

Indonesia

Road Rehabilitation Project (III)

Report Date: January 2003

Field Survey: November 2002

1. Project Profile and Japan's ODA Loan



Project location map



Maintenance work in progress on a national road (North Sumatra Province)

1.1 Background

At the time of project appraisal (1993), development of the trunk road network in Indonesia had been virtually completed with the exclusion of a few regional and toll roads that were still under construction. Accordingly, the government's fifth five-year national development plan (REPELITA V: 1989-1993) assigned priority to the maintenance and improvement of existing roads as a means of targeting sustainable and stable economic growth and balanced socioeconomic development.

Having stressed the importance of maintaining and improving the existing road network, in 1987 the government of Indonesia devised the "Road and Bridge Rehabilitation Project", which envisaged the rehabilitation of 6,097km of roads in the eight provinces of Sumatra and West Java Province, the regions targeted by this project. In order to execute this plan Japan began providing loan assistance in 1988, which was used to fund two road rehabilitation projects (Phases I and II). However, it was predicted that after price increases, plan modifications and so forth, it would only be possible to complete 4,335km of the 4,934km planned. Deterioration continued apace on the outstanding sections and although some work was undertaken using funds from the national budget, etc., it was insufficient, and it was thus deemed necessary to undertake immediate rehabilitation of the unfinished sections. Given the circumstances, the government of Japan was requested to provide a loan to cover the maintenance and improvement of existing national and provincial roads including the outstanding sections from the previous project.

1.2 Objectives

To implement rehabilitation work on conspicuously deteriorated sections of national and provincial roads in the eight provinces of Sumatra and West Java Province and improvement work,

including width expansion, on routes subject to growth in traffic volume, etc., in order to achieve the smooth flow of traffic and thereby to stimulate regional societies and economies and effectuate balanced national development

1.3 Project Scope

(1) Civil engineering works: Maintenance/improvement of national and provincial roads and replacement of related bridges.

- National/provincial road maintenance/improvement works (1,481.5km)
 - Surface improvement (asphalt overlay)
 - Expansion of sections not conforming to road width standards
 - Four carriageway expansions to heavily congested sections on the outskirts of urban areas (5 sections: 56km)
- Bridge replacement works (48 sites: 1,639m)
 - 26 bridges on Nias Island, North Sumatra Province (replacement of wooden bridges)
 - 22 bridges in West Java Province (replacement in line with width expansions)

(2) Consulting services: Execution supervision

1.4 Borrower/Executing Agency

The Republic of Indonesia/Ministry of Settlement and Regional Infrastructure, Directorate General of Regional Infrastructure (the former Ministry of Public Works, Directorate General of Highways)

* In real terms, the executing agency was the Road Betterment Office, a local office of the central government (which has been responsible for the planning, construction and maintenance of national roads under provincial government authority since the decentralization of authority).

1.5 Outline of Loan Agreement

Loan Amount	20,302 million yen
Loan Disbursed Amount	18,830 million yen
Exchange of Notes	October 1993
Loan Agreement	November 1993
Terms and Conditions	
-Interest Rate	2.6%
-Repayment Period (Grace Period)	30 years (10 years)
-Procurement	General untied (Consultant service is procured as partially untied aid)
Final Disbursement Date	June 2000

2. Results and Evaluation

2.1 Relevance

[Relevancy of project objectives]

At the time of project appraisal, the priority of national road policy had been promulgated as follows on the basis of development budget retrenchment:

National road policy priorities:

- I. Improvement, periodic and routine maintenance of national, provincial and district roads.
- II. Improvement of heavily congested roads for which a previous/new proposal exists (to improve standards).
- III. Construction of roads and toll roads to contribute to regional development.

The current project was devised in line with the road policy priorities cited above with the objective of implementing improvements and periodic and routine maintenance work on national and provincial roads in West Java and eight provinces on Sumatra and of enhancing transport efficiency, as a means of targeting socioeconomic development¹⁾.

Moreover, PROPENSAS (2000-2004), the current national development plan, has assigned priority to “the rehabilitation and maintenance of transportation facilities and infrastructure, especially roads, railways, bridges, docks, and airports”, “efforts to improve efficiency via the transport management system so as to enable maximum utilization of existing transportation facilities and infrastructure”, and “increasing the permissible capacity of transportation services on overloaded routes and when traffic congestion causes a bottleneck” as specific activities relating to the maintenance and improvement of transport-related infrastructure and services, and accordingly, the objectives of this project are considered to have retained their relevancy.

