

Indonesia

Rehabilitation of Diesel Railcars Project, Diesel Railcar Rehabilitation Project

Report Date: March 2001

Field Survey: September 2000

1. Project Profile and Japan's ODA Loan



Project Area
(Railways centering around Java Island)



Inside the Diesel Railcar

(1) Background

Since the late 1970's, Indonesia revalued the importance of rail transport especially for the capital Jakarta and its surrounding areas and began positively investing in its railway sector due to the obvious road congestion problems. The procurement of diesel railcars was one aspect of this investment. Starting with the procurement of 24 railcars in 1976, the number had reached 164 by 1987. However, shortages of spare parts due to lack of budget and insufficient skill for inspecting and repairing the railcars etc made the condition of the railcars deteriorated and hindered railway operations. The rehabilitation of these diesel railcars has become a pressing matter from the standpoints of meeting the growing demand for railway transport and maintaining efficient railway operations.

(2) Objectives

This project was divided into two stages: the fiscal 1988 "Rehabilitation of Diesel Railcars Project" (hereinafter referred to as Phase I) and the fiscal 1996 "Diesel Railcar Rehabilitation Project" (hereinafter referred to as Phase II). The Phase I was aimed to bolster the rail transport capacity for the Jabotabek Area and other major cities by rehabilitating diesel railcars obtained before 1987. This was accomplished by procuring the maintenance parts for 108 railcars and by conducting repairs on 96 of these railcars (excluding 12 out of 108 railcars that were rehabilitated by a team of dispatched JICA experts). Phase II Project continued with the rehabilitation of the diesel railcars while making efficient use of the spare parts purchased under Phase I.

(3) Project Scope

The project scope for both Phase I and Phase II covered (1) parts procurement, (2) railcar rehabilitation and (3) consulting services.

Japan’s ODA loan covered the entire portion of purchasing spare parts and the consulting services for both Phase I and II (as well as the costs related to carrying out the rehabilitation operations in Phase I).

Figure 1 Java Island Railway Map



(4) Borrower/Executing Agency

Republic of Indonesia / Directorate General of Land Communication, Ministry of Communication

(5) Outline of Loan Agreement

Loan Amount/ Loan Disbursed Amount	Phase I:	¥4,819 million / ¥4,477 million
	Phase II:	¥1,112 million / ¥971 million
	Total:	¥5,931 million / ¥5,448 million
Exchange of Notes/ Loan Agreement	Phase I:	April 1988 / July 1988
	Phase II:	December 1996 / December 1996
Terms and Conditions	Phase I:	Interest rate: 3.0% Repayment period: 30 years (10 years for grace period) General Untied
	Phase II:	Interest rate: 2.7% (2.3% for consultant portion) Repayment period: 30 years (10 years for grace period) General Untied
Final Disbursement Date	Phase I:	February 1999
	Phase II:	March 1999

2. Results and Evaluation

(1) Relevance

Many sections of the railway system in Indonesia are not electrified, and thus diesel railcars are mainly responsible for handling the nation’s passenger and freight transport. Since 1976 Japan has been successively supplying Indonesia with diesel railcars through ODA loans. Strengthening Indonesia’s railway transport capacity through the rehabilitation and effective use of these railcars continues to be maintained as a relevant purpose for the project.

Plans were to rehabilitate 96 railcars, but this number was reduced to 64 railcars. This is because 32 railcars

were removed from the project scope due to deterioration and damage to these railcars that occurred during the delays in working out the contract with consultants by the Indonesia side. Rehabilitation of the 64 railcars was completed after implementing Phase II.

(2) Efficiency

The Directorate General of Land Communication was the executing agency for this project and the actual rehabilitation was performed by Indonesian Railway Public Corporation (Perum KA: current Indonesian Railway Company PT. KAI). As mentioned above, the internal working process of the contracts with consultants for Phase I required more time than was expected and an additional budgetary measure was needed in order to complete the planned repairs, resulting in the implementation of Phase II. Changes in the project scope during the procurement stage brought about delays in the implementation schedule. As a result, the implementation of Phase I was extended some six years beyond the original schedule, and it is hard to say that the project was implemented in an effective manner.

