

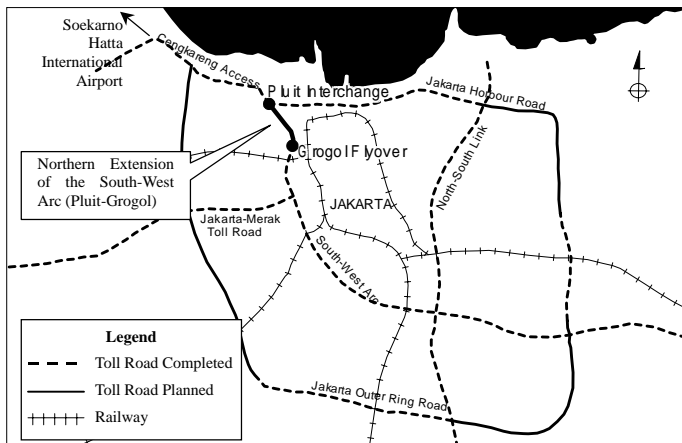
Indonesia

Construction Project of the Northern Extension of the South-West Arc (Pluit-Grogol)

Report Date : November 2002

Field Survey : July 2001

1. Project Profile and Japan's ODA Loan



Project Location Map



Northern Extension of South-West Arc

1.1 Background

Development of DKI Jakarta (Jakarta Metropolitan Area) led to increased traffic volume which had in turn created greater traffic congestion on arterial roads. The Cengkareng Access Road connecting Jakarta with the international airport terminated at the north of the city, forcing traffic onto urban streets between that point and the South-West Arc Toll Road, leading directly to the city center. Hence, those streets between the Cengkareng Access Road and the South-West Arc were heavily congested. In order to mitigate the congestion, and at the same time to complete the toll-way network in the Metropolitan Area, the construction of the Northern Extension of the South-West Arc Road was urgently required.

1.2 Objectives

To establish a toll-way network comprising the South-West Arc, the North-South Link, and the Jakarta Harbor Road of Jakarta Intra Urban Toll-way, the Cengkareng Access Road, the Jakarta – Tangerang Freeway, the Jagorawi Freeway, and the Jakarta – Cikampek Freeway, thereby improving the traffic congestion in the northwest region of DKI Jakarta, and to use the urban toll-way network effectively by providing a toll-way connection between the South-West Arc and the Soekarno-Hatta International Airport.

1.3 Project Scope

- (i) Construction of a toll-way and ancillary works between Grogol and Pluit, including interchanges and ramps, and construction of a southbound arterial road between Jembatan Besi and Grogol

- (ii) Consulting services for supervision of the above works

1.4 Borrower/Executing Agency

Republic of Indonesia / Bina Marga, Directorate General of Highways, Ministry of Public Works

1.5 Outline of Loan Agreement

| | |
|---------------------------------|---------------------|
| Loan Amount | 10,902 million yen |
| Loan Disbursed Amount | 7,038 million yen |
| Exchange of Notes | November, 1994 |
| Loan Agreement | November, 1994 |
| Terms and Conditions | |
| Interest Rate | 2.6 % p.a. |
| Repayment Period (Grace Period) | 30 years (10 years) |
| Procurement | General Untied |
| Final Disbursement Date | December, 1999 |

2. Results and Evaluation

2.1 Relevance

Since the Jakarta Metropolitan Area Transport Study conducted in 1972, development of a toll road network has been one of most important policies for addressing transportation problems in the Metropolitan Area. The planned network comprises two ring roads and five radial inter-urban toll roads. The project section, the Northern Extension of the South-West Arc, was a missing link of the Inner Ring Road between the South-West Arc and the Cengkareng Access Road, and the absence of this link had hampered smooth traffic flow. Since this connection was urgently needed to facilitate the flow of traffic between the urban center and the Soekarno Hatta Airport, the project was appropriate at the time of appraisal. The solution of such traffic congestion was one of the main targets in the sixth national five-year development plan (REPELITA VI, 1994-1998). The current national development program (PROPENAS) emphasizes that critical bottlenecks should be improved in order to utilize the existing road network effectively. This priority assures that the project remains relevant, even at present.