2.2 Efficiency

2.2.1 Project Scope

At the time of project appraisal, the original scope covered maintenance and improvement to a total 1,481.5km of trunk road sections²⁾, however, this was in fact extended by 15% to 1,709km, involving additional sections measuring approximately 335km. Accordingly, the scope was expanded by approximately 38% in terms of overall distance. This was based on the intentions of the Indonesian government regarding the urgency/necessity of rehabilitation and improvement works

¹⁾ The rehabilitation and improvement of trunk roads (including bridges) in the ten provinces of Java, Bali, Nusa Tenggara and Sulawesi were implemented using funds provided by the Asian Development Bank (Ninth Road (Maintenance) Sector Project; Loan No. 863-INO).

²⁾ In selecting routes for the project, with the exception of some sections, sections implemented in the preceding phases of the project (I or II) were extended with the aim of achieving the balanced rehabilitation/improvement of the entire road network. Although bridge replacement work was scheduled for North Sumatra and West Java it was not possible to obtain data on the results. Nevertheless, we were able to confirm that the necessary bridge replacement work had been undertaken on the improved road sections in West Java during a drive through the target sections, and the work appears to have been implemented satisfactorily.

and was in line with the objectives of this project to promote the rehabilitation and improvement of trunk roads.

Table 1: Comparison of original and actual scope

Province	Original scope (km)	Actual scope			Actual/original
		Post revision (km)	Increase (km)	Total (km)	
West Java Province	140.3	233.47	80.70	314.17	2.24
Lampung Province	321.0	303.30	14.40	317.70	0.99
South Sumatra Province	200.3	207.63	45.80	253.43	1.27
Bengkulu Province	102.0	101.75	49.14	150.89	1.48
Jambi Province	56.5	53.62	--	53.62	0.95
Riau Province	27.0	28.53	--	28.53	1.06
West Sumatra Province	169.3	214.05	71.95	285.10	1.68
North Sumatra Province	211.8	340.75	73.51	414.26	1.96
Aceh Special Province	253.3	226.07	--	226.07	0.89
Total	1,481.5	1,709.17	334.50	2,043.77	1.38

Note: Original scope figures are taken from audit data; actual figures are taken from the Project Completion Report (PCR).

2.2.2 Implementation Schedule

Work on the sections included in the original project scope was commenced in February 1994, approximately six months after the loan contract was concluded in November 1993, and after the original scope was modified/supplemented to incorporate the extensions mentioned above, the final section was completed in December 1999 (determined at time of delivery). Work was started some four months ahead of the initially planned implementation schedule, whilst completion was some three years behind schedule. The implementation schedule was extended on almost all sections. According to the executing agency the delays were caused by (1) the poor performance of the contractor (insufficient quality/quantity of construction materials), (2) the impact of natural phenomena such as rainfall, landslides, etc., and (3) governmental delays in delivery of budgetary funds. Phases I and II of the project were subject to similar delays and it was hoped that the executing agency would strengthen its project management capabilities in this respect. Notwithstanding, even given the nature of the project, which involved a large volume of construction work scattered across a wide area, it cannot be denied that its management left much to be desired.

2.2.3 Project Cost

Total project costs amounted to 23,204 million yen (Rp. 580,104 million: 1 rupiah = 0.040 yen) against estimated costs of 23,885 million yen (Rp. 404,831 million: 1 rupiah = 0.059 yen)³⁾. The expansions in scope that were made in consideration of the urgency/necessity of maintenance and improvement works resulted in an overrun in local currency expenditure, however, adjustments were made during project implementation by reallocating foreign currency and domestic currency funds,

³⁾ Provisionally calculated using the construction order value indicated in the final report and the payment statements for consultant fees.

thereby preventing an overrun in total costs. The actual loan disbursement amounted to 18,830 million yen and was kept within a range of around 93% of the ceiling value of 20,302 million yen.