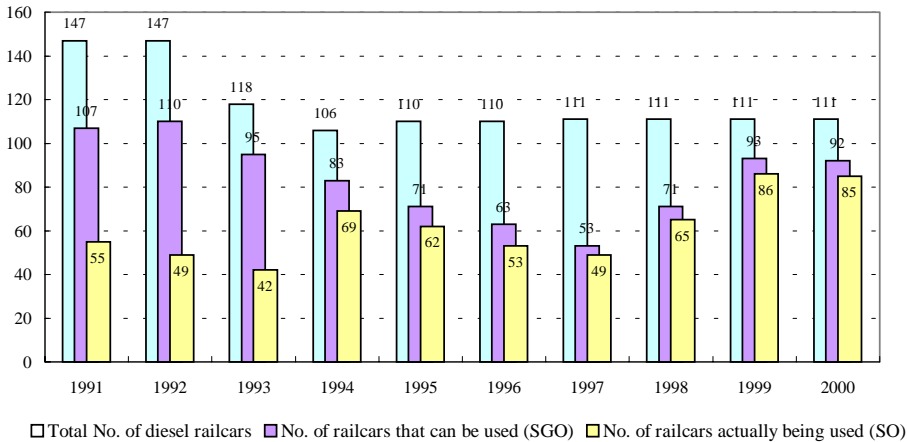
(3) Effectiveness

1) Quantitative Effects

<Working condition of Rehabilitated Railcars>

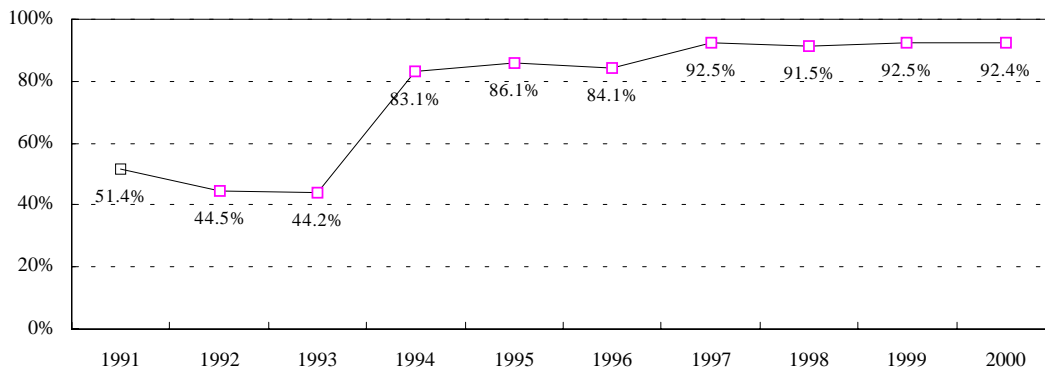
Figure 2 shows the condition of all of the diesel railcars in Indonesia, including the 64 railcars repaired by this project and the 12 railcars rehabilitated between September 1987 and December 1988 by the 22 JICA experts that provided instruction and needed equipment. In early 1990s only around one-third of the 150 railcars were in operation. Railcars repaired by this project began to be gradually put back into service from the middle of 1995 and in 1998, and a total of 40 railcars were put back into service at one time. Therefore, from 1998 the number of railcars "In Operation", or SO¹, has been substantive as shown in Figure 2. Currently, more than 90 of the total of 111 railcars are deemed as being "Ready for Use", or SGO². The actual number of "In Operation" (SO) railcars has topped 85. The operating ratio (SO/SGO) for the past four years has been maintained at a very high level of more than 90% (see Fig. 3).

Figure2 No. of Diesel Railcars in Indonesia (by utilization conditions)



¹ SO is derived from the Indonesian word Siap Operasi, which in English means "In Operation".
² SGO is derived from the Indonesian word Siap Guna Operasi, which in English means "Ready for Use".

Figure 3 Diesel Railcar Operating Ratio (SO/SGO)



This improvement in the number of railcars in operation and the operating ratio demonstrates that the implementation of this project has helped Indonesia to rehabilitate its diesel railcars, which has led to the recovery and maintenance of more efficient railway operations.

<Improved Transport Capacity>

Table 1 shows the annual redistribution of the rehabilitated diesel railcars. Between 1995 and 1997 the railcars were mainly redistributed in the East Java region and in 1998 the railcars were distributed to some other regions including Central and East Java regions.