2.2 Efficiency

(2.2.1) Project Scope

The project comprised construction of a 3.5 km Pluit-Grogol toll road section, two toll gates (Cengkareng and Toman C), two interchanges (Pluit and Angke), and two ramps at Jelambar. All the works were implemented without any significant change in scope.

(2.2.2) Implementation Schedule

Civil works started in January 1994 and were completed with a 30-month construction period as

originally planned. Project planners faced pressure to have the project completed before the Jakarta International Air Show in June 1996 at the Soekarno Hatta Airport, so from the beginning the work was organized on a tight schedule. Most was completed before the Air Show, except for minor works not critical to airport access. All the civil works were completed in December 1996, as scheduled in the original plan.

(2.2.3) Project Cost

The project cost was estimated to be 12,826 million yen at the time of project appraisal.

The actual cost was 8,673 million yen, 32% lower than the original estimate. There were two reasons for this, the major one being severe bidding competition. A successful bidder offered the lowest price, which was about 20% lower than the estimate at the time of appraisal. The other reason was the change in exchange rates. At the project appraisal in 1994, one yen was equivalent to Rp. 20, but the actual rate was Rp. 25 on average at the time of disbursement. As the foreign portion of the project was about 60%, the 20% rise of yen to rupiah resulted in a 12% cost decline for the project.

2.3 Effectiveness

(2.3.1) Traffic Volume

According to the latest survey¹⁾ results, traffic crossing the South-West Arc and its Northern Extension increased from 323,049 vehicles per day in 1993 to 500,649 vehicles per day in 2001, rising 6.5% per annum. These figures are comparable to average traffic growth rates for the entire Jakarta metropolitan area. Table 1 compares estimates of traffic volume on the S-W Arc, based on actual data, with the figures forecasted in 1995. The actual number in the first year of operation (1997) was already larger than the forecast for 2001. The number of users has been increasing, and is consistently 1.3 to 1.4 times in excess of the forecast. The average annual growth rate of the actual traffic on toll road during the years 1993-2001 was 11.3%, which is much higher than the growth rate for all of Jakarta. Traffic volumes (AADT: Annual Average Daily Traffic) on the Northern Extension of the S-W Arc between each interchange or ramp are between 50,000 to 60,000 vehicles, as shown in Table 2.

Table 1: Trend of Daily Users on S-W Arc and Northern Extension (vehicles/day)

| Section | | 1991 | 1993 | 1997 | 1998 | 1999 | 2000 | 2001* |
|------------------------------|------------------|---------|---------|---------|---------|---------|---------|---------|
| Entire DKI Jakarta Toll Road | Actual | 162,849 | 222,494 | 425,003 | 373,748 | 422,747 | 492,631 | 524,185 |
| Tollway User on S-W Arc | Estimated** | 99,338 | 135,721 | 259,252 | 227,986 | 257,876 | 300,505 | 319,753 |
| | Forecast in 1995 | - | - | 190,299 | 198,020 | 206,054 | 214,414 | 223,113 |
| User of Northern Extension | Estimated** | - | - | 46,665 | 41,038 | 46,418 | 54,091 | 57,556 |

Note: * as of April 2001

** estimated from the actual number of users of Entire Toll Road in DKI Jakarta

Source: Elaborated on Jasa Marga Monthly Report and JBIC report "1994 Update of the Financial and Economic Analysis of the Northern Extension of the South-West Arc" April, 1994