2.3 Effectiveness

2.3.1 Improvement in surface condition index values

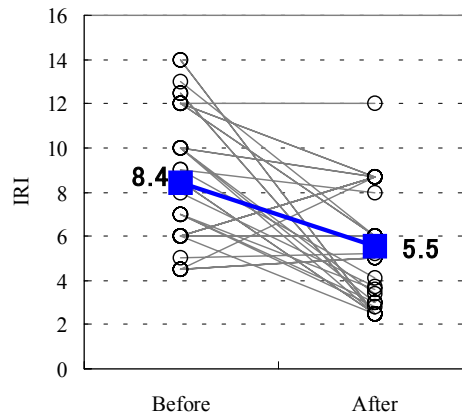
According to data provided by the four provinces visited by the survey mission (West Java, Lampung, South Sumatra and North Sumatra), there has been an overall improvement in index values as compared to their previous levels. The figure shown below illustrates changes in road surface conditions (a sample of 39 sections) from prior to implementation (1993) to post completion (2002) in terms of the International Roughness Index (IRI⁴). The pre-project IRI values of between 4-14 (average 8.4: poor condition) have decreased to between 2-12 (average 5.5: good) most recently. With IRI, the smaller the value the better the condition of the road, and generally speaking, a standard value less than 8 is desirable in terms of pavement smoothness⁵.

⁴) An internationally standardized method for measuring the condition of road surfaces; the index indicates pavement smoothness. A measuring wheel mounted on a vehicle moves up and down in response to unevenness in the road's surface. The cumulative movement displacement value (absolute value) of vertical direction is divided by the distance traveled to give an index in number of meters per kilometer.

IRI value	Pavement condition
0-3	Almost completely unstriated and homogeneous
3-4	Very good, mostly unstriated
4-6	Good
6-8	Comparatively good. There are defects in surface homogeneity, but localized potholes are rare.
8-10	Poor. There are scattered localized potholes and the surface is not homogeneous.
10-12	Damaged. There are ruts and numerous localized potholes.
12-16	Badly damaged. There are numerous localized potholes covering a wide area of pavement surface.
16-	Can only be traversed with difficulty by four-wheeled vehicles.

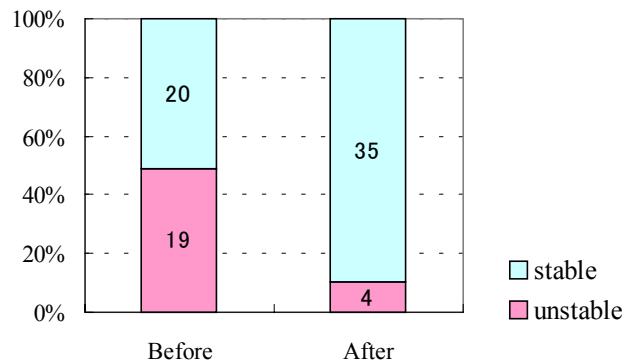
⁵) An IRI value of 8 or more was a basic condition for selection of routes to be targeted for development. However, even if the IRI value was less than 8, routes on which it was feared damage would progress in the near future were also included in view of pavement conditions on connecting sections, together with routes judged to require preemptive improvement in view of a propensity for traffic volumes to increase.

Figure 1: Pre-project and current IRI values (an index expressing pavement smoothness)



The provincial government offices responsible for roads use these IRI values to assess pavement conditions in terms of driving stability or instability and focus plans for maintenance and improvement on routes that are in an unstable condition. Figure 2 is a comparison of pre- and post-project provincial government stable/unstable evaluation results for the routes for which the above-mentioned data was available. Prior to project implementation approximately half the routes were classified as being in an unstable condition, however, 90% are now in a stable condition and only a limited number remain unstable (10%). In this way, the current project has contributed to improving and stabilizing the pavement condition of national and provincial roads.

Figure 2: Pre-project and current pavement conditions



2.3.2 Driving results in the target sections

Driving tests were conducted on upgraded sections in the four provinces of West Java, Lampung, South Sumatra and North Sumatra in order to confirm current pavement and maintenance conditions. As a result it was possible to evaluate the ride performance, i.e. driving speed and comfort, of routes that had been paved or widened under the project as having improved. Despite the fact that more than five years has elapsed since work was completed on most of the upgraded routes, minor improvements subsequently undertaken as part of routine maintenance have ensured that the roads have stayed in good condition. However, there are outstanding issues in terms of the “sustainability”

of good ride performance when viewed in terms of the entire road network, including routes not covered by this project. There is conspicuous cracking and subsidence on the surface of national trunk roads (Sumatra East and Sumatra Central) that see heavy traffic of large, heavy vehicles in Lampung and South Sumatra in particular, and vehicles entering the sections concerned are obliged to slow down, which causes traffic jams. The challenge will be to maintain the balance of ride performance at a certain level across the entire road network.

