Republic of Indonesia

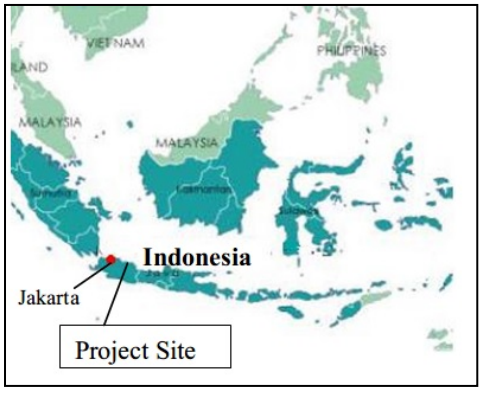
Ex-Post Evaluation of Japanese ODA Loan
"Railway Double Tracking of Cikampek-Cirebon Project (II)"
External Evaluator: Kenichi Inazawa, Octavia Japan Co., Ltd.

0. Summary

This project assisted the formation of a double-track between Cikampek and Cirebon on the North Line and rehabilitated Cirebon Station, with an aim of increasing the line capacity and the frequency of trains, making railway transportation safe, rapid and punctual, and reducing delays. At the time of the ex-post evaluation, the Medium-Term Development Plan calls for increasing transportation capacity and developing transportation infrastructures. There continues to be a development need for double tracking along the Java South Line and others. In addition, the project is consistent with Japan's ODA policy as it is in line with the "Country Assistance Plan for Indonesia". Thus, the relevance of this project is high. The project cost exceeded the plan, and the project period was significantly longer than planned; thus, efficiency is low. The line capacity and the frequency of trains between Cikampek and Cirebon increased as initially planned. Railway transportation has become safe and punctual, and delay time has reduced. The number of people who use Cirebon Station has been increasing since the rehabilitation of the station. Additionally, it has been confirmed through a beneficiary survey that the double-tracking works have led to an improvement in convenience of railway transportation and that the rehabilitation of Cirebon Station has contributed to the growth of the regional economy. Thus, effectiveness and impact of this project are high. No major problems are observed in the institutional, technical and financial aspects of the operation and maintenance of this project; thus, sustainability is high.

In the light of the above, this project is evaluated to be satisfactory.

1. Project Description



Project location

Railroad bed developed by this project
(track laid with Indonesian funds)

1.1 Background

In the late 1990s, trains in Indonesia only existed on Java and Sumatra. On Java, railway networks covered almost all areas of the island. The main three lines were the North Line, connecting Jakarta with Surabaya, the South Line and the Bandung Line, connecting Jakarta with Bandung. Of these, the North Line is still the main railway that connects the capital city of Jakarta with Surabaya, the country's second largest city. Before the project was commenced, it was only between Bekasi and Cikampek (57 km) that the North Line was double-track. All the other sections were single-track; however, trains were operated exceeding the line capacity, especially between Cikampek and Cirebon (135 km), and congestion was experienced frequently. Thus, there was a need to increase the line capacity, and it was an urgent task to realize safe, rapid and punctual railway transportation. The Japan International Cooperation Agency (JICA) assisted the double-tracking of Cikampek and Haurgeulis (approximately 54 km), through an ODA project whose loan agreement was signed in 1994, as the first phase of the double-tracking project between Cikampek and Cirebon. Subsequently, this project was implemented to construct double-track mainly between Kadokangabus and Cirebon (approximately 63 km) and to conduct accessory works as the second-phase project.

1.2 Project Outline

The objective of this project is to increase the line capacity and train frequency on the North Line connecting Jakarta, the capital, with Surabaya, the second largest city, realizing safe, rapid and punctual railway transportation and reducing delays by assisting the double-tracking works mainly between Kadokangabus and Cirebon, part of the Cikampek-Cirebon section of the line, thereby contributing to the development of the regional economy.

Loan Approved Amount/ Disbursed Amount	8,748 million yen / 8,742 million yen
Exchange of Notes Date/ Loan Agreement Signing Date	January 1998 / January 1998
Terms and Conditions	Construction: Interest Rate 2.7%, Repayment Period 30 years (Grace Period 10 years), General Untied Consulting Services: Interest Rate 2.3%, Repayment Period 30 years (Grace Period 10 years), General Untied

Borrower / Executing Agency(ies)	Government of the Republic of Indonesia / Directorate General of Land Communications, Ministry of Communications (DGR)
Final Disbursement Date	August 2012
Main Contractor (Over one billion yen)	PT. Wijaya Karya (Indonesia) / Tokyu Construction Co., Ltd. (Japan) (JV), PT. Modern Surya Jaya (Indonesia) / Tekken Corporation (Japan) (JV)
Main Consultant (Over 100 million yen)	PT. Rayakonsult (Indonesia) / PT. Dardela Yasa Guna (Indonesia) / PT. Jaya CM (Indonesia) / Pacific Consultants International (Japan) / Japan Transportation Consultants, Inc. (Japan) (JV)
Feasibility Studies, etc.	"Sector Review", JICA, October 1993
Related Projects	(ODA Loan) ・North Java Line Track Rehabilitation Project (1989) ・Rehabilitation of Bridges for Java North Line (1) (2) (1992, 1995) ・Construction of Railway Double Tracking of Cikampek-Cirebon (1) (1994) ・Railway Double Tracking on Java South Line (3) Engineering Service (E/S) (2007) ・Railway Double Tracking on Java South Line (3) (2008) Note: The years shown above indicate when the loan agreement was signed.

2. Outline of the Evaluation Study

2.1 External Evaluator

Kenichi Inazawa (Octavia Japan Co., Ltd.)

2.2 Duration of Evaluation Study

Duration of the Study: September 2014-July 2015

Duration of the Field Study: November 22-December 6, 2014 and March 15-21, 2015

2.3 Constraints During the Evaluation Study

As will be explained in section 3.2 under Efficiency, the double-tracking works (construction

of railroad bed and tracks and installation of signal facilities) were carried out in this project targeting only a part of the section of the railway with an ODA loan; the remaining section was implemented previously with the Indonesian funds (Acceleration Program[1]). Because of this situation, it is difficult to evaluate effectiveness and indicators of quantitative effects (e.g., line capacity and train frequency) unless we observe the entire section, i.e., both the section covered by this project and the sections implemented by the Acceleration Program. In addition, data could be obtained only for the entire section between Cikampek and Cirebon (Figure 1) during the field survey of this evaluation study; thus, it is only possible to evaluate the project effects of the section targeted by this project (Kadokangabus-Cirebon) based on the data of the entire section.

