Indonesia

Local Road Development Project (3)

Report Date: January 2003

Field Survey: December 2002

1. Project Profile and Japan's ODA Loan

Project site

Interview in progress on a project road (Kab. Pasir)

1.1 Background

The focus of Indonesian government road sector policy under the sixth five-year national development plan (REPELITA VI: 1994-1998) was not upon the construction of new roads but on the maintenance and improvement of the existing infrastructure. Surfacing improvements were being undertaken on national and provincial roads to maintain pavements in reasonable condition, however, development standards on district (kabupaten) roads remained low and there was a pressing need for continuous maintenance and improvement work.

Development of Indonesia's district roads (local roads) requires vast sums of money and since it is difficult to ensure sufficient funding from state coffers, for many years the archipelago has been broadly divided into three regions with maintenance and improvement projects being respectively undertaken using loan funding from Japan, the World Bank and the Asian Development Bank[1)].

[1)] Results from antecedent projects undertaken by Japan (JBIC), the World Bank and the Asian Development Bank are as shown below.

Aid country (organization)	Project name	Content	Implementation period	Cost
Japan (JBIC)	Local Road Development Project I (IP-233)	B, M, E	1980-1985	2,332 million yen
	Local Road Development Project II (IP-327)	B, M, E	1988-1991	12,882 million yen
	Local and Urban Road Development Project (IP-353)	B, M, E	1992-1999	9,255 million yen
World Bank	RR1	B, E	1982-1988	100 million dollars
	RR2	B, M, E, T	1987-1993	190 million dollars
	KR3	B, M, E, T	1992-1996	215 million dollars
	KREI	B, M, E, T	1993-1998	155 million dollars
	RR5	B, M, E	1994-1999	102 million dollars
Asian Development Bank	LR1	B, M, E	1983-1987	60 million dollars
	LR2	B, M, E	1987-1992	120 million dollars
	LR3	B, M, E	1993-1997	200 million dollars

Note: Letters in the project content column indicate, B: Betterment, M: Maintenance, E: Equipment, and T: Training. The above data was compiled using materials acquired during project appraisal.

However, development standards at this time continued to be low, and in view of the contribution of district road development to improving regional economies and the living standards of local communities there was demand for continuous efforts to be undertaken in their maintenance and improvement.

1.2 Objectives

To execute repairs and improvement work on key local roads[2] in a total of 57 districts in eight provinces on Kalimantan and Sulawesi with the aim of stimulating local economies and improving the living standards of community residents.

1.3 Project Scope

The project involved civil engineering works, the deployment of maintenance machinery, the provision of spare parts for machinery previously supplied using ODA loan funding, and consulting services. Civil engineering works are classified into road betterment, periodic maintenance, routine maintenance and holding work; of these, the current project covered road betterment, periodic maintenance and routine maintenance[3].

An outline of the project is given below:

(1) Civil engineering works

	[Full-scale plan]	[ODA loan portion]	
- Road betterment	8,114 km (and 14km of bridges)	1,476 km	(18% of total)
- Periodic maintenance	7,002 km	3,501 km	(50% of total)
- Routine maintenance	12,910 km	12,901 km	(100% of total)
Total	28,026 km	Total 17,878 km	(64% of total)

(2) Procurement of equipment and spare parts for maintenance work

- 636 pieces of equipment, spare parts for 285 units

(3) Consulting services

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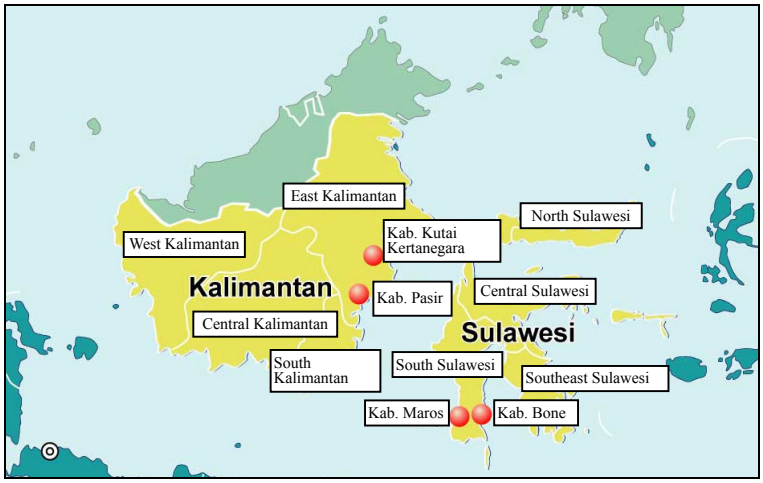
2) Of the (then) total 253 districts in 27 provinces, the current project covered only 57 districts in eight provinces on the islands of Kalimantan and Sulawesi. This was because plans required adjustment to accommodate similar projects being undertaken by other donors (World Bank/Asian Development Bank) in the regions of Java, Sumatra, and Timor, etc., and because an environmental impact evaluation of Irian Jaya was pending.

3) The Local Road Development Project covered 21 districts in seven provinces (a total of 7,060km of district roads), whilst the Local Road Development Project (II) covered 38 districts in ten provinces (Kalimantan was added to the provinces covered in Phase I: total district road length: 18,814km).

Figure 1: Project sites and districts visited during this survey



Note: Yellow sections on the map are the islands of Kalimantan and Sulawesi, which were covered by this project. The four red dots indicate the districts visited during this survey (Kab. Kutai Kertanegara, Kab. Pasir, Kab. Maros, and Kab. Bone).

1.4 Borrower/Executing Agency

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

* Note that the executing agencies at the local government level were the respective District Offices of Public Works (DPUK).

