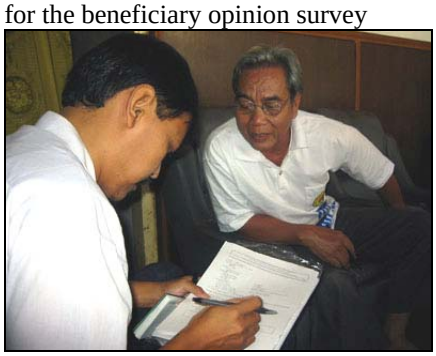
2.4 Impact

2.4.1 Impacts on Local Residents Produced by Improvements in Telecom Services

[4] Fault Recovery Ratio = the ratio to recovery from fault occurrence within a fixed timeframe
[5] Mean Time to Repair = the mean time from fault occurrence to repair completion

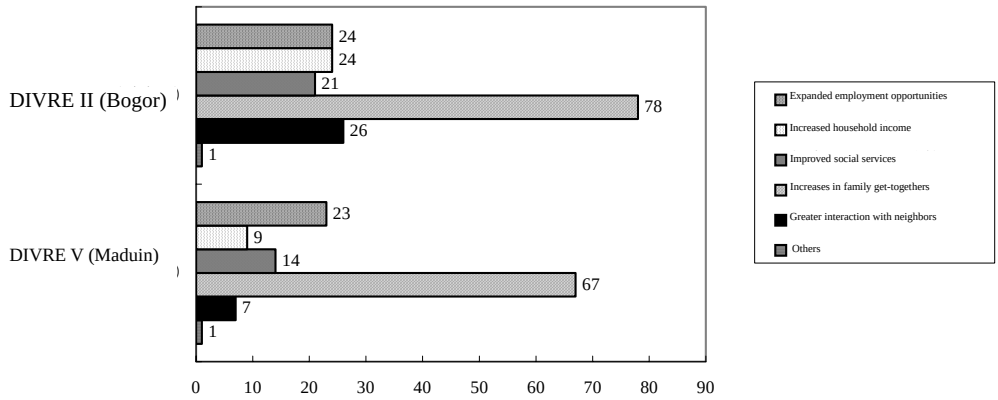
A beneficiary opinion survey was undertaken as part of this ex-post evaluation with the aim of ascertaining the nature of the impacts that the project-induced improvements in service quality had had on local residents. With the help of executing agency employees, two locations covered by the newly constructed OPMC - one each in DIVRE II and V - were selected, and questionnaire-based interviews were conducted with 100 residents in each area[6].

Figure 7: A resident providing answers for the beneficiary opinion survey



More than 70 percent of all respondents in DIVRE II and V stated that they were either "highly satisfied" or "satisfied" with the overall level of current telecommunications services, citing "improved communication with distant relatives" and "links with expanded opportunities for employment" (see Figure 8). Although resident satisfaction with these impacts cannot be solely attributed to this project, it is suggested that the work undertaken to strengthen the maintenance system, via this and other projects, is supporting the generation of positive outcomes.

Figure 8: Impacts on Local Residents (No. of people) (multiple answers possible)



2.4.2 Environmental Impact

According to the executing agency, there have been no reports of any negative impacts on the environment attendant upon the project. No land was newly acquired for implementation.

2.5 Sustainability

Executing Agency

(1) Technical capacity

The employees assigned to perform operation and maintenance work have sufficient technical capabilities and there are no problems in this area. The executing agency provides training for

[6] Interviews were conducted in the control area of Bogor branch in DIVRE II and Madiun branch in DIVRE V.

its operation and maintenance staff through its education and training division with a view to improving their technical skills, and where necessary, workers are dispatched to institutions in Indonesia and overseas for additional training. Moreover, workers who have completed training programs are required to make positive efforts to transfer their skills to others, an effort that is encouraging the sharing of techniques and knowledge within the organization.

(2) Operation and Maintenance System

Figure 9 Maintenance board

The executing agency's Jakarta Regional Office is DIVRE II, while its East Java Regional Office is DIVRE V. Both are responsible for the operation and maintenance of project facilities. Operation and maintenance tasks are conducted on the basis of standard operation procedures (SOP) and standard maintenance procedures (SMP), which have been certified by the International Standards Organization (ISO). The formulation of operational policy and strategy is primarily head office responsibility, whilst each DIVRE is responsible for the operation and maintenance of facilities, equipment planning, the compilation of demand forecasts, marketing activities and so forth.

As of the end of 2002, the executing agency employed a workforce of 34,678, of which 8,433 workers were assigned to DIVRE II and 4,282 to DIVRE V. With the aim of establishing a more efficient operating system, the executing agency is implementing an early retirement scheme, which aims to pension off 7,000 employees between 2002 and 2004 as part of efforts to reduce its workforce.