Figure 3: A section of road upgraded via the project (left) and a road connecting with the upgraded route (right: not covered)



In addition, whilst the ride performance of intercity roads is favorable, traffic congestion tends to occur when entering regional cities that face onto national and provincial trunk roads. This is because numerous local markets are set up alongside trunk roads and temporary roadside stalls and shoppers protruding onto both sides of the road block the flow of traffic. In consequence, even if pavement conditions are improved and the ride performance of the roads per se increases, it must still be taken into account that this state of affairs will affect travel times.

2.3.3 Recalculation of Economic Internal Rate of Return (EIRR)

It is difficult to recalculate EIRR since appraisal documents contain no information on the premises for calculation and it was not possible to obtain sufficient data for the purposes of recalculation during this survey.

2.4 Impact

2.4.1 Socioeconomic Impacts

The implementation of this project involved improvements to pavement conditions on target sections of national and provincial trunk roads, in addition to carriage extensions and so forth, which led to reductions in travel times, the elimination of traffic congestion and improved driving comfort. This is evaluated as having enhanced the efficiency of freight and passenger transportation. According to the Project Completion Report (PCR), indirect effects (project effects) were realized in the form of employment creation at the implementation stage, revitalization of economic activity along the roads, and stimulation of the tourist industry, housing development and so forth. These

effects were evidenced by specific examples obtained during this survey.

Specific examples of project impacts are given in the following case studies.

- Shrimp culture, which was initiated in areas contiguous to project roads from around the beginning of the 1990s, has flourished and there is evidence of breeding pond construction. According to the manager of a shrimp culture business set up in 1991 (an executive of a major corporate group in Lampung Province), a single breeding pond measures approximately 4,000m² (3 harvests per year; per harvest yields of 2 tons) and the group owns 100 such ponds. Transporting the shrimp by truck from the breeding ponds to Bakauheni (a major port in Lampung) used to take 4-5 hours, however, the road widening and pavement upgrades undertaken via this project have substantially reduced the travel time to its current level of 2-3 hours (Lampung Province example).
- The transportation of field crops such as corn and cassava produced in the Jambung district of Lampung Province has been facilitated by the road improvement works carried out under this project. It has also become possible for a large bus service to operate a morning and evening service as far as L. Maringgai, increasing the convenience of daily living for community residents (Lampung Province example).
- Improvements (reconstruction including the undercarriage) to the section of provincial road running along the southeast coast of Nias Island in North Sumatra Province have reduced the journey between Gunung Sitoli and Tlk. Dalam from five hours (using the alternative mountain route) to two hours. The chief of the provincial department of roads has evaluated this as having had a major impact on the island's economy, which is anchored by the tourist industry. (North Sumatra Province example).

On the other hand, there was a case like West Java that congestion is prone to occur when entering the regional cities that are located along trunk roads. These traffic jams occur because of the many local markets set up alongside the trunk roads, where temporarily established roadside stalls and shoppers spilling out on both sides of the road serve to block the flow of traffic.

2.4.2 Environmental Impacts

The objective of this project was to rehabilitate existing roads and accordingly it did not have any marked negative impacts on the natural environment. It was necessary to relocate residents along three routes in West Java. According to the provincial government, although not all residents were necessarily satisfied with the amount of compensation offered, agreement was ultimately reached, compensation awarded and the residents resettled.