1.5 Outline of Loan Agreement

Loan Amount / Loan Disbursed Amount	16,256 million yen / 13,737million yen
Exchange of Notes / Loan Agreement	December 1996 / December 1996
Terms and Conditions -Interest Rate -Repayment Period (Grace Period) -Procurement	 2.7% 30 years (10 years) General untied
Final Disbursement Date	December 2000

2. Results and Evaluation

2.1 Relevance

At the time of project appraisal (1996), the focus of Indonesian government road sector policy under the sixth five-year national development plan (REPELITA VI: 1994-1998) was not upon the construction of new roads but on the maintenance and improvement of the existing infrastructure. Surfacing improvements were being undertaken on national and provincial roads to maintain pavements in reasonable condition; however, development standards on district roads remained low by comparison and given the urgent need to implement continuous maintenance and improvement work, the objective of this project, i.e. to execute maintenance and improvement work on district roads, is considered to have been relevant.

Moreover, the objectives of this project are consistent with PROPENSAS (2000-2004), the current national development plan, which 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 weight limits for 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, thus they continue to be relevant.

2.2 Efficiency

2.2.1 Project Scope

The currency crisis that occurred at the end of 1997, after the start of this project, caused the rupiah to decline against the yen and, on the basis of government requests, the scope of the project was revised and expanded in consideration of the urgency/necessity of rehabilitation and improvement work. The project was scheduled to be implemented in three phases, i.e. during 1997/1998, 1998/1999 and 1999/2000, however, the scope revisions made in 1999 resulted in the addition of two more phases: 1999/2000 (addition 1) and 2000 (addition 2). The lengths of all sections targeted for betterment, periodic maintenance and routine maintenance were increased in line with the scope expansions, and bridge work (periodic/routine maintenance) was also added (Table 1).

Table 1: Planned and actual scope of road developments

	Planned		Actual		Additions	
	Roads [km]	Bridges [m]	Roads [km]	Bridges [m]	Roads [km]	Bridges [m]
Road betterment	1,476	2,483	2,396	4,699	920	2,216
Periodic maintenance	3,501	--	6,522	3,241	3,021	3,241
Routine maintenance	12,901	--	38,130	1,620	25,229	1,620

Source: compiled from the Final Report (Nov. 2000)

The scope of periodic and routine maintenance work undertaken in both Phase I (1980-1987) and Phase II (1988-1991) of this project was scaled back considerably. The Phase I project concentrated on road betterment and although the volume of betterment work undertaken exceeded planned levels this resulted in far less maintenance work being executed than planned (routine maintenance of 13,117km was planned; 3,163km was executed). There was disagreement over the project design, and the lack of managerial skills within the Directorate General of Highways led to considerable reductions in the scope/planned level of road betterment and maintenance work (routine maintenance of 21,961km was planned; 6,036km was executed). Nevertheless, the focus on maintenance was upheld by the current project and results for routine maintenance in particular, were considerably higher than planned levels. The final figure was 38,130km, exceeding the planned total of 12,901km, however, the work was executed within the aforementioned loan budget and it is thought to have

been made possible because road sections targeted under future plans were also moved up and incorporated into this project.

Moreover, systematic consideration was given to various factors such as pavement condition, conditions in surrounding regions, and so forth, and decisions on project roads were made after a shortlist of road sections compiled by local governments had been passed to the central government for approval. The project was implemented between 1997 and 2000 and the routes covered during 1997/1998 and 1998/1999 were decided through dialogue between the central government and local governments. Thereafter, routes were selected via a process in which the project consulting team reviewed the shortlist of routes selected by the local government, examining relevancy from the objective perspective of a third party. Thus it can be said that the route selection process has become more transparent. For example, the following policies and procedures were employed in determining which roads to cover in the districts visited during this survey (Kab. Kutai Kertanegara, East Kalimantan is excluded).

[Kab. Pasir, East Kalimantan]

Project roads were selected after balanced consideration of various factors, including pavement condition and conditions in surrounding areas. The final decision was made after consultants had crosschecked local government selections/proposals.

[Kab. Bone, South Sulawesi]

Routes were selected for betterment in the south of the district from a perspective of strengthening trunk roads with the aim of stimulating the local economy (10 sections in total). In the north, the primary objective was to conduct maintenance work on existing roads and the routes were selected accordingly.

[Kab. Maros, South Sulawesi]

Routes that were judged to be important in terms of stimulating the local economy were selected, then each route was further divided and funding concentrated on short sections, with the focus being to provide high quality (highly durable) pavement. This was based on the fact that the (government) maintenance budget was insufficient and it was thus deemed advisable to gradually extend sections of high quality pavement that would require minimal maintenance.

The project also involved the procurement of equipment and spare parts for road maintenance. Although plans envisaged the provision of 636 pieces of equipment, including motor graders and dump trucks for construction, as well as spare parts for 285 units, after modification, 390 pieces of equipment and spare parts for 164 units were procured. There were plans to provide an additional contract for equipment and spare parts, but since the ODA loan contract was approaching the end of its term the additional procurement was not realized. These reductions in the scope for spare parts were primarily attributable to delays in procurement procedures during the early stages.

2.2.2 Implementation Schedule

Under the original plans, the procurement of equipment and spare parts was to precede the implementation of road development (civil engineering works), however, the procurement process was delayed by more than two years, which resulted in the road development work being moved up. The delays in procurement were caused by government-side (the executing agency) tardiness in executing the tender and contract procedures. Road developments, meanwhile, progressed essentially on schedule, with the work incorporated in the original scope being completed two months behind target in May 2000. As mentioned earlier, the project scope was expanded, thus the final completion date including scope additions was December 2000; nonetheless, the development work is generally considered to have been efficiently implemented.

2.2.3 Project Cost

The actual loan disbursement amounted to 13,737 million yen, below the originally estimated sum of 16,256 million yen (85% disbursement ratio). We were unable to obtain detailed data on actual project costs.