(3) Financial Status

With the objective of improving its telecommunications services, in 1991, P.T. TELKOM, the executing agency, was transformed from a state-owned public service corporation into a commercially-based government-owned limited liability corporation. As stated earlier, 1995 saw major organization reforms, with the earlier regional operating divisions (WITEL) being reorganized into the seven regional divisions (DIVRE) and network divisions of today, and the injection of private-sector resources into all regions with the exclusion of the Jakarta region (DIVRE II) and the East Java region (DIVRE V). Moreover, in November of the same year the government sold off some of its shares to realize a partial privatization of the company's stock. Under the new organizational structure, the executing agency has subsequently been working to strengthen its business through efforts to expand the scope of its services, improve customer services and improve the health of its finances.

Revenues from its telephone business are central and account for approximately 70 percent of

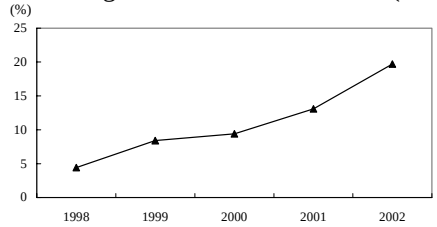
P.T. TELKOM's gross earnings, with the remainder made up of dividends from commercial service providers, revenues from its interconnections, network, data transmission and Internet businesses. As evidenced in Table 2, it has posted growth in operating revenues every year for the past five years, and operating margins and current term profit ratios are fluctuating within a stable range. Its return on assets (ROA)[7] percentages have increased annually, and had reached 19.7 percent in 2002. Meanwhile, although the company's capital adequacy ratio[8] has fluctuated during the past five years, it is moving within a fixed range (see Figures 10 and 11). Based solely on a judgment of the balance of P.T. TELKOM's accounts in recent years, the financial capabilities of the executing agency are favorable, a factor that bodes well for the sustainable development of project effects.

Table 2: TELKOM Profit and Loss Statement (1998-2002) (Rp10b)

	1998	As % or revenue	1999	As % or revenue	2000	As % or revenue	2001	As % or revenue	2002	As % or revenue
Operating income	**7,590**	**100%**	**9,386**	**100%**	**12,112**	**100%**	**16,131**	**100%**	**21,400**	**100%**
Fixed-line business	4,894		6,278		8,068		11,123		14,554	
Dividends from KSO companies	1,592		1,677		2,267		2,220		1,638	
Interconnections business	412		706		981		1,387		3,026	
Network business	354		343		340		415		326	
Data transmissions / Internet business	32		54		108		673		1,572	
Other	306		327		348		312		284	
Operating costs	**4,824**	**64%**	**5,645**	**60%**	**6,434**	**53%**	**8,515**	**53%**	**11,998**	**56%**
Personnel costs	904		1,225		1,610		2,028		4,124	
Fuel costs	2,468		2,627		2,419		2,829		3,504	
O&M costs	726		1,146		1,386		2,150		2,432	
General administrative costs	675		571		872		1,288		1,558	
Business development costs	51		76		147		220		380	
Operating profit	**2,766**	**36%**	**3,741**	**40%**	**5,678**	**47%**	**7,616**	**47%**	**9,402**	**44%**
Non-operating profits / costs	-1,340		-166		-889		-928		2,941	
Pre-tax profits for current term	**1,426**	**19%**	**3,575**	**38%**	**4,789**	**40%**	**6,687**	**41%**	**12,343**	**58%**
Tax	258		1,009		1,466		2,071		2,746	
Special profits / costs	-15		-162		-313		-367		-1,252	
Current term profit	**1,153**	**15%**	**2,404**	**26%**	**3,010**	**25%**	**4,250**	**26%**	**8,345**	**39%**

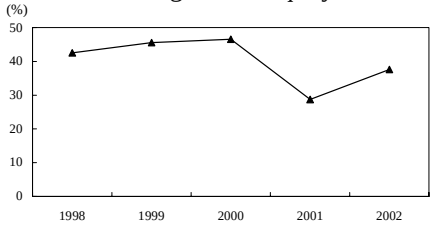
Source: P.T. TELKOM

Figure 10: Return On Assets (ROA)



Source: P.T. TELKOM

Figure 11: Equity ratio



Source: P.T. TELKOM

[7] ROA = profits / gross production (indicates overall profitability)

[8] Capital adequacy ratio = liquid assets / current liabilities (indicates solvency: ability to make payments)

2.5.2 Operation and Maintenance Status

The facilities and equipment procured through this project are all in favorable condition.

3. Feedback

3.1 Lessons Learned

None in particular.

3.2 Recommendations

None in particular.