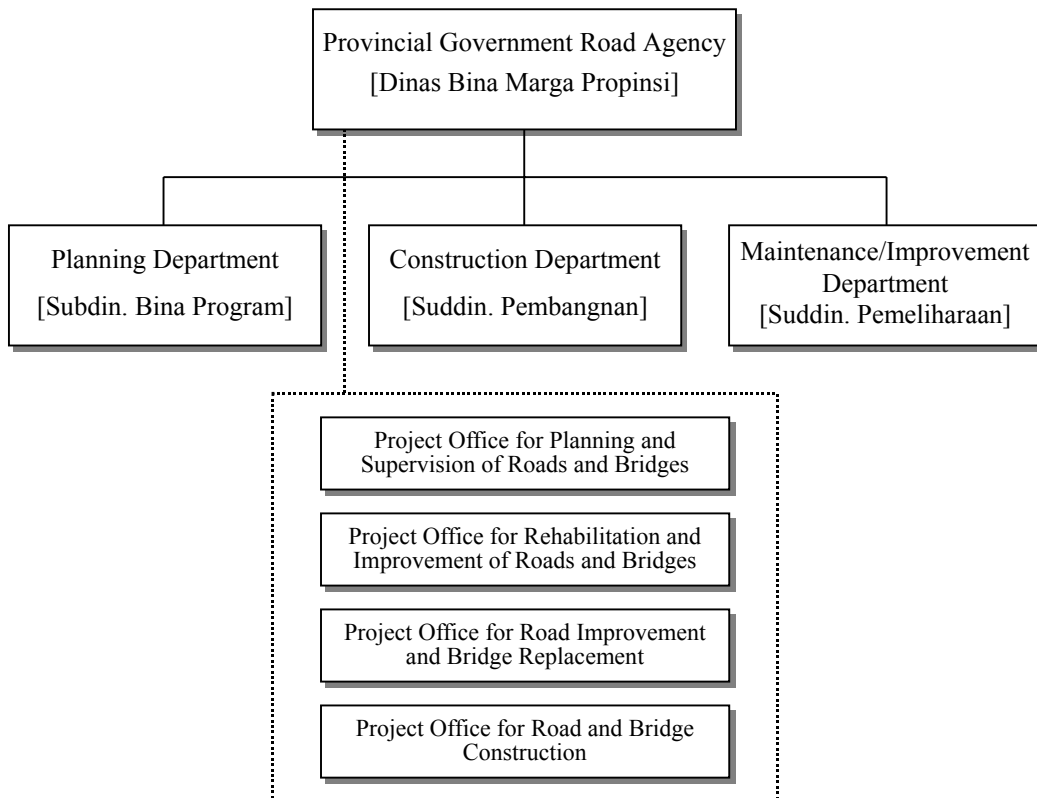
2.5 Sustainability

2.5.1 Organizational System

Even after the government was decentralized in 2001, the maintenance of national and provincial roads has been executed by provincial government road agencies (Dinas Bina Marga, Propinsi) or the highway departments of provincial public works agencies (Sub Dinas Bina Marga, etc.) in line with plans made at appraisal. However, funds for the national road maintenance budget originate from state coffers (APBN) whilst those for the provincial road maintenance budget come out of regional government budgets (APBD).

Dinas Bina Marga generally comprise three sections (a line system), namely, the planning department (section), the construction department (section), and the maintenance and improvement department (section). The work involved in the Project Office for Planning and Supervision of Roads and Bridges (P3JJ: formerly the Road Betterment Office) established by the central government has been carried out under provincial government supervision since the power shift (a staff system). Similar to P3JJ, the central government has established individual projects, functional systems that are supervised by provincial authorities, which respectively handle the planning, construction and maintenance of national roads. Specifically, the Project Office for Rehabilitation and Improvement of Roads and Bridges, the Project Office for Road Improvement and Bridge Replacement, and the Project Office for Road and Bridge Construction.

Figure 4: National/Provincial Road Maintenance Organizational System (Lampung Province)



* Offices set up by the central government

2.5.2 Technical Capacity

The Provincial Government Road Agencies conduct the following three types of maintenance work. Namely:

- 1) Routine maintenance
- 2) Periodic maintenance
- 3) Betterment

Routine maintenance work involves filling sagging or cracked areas, weed culling, gutter sweeping and so forth, periodic maintenance comprises partial resurfacing (asphalt paving), whilst road betterment covers large-scale improvements including groundwork such as road widening. The sections to be targeted by the betterment program are selected on the basis of pavement condition and section-based EIRR values (criteria value: 13-15%) that are periodically updated using the Integrated Road Management System (IRMS) introduced via World Bank cooperation, which determine the sections that are economically significant. However, lack of sufficient operational funding means that the IRMS system is not currently being run in line with the original plans and the EIRR value-based selection process is not functioning. In fact, sections are selected on the basis of unilateral judgments made by provincial government officers as to pavement condition (stable or unstable). Meanwhile, no specific selection criteria have been established for determining which sections should be targeted for routine and/or periodic maintenance (because routine and periodic maintenance should be undertaken irrespective of index values such as EIRR), and here too, selection decisions are based on the experience of provincial government officers. According to the provincial government road agencies and central government organs, staff involved in maintenance activities have sufficient knowledge and technical skills, however, securing funding is an issue, and it is not possible to implement as much maintenance work as is required/desirable.