2.3 Effectiveness

2.3.1 Effects of Road Betterment

According to data acquired at project completion (Table 2), betterment work and/or periodic maintenance was conducted on 10-24% (average 19%) of local roads (total length) in each of the provinces, with road surfaces being improved to a stable condition[4].

Table 2: Road improvements (betterment/periodic maintenance)

Province	Total length (1997)	Length of pavement surface in stable condition					
		Pre-project (1997)		Post-project (2000)		Project-based increases	
	km	km	%	km	%	km	%
West Kalimantan	7,742	2,322	30.0%	3,680	47.5%	1,358	17.5%
Central Kalimantan	4,031	1,011	25.1%	1,647	40.9%	636	15.8%
South Kalimantan	4,812	2,589	53.8%	3,779	78.5%	1,190	24.7%
East Kalimantan	3,123	1,003	32.1%	1,583	50.7%	580	18.6%
Kalimantan total	**19,708**	**6,925**	**35.3%**	**10,687**	**54.2%**	**3,764**	**19.1%**
North Sulawesi	5,309	2,054	38.7%	2,620	49.4%	566	10.7%
Central Sulawesi	4,836	1,986	41.1%	2,779	57.5%	793	16.4%
South Sulawesi	14,378	5,751	40.0%	8,786	61.1%	3,035	21.1%
Southeast Sulawesi	3,299	1,091	33.1%	1,851	56.1%	760	23.0%
Sulawesi total	**27,822**	**10,882**	**39.1%**	**16,036**	**57.6%**	**5,154**	**18.5%**
Total	**47,530**	**17,807**	**37.5%**	**26,723**	**56.2%**	**8,918**	**18.8%**

Source: Final Report (Nov. 2000); percentages indicate the ratio to total length (initial results for 1997).

Likewise, the routine maintenance work undertaken via this project covered an average 80% (40-110%) of total local road length in each of the provinces (Table 3).

[4] Each district undertakes annual monitoring of pavement conditions. The results for each section are classified according to five grades: good (baik), comparatively good (sedang), poor (sedang rusak), damaged (rusak), badly damaged (rusak barat). A "stable condition" equates to the good and comparatively good grades.

Table 3: Routine maintenance

Province	Total length (1997) km	Length of road sections covered by project funded routine maintenance per year				
		97/98 km	98/99 km	99/00 km	99/00 Added section km	Total km (percentage cover)
West Kalimantan	7,742	1,225	1,226	1,113	-	3,565 (46.0%)
Central Kalimantan	4,031	465	614	445	122	1,647 (40.9%)
South Kalimantan	4,812	1,552	1,476	1,459	106	4,593 (95.4%)
East Kalimantan	3,123	536	558	416	176	1,685 (54.0%)
Kalimantan total	**19,708**	**3,778**	**3,874**	**3,433**	**404**	**11,490** (58.3%)
North Sulawesi	5,309	1,518	1,563	1,162	-	4,243 (79.9%)
Central Sulawesi	4,836	1,513	714	1,007	101	3,335 (69.0%)
South Sulawesi	14,378	4,190	5,615	5,984	69	15,857 (110.3%)
Southeast Sulawesi	3,299	858	921	1,063	364	3,206 (97.2%)
Sulawesi total	**27,822**	**8,079**	**8,813**	**9,216**	**534**	**26,641** (95.8%)
Total	**47,530**	**11,857**	**12,687**	**12,649**	**938**	**38,131** (80.2%)

Source: as above

2.3.2 Effects of Bridge Improvements

Due to a lack of relevant data it is difficult to identify the overall effects of the improvements (replacement) and maintenance work executed on bridges in quantitative terms, however, in the case of the four districts visited during this survey, the construction of robust bridges has effectuated substantial reductions in travel distances, and has rendered year-round crossing possible in places that were previously difficult to cross when water levels increased during the rainy season. Whilst it may be imagined that many of the bridges covered by the project are small bridges spanning small rivers, they play a significant role in enhancing the convenience of and stabilizing daily transit in the target regions.

Figure 2: Bridges replaced via the project
(Kab. Bone, South Sulawesi)

2.3.3 Utilization of Procured Equipment

As with the bridges mentioned in the previous section, it is difficult to ascertain the utilization of equipment procured via this project in quantitative terms as it was not possible to obtain relevant data. Nevertheless, according to the hearings conducted with local government officials in each of the districts visited during this survey, the equipment is being used on the ground[5)].

[5)] We were able to confirm that one of the dump trucks procured for Kab. Bone, South Sulawesi is being maintained in good condition.

Figure 3: A dump truck procured via this project
(Kab. Bone, South Sulawesi)

2.3.4 Traffic Volume Data

For the purposes of this survey we requested each district to provide monitoring data comprising traffic volumes (Annual Average Daily Traffic: AADT) and pavement conditions for the total length of roads in the district so as to be able to ascertain the utilization and maintenance status of project roads post completion; however, we were unable to obtain this data.

For reference, the AADT values measured at appraisal are given in the following table together with the estimates made during project evaluation. In terms of averages, the previous transit frequency of 1 vehicle every 10 minutes and 6 seconds had increased to 1 vehicle every 8 minutes and 8 seconds at evaluation. However, it is difficult to extract/cite what contribution the improvements to road surfaces undertaken via this project have had per se on the increased traffic volumes, because the figures are affected by vehicle ownership figures and demand for transport, as well as by trends in the regional economy.

Table 4: Estimated AADT results (vehicles/day)

Province	At appraisal* [1996] (A)	At evaluation** [2001] (B)	% increase (B）/(A)
West Kalimantan	161	202	125%
Central Kalimantan	141	169	120%
South Kalimantan	169	211	125%
East Kalimantan	220	249	113%
North Sulawesi	164	197	120%
Central Sulawesi	80	154	193%
South Sulawesi	105	113	108%
Southeast Sulawesi	86	124	144%
Average for eight provinces	142	164	115%

Notes:

* The appraisal figures are average AADT for district roads in each of the provinces, which were calculated on the basis of weighted averages computed using data obtained at appraisal (traffic volume per kilometer of road).