¹⁾ JICA: Study in 2001 on Integrated Transport Master Plan for JABOTABEK

Table 2: Traffic Volume (AADT) on South-West Arc and Northern Extension
Counted in December, 2000

| | IC/Ramp | Direction | | Total |
|-------------------------|-------------|---------------|--------------|---------|
| | | Cawang -Pluit | Pluit-Cawang | |
| S-W Arc North Extension | Pluit | | | |
| | Plun ITC | 24,766 | 24,059 | 48,825 |
| | Angke | 33,142 | 27,475 | 60,617 |
| | Jelambar | 31,334 | 28,951 | 60,285 |
| | Grogol | 21,762 | 34,250 | 56,012 |
| S-W Arc | Tomang ITC | 34,001 | 32,020 | 66,021 |
| | Slipi 2 | 56,647 | 56,567 | 113,214 |
| | Slipi 1 | 63,327 | 56,482 | 119,809 |
| | Pejompongan | 56,923 | 56,482 | 113,405 |
| | Senayan | 68,558 | 63,878 | 132,436 |
| | Semanggi | 58,233 | 52,538 | 110,771 |
| | Kuningan 1 | 74,478 | 71,701 | 146,179 |
| | Kuningan | 70,766 | 71,701 | 142,467 |
| | Pancoran | 82,205 | 83,552 | 165,757 |
| | Tebet | 76,105 | 75,342 | 151,447 |
| | Ciliwung | 80,780 | 81,495 | 162,275 |
| | Cawang ITC | 74,028 | 74,327 | 148,355 |

Source: Jasa Marga Monthly Traffic Report, May 2001

(2.3.2) Effective Use of Toll-way Network

The Northern Extension connected the South-West Arc with the Cengkareng Access Road and Jakarta Harbor Road, completing the Inner Ring Road. As a consequence, traffic toward Inner Jakarta is better distributed across the radial roads. The radial inter-city expressways all have their starting point on the Inner Ring Road, so the completion of the Northern Extension has proved highly effective for accommodating and distributing inter-city traffic as well as traffic from the outskirts of Jakarta.

(2.3.3) Saved Time

Daily traffic volume on the Northern Extension is currently about 60,000 pcu (passenger car units). If this project had not been implemented and all the traffic had been diverted to the parallel arterial road, daily traffic on Jl. Dr. Latumenten and Jl. Jembatan Tiga would have exceeded 100,000 pcu, and the average speed would have been lower than 10 km/hour, considering the relationship between the traffic capacity and travel speed on the basis of the survey results in the aforementioned JICA study. Time saved by the project is estimated to be approximately 40,000 pcu-hours a day in 2001. Accessibility to the Soekarno Hatta Airport has improved significantly also, especially from the southern part of the city. Previously, travel time to the airport was quite uncertain. But the project made it possible for travelers and well-wishers to estimate the travel time to the airport with higher accuracy. If taking this into account, saved time will be much larger than estimated above.

(2.3.4) Economic Internal Rate of Return (EIRR)

a. Estimation of Economic Benefit

In order to re-estimate the economic benefit, a simple calculation method was employed instead of conducting a network simulation.

The main alternative to the Northern Extension is Jl. Dr. Latumenten and Jl. Jembatan Dua (Figure 1). It is assumed that all the traffic on the Northern Extension would have been diverted to the alternative route if the Extension had not been constructed. Average modal composition of S-W Arc is assumed for the Northern Extension and average pattern in the Inner Jakarta for the alternative route. Traffic on the alternative routes was about 34,000 pcu (passenger car units) in 2001, and is assumed to grow at 5% per annum until 2020, based on the past traffic growth rate. The economic benefit is estimated for two cases; one is based on the actual traffic volume in 1997-2001, and the other is based on the traffic volume forecast in 1994. The estimated first year economic benefit is Rp. 71,890 million for the former case and Rp. 57,071 million for the latter. Most benefits are derived from savings in terms of travel time cost (TTC), not from savings in vehicle operating cost. (Table 3)