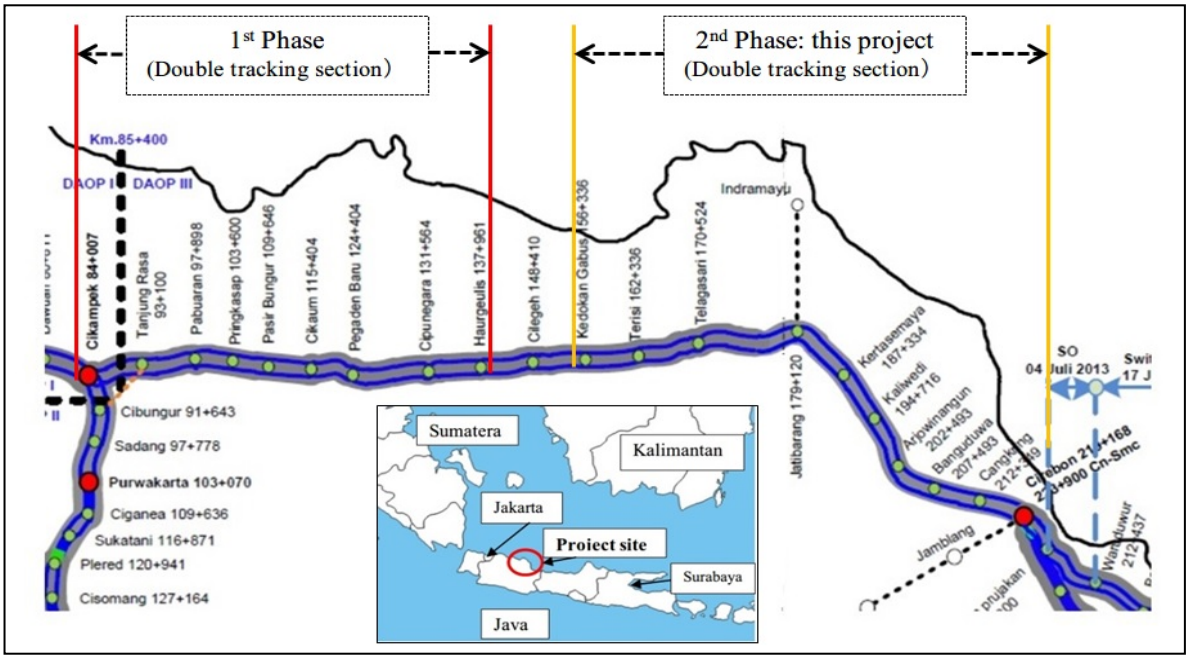


Figure 1: Project Locations
(The second section was the main target of this project. The first section was implemented by a previous project[2].)

[1] Although details are unknown, the total budget of this program is estimated at approximately 40 billion rupiah. As part of the Acceleration Program, the Indonesian government first decided to carry out the construction of the Telagasari-Cirebon section (see Figure 1) out of Cikampek-Cirebon on the North Line by Lebaran toward the end of 1999.

[2] "Construction of Railway Double Tracking of Cikampek-Cirebon (1)"

3. Results of the Evaluation (Overall Rating: B[3])

3.1 Relevance (Rating: ③[4])

3.1.1 Relevance to the Development Plan of Indonesia

At the time of the appraisal, the government of Indonesia formulated the "Sixth Five-Year Plan" (1994-1998). This plan included rehabilitation of tracks (840 km) and construction of new lines including double-tracking (350 km) in order to respond to the increasing railway demand. This project was part of the construction of new lines (350 km) and thus was considered important in the national development plan.

At the time of the ex-post evaluation, the government of Indonesia formulated the "Medium-Term Development Plan" (2010-2014), which placed importance on increasing transportation capacity and developing transportation infrastructures. With regard to the railway sector, rehabilitation of tracks (239 km), restoration of disused railroads (534 km), construction of new lines including double-tracking (954 km), and introduction of late-model train cars were planned, with the aim of improving safety and reliability and expanding networks.

The development and promotion of the railway sector were therefore viewed as important in Indonesia at the time of the appraisal and this continues to be the case at the time of the ex-post evaluation. Thus, this project is consistent with the country's policies in terms of national and sector plans.

3.1.2 Relevance to the Development Needs of Indonesia

Before the commencement of this project, railway networks existed across almost all parts of Java. The main three lines were the North Line, connecting Jakarta with Surabaya, the South Line and the Bandung Line, connecting Jakarta with Bandung. While only 57 km between Bekasi and Cikampek on the North Line was double-track, all the other sections were single-track. Trains were operated beyond the line capacity, especially between Cikampek and Cirebon (135 km). As of 1996, 74 trains were operated during regular hours and 89 trains during peak hours, as compared to the line capacity of 70. Congestion was apparent, and there was an urgent need to increase the line capacity. Additionally, the railway facilities were not sufficiently maintained or managed and were becoming old. There was therefore an urgent need to rehabilitate the tracks and bridges, to modernize security facilities such as communication systems for signals, to procure vehicles for the improvement of transportation capacity, and to

[3] A: Highly satisfactory, B: Satisfactory, C: Partially satisfactory and D: Unsatisfactory.
[4] ③: High, ② Fair, ① Low.

build double-tracks in order to realize safe, rapid and punctual railway operations. The number of passengers on the North Line, which is the main line on Java, increased by 6% per year on average before the project's commencement (1988-1994). At that time it was expected that the number of passengers would increase by 3.8-4.3% per year between 1996 and 2011[5]. It was perceived to be important to increase the line capacity in order to respond to this situation.

At the time of the ex-post evaluation, the construction of double-track is on-going along the North and South Lines. The Directorate General of Land Communications, Ministry of Communications (hereafter referred to as "DGR"), the executing agency of this project, completed the double-tracking of all lines on the North Line at the end of 2013; DGR has a plan to make the rest of the lines on Java double-track by 2030. For example, there are plans to make the following sections double-track after 2015: Solo-Madiun, Madiun-Surabaya and Surabaya-Gembel-Banyuwangi. On Java, while the majority of railway traffic has traditionally been passenger transportation, freight transportation has been increasing in recent years. Thus there is a continued need for double-tracking and renewal of signal facilities in order to improve transportation capacity and reduce congestion. Table 1 and Table 2 show the changes in passenger and freight transportation on the North and South Lines over the last several years, being to show the development needs.

Table 1: Changes in Passenger Transportation on the North Line and South Line

(Unit: person)

	2011	2012	2013	2014*
North Line	7,137,633	6,547,848	7,147,813	9,213,222
South Line	9,264,891	13,037,746	13,270,584	14,919,846

Source: PT Kereta Api Indonesia

Note*: The 2014 figures were estimated by calculating the monthly average from the data up to the end of October (North Line: 7,677,685 people, South Line: 14,919,846 people) (divided by 10), and multiplying it by 12 months.

Table 2: Changes in Freight Transportation on the North and South Lines

(Unit: ton)

	2011	2012	2013	2014*
North Line	28,125	50,158	174,242	261,672
South Line	19,720	120,354	182,270	346,704

Source: PT Kereta Api Indonesia

Note*: The 2014 figures were estimated by calculating the monthly average from the data up to the end of October (North Line: 218,060 ton, South Line: 288,920 ton) (divided by 10), and multiplying it by 12 months.

In conclusion, passenger and freight transportation is on the increase on the North and South

[5] On the other hand, the demand for freight transportation was expected to grow by 4.2-6.6%.

Lines at the time of the ex-post evaluation. In addition, there is a continued need for double-tracking of tracks and modernization of signal facilities. Therefore, this project is consistent with the development needs before the project's commencement and also at the time of the ex-post evaluation.

3.1.3 Relevance to Japan's ODA Policy

The government of Japan agreed with the government of Indonesia on the "Country Assistance Policy for the Republic of Indonesia" in February 1994 before the commencement of this project. The following five priority areas were identified: (1) the balanced development across the country through ensuring equity; (2) the improvement of the educational level and the development of human resources to strengthen competitiveness; (3) the countermeasures against environmental problems associated with rapid development; (4) the sound macroeconomic management and industrial restructuring for broad-based economic development; and (5) development of industrial infrastructures for continuous inflows of investment. This project is relevant to the last of these points, (5) the development of industrial infrastructures for continuous inflows of investment: the double-tracking of railway is expected to lead to economic growth. Thus, the project is consistent with the Assistance Policy of Japan.

This project has been highly relevant to Indonesia's development plan and development needs, as well as Japan's ODA policy. Therefore its relevance is high.

3.2 Efficiency (Rating: ①)

3.2.1 Project Outputs

Table 3 shows the planned and actual outputs of this project.