2.5.3 Financial Status

Although it was not possible to procure annual fiscal data from all the provincial governments involved, from hearing surveys we learned that officials are unanimous in their opinion that with secured maintenance budgets being only around a quarter to half the required amount (per year per kilometer⁶⁾), the level of funding is insufficient. Specific details from the hearings conducted in each

⁶⁾ According to information obtained from each of the provinces during this survey, budget requirements for road maintenance are as shown in the following table.

	(Unit: million Rp./km/year)			
	West Java	Lampung	South Sumatra	North Sumatra
Routine maintenance	20	National roads: 40 – 50 Provincial roads: 15 – 20	25	25
Periodic maintenance	350	320	750	700
Betterment	1,200	1,100	1,500	1,000

province⁷⁾ are given below.

[West Java]

The average annual maintenance budget is 10 million Rp./km/year (approximately 1.5 million yen), i.e. a 50% fulfillment ratio on the 20 million Rp./km/year required by the province. This budget covers patchwork filling of cracks and potholes, etc., and routine maintenance such as painting centerline markings and so forth. For periodic and more substantial work, such as overlaying, it is necessary to apply for and secure a separate budget.

[Lampung]

The annual maintenance budget (for the above-stated routine maintenance work) averages out at 10-15 million Rp./km/year (approximately 150-220 thousand yen) for national roads, i.e. a 25% fulfillment ratio on the 40-50 million Rp./km/year required by the province. The figure for provincial roads is 3.5-5.0 million Rp./km/year (approximately 50-80 thousand yen), which is again equivalent to a 25% fulfillment ratio on the 15-20 million Rp./km/year that is required. Likewise, this budget covers patchwork filling of cracks and potholes, etc., and routine maintenance such as painting centerline markings and so forth. For periodic and more substantial work, such as overlaying, it is necessary to apply for and secure a separate budget.

[South Sumatra]

The province receives a budgetary allocation of 7.5 million Rp./km/year for routine maintenance, which is equivalent to a third of the required amount of 25 million Rp./km/year (approximately 370 thousand yen).

2.5.4 Towards Sustainable Development

Pavement conditions on road sections upgraded via this project are evaluated as being predominantly favorable, which has been directly effective in reducing travel times by a certain amount and in eliminating congestion, etc. It has also had indirect effects on economic activities in regional communities (as detailed in the section on project impacts). However, as feared at the time of appraisal, budgetary funding is insufficient to cover the necessary maintenance work and it is proving difficult to execute periodic maintenance level improvements and betterment activities. These budgetary constraints will eventually affect driving speed and comfort and it is essential that government funding can be stably and securely procured.

3. Feedback

[Lessons learned]

⁷⁾ Since it was not possible to obtain valid information/data from North Sumatra Province, details are only given for the three provinces of West Java, Lampung and South Sumatra.

- As mentioned in the body of this report, although intercity ride performance is comfortable, congestion is prone to occur when entering the regional cities that are located along trunk roads. These traffic jams occur because of the many local markets set up alongside the trunk roads, where temporarily established roadside stalls and shoppers spilling out on both sides of the road serve to block the flow of traffic. It is necessary to consider the measure for such condition from the designing stage.

Figure 5: Traffic congestion in the vicinity of a roadside market



- In regions where flooding is a regular occurrence, structural damage is progressing as the result of the repeated inundation and saturation of road surfaces, and there are scattered instances where pavement conditions are deteriorating. To this end, it is considered desirable to take into the each regional feature and implement road development plan which coordinate with flood countermeasures.

[Recommendations]

- A survey of connecting road sections, including sections not covered by this project, reveals examples of poor surface conditions, and there is still considerable scope for improvement in terms of the road networks in the provinces of Lampung and South Sumatra. Provincial government road departments need to move away from “executing stopgap improvements/rehabilitation once pavement conditions have deteriorated” to executing preventive maintenance activities based on “improvements/rehabilitation plans that are formulated upon rational consideration of surface conditions and elapsed years”. There is also a need to explore budgetary measures such as the establishment of a road maintenance and repair fund using revenue from gasoline taxes, etc., as a means of securing adequate funding to conduct this work.
- Illegal overloading of large freight vehicles was observed on all routes traveled on during the case studies. In terms of the sustainability of project-led developments, aside from the implementation of appropriately funded maintenance work to improve the structural and surface conditions of roads, it is also necessary to request all provinces to enforce effective regulations regarding the overloaded freight vehicles.