Figure 1: Alternative Route of Northern Extension of South-West Arc

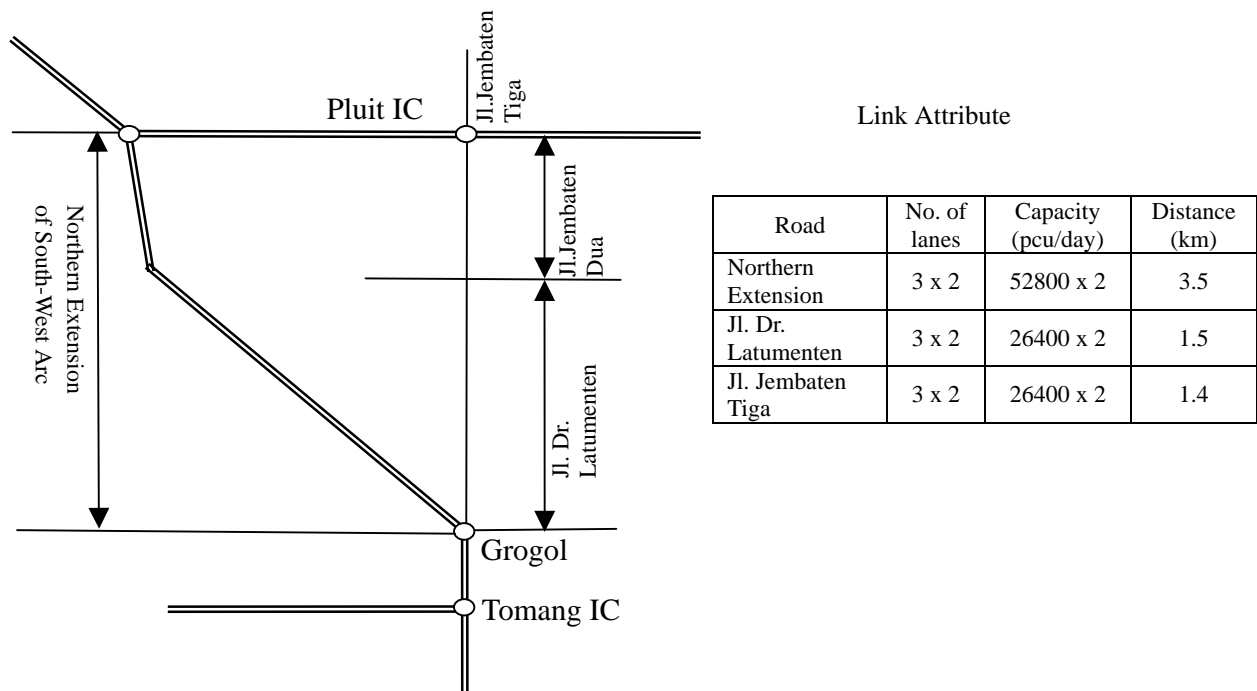


Table 3: Re-estimated Economic Benefit of Northern Extension of South-West Arc

Unit: million Rp. (1994 prices)

| Case | Year | VOC saving | TTC Saving | Total Benefit |
|-----------------------------------|------|------------|------------|---------------|
| Based on Traffic Forecast in 1994 | 1997 | 3,234 | 53,837 | 57,071 |
| | 2000 | 3,861 | 62,481 | 66,342 |
| | 2010 | 6,068 | 93,372 | 99,440 |
| Based on Actual Traffic Volume | 1997 | 4,481 | 67,410 | 71,890 |
| | 2000 | 5,547 | 79,953 | 85,500 |
| | 2010 | 7,562 | 117,593 | 125,156 |

b. Re-estimation of EIRR

The Northern Extension project assumed a high EIRR of 28.1%, based on a network simulation at the stage of project appraisal. The EIRR is also estimated for two cases mentioned above; actual traffic volume case and the forecasted traffic volume case.

As a result, the EIRR in the former case is 1.17 times higher than that of the latter based on the simple calculation method mentioned above. Accordingly, if a network simulation is conducted using the actual high demand growth, the resultant EIRR would be 32.9%.

The higher resultant value is attributed to the higher traffic growth and to reductions in construction costs.

(2.3.5) Financial IRR (FIRR)

Based on the fact that the number of toll road users actually increased on the Northern Extension, the revenue attributable to the Northern Extension and the resultant FIRR were estimated at current prices. The toll of the South-West Arc has remained unchanged at Rp. 3,000 since the Northern Extension opened.