Table 1 Redistribution of Railcars Rehabilitated by this Project

Location \ Year	1995	1996	1997	1998	Total
No.1 Regional Division: Jakarta	8	4	-	8	20
No.2 Regional Division: Bandung	-	4	8	12	24
No.8 Regional Division: Surabaya	-	-	-	8	8
No.6 Regional Division: Jogjakarta	-	-	-	6	6
No.5 Regional Division: Semarang	-	-	-	6	6
Annual Total	8	8	8	40	64
Overall Total	8	16	24	64	

PT. KAI material

Table 2 Changes in the Number of Railway Passengers

	1995	1996	1997	1998	1999
Jabotabek and its Environs	85.4	100.6	105.1	107.9	117.7
	-	17.9%	4.4%	2.7%	9.1%
Other Cities and their Environs	24.7	23.5	23.8	28.9	30.9
	-	5.0%	1.2%	21.3%	7.1%
Inter-city Railways (wide area)	31.2	30.1	30.7	32.8	38.7
	-	3.4%	2.0%	6.9%	17.8%
Total No. of Passengers	141.3	154.2	159.6	169.6	187.3
	-	9.2%	3.5%	6.3%	10.4%

The upper figures denote the annual number of passengers (unit: one million people), while the lower figures indicate the growth rates for previous year.

PT. KAI material

According to PT. KAI, the railcars rehabilitated by this project have been mainly used in the railway sections around major cities that are not electrified in order to provide passenger transport services. These railcars are also being used to provide passenger service to the "Other Cities and their Environs" within PT. KAI's area of rail passenger service. Table 2 shows the annual number of passengers for each passenger service sector. In 1996 the number of passengers for the "Other Cities and their Environs" decreased from the previous year, but then increased slightly in 1997 and jumped more than 20% in 1998. This can be explained by the fact that the rehabilitated railcars were gradually being redistributed from the second half of 1995 and then in 1998 when a total of 40 of the 64 trains were redistributed and used all at once. This shows how the project helped to improve passenger transport capacity, especially in the "Other Cities and their Environs" by rehabilitating the diesel railcars.

<Increased Revenues from Passenger Services>

Table 3 shows changes in passenger revenues for PT. KAI. This table shows how the improvement to PT. KAI's ability to transport passengers resulted in increased passenger revenues. As mentioned above, using some of the rehabilitated railcars for passenger service in "Other Cities and their Environs" led to an increase in the number of passengers and a sharp increase in passenger revenues, especially between 1997 and 1998. In the same manner as with the Jabotabek region, this sharp rise for "Other Cities and their Environs" demonstrates the positive result from the large amount of rehabilitated railcars that were reintroduced during this period.

Table 3 Transition of Revenues from Passenger Services

	1995	1996	1997	1998	1999
Jabotabek and its Environs	259 -	372 43.8%	433 16.4%	470 8.6%	541 14.9%
Other Cities and their Environs	104 -	117 12.6%	131 12.1%	173 32.0%	198 14.6%
Inter-city Railways (wide area)	3,062 -	3,829 25.0%	4,426 15.6%	6,073 37.2%	8,231 35.5%
Total No. of Passengers	3,424 -	4,318 26.1%	4,990 15.6%	6,716 34.6%	8,969 33.6%

The upper figures denote the annual revenues from passenger services (unit: 100 million rupees), while the lower figures indicate the growth rates for previous year.
PT. KAI material

<Improved Railcar Comfort and Safety>

The railcars rehabilitated by this project helped to raise the level of passenger comfort and safety by improving the opening and closing of doors, the operation of fans within the railcars and toilet functions. Previously there had been problems with doors that would not completely shut while the railcar was in motion. This resulted in some passengers being pushed out of the railcars during the crowded rush hours, in some cases resulting in the passenger's death. By repairing the railcars to make these doors securely shut, this project has contributed to improved safety by helping to reduce the likelihood of passengers falling from the trains.

<Improved Traffic Convenience>

This project played a major role in improving public transportation for the major cities on Java Island such as Jakarta, Semarang and Surabaya. For example, although the diesel railcars used to be in service, passenger service in the Surabaya region (71km section between Surabaya-Kota and Jombang) was interrupted due to the poor state of the diesel railcars. Up until the rehabilitated railcars were introduced by

this project, the traveling time between above sections took up to 3 hours including bus transfers. However, the time needed to make this trip was reduced to only 2 hours when the diesel railcar service was restarted.

<Improved Regional Technologies>

Maintenance manuals (in English and Indonesian) were produced through the consulting services provided by this project and instruction was provided on how to inspect and maintain the railcars. These and other steps helped to greatly improve the knowledge and expertise of the technical staff at the executing agency and PT. KAI in regards to rehabilitating the railcars.