** On the assumption that traffic volumes are substantially affected by vehicle registration figures, we requested AADT per number of vehicles registered for 1996 from each of the provinces and calculated evaluation AADT by multiplying these with the vehicle registration figures for 2001 (estimates for 2001 were obtained by performing a regression analysis on actual figures for 1998, 1999 and 2000).

2.3.5 Information Obtained during Test runs on Project Road Sections

In order to confirm road surface and maintenance conditions, test runs were undertaken on improved road sections in a total of four districts, namely, Kab. Kutai Kertanegara and Kab. Pasir in East Kalimantan, and Kab. Bone and Kab. Maros in South Sulawesi.

Table 5: An overview of road conditions in each district

District visited	Pavement conditions	Maintenance conditions
Kutai Kertanegara East Kalimantan	・Conspicuous potholes and surface unevenness on sections leading into and out of steep inclines. ・Pavement wear advanced with each heavy downpour during the rainy season, and potholes and subsidence were occurring.	・It appears that insufficient maintenance has been undertaken since project completion in 2000.
Pasir East Kalimantan	・Heavy pavement wear (cracks, potholes, etc.) caused by HGV traffic on access roads used by migrant palm oil cultivation workers. ・Pavement conditions on urban roads comparatively good.	・Although routine maintenance is being undertaken on urban roads, none is being undertaken in the surrounding green belt, including migrant quarters, etc.
Bone South Sulawesi	・Surface wear (unevenness, potholes, etc.) observed to be advancing on some sections, but condition adequate for traffic volumes. ・On sections subject to betterment (gravel → asphalt), it is now possible to drive at 40-50km/h vs. the previous level of 20km/h.	・Insufficient maintenance has been conducted since project completion.
Maros South Sulawesi	・Roads in marshy areas running alongside rivers in poor condition (potholes, subsidence, etc.) ・Conspicuous cracking and unevenness on sections with heavy HGV traffic.	・Despite insufficient routine maintenance, betterment work and periodic maintenance is being executed by degrees using district government budget funds.

The road betterment and maintenance works executed using project funds are evaluated as having improved the ride performance of roads, i.e. driving speeds and comfort, on the basis of the test runs carried out during this survey. However, since insufficient routine maintenance work is being undertaken, road surfaces are becoming increasingly worn. The lack of adequate routine maintenance on sections improved via the project in the two years that have elapsed since completion is causing pavements to become progressively deteriorated. Nonetheless, as is described in the section on project impacts (2.4), according to interviews with local residents, although pavement conditions on improved sections are now worse than immediately after project completion, travel times are still shorter than they were before and the project is highly evaluated.

2.3.6 Recalculation of Economic Internal Rate of Return (EIRR)

One of the criteria established for selecting road sections for betterment was “an EIRR of at least

10%, in principle[6]"; results from the World Bank economic evaluation (which covered four provinces in Sulawesi as part of the series of local road development projects being undertaken in Indonesia), which were used for reference during project appraisal, also pointed to an EIRR of between 13.2%-23.5%. The recalculation of EIRR at the time of the evaluation is, an overall value of 23.3% (13.5%-59.5%), which is an appropriate level. From this the project may be evaluated as having realized sufficient economic returns.

Table 6: Results of EIRR recalculations[7]

Province	EIRR
West Kalimantan	30.8%
Central Kalimantan	21.3%
South Kalimantan	35.2%
East Kalimantan	34.5%
North Sulawesi	59.5%
Central Sulawesi	22.7%
South Sulawesi	13.5%
Southeast Sulawesi	16.7%
Total	**23.3%**

2.4 Impact

This project effectuated improvements to pavement conditions on target sections of local roads, which, taken as a whole, linked to reductions in travel times and improved driving comfort. It is thus evaluated as having enhanced the efficiency of freight and passenger transportation.

2.4.1 Socioeconomic Impacts

Specific examples of the impacts generated by this project are given below. The information was obtained during interviews with residents in the four districts visited by this survey mission.

- This project, which targeted the development of local roads, served to enhance/strengthen traffic access between mountainous regions, including migrant quarters, and urban centers, and was effective in that it freed these mountainous areas from their economic isolation (example from Kab. Pasir, East Kalimantan).
- In the days when the road was graveled it used to take 30 minutes by motorbike (10km/h) to get to the provincial highway, but since the road was asphalted in 2000 it is now possible to get there in around 5 minutes (50-60km/h). Deterioration of the road's surface in the two years that have subsequently elapsed means that it now takes 10-15 minutes (20-30km/h).

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6) Based on the "Technical Guidelines for Planning and Programming for Kabupaten Roads: SK. No. 77/KRTS/Db/1990", which were established with the cooperation of the World Bank during the era of the former Ministry of Public Works, Directorate General of Highways.

7) Economic costs were surmised on the basis of construction costs for each province/year, as confirmed during this survey. Benefits were hypothesized using the vehicle operating cost savings (direct effect) generated by local road development indicated in the "Republic of Indonesia Local Road Development Feasibility Study Report (1986)" conducted by JICA, corrected using the most recent consumer gasoline prices and multiplied by future traffic volumes estimated from AADT and vehicle registration figures for each province. The period during which economic benefits (returns) would be realized was the same as that envisaged at appraisal, i.e. 10 years.

Although the pavement condition has worsened as compared to its state at completion, it is still more convenient than when it was graveled (example from Kab. Bone, South Sulawesi).