Table 3: Planned and Actual Outputs of this Project

	(Initial) Plan Before the Project's Commencement	Actual Results After the Project's Completion
1) Railroad Bed Construction	Double-tracking of Arjawinangun-Cirebon (22.73 km).	→ Mostly as planned (*except that the box culvert was installed with Indonesian funds (through the Acceleration Program).
	Siding between Kadokangabus and Arjawinangun (45.7 km).	→ Only Arjawinangun-Cangkring (approx. 10 km) and Jatibarang-Kertasemaya (approx. 2.9 km). (*The other sections were implemented using Indonesian funds

		(Acceleration Program)).
2) Track Construction	The double-track sections between Arjawinangun and Cirebon (22.73 km).	→ Implemented by Indonesian funds (Acceleration Program).
	Siding between Kadokangabus and Arjawinangun (45.7 km).	→Only Arjawinangun- Cangkring (approx. 10 km) and Jatibarang-Kertasemaya (approx. 2.9 km). (*The other sections were implemented with Indonesian funds (Acceleration Program).
	Replacement of track materials for the double-track section between Haurgeulis and Arjawinangun (58.47 km).	→ Implemented with Indonesian funds (Acceleration Program).
	Replacement of track materials of the existing track between Cipunegara and Jatibarang (except for 8 km out of 47.57 km).	→ Cipunegara-Cilegeh and Kadokangabus-Kertasemaya (approx. 39 km), Haurgeulis-Jatibarang (approx. 37 km).
3) Construction of Bridges	Six bridges between Telagasari and Arjawinangun.	→ Implemented with Indonesian funds (Acceleration Program).
	Seven bridges between Arjawinangun and Cirebon.	→ Implemented with Indonesian funds (Acceleration Program).
4) Signaling system	Signaling system and CTC function between Telagasari and Cirebon (six stations).	→ Signaling system and CTC function between Haurgeulis and Cangkring (10 stations).
	Establishing of CTC connection between Cikampek and Telagasari (12 stations).	→ CTC connection established between Tanjungrasa and Cangkring (16 stations).
	Installation of optical fiber cable between Haurgeulis and Cirebon (81.2 km).	→ Installation of optical fiber cable between Cikampek and Cirebon (approx. 135 km).
5) Consulting Services	Review of the design, assistance to the bidding process, and supervision of construction (International: 220M/M, Local 644M/M).	→ Review of the design, assistance to the bidding process, and supervision of construction (including the supervision of the rehabilitation of Cirebon Station) (International: 312.53M/M, Local 922.59M/M).
【Additional Outputs】		→ Rehabilitation of Cirebon Station (rehabilitation of the station building, platforms, vehicle repair shop, track maintenance base, signaling system and switching device, changing of tracks inside the station, installing controlling equipment for the control room, and construction of staff housing).

Source: Document provided by JICA (initial plan), Project Completion Report and answers to the questionnaire (actual).

As shown in Table 3, there are increased/reduced, canceled and additional outputs in this project. Below are the reasons:

1) Railroad Bed Construction, 2) Installation of Tracks, 3) Bridge Construction

Many outputs in these areas were implemented by the Indonesian side with its own funds: the government of Indonesia decided to implement the "Acceleration Program" infrastructure development program in April 1999 after the commencement of this project. The Indonesian government commenced implementation of 1), 2) and 3) using its own funds before construction began as part of this project (ODA loan). The Acceleration Program was implemented as an urgent measure to address post-Asian currency crisis problems such as unemployment (employment promotion) toward the end of the 1990s. Although the actual outputs of this project differ from the initial plan, it can be said that the government of Indonesia had compelling reasons.

4) Construction of Signaling System

The actual outputs were more ambitious than those specified in the initial plan because the number of facilities where the construction of signaling system was required to be developed and installed for the double-tracking were recalculated during the detailed design study.

5) Consulting Services

In addition to the extension of the project period, the actual work volume increased than suggested in the initial plan because of the rehabilitation of Cirebon Station, as explained below.

6) Additional Output

Cirebon Station was rehabilitated as an additional output. This station actually consists of two stations: Prujakan Station and Kejaksan Station; "Cirebon Station" is the umbrella term. Before the commencement of this project, the line capacity nearly reached its limit at the two stations[6]. Thus, there was a need to improve the line distribution. In addition, there were some safety issues concerning the structure of the station. There were operational problems such as trains at grade intersections going in the wrong direction, and accidents happened frequently. At that time, the government of Indonesia had been aware that Cirebon Station needed to be rehabilitated, as it was located at the branching point of the North Line and the South Line. However, the government had been planning to rehabilitate the station with their own funds after the completion of this project, prioritizing the double-tracking of the North Line

[6] The problem was particularly serious for Kejaksan Station because express trains and high-class trains on the North Line and all trains on the South Line would stop at this station.

(Cikampek-Cirebon)[7]. The rehabilitation of the station was thus not included in the initial plan as an output. In 2001, after the commencement of this project, however, a crash occurred at this station[8], which emphasized the need to improve the safety of train operations, as well as to realize punctuality and to reduce delay time. The improvement of the safety of train operations, realization of punctuality and reduction of delay time were recognized as urgent matters. The Cirebon station became big obstacles in order to respond to the expansion of rail capacity for the safe train operation, which resulted in the recognition. Thus, the rehabilitation of this station was implemented as an additional output of this project. This change was judged appropriate as it had become urgently required.

Photo 1: Rehabilitated Prujakan Station

Photo 2: Rehabilitated Kejaksan Station

3.2.2 Project Inputs

3.2.2.1 Project Cost

The total project cost initially planned was 11,665 million yen (of which 8,748 million yen was to be financed by ODA loan). However, the actual project cost was 12,318 million yen (of which 8,742 million yen was borne by ODA loan), which was slightly more than planned (106%). As explained above, the Indonesian government implemented most parts of the section targeted by this project with its own fund (Acceleration Program), and the project scope reduced from the initial plan. The reduction in project scope left some project budget unutilized. Therefore, although the Indonesian side and the JICA side agreed to allocate the unutilized budget for the rehabilitation of Cirebon Station, as a result, the actual project cost slightly exceeded the initial plan.

[7] Before the commencement of this project, it is thought that the Indonesian government did not have sufficient budget to implement a project with multiple outputs and thus needed to implement in accordance with the priority.
[8] It left 39 people dead and 64 people injured. What caused the accident is not known because the train driver died. However, it is suspected that the signal mal-operation coincided with miscommunication between the CTC Center (old facility and equipment which was in use before the commencement of this project) and the operation command.

Since the project scope was changed after the commencement, the initial cost's plan also changed during the implementation. In other words, due to the influence of the Acceleration Program, the comparison between the project's output and input became not easy, it was thus necessary to analyze it taking the change of cost plan into consideration. As shown in Table 4, the initial project cost planned before the construction of this project (at the time of the signing of the loan agreement), the planned project cost after the decision to implement the Acceleration Program, and the actual project cost after the completion of construction are compared, in order to trace the transition as much as possible. With regard to the actual cost, approximately 8,200 million yen about the construction as remaining part associated with the initially planned project scope and the consulting services exceeded the estimated budget (126 % increase at maximum) after the decision on the Acceleration Program (approximately 6,500-7,300 million yen). Through the review of existing documents and inquiries to the DGR during this evaluation study, it was not possible to identify the exact reasons of the increase in cost of the actual cost compared to the estimated budget. However, it was presumably because of the increase in the prices of construction inputs (labor cost, materials, etc.) throughout the project period, the increase in consulting service costs due to the extension of the project period, and the fluctuation of exchange rates. On the other hand, the additional cost for the improvement of Cirebon Station was approximately 4,100 million yen[9].

In any case, the total actual amount exceeded the initial plan. Therefore, it can be judged that the efficiency of project cost is fair.