Assuming the same toll (Rp. 3,000) is applied in the future, the FIRR is re-estimated as 15.9%, which is slightly higher than the FIRR of 13.3% estimated at the time of appraisal, when the toll was escalated annually by 3.5% in real terms. Applying the same increase in the toll rate, the re-estimated FIRR would be 19.5%. The higher result is attributed mainly to higher traffic growth than was originally expected and to the cost underrun for the construction.

2.4 Impact

(2.4.1) Impacts on Environment

The project section of 3.5 km was mostly constructed on Banjir Canal. According to the executing agency, negative impacts, such as noise and vibration by heavy traffic, are minimal. No complaints from residents living alongside the route have been reported. Formerly, about 10,000 squatters inhabited the project site; they were peacefully relocated, each receiving a legal indemnity during the 1991 to 1993 period.

According to the executing agency, the project toll road is influencing changes in traffic flow, and new congestion-prone spots are being generated around new interchanges and in the vicinity of on/off ramps.

2.5 Sustainability

(2.5.1) Operations and Maintenance

a. Organization

After completion, the project section was operated and maintained by PT Jasa Marga. Jasa Marga is a state-owned enterprise, founded in 1978, in order to plan, build, operate and maintain the toll road and its facilities.

Under the Head Office of PT Jasa Marga, there are nine Branch Offices, corresponding to nine toll road sections totaling 350 km in length. The CTC (Cawang – Tomang – Cenkareng) branch office is directly responsible for the western half of the Inner Ring Road, including the project section. The eastern half is operated and maintained by another private company, PT.CMNP, under the BOT scheme. The CTC mainly undertakes inspection, checking and compiling a maintenance work plan in collaboration with PT.CMNP. Practical maintenance works are contracted out to private companies.

Jasa Marga is one of the companies included in the program to privatize state-owned enterprises, part of the Government's commitment to the IMF. The company started preparations a few years ago. However, at the moment, the process has stopped owing to the change in government.

b. Present Condition of the Project

According to the executing agency, although the Pluit–Groggol project section is still new, the road surface is already damaged, partly because of heavy traffic and partly because of the low quality of the construction materials. In 1999 and 2000, special maintenance was implemented on this section, including scrap and fill procedures, as well as overlaying and surface leveling. According to the CTC branch office, the maintenance budget has not been sufficiently allocated to CTC from PT Jasa Marga.

As a result, CTC has been in a difficult position to place and order to private companies for the maintenance work, and therefore, the maintenance of the project road is being carried out section by section, mostly behind schedule.

(2.5.2) Technical Capacity

In year 2000, PT Jasa Marga employed 6,323 people, about 6% of them in managerial positions, and the rest in non-managerial positions. The Company is carrying out various training and education programs, both on-the-job and regular training, to enhance their skills. The Company also works together with the Japan Highway Public Corporation and the Korean Highway Corporation in exchanging information, knowledge, and technology. The Branch Office of the CTC has 39 staff members in the Maintenance Section, including three engineers and many technicians.

Since 1998, the Company has been carrying out maintenance work according to the Toll Road Maintenance Management System, by perfecting the existing system and updating the data of all toll roads. The System aims at keeping the Toll Road Maintenance Standard, which specifies three categories of maintenance: routine maintenance, which is carried out at certain times on all toll road assets; periodic maintenance, carried out on a regular basis in compliance with the design life of the assets; and special maintenance, which is carried out on toll road assets that are suddenly damaged by flood, soil erosion or a similar cause. The Company has a long history and sufficient experience in toll road development, operation and maintenance.

(2.5.3) Financial Status

Historically, the Indonesian Government has carried out a clear financial policy for toll road development: Cost of construction, operation and maintenance have to be covered by toll revenue, and not be dependent on the national budget. However, land for the toll road is procured by the Government with public funds. Practically speaking, development funds for toll roads used to be raised independently, via public bond issuance, or through loans from the Government and/or private finance.