Figure 4: Road in Kab. Bone, South Sulawesi and a family who live on it

(Right-hand photo) A family of six who earn their living in the coastal fishing trade (Tete coastal region) in Pute village, Kab. Bone, South Sulawesi. Their average daily cash income is Rp. 20,000, which is equivalent to approximately Rp. 6.4 million a year (approx. 750 US$).

- Before the road was paved there were no village buses in operation, however, some 20-30 buses run back and forth every day, which has made travel more convenient. The distance from the village to the provincial highway is around 4km and in the past it was not possible to cross the river during the rainy season because it would become swollen necessitating a detour of around 10km. However, since the bridge was replaced via the project, it is now possible to get onto the provincial highway without detouring even during the rainy season (example from Kab. Bone, South Sulawesi).

Figure 5: Village bus in service on an improved stretch of road in Kab. Bone, South Sulawesi

- The surrounding area is given over to shrimp culture (the villages of Pajukukkang and Paju) and the port of Tanboa is located at the western end of the same road section. Shrimp culturing has flourished in this region since the 1980s and some 200 households are now employed in the industry. The pavement improvements executed under this project have reduced the time to Benekong city from the pre-project level of 1-2 hours to the current 0.5-1 hours (example from Kab. Maros, South Sulawesi).

Figure 6: Road section targeted for periodic maintenance, Kab. Maros, South Sulawesi (neighboring shrimp breeding ponds)

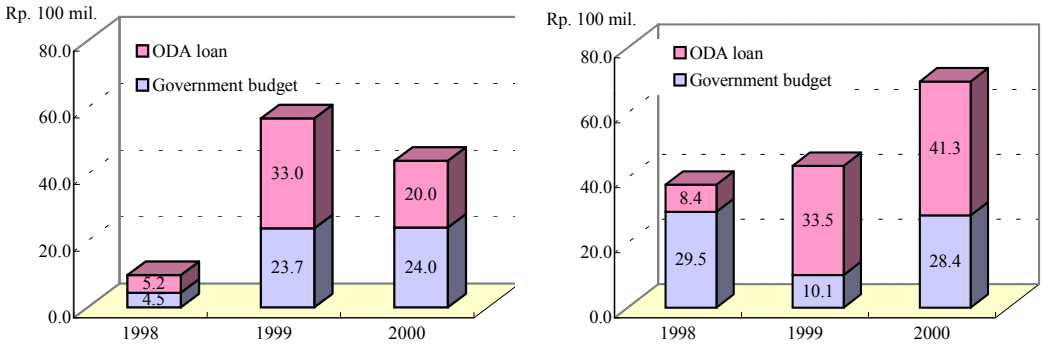
2.4.2 Environmental Impacts

This project comprised the maintenance and improvement of existing local roads and thus did not involve any land acquisition or relocation of residents. Furthermore, it did not generate any particularly negative effects on the environment.

2.4.3 Contributions to Local Road Finances

According to annual budget reports (results) obtained from each of the districts, the ODA loan covered as much as half the road maintenance budgets during the project implementation period (Figure 7). The project implementation period overlapped with a period of government financial difficulty following the currency crisis that occurred at the end of 1997. Thus if the project had not been implemented, the road maintenance budgets for each district would have effectively been halved, in other words, the project contributed by supporting local road finances in the wake of the currency crisis.

Figure 7: Fiscal resources for local road maintenance and project loan funding (left: Kab. Maros, right: Kab. Bone)



Note: Figures are compiled from annual budget reports (results) for each district. It was not possible to obtain data for fiscal 1997, the year of project commencement.

2.5 Sustainability

2.5.1 Organizational Capability

In principle, district road department offices (road departments, district offices of public works or district road department offices/district road construction department offices) undertake to maintain local roads classified as district roads or under. Local road maintenance budgets are appropriated from district budgets (APBD TkII). However, since the decentralization in 2001, as in Kab. Kutai Keratenagara, East Kalimantan, although the district government shoulders the district road maintenance costs, there are cases in which the responsibility for/authority over county and village road maintenance have respectively been transferred to the county/village level (with the budget appropriated from district government coffers).

Table 7: Division of maintenance responsibility by road classification

	Locus of responsibility	Activities resources
National roads	Road Dept., Provincial Office of Public Works or Provincial Road Bureau	Central government * Necessary resources (funds / personnel) are allocated by the central government
Provincial roads		Provincial governments
District roads (Local roads)	Road Dept., District Office of Public Works or District Road Bureau	District governments

2.5.2 Technical Capacity

The district government road bureaus conduct the following three types of maintenance work. Namely:

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

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. Decisions on the type of maintenance activities to be undertaken are based on the state of pavement. As stated above, despite the establishment of a selection criterion for the betterment program, i.e. links with an EIRR of at least 10%, none of the districts visited during this survey are updating EIRR values for individual links, and decisions on the selection of links to be targeted are based on the experience of government officers. 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 whether the EIRR value is big or small), and here too, selection decisions are based on the experience of district government officers.

According to the district government road bureaus, staff involved in maintenance activities have sufficient knowledge and technical skills, however, securing funding is an issue, and it is not

possible to implement sufficient maintenance work. By way of example, in the case of Kab. Maros, South Sulawesi, where it is assumed that the maintenance budget will be insufficient, betterment activities are undertaken selectively, with budget funds being concentrated on periodic maintenance and betterment, a strategy based on the concept of gradually extending high quality pavement links that will require a minimum of routine maintenance. The result of this policy is that when driving through the district, roads are marked by a succession of alternately good and poor quality pavement sections. Given the budget limitations, overlay to effect "pavement smoothing", in other words spraying asphalt, is the only way to cover larger stretches of road, and pavement durability is decreasing markedly as a result (potholes quickly develop). Local government efforts/initiatives in dealing with this situation in the face of severe budgetary constraints will need to be watched.