Table 4: The Initially Planned Project Cost, Planned Project Cost after the Decision on Acceleration Program (Estimate), and Actual Cost

Item	Before Construction		After Construction
	Initial Plan (Before Project's Commencement: 1997)	Planned Project Cost After Acceleration Program was implemented *Note (Estimate: around 2000)	Actual
1) Civil Engineering Work	8,754 million yen	Approx. 4,500-5,000 million yen	Approx. 8,200 million yen
2) Contingency	876 million yen	Approx. 700-800 million yen	
3) Tax	1,060 million yen	Approx. 500-600 million yen	

[9] Through the survey, it was confirmed that this actual amount was the almost same as the one estimated before the modification.

4) Consulting Services	975 million yen	Approx. 800-900 million yen	
Total	11,665 million yen	Approx. 6,500-7,300 million yen	Approx. 8,200 million yen
5) Additional Output (Rehabilitation of Cirebon Station)			Approx. 4,100 million yen
		Total:	12,318 million yen

Source: JICA's document and estimates based on data provided in JICA's documents (before the construction), and DGR (after the construction)
*Note: With regard to "Planned Project Cost After Acceleration Program was implemented", since the data about the planned project cost recalculated after Acceleration Program was implemented is not available, this amount was presumably estimated from the actual amount after the project completion, throughout the survey.

3.2.2.2 Project Period

Table 5 presents a comparison between the planned and actual project periods for each output of this project. At the time of the project appraisal, the project period was planned to be five years and four months (64 months), from January 1998 to April 2003. The actual period was 13 years and nine months (165 months), from January 1998 to September 2011, i.e., 258% of the plan. As explained earlier, some double-tracking works were implemented using Indonesian funds (Acceleration Program) before this project. Both Japanese and Indonesian sides confirmed the status and process each other and made an effort to prevent further delay. Then, the both side made clear the project scope (ODA loan) again. Based on the clarification, the remaining double-tracking works (constructions related to railroad beds, tracks and signal facilities, etc.) were commenced[10] and completed in August 2007. After the completion of the double-tracking works, the rehabilitation of Cirebon Station began. Bidding, selection and procurement/contracting of contractors were conducted and the construction began; it was completed in September 2011. Regarding the double-tracking works of this project, the project took 181% longer than the initial plan. As for the rehabilitation of Cirebon Station, the project took 258% longer than planned. Thus, the project period was significantly longer than planned in any case, which the efficiency of project period is low.

[10] The construction by the Japanese side was commenced late (November 2004) because: there was a delay in bidding/selection/procurement and contracting; the project scope was changed and it required time to confirm and discuss such changes as a result of the above-mentioned Acceleration Program; and the Indonesian currency crisis in the late 1990s mixed up the society and economy, and the government went through frequent restructuring, as a result of which the government function stagnated and decisions on this project could not be made in a timely manner.

Table 5: Initially Planned and Actual Project Period

	Initial Plan	Actual
Entire Project	January 1998 – April 2003 (64 months)	January 1998 – September 2011 (165 months)
Assistance for Double-Tracking		
Selection of Consultant	January 1998 – April 1998	January 1998 – October 1998
Consulting Services	May 1998 – April 2003	February 1999 – September 2011
Bidding and Contracting	September 1998 – February 1999	June 1998 – May 2004
Civil Engineering Works	March 1999 – April 2003	November 2004 – August 2007
Additional Construction		
Bidding and Contracting	-	December 2007 – March 2010
Civil Engineering Works	-	February 2010 – September 2011

Source: JICA's document (initial plan), Completion Reports and answers to the questionnaires (actual)

3.2.3 Results of Calculations of Internal Rates of Return (Reference only)

At the time of the appraisal of this project, the Financial Internal Rate of Return (FIRR) was calculated to be 1.89%, using fare incomes as a benefit, construction costs and maintenance expenses as a cost, and a project life of 40 years. In addition, the Economic Internal Rate of Return (EIRR) was calculated as 21.47%, using the reduction in time-associated cost as a benefit, construction costs as a cost, and a project life of 40 years. On the other hand, the project expenses significantly differed from the initial plan because the Indonesian side implemented Cikampek-Cirebon section using its own fund (Acceleration Program) prior to this project and the rehabilitation of Cirebon Station was additionally implemented by this project. The accurate construction cost of this section financed by the Acceleration Program was not clear, and benefits and costs associated with the rehabilitation of Cirebon Station were also unclear; thus, the internal rate of return was not recalculated.

The project cost exceeded the plan, and the project period significantly exceeded the plan. Therefore, efficiency of the project is low.

3.3 Effectiveness[11] (Rating: ③)

3.3.1 Quantitative Effects

1) Line Capacity and Number of Trains

As shown in Table 6, the line capacity[12] between Cikampek and Cirebon on the North Line after the completion of double-tracking works is 136 trains at the time of the ex-post evaluation. As can be seen from Table 7, the number of trains has generally been increasing in recent years, and the same holds true for the freight trains. Thus, it can be judged that double-tracking works increased the line capacity and the number of trains, thereby realizing less congested railway operation within the line capacity. Although the main section for which this project implemented double-tracking works was between Kadokangabus and Cirebon, the only data obtained during this evaluation study were for the entire section of Cikampek-Cirebon; thus, the evaluation was done based on the data for the entire section.

Table 6: Line Capacity between Cikampek and Cirebon on the North Line

(Unit: No. of trains per day)

Item	1998 (Before Project's Commencement)	2013-14 (At the Time of Ex-Post Evaluation)
Line Capacity	70 (single-track)	136 (after double-tracking)

Source: Answers to the questionnaire

Table 7: Changes in the Number of Trains Operating between Cikampek and Cirebon (Recent Years)

(Unit: No. of Trains per day)

Type of Train		2010	2011	2012	2013	2014
Passenger	Cirebon Express	15	15	15	17	18
	Executive/Business Class	22	23	24	27	20
	Economy Class	12	12	12	6	20
Freight Trains		9	11	15	21	32
Total		58	61	66	71	90

Source: Answers to the questionnaire

2) Improvement of Punctuality

Table 8 shows delay times between Cikampek and Cirebon on the North Line after the commencement of double-tracking works (the average of up and down lines per one operating train).

[11] Sub-rating for Effectiveness is to be put with consideration of Impact.
[12] It refers to the number of trains that can operate on a line in a given time.

Table 8: Train Delay Time between Cikampek and Cirebon on the North Line
(Average of Up and Down Lines per One Operation Train)

(Unit: Minutes)

2004	2005	2006	2007	2008
8.71	11.33	11.68	3.69	2.94
2009	2010	2011	2012	2013
2.81	3.95	0.68	0	0

Source: DGR (2004-2008), the third district office (DAOPIII) (from 2009 onwards)

Presented above are data on delay times for the past ten years; one can notice that delay has been diminishing ever year and became zero in 2012. This is thought to be because the double-tracking works made the plan and actual railway operation more relaxed. As shown in Table 7, there is no delay time despite the fact that the number of trains has been increasing. Thus, it can be judged that the completion of the double-tracking works has contributed to the reduction in delay times[13].

3) Effects of the Rehabilitation of Cirebon Station

As described in "3.2.1 Project Outputs" under Efficiency, Cirebon Station was rehabilitated as an additional output of this project. Table 9 shows the changes in the number of Cirebon Station users for the past three years.