Comparison of Original and Actual Scope

Item	Plan	Actual
1. Project Scope	<u>Total 1,481.5km</u>	<u>Total 1,709.3km + an additional 334.5km</u>
1) West Java Province	140.3km	233.5km + an additional 80.7km
2) Lampung Province	321.0km	303.3km + an additional 14.4km
3) South Sumatra Province	200.3km	207.6km + an additional 45.8km
4) Bengkulu Province	102.0km	101.8km + an additional 49.1km
5) Jambi Province	56.5km	53.6km
6) Riau Province	27.0km	28.5km
7) West Sumatra Province	169.3km	214.1km + an additional 71.0km
8) North Sumatra Province	211.8km	340.8km + an additional 73.5km
9) Aceh Special Province	253.3km	226.1km
	(based on appraisal materials)	(based on the PCR)
2. Implementation Schedule		
1) L/A	Nov. 1993	Nov. 1993
2) Consultant selection	Jul. 1993 – Jun. 1994	n.a
3) Consulting services	Jul. 1994 – Jan. 1997	n.a
4) Contractor tender	Jun. 1993 – Nov. 1993	n.a
5) Contractor selection/contract conclusion	Sep. 199 – Aug. 1994	n.a
6) Implementation	Jun. 1994 – Nov. 1996 (based on the PCR)	Feb. 1994 – Dec. 1999 (based on the PCR)
3. Project Cost		
Foreign currency	11,955 million yen	n.a
Local currency	11,930 million yen (202,202 million rupiah)	n.a
Total	23,885 million yen (404,831 million rupiah)	* 23,204 million yen (580,104 million rupiah)
ODA loan portion	20,302 million yen	18,830 million yen
Exchange rate	1 rupiah = 0.059 yen	1 rupiah = 0.040 yen

* The total amount (construction contract price and consultant fees only) requested in local currency as cited in the final report converted into yen using the exchange rate average for the implementation period.

Third Party Evaluator's Opinion on Road Rehabilitation Project

BS Kusbiantoro

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Relevance

The project objective met the National Development Policy and the Development Plan, i.e. the priority of the REPELITA V (1989-1993) on road sector was on the maintenance and improvement of the existing roads, as development of the trunk road network had been (almost) completed. The objective of the project is still relevant, i.e. given the government's limited budget due to the economic crisis, the current national development plan, PROPENAS (2000-2004), the government's policy in the road sector prioritizes rehabilitation and maintenance.

Traffic volumes as well as traffic growth in Sumatra and West Java have been among the highest in Indonesia, therefore the most congested and deteriorated roads are also found in these regions. So road rehabilitation projects in these regions are relevant for the beneficiary needs and demand.

In general, the project scope in each province was extended from the actual plan. This was based on intensions of the GOI regarding the urgency of rehabilitation and improvement works. There were delays in the implementation schedule due to the poor performance of contractors in relation with poor construction materials, the impact of natural phenomena such as landslides, and governmental delays in budget delivery. However, these changes did not affect the overall implementation project.

There has been a similar project funded by ADB for road rehabilitation in 2000-2004 for 15 provinces in Sumatra, Java, Kalimantan, and Sulawesi. The focus of the project has been on national and provincial roads. The district roads may be included if these are priority roads for economic recovery or poverty reduction.

The scope of the project was expanded in terms of overall road length due to intention of the GOI given the quantity of roads that needed to be improved within the limited government budget. The implementation schedule was extended in almost all sections due to a lack of management capabilities. In general, the project has contributed to improving and stabilizing the pavement condition of national and provincial roads. However, given the lack of integrated regional development plan/program/management, numerous local markets and other activities have occupied both sides of the roads, thus blocking the flow of the traffic entering and exiting major regional cities.

In turn, the effectiveness of the project has been affected/reduced.

Impact

In general, the overall goal of the project has been achieved, i.e. in terms of positive impacts on national economic development as well as on financing for road maintenance. However, the project should be carried out within a longer-term program involving a continuous road maintenance and improvement program, otherwise its impacts would be short and limited

One of the main problems with the road development project financed by foreign fund is sustainability of the impacts. In general, the road development project has been treated based on a partial/sector approach (i.e. on road development) rather than a more comprehensive one (i.e. based on regional development plan/program – road and land use, etc.). As mentioned above, this partial/sector approach has reduced the effectiveness of the project. Furthermore, given the lack of qualified human resources, the project should incorporate a capacity building component, i.e. in terms of human resource as well as institutional capacity building.