(4) Impact

1) Environmental Impact

This rehabilitation project was conducted at a railcar maintenance plant, and no particular negative impacts were placed on the environment.

2) Social Impact

This project did not require the acquisition of land, and there were no resulting social problems such as the relocation of residents.

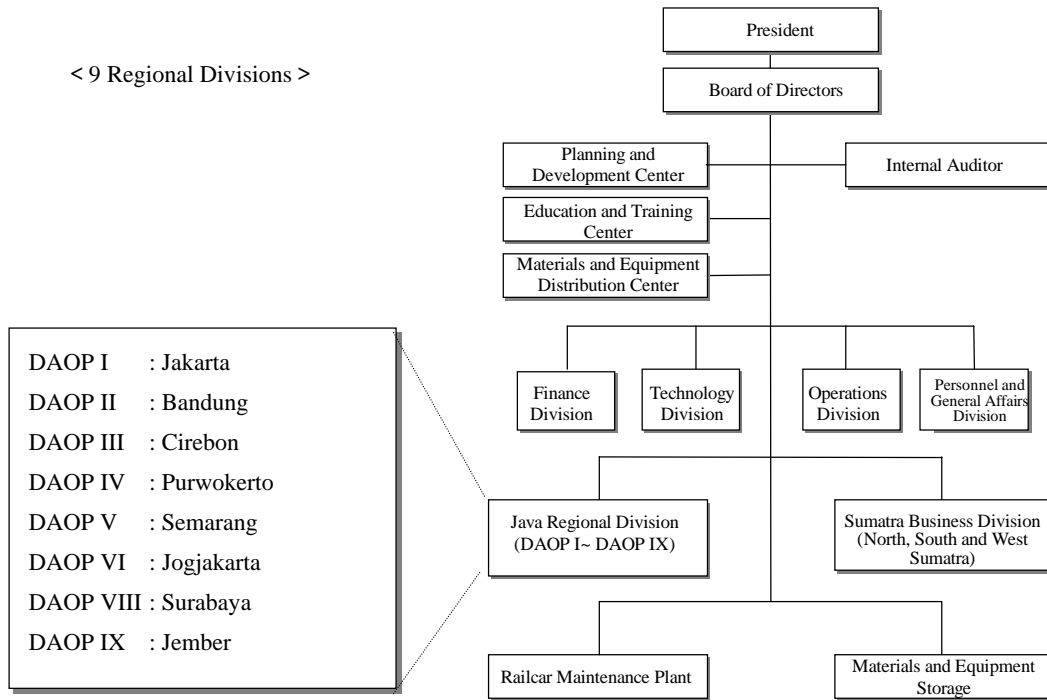
(5) Sustainability

1) Operation and Maintenance

Maintenance of the railcars after rehabilitation was entrusted to the PT. KAI regional divisions (hereinafter referred to as DAOP) (see Figure 4). Specifically, the Railcar Section^{Note} has served as the maintenance organization and has been responsible for daily inspections and periodical inspections of every few months at auxiliary railcar storehouses. Major overhauls every few years and large unscheduled repairs are conducted at the railcar repair yard (Balai Yasa) under the direct management of PT. KAI in Jogjakarta. This railcar repair yard said that it has so far overhauled nine out of 64 railcars rehabilitated by this project.

^{Note} The regional division (DAOP) consists of the following six sections: Signals and Communications, Train Operations, Railways and Bridges, Railcars, Business Operations and Employment / Health.

Figure 4 Organization Chart of Indonesian Railway Company (PT. KAI)



2) Maintenance Status

Table 4 shows the 2000 Railcar Maintenance Plan for DAOP VIII in Surabaya. Eight of the railcars rehabilitated by this project were distributed to this DAOP and plans call for one-, two-, three- and six-month inspections, as well as an annual (12-month) inspection.

According to the Railcar Section of this DAOP, the terms "one-month inspection" and "two-month inspection" do not refer to the timeframe in which the inspections must be conducted, but rather the contents of the inspection. In other words, one-month inspections do not have to be conducted every month and two-month inspections do not need to be carried out once every two months. Maintenance is conducted by combining the one-, two-, three- and six-month inspections in accordance with the condition of the railcar. In this manner a maintenance plan is created giving proper consideration to the contents and frequency of the inspections. The 12-month inspection (one-year inspection) cannot be handled by the DAOP because it does not have the needed number of inspecting staff, the skill level, and equipment and materials. Therefore, these inspections are entrusted to the previously mentioned railcar maintenance yard (Balai Yasa), which is under the direct control of PT. KAI.