Table 9: Changes in the Number of Cirebon Station Users

(Unit: No. of people)

Cirebon Station	2011	2012	2013
Kejaksan Station	785,905	633,668	656,790
Prujakan Station	120,391	244,044	299,979

Source: DAOPIII
Remark: The rehabilitation of Cirebon Station was completed in September 2011

According to the third district office (hereafter referred to as "DAOPIII"), which operates and maintains the Cikampek and Cirebon section on the North Line, with the rehabilitation of Cirebon Station and the improvement of convenience and service standards of railway, people have shifted from other methods of transportation such as from automobiles to trains. As a result the number of people who use the station has been increasing[14]. On the other hand, the number of Kejaksan Station users decreased between 2011 and 2012. Before 2011, many people without

[13] Although 2014 data could not be obtained, according to the third district office (DAOPIII), which is under the Indonesian Railways Co. (PT.KAI) and responsible for the operation and maintenance of the Cikampek and Cirebon section on the North Line, there was some delay time that year. At the time of the ex-post evaluation, the double-tracking work is on-going from Kejaksan Station toward the South Line (ODA Loan, "Railway Double Tracking on Java South Line Project (III)"), which is apparently creating some delay.

[14] The number of station users in 2014 certainly increased from the previous year for both stations, according to DAOPIII.

seat reservation tickets would stand on the train passing through this station and there were safety issues. Thus, the Indonesian Railways Co., responsible for railway operation on Java (hereafter referred to as "PT.KAI"), decided to make all seats reserved, starting in 2012, with the intention of reducing the number of standing passengers.

It has been confirmed that those who did not commute by train before the rehabilitation of Cirebon Station (i.e., residents who used to take automobiles, motorbikes and buses) now use this station more frequently. Such residents commented when interviewed, "Commuting by train allows us to reach the destination most probably on time without getting affected by traffic congestion, which is the case for automobiles and motorbikes." Additionally, they also commented, "Before the rehabilitation of the station, there was a difference in height between the platform and train door and we needed to use removable stairs (steel), and safety during boarding and alighting was a concern. Now, after the station was rehabilitated, there is no need to worry." Thus, it can be observed that concerns about safety are decreasing. Taking such comments into consideration, it can be judged that the rehabilitation of Cirebon Station is responding to the increased number of railway users and is contributing to improved safety.

Photo 3: Kejaksan Station before Rehabilitation (safety issues were prominent: the platform was low and people would enter inside the track to sell various things.)

Photo 4: Inside the Kejaksan Station after Rehabilitation

4) Improvement of Safety

Table 10 shows the number of incidences of railway accidents before the commencement of this project (1995) and after the completion of this project (2011 onwards) between Cikampek and Cirebon on the North Line.

Table 10: Incidences of Railway Accidents between Cikampek and Cirebon on the North Line

(Unit: No. of persons)

Timing		Category					Total	Dead	Injured
		Train-to-Train Collision	Train-to-Automobile Collision	Derailment and Rollover*	Flooding and Land Slide	Other			
Before Commencement	1995	0	10	4	1	2	17	3	5
After Completion	2011	0	4	4	0	0	8	3	7
	2012	0	2	0	0	0	2	4	0
	2013	0	5	2	0	0	7	4	0
	2014	0	5	2	0	0	7	35	18

Source: JICA document (before commencement), answers to the questionnaire (after completion)

*Note: There is no information which indicates that derailment and rollover occurred as a result of the implementation of this project.

Since the project was completed, there has not been any “train-to-train collision” or “flooding and land slide”. The number of accidents has generally been decreasing as compared to 1995, before the project’s commencement. There are relatively many cases of “train-to-automobile collision”; however, there is no information which indicates that it has been caused by the double-tracking works of this project. According to DAOPIII, the main problem is that vehicles cross a railway recklessly (e.g., they try to cross even when the crossing gate is closed) and that it is not attributed to the level of maintenance, technology and railway operation management of DAOPIII. In 2014 many casualties are recorded because one bus tried to cross the railway by force and collided with the oncoming train. Nevertheless, it is thought necessary that the railway operator take some measures to prevent accidents as such. Currently, DAOPIII is frequently holding workshops and presentations for the local communities and residents. They also distribute brochures that call for preventing accidents (Photo 6), thereby making efforts to improve residents’ understanding of safety issues.

Photo 5: Passenger Train in Action

Photo 6: Brochure to Call for Prevention of Accidents

3.3.2 Qualitative Effects (Other effects)

1) Improvement of Convenience, Punctuality and Safety of Railway Transportation

As part of this evaluation study, users of Cirebon Station and Arjawinangun Station, where double-tracking works were carried out, were interviewed using a questionnaire (beneficiary survey). For both stations, the target of the survey was those who have been using the station for more than 15 years since before the project's commencement[15]. As shown in Figure 2 and Figure 3, many respondents indicated that the railway operation has improved, delays have been reduced and travel time has become less; thus, it can be thought that the double-tracking works have achieved the outcomes as initially expected. As shown in Figure 4, a large proportion of respondents indicated that many people have shifted from automobiles/motorbikes/bus to trains. Figure 5 shows that a large proportion of people think the comfort on trains has been improving. Therefore, it can be thought that the level of users' satisfaction with the railway services has generally been improving[16]. As shown in Figure 6, many respondents indicated that the project has improved the punctuality of train arrival and departure times; thus, it can be judged that the punctuality of railway transportation has also been achieved.

[15] By doing this, it was intended to measure the effects and impact appropriately (comparison of before and after the project). It turned out that the number of station users and the number of shops are less for Arjawinangun Station; the sample size was adjudged to be 70 for Cirebon Station users and 30 for Arjawinangun Station users (total: 100). Samples were drawn using the random sampling method, and the survey was conducted using questionnaires. The quantity of valid responses was 100.

[16] According to the interviews with PT.KAI and DAOPIII, an increasing proportion of people who used to take cars/motorbikes/bus for commuting have shifted to trains and the level of convenience has improved. Their reasons were as follows: (1) they do not get affected by traffic congestion, which is often the case for automobiles, as today there are more trains operating and fewer delays, making railway an advantageous method of commuting; (2) trains are comfortable with air conditioning; and (3) Cirebon Station has clean and attractive facilities with many shops and restaurants. It is observed that railway transportation is more attractive to commuters because of its punctuality and capacity for mass transportation.

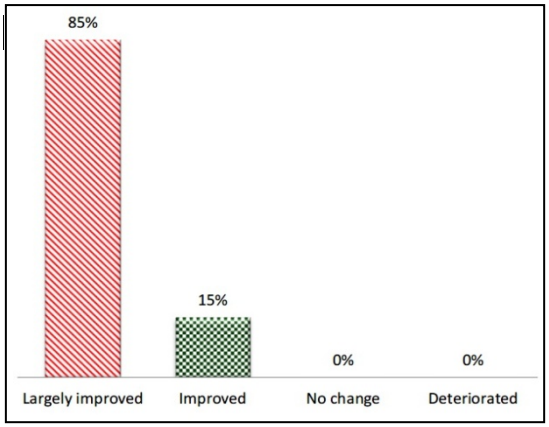


Figure 2: Do you think the railway operation has improved with less delay after double-tracking works?

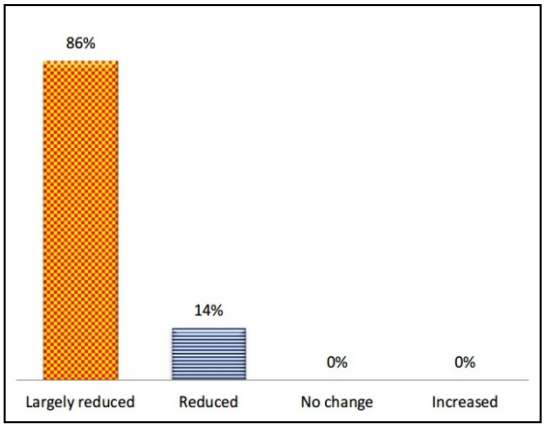


Figure 3: Do you think the time required to reach destinations has reduced after the double-tracking works?