The toll for the Inner Ring Road was raised from Rp.2,000 to Rp.3,000 for automobiles when the project was completed in 1996. According to Jasa Marga, the Central Government has approved toll increases every three years in accordance with the inflation rate, however, since 1996, it has not been raised, in spite of the high inflation rate during the recent several years. The present value of Rp. 3,000, is equivalent to about Rp. 1,040 in 1996 prices. Accordingly, it can be said that the current toll level is too low to cover all the expenses including the depreciation cost.

As shown in Table 4, net income of the Company has recently been in a positive balance. The financial situation to date seems sound. However, all the operating ratios in the table are on a declining trend. In general, the operation of toll roads becomes less profitable every year. Furthermore, repayment of long-term loans will become a heavier burden in the near future after the grace period has expired. At that time, special attention should be paid to the financial trend of PT Jasa Marga.

Table 4: Financial Highlights of PT Jasa Marga

(in million rupiah)

| Item | 1996 | 1997 | 1998 | 1999 |
|--|-----------|-----------|-----------|-----------|
| (1) Income Statement | | | | |
| Toll Revenue | 625,160 | 727,073 | 674,424 | 738,908 |
| Operating Expenses | 307,680 | 372,916 | 446,791 | 491,462 |
| Operating Income | 324,731 | 362,148 | 234,430 | 252,850 |
| Other Income | -23,955 | -20,319 | -28,837 | -50,194 |
| Profit before Tax | 300,776 | 341,829 | 205,594 | 202,656 |
| Income Tax | 80,522 | 89,562 | 39,842 | 48,945 |
| Net Income | 220,254 | 252,267 | 165,752 | 153,711 |
| Shares Outstanding (in 1000 of shares) | 29.7 | 29.7 | 1,000 | 1,000 |
| Earning per Share(Rp. 1000) | 221 | 252 | 166 | 154 |
| (2) Balance Sheet | | | | |
| Total Asset | 2,457,210 | 2,604,768 | 3,066,114 | 3,099,858 |
| Fixed Asset (NPV) | 1,705,288 | 1,829,852 | 2,297,603 | 2,402,728 |
| Total Liabilities | 1,075,579 | 1,097,425 | 1,503,604 | 1,736,641 |
| Stockholder's Equity | 1,176,170 | 1,282,333 | 1,324,378 | 1,394,492 |
| (3) Operating Ratios(%) | | | | |
| Operating Income to Toll Revenues | 51.94 | 49.81 | 34.76 | 34.22 |
| Operating Income to Stockholder's Equity | 27.61 | 28.24 | 17.70 | 18.13 |
| Operating Income to Total Assets | 13.22 | 13.90 | 7.65 | 8.16 |
| Net Profit Margin | 35.23 | 34.70 | 24.58 | 20.80 |
| Return to Equity | 18.73 | 19.67 | 12.52 | 11.02 |
| Return on Assets | 8.96 | 9.68 | 5.41 | 4.96 |
| (4) Financial Ratio(%) | | | | |
| Current Ratio | 174.47 | 90.42 | 124.26 | 131.52 |
| Debt Equity Ratio | 91.45 | 85.58 | 113.53 | 124.54 |
| Total Liabilities to Total Assets | 43.77 | 42.13 | 49.04 | 56.02 |

Source: PT Jasa Marga, Annual Report 1999

3. Lessons Learned

Through an international competitive bidding, this project was awarded to a bidder whose offered price was much lower than the estimate at the time of appraisal. As a result, due to low quality of construction materials and heavy traffic, the road surface was seriously damaged in a short period after project completion. In such a case where the contractor's bidding price is extremely low compared to the consultant's estimates, appropriate measures and procedures should be considered by the executing agency in order to secure an acceptable level of construction quality.

4. Recommendations

Although net income has shown positive, declining trends are observed in PT Jasa Marga's financial statement and thus the financial status should be monitored carefully. In spite of Indonesia's high rate of inflation, the toll has not been revised since project completion in 1996. The toll increase currently being considered by Jasa Marga is an important issue. It is recommended that the toll be increased as soon as possible to match the rate of inflation.