Table 4 2000 Railcar Maintenance Plan for DAOP VIII in Surabaya

Railcar No.	Monthly Schedule												Maintenance Frequency by Railcar Type				
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	P1	P2	P3	P6	P12
KD3 82244	P1	P2		P3	P1		P2		P6		P1	P2	3	3	1	1	-
KD3 82255	P1		P2	P3	P1		P2		P6	P1		P2	3	3	1	1	-
KD3 82208	P2		P12	P1		P2	P3	P1		P2		P6	2	3	1	1	1
KD3 81214	P1	P2	P3		P1	P2			P6	P1	P2		3	3	1	1	-
KD3 82257		P3	P1		P2		P6	P1		P2	P3		2	2	2	1	-
KD3 82210	P2	P3		P1	P2		P6		P1	P2		P3	2	3	2	1	-
KD3 82207	P3		P1	P2		P6		P1	P2	P3		P1	3	2	2	1	-
KD3 82288	P2	P3		P1	P2		P6	P1		P2	P3		2	3	2	1	-
													20	22	12	8	1

P1 refers to a one-month inspection, P2 a two-month inspection, P3 a three-month inspection, P6 a six-month inspection and P12 a one-year inspection. These figures were provided by DAOP Surabaya.

According to this DAOP, all of the other DAOPs make similar maintenance plans, which are submitted to the PT. KAI headquarters. The headquarters then allots the maintenance budget so that these plans can be carried out. The 2000 maintenance operations for DAOP VIII were as of the end of August proceeding smoothly in accordance with this plan with no particular problems involving any of the railcars.

3) Sustainability of Impact

The diesel railcars rehabilitated by this project have for the most part been adequately maintained up until this point, which has allowed these railcars to make a big contribution in improving railway transport capacity for the major cities while improving passenger service. The following provides a general overview of the current situation of the maintenance body after privatization, as well as considerations for maintaining project effects by understanding the current financial situation.

<Conditions after Privatization>

In 1999 the former Perum KA (Indonesia Railway Public Corporation) was converted into a private company, the current PT. KAI, with the government holding 100% of the shares. Under this new form, the central government (Ministry of Communication) has been responsible for the construction of the needed infrastructure, while the private organization PT. KAI is entrusted with operations and maintenance. This is the so-called "top-bottom" separation method (fixed assets such as land, tracks and station buildings are owned by the government, while movable assets such as railcars are handed over to PT. KAI, and track maintenance, station operation, operational services etc. are entrusted). In this manner the roles are separated so that PT. KAI can focus on improving the quality of rail service and raising profits, while the government can focus on effectively and efficiently preparing infrastructure from the viewpoint of regional development.

The fare system, which is supervised and controlled by the Directorate General of Land Communication (DGLC), is divided into three classes: economy class, business class and VIP class. Economy class fares are set directly by the DGLC from the viewpoint of public responsibility. Fares for the other classes are set by the operator, PT. KAI, from the viewpoint of earning profits. However, these fares must be approved by the DGLC in accordance with the 1992 Railway Law. The diesel railcars rehabilitated by this project have been used for economy class (3rd class) service primarily for cities and their surrounding areas. As

mentioned earlier, the government regulates economy class fares and the operation of these services does not directly raise profits for PT. KAI. However, PT. KAI is afforded some freedom in setting fares for the business and VIP classes, and thus PT.KAI has been working to secure overall profit by conducting management in such a manner as to use profits gained from these two classes to cover the operation and maintenance of the economy class service.

<Financial State of Operation and Maintenance Organization>

Table 5 shows the financial condition of PT. KAI, which is responsible for operation and maintenance. These results are for 1999, the first year after privatization, as well as the previous two years. Roughly 70% of the operating income comes from passenger fares. According to the executing agency, roughly 80% of the income from passenger fares comes from the business and VIP classes, which are used by only 20% of the passengers. Furthermore, the economy class fares as above are restricted by the government from the viewpoint of public responsibility and fixed government subsidies are provided each year in return. If government subsidies were not provided in 1997 and 1998 just before privatization, earnings would have worsened and PT.KAI would have had a current account deficit.

On the other hand, during the first year of privatization the government cut its subsidies by 60% from the previous year, but PT.KAI still managed to turn a profit. This was the result of reductions in administrative costs and other rationalization efforts.