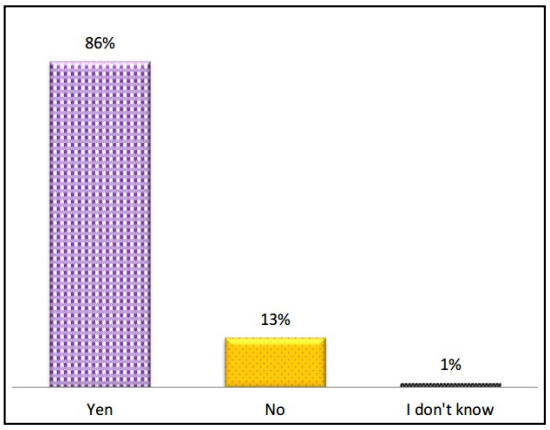


Figure 4: Do you think many people have shifted from cars/motorbikes/public bus to trains after the double-tracking works?

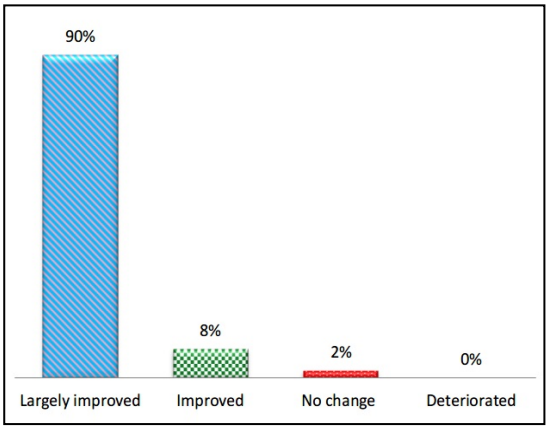


Figure 5: Do you think the comfort level on trains has improved after the double-tracking works?

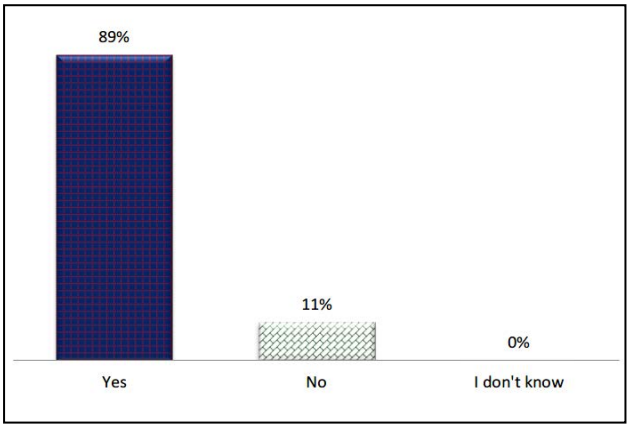


Figure 6: Do you think the punctuality of departure and arriving times has improved after the double-tracking works?

In line with the above beneficiary survey results, it can be judged that this project has contributed to the improvement of convenience, punctuality and safety of railway transportation between Cikampek and Cirebon.

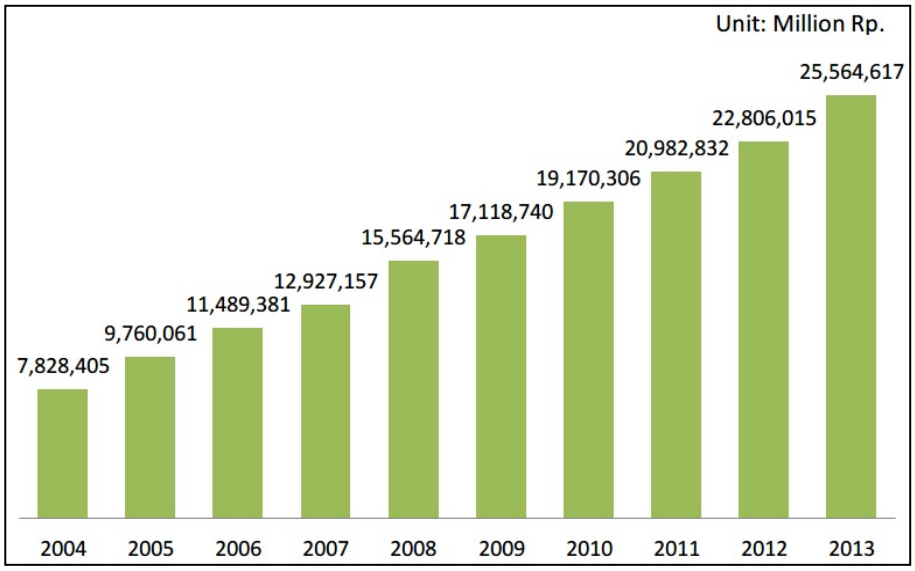
3.4 Impacts

3.4.1 Intended Impacts

3.4.1.1 Contribution to the Development of Regional Economy

Figure 7 shows the changes of the Gross Regional Domestic Product (GRDP) of Cirebon City (population: more than 300,000[17]), which is the major town between Cikampek and Cirebon on the North Line. It has been increasing for the past 10 years. As can be seen from the beneficiary survey results[18] shown in Figure 8 and Figure 9, many respondents answered that economic activities of Cirebon City and the retail and food industries[19] around the station have been vitalized. In addition, as shown in Figure 10, many respondents confirmed the improvement in employment opportunities. Residents and shop owners around the station and DAOPIII staff members who were interviewed commented, "The number of passengers has been increasing every year, and accordingly, we think the number of people who visit Cirebon City has been increasing. We find the rehabilitation of the station and the increase of passengers and visitors are favorable to the vitalization of the regional economy." Based on such beneficiary survey results and residents' comments, it can be presumed that the development of railway infrastructures such as double-tracking and rehabilitation of stations supports the increasing population, expansion of city functions and economic vitalization for the entire city.

[17] The number varies depending on the data source: approx. 298,000 people in 2010 (source: national population census), approx. 329,000 people in 2011 (source: the Population Administration Information System (SIAK), approx. 369,000 people in 2014 (source: Cirebon municipal government). The population has been increasing in recent years.
[18] The sample size of the beneficiary survey relating to this impact was 70.
[19] According to the data provided by the city, the number of companies increases by 50-60 every year.



Source: Cirebon City Statistics

Figure 7: Changes in the Gross Regional Domestic Product (GRDP) of Cirebon City

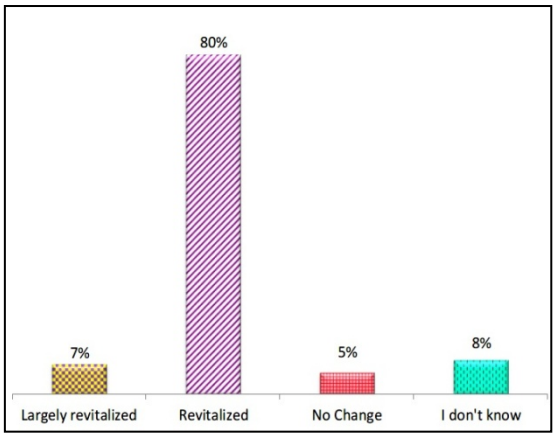


Figure 8: Do you think the economy in and around Cirebon City has been vitalized after the double-tracking works and the rehabilitation of Cirebon Station?