Comparison of Original and Actual Scope

| Item | Plan | Actual |
|--|--|--|
| Project Scope | | |
| a. Construction of Toll-way component | L= 3,500m W= 12.5m(2way) Six lane / 2way | As planned As planned As planned |
| b. Construction of Interchanges | | |
| 1) Pluit | | |
| 2) Angke (including arterial road betterment) | L (arterial road)= 590m | As planned |
| c. Ramp | | |
| 1) Jembatan Besi | 1 off-ramp W=3.5m | As planned |
| 2) Jelambar | 2 on-ramp W=3.5m | As planned |
| d. Toll gate and Toll office | | |
| 1) Toll gate | 2 places (Cengkareng and Toman C ramp) | As planned |
| 2) Toll office | 1 places (Cengkareng) | As planned |
| e. Consulting Service for supervision of the above 1,2,3 and 4 | Expatriate 229 M/M Local 2,292 M/M | Expatriate 175 M/M Local 1,919 M/M |
| Implementation Schedule | | |
| a. Consulting Service | Nov. 1994 to Aug. 1997 (34 months) | Nov. 1994 to Aug.1997 (34 months) |
| b. Civil Works | | |
| 1) Section 1 | Jan. 1994 to Dec. 1996 (24 months) | Jan.1994 to Dec.1996 (24 months) |
| 2) Section 2 | Jan. 1994 to June 1996 (30 months) | Jan.1994 to June 1996 (30 months) |
| 3) Section 3 | Jan. 1994 to May 1996 (17 months) | Jan.1994 to Oct.1996 (22 months) |
| Project Cost | | |
| Foreign currency | 7,987 million yen | 5,401 million yen |
| Local currency | 4,839 million yen | 3,272 million yen |
| Total | 12,826 million yen | 8,673 million yen |
| ODA Loan Portion | 10,902 million yen | 7,038 million yen |
| Exchange Rate | 1Rp = 0.05 yen | 1Rp = 0.04 yen |

Independent Evaluator's Opinion on Northern Extension of the South-West Arc (Pluit-Grogol)

Pande Radja Silalahi

Head of the Department of Economic Affairs, CSIS, Jakarta

The Relevance

The draft report is concise and covers all the relevant subjects set out in the DAC Evaluation Criteria. Construction of a toll-way and arterial road in Jakarta has very high relevance, and the construction of a toll-way and arterial road will become even more important as the government trying to improve the traffic congestion in Jakarta. Government budget constraints and increasing importance of unimpeded flows of vehicles means that construction of roads will play an increasing vital role in the future.

With this project a higher number of vehicles to pass/use a particular stretch of road, and create a time saving for the user of these constructions. The economic benefits are derived from saving in terms of travel time cost, not from saving in vehicle operating cost.

The estimated economic rates return (EIRR) which is significantly high may be seen as indication that the project provides significant benefit to the society at large (often referred to as social benefit). However, this indication need to be corrected by using appropriate interest rate. The EIRR is estimated in Rupiah term while the repayment of this loan is in Yen. Since there has been a large depreciation of Rupiah with respect to yen, it is important to determine which interest rate should be used in calculation EIRR (whether yen loan or market rate of loan in Rupiah)

Impact

The project resulted in positive economics and social impacts. It might be concluded that as a result of the project the accessibility to the Soekarno-Hatta Airport has improved significantly, and travel time to the airport can be estimated with higher accuracy. Furthermore, negative impacts, such as noise and vibration by heavy traffic, are minimal. About 10,000 squatters inhabited the project site were peacefully relocated, and each receiving a legal indemnity.

As mentioned in this report the actual cost was much lower than the estimate at the time of appraisal (about 32%). The decrease was resulted from the excessive competition. The Korean contractor's bidding price is extremely low. But the quality of the project was below acceptable level. Therefore in order to show whether these project was cost-efficient we need to compare the unit cost of the project with unit cost of a similar project.