2.5.3 Financial Status

Through interviews with staff at the road bureaus in the four districts visited during this survey it was confirmed that local government finances are, for the most part, not sufficient to cover the development and maintenance of roads. Moreover, since decentralization in 2001, differences in the economic clout and productivity of each district have come to be reflected in local fiscal resources, and there are now districts where budgets have increased or decreased more than in the past. In districts like Kab. Kutai Kertenagara, East Kalimantan, which have abundant oil resources, district finances have improved enormously. However, this district is currently focusing on the construction of new trunk roads and bridges, and from what we witnessed of the pavement conditions of existing roads, is not executing sufficient maintenance work.

[Kab. Kutai Kertanegara, East Kalimantan]

The district of Kutai Kertanegara came into being after decentralization in 2001 when the former Kutai district was divided in three (project implementation covered the then district of Kutai). Currently, 1.2 trillion rupiah of the district's fiscal budget of 1.6 trillion rupiah is appropriated from the national treasury (FY 2002 forecast). Prior to decentralization, regional grants were no more than 3% of total production, however, this percentage has increased dramatically since 2001, and is currently equivalent to some 50-60% of gross production. Since this project was completed in 2000, no substantial routine/periodic maintenance or betterment work has been undertaken. However, the district is actively employing its massively inflated development budget in the improvement and construction of trunk roads and in bridge construction.

[Kab. Pasir, East Kalimantan]

Kab. Pasir's budget for fiscal 2002 was 450 billion rupiah of which 40 billion was allocated to the road sector. Since the district has an effective road length of 960km (the length of the total 1,600km that is passable to vehicular traffic, excluding bridges), this equates to a budget of 4.2 million Rp./km/year. According to the head of the road construction department, the district needs 5-9 million Rp./km/year for routine maintenance budget, and 30-50 million Rp./km/year for periodic maintenance and it is not possible to execute sufficient maintenance work undercurrent budget

conditions[8].

Since decentralization, the district's gross production figures have been reflected in its development budget allocations, which are currently on a downward trend (the opposite case scenario to Kab. Kutai Kertanegara cited above). There are plans to partition the district into North Pasir and Pasir in 2003. North Pasir is rich in natural oil resources and its mainstay is the oil industry; Pasir's main industries are coal, lumber and palm oil production. Local government budgets are determined according to the economic clout of the authority concerned, thus North Pasir (like Kab. Tanah Grogot) is expected to be allocated a healthy budget, whilst Kab. Pasir's budgetary allocation will be comparatively small.

[Kab. Bone, South Sulawesi]

Kab. Bone's total budget for 2000 was 56 billion rupiah, however, in 2002 it was 21 billion rupiah and had decreased by 50%. In 2002, the annual road sector budget was 11 billion rupiah. The budget for the maintenance department alone has decreased dramatically, from around 2.8 billion rupiah (government subsidy) in fiscal 2000 to 400 million rupiah (for urban roads) in fiscal 2002. Although the percentage of the district's total budget that is appropriated for the road sector is comparatively high, this only equates to 4.8 million Rp./km/year when divided by 2,300km, the total length of local roads (classified as district roads and under). According to the head of the road department, an annual road sector budget of around 50 billion rupiah would be ideal, but they have no hope of getting it.

[Kab. Maros, South Sulawesi]

Kab. Maros' road development budget has been increasing progressively since decentralization. In 2002, the road sector development budget was 18 billion rupiah out of a total development budget of 30 billion. This is a substantial increase on the figure of approximately 10 billion rupiah for the previous year. However, this only equates to 1.7 million Rp./km/year (fiscal 2002) for total road length (1,078km), and given that routine maintenance is considered to require a budget in the region of 6-7 million Rp./km/year, the current budget fulfillment ratio is less than 30%. Moreover, in view of the fact that, over and above routine maintenance, it is necessary to implement more costly periodic maintenance and betterment works in a timely manner, the current road sector budget is unequivocally short.

2.5.4 Current Maintenance Conditions – Towards Sustainable Development

As Table 5 illustrates, it would be difficult to aver that any of the four districts visited by this survey mission have implemented sufficient maintenance work since project completion. Issues

[8] For reference, the following provides an indication of the figures involved based on assessment of whether the road maintenance budget is sufficient/insufficient.

Type of maintenance	Kab. Gowa, South Sulawesi
Routine maintenance	7.5 million Rp./km/1 year
Periodic maintenance	45 million Rp./km/3years
Road betterment	125 - 400 million Rp./km/5years

Source: Fiscal 2001 PEDACS "Local Road Development Project II"

towards sustainability are given hereunder for each of the districts.

[Kab. Kutai Kertanegara, East Kalimantan]

Interest is biased in favor of so-called “big projects” such as the improvement and construction of trunk roads, bridge construction and so forth, and insufficient attention is being directed toward the maintenance of the existing infrastructure. Given that, as stated above, the district receives a substantial budget from the government, we recommend that budgetary allocations to maintenance activities be increased by a small margin.

[Kab. Pasir, East Kalimantan]

With the exclusion of urban roads, almost no maintenance work is being undertaken. HGV traffic causes surface wear on both urban and rural roads and if appropriate measures (maintenance) are not taken and cracks and unevenness are allowed to develop, then the damage will only spread. As the result of an inability to secure sufficient budgetary funds for maintenance, there is currently a tendency to allocate more money to main urban roads and local roads are being put on a back burner.

[Kab. Bone, South Sulawesi]

Field survey visits were mainly to sections where improvement (betterment) work had been undertaken, and according to interviews with local residents the project has had tangible outcomes. The sections covered by the project were predominantly selected with the aim of stimulating the local economy, and each is recognized to have improved to a certain extent. However, it is clear that pavement conditions have deteriorated since project completion, and from a perspective of sustaining project effects, it is hoped that efforts will be made to improve the maintenance budget and to reinforce maintenance activities. In view of current budget allocation circumstances, however, it is difficult to anticipate any strengthening of the maintenance system. It is likely that the district will continue to be forced to implement selective maintenance for some time to come.