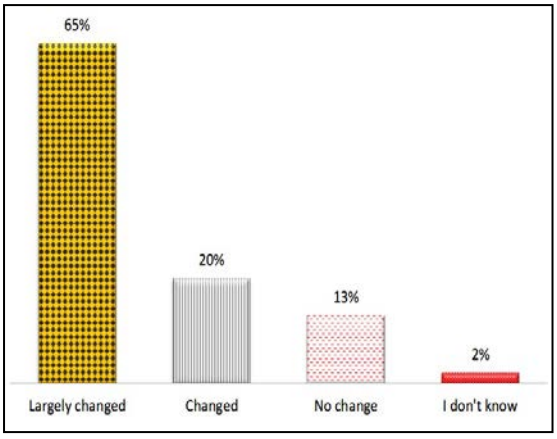


Figure 9: Do you think the retail and food industries around the station have been vitalized after the double-tracking works and the rehabilitation of Cirebon Station?

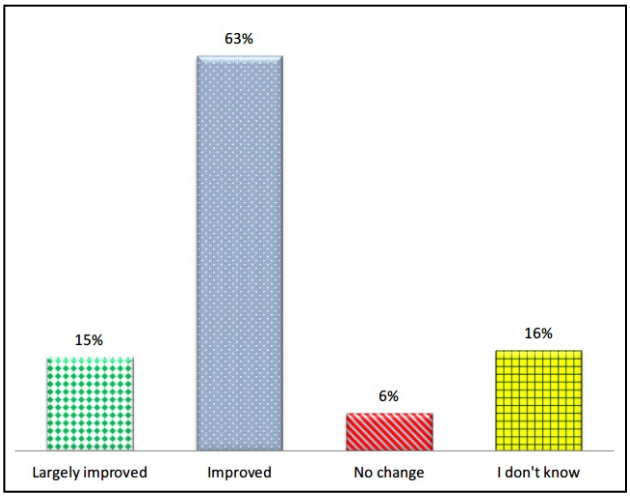


Figure 10: Do you think there is an improvement in employment opportunities after the double-tracking works and the rehabilitation of Cirebon Station?

3.4.2 Other Impacts

3.4.2.1 Impacts on the Natural Environment

Since this project was mainly about laying a new track next to an existing track, its impact on the natural environment was thought to be little. Thus, the Environmental Impact Assessment (EIA) was not required before the project's commencement. All in all, no major environmental issue arose concerning the Cikampek-Cirebon section during the project implementation or at the time of the ex-post evaluation[20].

3.4.2.2 Land Acquisition and Resettlement

The land needed for this project belonged to the Indonesian government before the commencement of this project. Thus, no new land was acquired and no resettlement was needed in association with this project.

This project has largely achieved its objectives. Therefore effectiveness and impact of the

[20] On the other hand, residents and commuters complained about dust, vibration and noise around Arjawinangun Station. There are an increasing number of heavy-duty vehicles transporting cement from this station to other areas on Java, creating dust along the way. According to the interviews with residents and commuters conducted during the beneficiary survey, there was no indication that this is associated with health issues in particular. However, it is recommended that transporters of cement take some measures to prevent dust from spreading (e.g., make sure that all vehicles have covers on truck boxes) while paying attention to the hours of transportation with a view to minimizing noise. It is also thought necessary that the local government should take some actions to regulate the cement manufacturing companies regarding this issue.

project are high.

3.5 Sustainability (Rating: ③)

3.5.1 Institutional Aspects of Operation and Maintenance

PT. KAI, a national company fully owned by the Indonesian government, is responsible for the operation and maintenance of the country's railway infrastructures, including that of this project[21]. PT.KAI is responsible for track maintenance works, such as repairing of tracks, signal facilities, wires, bridges and crossings and replacement of crossties. DAOPIII, which is under PT.KAI, is doing the actual operation and maintenance work on the ground for the Cikampek-Cirebon section on the North Line. In addition to the track maintenance works, DAOPIII also operates and maintains Cirebon Station. DAOPIII has 213 employees at the time of the ex-post evaluation (as of November 2014). In recent years the number of staff has been increasing[22]. This is because PT.KAI is faced with the need to improve its railway services and maintenance works in order to respond to the increasing volume of passengers and freight transportation.

In the light of the above, no particular problems are observed concerning the institutional aspects of the operation and maintenance of this project.

3.5.2 Technical Aspects of Operation and Maintenance

DAOPIII has many experienced staff members. It has been confirmed through the field survey that they are sufficiently aware of the importance of operation and maintenance of tracks, bridges, and signal facilities. The PT.KAI headquarters is in charge of the training for operation and maintenance staff. Recently, 529 DAOPIII staff attended a workshop for understanding railway operations (one course lasted eight days), and 20 attended a training course on practical maintenance of signal and telegraphic facilities (three days). Also, on-the-job training (OJT) is given to newly recruited staff as needed at the training facility inside PT.KAI's headquarters. During the implementation of this project, four of the DAOPIII staff attended oversea training to learn about operation plans of signals (about one month).

In addition, deterioration of facilities due to lack of maintenance was not observed. Furthermore, staff members in charge of operating control equipment at the traffic control room

[21] The two-tiered system is applied to the operation and maintenance of Indonesia's railway infrastructures.
[22] There were 67 staff members one year and two months ago (September 2013) according to the record.

of Cirebon Station received three-month training[23]. Thus, it has been confirmed that training system is in place.

In light of the above, it is thought that there are no major problems with the technical aspect of the operation and maintenance of this project.

3.5.3 Financial Aspects of Operation and Maintenance

The operation and maintenance budget of DAOPIII is allocated by PT.KAI headquarters. Table 11 shows the operation and maintenance costs for the past three years. According to DAOPIII, "While 100% of what we request is not approved, we have necessary budget allocated." Thus, it is thought that there are no particular concerns about maintenance budget shortage.

Table 11: DAOPIII's Operation and Maintenance Costs

(Unit: thousand rupiah)

	2011	2012	2013
Operation Cost	19,846,896	21,975,240	26,579,598
Maintenance Cost	61,134,045	63,066,940	53,323,377

Source: PT.KAI
Remark: one thousand rupiah = approx. 10 Japanese yen (exchange rate of November 2014)

Table 12 is the profit-and-loss statement (P/L) of PT.KAI, and Table 13 shows the changes in consolidated financial positions[24]. With regard to the P/L, since the gross operating income, which is sales minus the cost of goods sold, has been increasing every year, so is the current net profit. With respect to the changes in consolidated financial positions, it is thought there is no problem for the time being as assets have been exceeding liabilities. Judging from the overall financial situation of PT.KAI, it is presumed that there are no major problems with the allocation of operation and maintenance budgets for district offices, including DAOPIII.

Table 12: PT.KAI's Profit-and-Loss Statement (P/L)

(Unit: million rupiah)

	2011	2012	2013
Sales(A)	6,094,095	6,966,237	8,600,972
Cost of goods sold(B)	4,675,846	5,024,796	5,920,554
Gross operating income(C=A-B)	1,418,249	1,941,441	2,680,418
Operating expenses(D)	1,277,860	1,243,802	1,620,304

[23] The training was mainly about operating control equipment.
[24] The P/S and changes in consolidated financial positions are those of the entire PT.KAI.