Comparison of Original and Actual Scope

Item	Planned	Actual
1) Outputs 1. OMPC construction Locations marked with an asterisk were constructed using private funds	1. Banda Aceh 2. Lhokseumaweh 3. Pematang Siantar 4. Padang 5. Pakanbaru 6. Jambi 7. Bandar Lampung 8. Depok 9. Bogor 10. Bandung 11. Jogyarkta 12. Solo 13. Malang 14. Banjarmasin 15. Balikpapan	[DIVRE II] 1. Depok 2. Cibinong 3. Karawang 4. Legok 5. Ciregon* 6. Serang* 7. Madiun 8. Bogor [DIVRE V] 9. Central Jakarta 10. West Surabaya* 11. East Surabaya* 12. Malang* 13. Jember*
2. Maintenance materials and equipment provision	Supplied to the 15 locations above	Supplied to the 13 locations above plus: 1. West Jakarta 2. East Jakarta 3. Bekasi
2) Project period 1. L/A conclusion 2. Consultant selection 3. Consulting services 4. Tender / contract (construction work) 5. OPMC construction 6. Tender / contract (materials & equipment) 7. Manufacture 8. Installation, training, handover tests	 November1994 July 1994 - June 1995 June 1995 - July 1998 October 1995 - December 1996 January 1997 - December 1997 October 1995 - December 1996 January 1997 - December 1997 January 1998 - July 1998	 November 1994 November 1994 - May 1995 July 1995 - April 2001 August 1996 - May 2000 November 1996 - December 2000 October 1995 - December 1996 October 1996 - October 1997 December 1998 - March 2001
3) Project costs Foreign currency Local currency Total ODA loan portion Exchange rate	 1,969 million yen 4,658 million yen 6,627 million yen (3,854 million yen) 1 rupee = 0.050 yen (April 1994)	 639 million yen 4,323 million yen 4,962 million yen (2,449 million yen) 1 rupee = 0.018 yen (weighted average during the project implementation phase)

Third Party Evaluator's Opinion on
The Telephone Outside Plant Maintenance Center Phase (2)

Dr. Pande Radja SILALAHI
Commissioner
Commission for The Supervision of
Business Competition Republic of Indonesia

Scope of the Project:

1. Construction of Outside Plant Maintenance Centers (OPMC) in 15 locations;
2. Provision of maintenance equipment and materials to the 15 locations of OPMC

Loan Amount / Disbursed Amount: 3,854 million yen / 2,451 million yen
Implementation Schedule : November 1994 to March 2001
Field Survey : August 2003

The Relevance

Construction of Outside Plant Maintenance Centers (OPMC) in several location in Indonesia and provision of maintenance equipment and materials of these plants has very high relevance. This project contribute to the improvement of the quality of telecommunications services through shorten recovery times, reduces failure rates and improve the call completion rate (CRR). This project consistent with the goal of Indonesia's sixth five-year national development plan: REPELITA VI (1994-1997) to "increase the efficiency and reliability of telecommunications services", and coinciding with the goal of the national development plan: PROPENAS (2000-2004) to "develop IT infrastructure and improve telecommunications access" and the goal of the executing agency's long-term business plan to "improve and upgrade telecommunications services".

Efficiency

The report did not explain whether or not the project was cost efficient. Instead the report mentioned that the actual cost was much lower than the estimate at the time of appraisal (about 25.1%). The cost under-run resulted mainly from depreciation of the local currency (Rupiah), which exceeded inflation, and competitive binding which enabled equipment to be procured efficiently. Lastly, it is possible that the cost reduction resulted from the change in number or location of the project (changes in the project scope).

The report pointed out that the project was completed 22 months behind the schedule because of (1) the time required to complete domestic formalities and to make the necessary alterations to the package, and (2) holdups in equipment procurement procedures due to the social and political disruption.

Effectiveness

Construction (OPMC) and provision of maintenance equipment and materials of these plants has Improve reliability and quality of telecom services. As pointed out by this report the Fault ratios, Ratio of breakdown derived from outside facilities and Local CRR have been improved in Jakarta and East Java. Furthermore, fault recovery ratio and Mean time to repair also improved. However, Not all improvements in service reliability were brought about by this project since several other telecom sector projects were implemented during much the same timeframe, and no data were available on improvements in customer service quality in the East Java region.

The report states that the FIRR of the project was calculated at 14.3% at appraisal. However, the FIRR was not recalculated during ex-post evaluation. Since the FIRR may be seen as indication of the effectiveness of the project to recalculated FIRR in local currency by using appropriate interest rate still needed in making proper and accurate evaluation of this project.

Impact

The report pointed out that this project had positive impacts on local economic activities, and non-quantifiable positive socio-economic impacts on the regions. More than 70% of interviewees in

Jakarta and East Java (100 in each area) stated that they were either “highly satisfied” or “satisfied” with telecom service content, with many pointing out that “communication has improved with distant relatives” and “it has led to expanded job opportunities”.

Sustainability

On the sustainability, the report considers three factors, i.e., Technical capacity, Operation and Maintenance System, and Financial status. The report points out that the employees assigned to perform operation and maintenance work have sufficient technical capabilities and there are no problem in this area. Furthermore under new organizational structure, the executing agency has subsequently been working to strengthen its business through effort to expand the scope of its services, improve customer services and improve the health of it finances.