[Kab. Maros, South Sulawesi]

Since it is not possible to cover a large number of routes during one period under the current road sector budget, roads that are judged to be important in terms of economic stimulation potential are selected, subdivided into shorter sections and then funds applied in a concentrated fashion with the aim of gradually extending high quality (highly durable) pavement.

It has been pointed out that, in general terms, maintenance of infrastructure, including roads, has been insufficient since prior to decentralization and this has not altered since the shift of power to the regions, since the move has resulted in the emergence of disparity between so-called “rich districts” and “poor districts”. The “rich districts” that now have some fiscal latitude are constructing new roads and bridges, but appearances indicate deficiencies in maintenance. Whilst the newly acquired ability to implement projects that reflect regional needs is a welcome development, it is hoped that attention will also be focused on maintenance and that appropriate budgetary funds will be allocated to cover it. It is also hoped that the focus will shift towards maintenance work once the new projects

are complete, but in order to ensure that this comes about it will be important to reaffirm the significance of post-project maintenance. For districts facing even more stringent financial circumstances than prior to decentralization, on the other hand, it is considered that the central government will need to increase its budgetary allocations for maintenance, or alternatively that top priority be assigned to actively developing the economy of the region by nurturing/promoting local industries, as a means of strengthening the district's financial base.

3. Feedback

[Lessons Learned]

In order to implement local road development projects such as this one effectively, it is necessary to take note of the central government's transfer mechanizum to regional governments and to extend support that is appropriate to the financing abilities of individual regions (districts).

District-based disparities in the level of budgetary allocations were observed after decentralization. Amidst forecasts that regions blessed with abundant natural resources such as oil will become richer, whilst those without natural resources will face financial difficulties, there are moves to further partition/separate districts, and it is feared that if this situation continues the gap between regions will only become wider. In future, when providing funding for "sector programs" such as this project, in selecting target regions and sub-projects it will be necessary to take note of the transfer mechanism via which ODA funds are distributed by the central government to the regional authorities, and to formulate plans that take differences in the financing abilities of individual regions (districts) into account.

[Recommendations]

(To JBIC)

The Ex-Post Evaluation for all local road development projects undertaken in Indonesia, including this one, have evidenced a common problem in the lack of sufficient post-project maintenance. Accordingly, in consideration of future progress in the shift to regional power, it is hoped that JBIC will explore and implement intellectual support involving the establishment of concrete policies aimed at improving the level of maintenance (Special Assistance for Project Sustainability (SAPS), road sector surveys, etc.).

The results of ex-post evaluations undertaken for all road sector projects in Indonesia, including the present project, point to a number of common issues. These include (1) the need for administrative reinforcement and upgrading of the equipment necessary to enforce regulations covering overloaded vehicles, (2) the need for a shift from "quantity" to "quality" in the focus of road projects (or initiatives such as that in place in Kab. Maros, South Sulawesi, where road improvements involve highly durable materials), (3) the need to strengthen/enforce contractor performance guarantees, (4) the need to investigate/promote direct/indirect maintenance systems to be effectuated by community residents, and (5) the need to establish road maintenance and improvement funds (using special funds such as gasoline taxes, etc.).

Although there are currently no plans to undertake any new ODA loan-funded local road projects in Indonesia, in consideration of future progress in the shift to regional power, the formulation/implementation of action plans that specifically target district level road maintenance as part of intellectual support of the road sector, will have a significant impact. It would be useful if such support could be provided via JBIC SAPS or sector surveys.

(To the executing agency)

There is a need to strengthen maintenance capacity (awareness and ability) in conjunction with efforts to bolster finances.

Generally speaking, a lack of fiscal resources for the maintenance of local roads is now the norm, and it cannot be said that there is sufficient awareness of the significance of nor interest in maintenance activities. Since only two years have elapsed since this project was completed and the work is still fresh, its effects have been maintained to a certain extent, but unless appropriate maintenance is undertaken, in the long term it is feared that the facilities will deteriorate ahead of their design life cycle as the result of a combination of overloaded vehicle traffic and the country's climate, which is characterized by heavy rains during the rainy season.

District road bureaus claim that "staff have a sufficient level knowledge/skills to undertake maintenance activities", however, this is in respect of their ability to provide so-called stopgap responses, i.e. to respond to ride performance problems caused by potholes and cracks after they occur, and maintenance activities are still wanting in terms of planned maintenance that will forestall problems.

In view of these circumstances and in order to improve the maintenance of local roads there is a need to consolidate finances and at the same time, work to improve awareness and bolster staff skills vis-à-vis maintenance within the district road bureaus.