Table 5 Financial Conditions (unit: one million rupees)

	Before Privatization		After Privatization
	1997	1998	1999
Operating Income	726,359	937,976	725,189
Operational Service Revenue : Passenger	498,981	671,560	562,874
Operational Service Revenue : Cargo	200,573	217,453	162,315
Ancillary Revenue	23,425	40,413	n.a.
Other	3,381	8,550	1,601
Government Subsidies	31,500	31,500	18,375
Overall Income	757,859	969,476	745,165
Operating Expenses	557,128	787,244	555,471
Overall Operating Profit	200,731	182,233	189,693
General Administrative Expense	235,847	246,161	187,526
Operating Profit	-35,116	-63,928	2,168
Non-operating Profit and Loss	65,486	101,777	28,497
Ordinary Profit	30,370	37,848	30,665
Special Profit and Loss	-1,869	-8,712	446
Earning Before Tax	28,501	29,137	31,111
Accrued Income Taxes	0	8,732	3,532
After-tax Profit	28,501	20,404	27,579

*From the 1998 Annual Report and PT. KAI accounting documents

Table 6 shows the main financial indicators for PT. KAI from 1995 to 1999. The net profit margin for the term, which is a good indication of overall profitability, improved from 2.18% in the year before privatization to 3.7% for the first year of privatization. The asset turnover ratio, which indicates how efficiently assets are being handled, has been in an upward trend since 1996 and has settled at around 0.4x in recent years. The two liquidity indicators, which indicate a company's financial solvency, are both very

high.

Table 6 Main Financial Indicators

	Before Privatization				After Privatization
	1995	1996	1997	1998	1999
Net Profit Margin for the Term (%)	1.76	2.53	3.76	2.18	3.70
Asset Turnover Ratio	0.32x	0.12x	0.35x	0.40x	0.40x
Liquidity (%)					
Liquid Ratio	672	801	440	888	554
Quick Ratio	387	484	328	591	307

*From the 1998 Annual Report and PT. KAI accounting documents

Before PT. KAI was privatized, though with subsidies from the government, it was able to obtain a certain degree of profitability and stability as a business entity. There have been some indications that the rationalization of operations brought about by the privatization has bolstered profitability. The budget needed for maintaining the target railcars has been provided on a comparatively stable basis and there are no particular financial concerns.

3. Lessons Learned

None.

Comparison of Original and Actual Scope

Item	Plan	Actual
Project Scope		
1. Repair of diesel railcars		
a) Repair	96 railcars covered	64 railcars covered
b) Procurement of spare parts	Same as above	Same as above
2. Consulting service		
a) Preparation of repairing implementation schedule and management of spare parts	Foreign consultant: 189M/M Local consultant: 150M/M Total : 339M/M	Foreign consultant: 222M/M Local consultant: 374M/M Total : 596M/M
b) Rehabilitation work and instruction		
Implementation Schedule		
1. Loan agreement		
a) FY1988 ODA Loan	July 1988	Same as left
b) FY1996 ODA Loan	December 1996	Same as left
2. Contract		
a) Selection of consultant	Oct. 1988 ~ Mar. 1989	Mar. 1989 ~ Nov. 1990
b) Contractor, supplier	Apr. 1989 ~ Nov. 1989	Sep. 1991 ~ Mar. 1994
3. Rehabilitation Process		
a) Consulting service	Apr. 1989 ~ Mar. 1993	Jan. 1991 ~ Jan. 1999
b) Procurement of spare parts, rehabilitation work	Jan. 1990 ~ Mar. 1993	Mar. 1994 ~ Dec. 1998
Project Cost		
<Rehabilitation of Diesel Railcars Project (Phase I)>		
Foreign currency	¥4,607 million	¥4,152 million
Local currency	¥212 million	¥325 million
Total	¥4,819 million	¥4,477 million
ODA loan portion	¥4,819 million	¥4,477 million
Exchange rate	Rp.1 = ¥0.088 (Jul. 1987)	Rp.1 = ¥0.0297
<Diesel Railcar Rehabilitation Project (Phase II)>		
Foreign currency	¥1,112 million	¥971 million
Local currency	¥0 million	¥0 million
Total	¥1,112 million	¥971 million
ODA loan portion	¥1,112 million	¥971 million
Exchange rate	Rp.1 = ¥0.046 (Apr. 1996)	
<Total>		
Foreign currency	¥5,383 million	¥5,123 million
Local currency	¥548 million	¥325 million
Total	¥5,931 million	¥5,448 million
ODA loan portion	¥5,931 million	¥5,448 million