Non-operating profit and loss(E)	157,661	-101,735	-270,808
Profit before tax(F=C-D+E)	298,050	595,904	789,306
Current net profit (After tax of F)	201,244	425,104	560,716

Source: PT.KAI
Remark: one million rupiah = approx. 10,000 Japanese yen (exchange rate of November 2014)

Table 13: PT.KAI's Consolidated Financial Positions

(Unit: million rupiah)

	2011	2012	2013
Current assets(A)	1,823,431	2,540,813	4,137,883
Fixed assets(B)	4,242,979	6,420,248	11,120,887
Total assets (C=A+B)	6,066,410	8,961,061	15,258,770
Current liabilities(D)	1,237,591	2,176,655	4,258,534
Non-current liabilities(E)	880,623	1,460,994	4,877,985
Liabilities (F=D+E)	2,118,214	3,637,649	9,136,520

Source: PT.KAI
Remark: one million rupiah = approx. 10,000 Japanese yen (exchange rate of November 2014)

3.5.4 Current Status of Operation and Maintenance

For the railroad bed and track between Cikampek and Cirebon, DAOPIII spreads ballast, repairs crossties, tightens bolts and does a regular check every month. They renovate the steel on the upper parts of bridges, repaint the bridges and protect the abutments once a year. Maintenance and inspection are also carried out for the signal facilities. At Cirebon Station, the control equipment installed in the control room is operating well; no particular problems were observed in the status of other facilities inside the station (platform, track maintenance base, etc.); and there is no problem with the railway operation. The station is cleaned daily. Additionally, it has been confirmed through interviews that there is no particular problem with the status of procurement and storage necessary for spare parts needed for the facilities developed by this project. Furthermore, it has also been confirmed that maintenance and operation manuals are kept at each facility and that each staff member refers to the manuals as needed in order to carry out maintenance activities.

No major problems have been observed in the institutional, technical and financial aspects of the operation and maintenance system. Therefore sustainability of the project effects is high.

Photo 7: Installed Signal Equipment

Photo 8: Developed Control Tower and Operation Control Device

4 Conclusion, Lessons Learned and Recommendations

4.1 Conclusion

This project assisted the formation of a double-track between Cikampek and Cirebon on the North Line and rehabilitated Cirebon Station, with the aim of increasing the line capacity and the frequency of trains, making railway transportation safe, rapid and punctual, and reducing delays. At the time of the ex-post evaluation, the Medium-Term Development Plan calls for increasing transportation capacity and developing transportation infrastructures. There continues to be a development need for double tracking along the Java South Line and others. In addition, the project is consistent with Japan's ODA policy as it is in line with the "Country Assistance Plan for Indonesia". Thus, the relevance of this project is high. The project cost exceeded the plan, and the project period was significantly longer than planned; thus, efficiency is low. The line capacity and the frequency of trains between Cikampek and Cirebon increased as initially planned. Railway transportation has become safe and punctual, and delay time has reduced. The number of people who use Cirebon Station has been increasing since the rehabilitation of the station. Additionally, it has been confirmed through a beneficiary survey that the double-tracking works have led to an improvement in convenience of railway transportation and that the rehabilitation of Cirebon Station has contributed to the growth of the regional economy. Thus, effectiveness and impact of this project are high. No major problems are observed in the institutional, technical and financial aspects of the operation and maintenance of this project; thus, sustainability is high.

In the light of the above, this project is evaluated to be satisfactory.

4.2 Recommendations

4.2.1 Recommendations to the Executing Agency

・Although it is not necessarily linked to the double-tracking works of this project directly, there are cases of vehicle-to-train collisions between Cikampek and Cirebon caused by vehicles (automobiles, motorbikes and buses) trying to cross tracks recklessly. While DAOPIII, which is carrying out the operation and maintenance on the ground, has been making efforts to educate residents and local communities about accident prevention, it is recommended that they continue making efforts to reduce accidents by advocating, distributing brochures and utilizing media such as television and radio.

・At the time of the ex-post evaluation, residents and commuters are complaining about the dust, vibration and noise around Arjawinangun Station. This is due to the increasing number of heavy-duty trucks transporting cement to the station. It is recommended that PT.KAI who is responsible for the railway operations request the cement manufacturing companies to take necessary measures (measures to minimize dust, efforts to minimize noise and attention to vibration while driving) with due consideration of the environment around the station.

4.2.2 Recommendations to JICA

・None.

4.3 Lessons Learned

(Necessity to Make Efforts to Avoid Project Delays)

It is preferable to omit risks of project delay as much as possible. In the case of this project, the project period was extended because the outputs planned initially of this project were affected by the implementation of the Acceleration Program by the government of Indonesia. The Acceleration Program was implemented prior to this project as an emergency response to the unemployment problem following the Asian currency crisis (employment promotion). Other factors include the delay in bidding/selection and procurement contracting and the slow decision-making process concerning this project because the government function stagnated when it was affected by the social and economic chaos following the currency crisis of the late 1990s. In reality, both Japanese and Indonesian sides were making an effort to confirm the project process and obstacle elements each other in order not only to avoid the delay of the project continuation after the Acceleration Program came up, but also to prevent any further delay. Considering future similar projects, if such obstacle elements are produced, the executing

agencies should always be prepared for various risks of project delay, throughout the mutual confirmation.

Comparison of the Original and Actual Scope of the Project

Item	Plan	Actual
1. Project Outputs	1) Railway Bed Construction ◆ Double-tracking of Arjawinangun-Cirebon (22.73 km). ◆ Siding between Kadokangabus and Arjawinangun (45.7 km).	1) Railway Bed Construction →Mostly as planned (*except that installation of box culvert was implemented by the Acceleration Program). → Only Arjawinangun-Cangkring (approx. 10 km) and Jatibarang-Kertasemaya (approx. 2.9 km). (*The other sections were implemented by the Acceleration Program.)
	2) Track Construction ◆ The double-track sections between Arjawinangun and Cirebon (22.73 km). ◆ Siding between Kadokangabus and Arjawinangun (45.7 km). ◆ Replacement of track materials for the double-track section between Haurgeulis and Arjawinangun (58.47 km). ◆ Replacement of track materials for the existing track between Cipunegara and Jatibarang (except for 8 km out of 47.57 km).	2) Track Construction →Implemented by the Acceleration Program →Only Arjawinangun- Cangkring (approx. 10 km) and Jatibarang-Kertasemaya (approx.2.9 km). (*The other sections were implemented by the Acceleration Program.) →Implemented by the Acceleration Program. →Cipunegara-Cilegeh and Kadokangabus-Kertasemaya (approx. 39 km), Haurgeulis-Jatibarang (approx. 37 km).
	3) Bridge Construction ◆ Six bridges between Telagasari and Arjawinangun. ◆ Seven bridges between Arjawinangun and Cirebon.	3) Bridge Construction →Implemented by the Acceleration Program. →Implemented by the Acceleration Program.
	4) Signaling Facilities ◆ Signaling system and CTC function between Telagasari and Cirebon (six stations). ◆ Establishing CTC connection between Cikampek and Telagasari (12 stations). ◆ Installation of optical fiber cable between Haurgeulis and Cirebon (81.2 km).	4) Signaling Facilities →Signaling system and CTC function between Haurgeulis and Cangkring (10 stations). → CTC connection established between Tanjungrasa and Cangkring (16 stations). → Installation of optical fiber cable between Cikampek and Cirebon (approx. 135 km).
	5) Consulting Services	5) Consulting Services

	◆ Review of the design, assistance to the bidding process, and supervision of construction (International: 220M/M, Local 644M/M).	→Review of the design, assistance to the bidding process, and supervision of construction (including the supervision of the rehabilitation of Cirebon Station) (International: 312.53M/M, Local 922.59M/M).
2. Project Period	January 1998 – April 2003 (64 months)	January 1998 – September 2011 (165 months)
3. Project Cost Amount paid in foreign currency	6,528 million yen	5,189 million yen
Amount paid in local currency	5,137 million yen	7,129 million yen
Total	11,665 million yen	12,318 million yen
Japanese ODA loan portion	8,748 million yen	8,742 million yen
Exchange rate	One Japanese yen = 0.052 rupiah (As of April 1997)	One Japanese yen = 0.011 rupiah (Average of the project period: source IMF and IFS)