Comparison of Original and Actual Scope

Item	Plan	Actual
1. Project Scope		
* distances in brackets indicate bridge length		
Civil engineering works		
[Road improvement]		
West Kalimantan	135.6 km (350.7 m)	290.08 km (781.0 m)
Central Kalimantan	100.8 km (194.1 m)	327.19 km (597.0 m)
South Kalimantan	157.1 km (268.5 m)	258.82 km (1,188.5 m)
East Kalimantan	73.3 km (172.2 m)	66.90 km (-- m)
North Sulawesi	150.5 km (229.8 m)	180.09 km (123.5 m)
Central Sulawesi	199.7 km (288.6 m)	206.00 km (746.0 m)
South Sulawesi	501.7 km (770.4 m)	922.15 km (798.6 m)
Southeast Sulawesi	157.8 km (208.5 m)	145.07 km (465.0 m)
Total for eight provinces	1,476.5 km (2,482.8 m)	2,396.30 km (4,699.6 m)
[Periodic maintenance]		
West Kalimantan	444.0 km	1,068.09 km (919.0 m)
Central Kalimantan	151.2 km	308.75 km (56.0 m)
South Kalimantan	561.5 km	931.49 km (936.1 m)
East Kalimantan	183.2 km	513.18 km (-- m)
North Sulawesi	317.5 km	386.35 km (212.2 m)
Central Sulawesi	353.6 km	587.29 km (240.0 m)
South Sulawesi	1,293.4 km	2,112.62 km (161.0 m)
Southeast Sulawesi	197.4 km	614.91 km (717.0 m)
Total for eight provinces	3,501.8 km	6,522.68 km (3,241.3 m)
[Routine maintenance]		
West Kalimantan	1,923.6 km	3,564.72 km (73.0 m)
Central Kalimantan	427.5 km	1,646.88 km (467.0 m)
South Kalimantan	1,851.3 km	4,592.78 km (153.0 m)
East Kalimantan	439.9 km	1,685.18 km (-- m)
North Sulawesi	1,342.5 km	4,242.84 km (-- m)
Central Sulawesi	1,720.4 km	3,335.23 km (682.0 m)
South Sulawesi	4,399.3 km	15,857.15 km (198.0 m)
Southeast Sulawesi	805.6 km	3,205.57 km (47.0 m)
Total for eight provinces	12,901.1 km	38,130.35 km (1,620.0 m)
Equipment procurement		
[Maintenance equipment]		
Motor graders (125 HP)	57	
Dump trucks (3.5 ton)	57	
Compressors	57	
Pedestrian rollers (450kg)	109	
Asphalt sprayers (200 liter)	64	* Refer to margin
Concrete mixers (250 liter)	57	
Plate tampers	64	
Vibrating rammers	57	
Grass cutters	57	
Chainsaws	57	
Total	636	
[Spare parts]	for 285 units	for 164 units
Consulting services		
Pro (A)	324 M/M	340M/M
Pro (B)	2,472 M/M	2,753M/M

2. Implementation Schedule		
1) Consulting services		
Consultant selection	Jun. 1996 – May 1997	Mar. 1997 – Feb. 1998
Consulting services	Jun. 1997 – May 2000	Feb. 1998 – Oct. 2000
2) Equipment procurement		
Tender/contract	Nov. 1996 – Aug. 1997	Feb. 1999 – Oct. 2000
Transport to sites	Jan. 1998 – Dec. 1998	Mar. 1999 – Oct. 2000
3) Civil engineering works		
[Year 1]		
Tender/contract	Mar. 1997 – May 1997	Mar. 1997 – May 1997
Implementation	Jun. 1997 – Mar. 1998	Jun. 1997 – May 1998
[Year 2]		
Tender/contract	Mar. 1998 – May 1998	Mar. 1998 – May 1998
Implementation	Jun. 1998 – Mar. 1999	Jun. 1998 – May 1999
[Year 3]		
Tender/contract	Mar. 1999 – May 1999	Mar. 1999 – May 1999
Implementation	Jun. 1999 – Mar. 2000	Jun. 1999 – May 2000
[Year 3 (Addition 1)]		
Tender/contract	n.a	Aug. 1999 – Oct. 1999
Implementation	n.a	Nov. 1999 – Dec. 2000
[Year 4 (Addition 2)]		
Tender/contract	n.a	Apr. 2000 – Jun. 2000
Implementation	n.a	Jul. 2000 – Dec. 2000
3. Project Cost		
Foreign currency	8,286 million yen	n.a
Local currency	13,388 million yen (291,037 Rp.)	n.a
Total	21,674 million yen	n.a
ODA loan portion	16,256 million yen	13,737 million yen
Exchange rate	1 Rp.= 0.046 yen (as of April 1996)	n.a

Note: Data on original and actual scope are compiled from the Final Report.

Equipment Procurement List

Name of equipment	Number of units
Construction/maintenance equipment	Total 390
Motor Grader 125PS	38
Wheel Loader 1.2m3	31
Three Wheel Roller 8-10ton	71
Baby Roller 0.7ton	44
Vibrating Rammer 80kg	67
Dump Truck 3.5ton	139
Spare parts	164 lots

Third Party Evaluator's Opinion on
Local Road Development Project

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Relevance

The project objective met the National Development Policy and the Development Plan, i.e. the focus of the REPELITA VI (1994-1998) on road sector was on the maintenance and improvement of the existing infrastructure. The objective of the project is still relevant, i.e. the current national development plan, PROPENAS (2000-2004), has a high-priority policy in the transportation sector concerning the rehabilitation and maintenance of roads, railways, bridges, docks, and airports.

Based on Law No. 13/1998 on Roads, the local government is responsible for planning, programming, operating and maintaining local roads. Although the law released before the Law on Autonomy for Local Government, principally the previous law already adopted the idea of decentralization on road development. So the beneficiary needs and demand have been met through the decentralized decision-making process.

There were two major changes during the implementation of the project, i.e. the Asian crisis and later the Law on Autonomy for Local Government. The external change resulted in limited central government subsidies for local road development while the internal change created problems for local government given the lack of qualified human resources for local road development. In turn, these affected the plan and scope of the project. On one hand, the foreign loan based project became more important -- the project plan and scope were extended. On the other hand, due to the lack of qualified local human resources, there were some changes as well in the plan and scope of the project.

There were similar project by other donors, i.e. World Bank and Asian Development Bank. Basically these projects were expected to complement each other. While the World Bank project had a training component, the JBIC had a consulting service one.

In general, the project design/scope was relevant to the project purpose in terms of effectiveness and efficiency. However, the weakness of the project comes from the government side, i.e. the project is usually based on a partial/sector program/plan rather than an overall regional development program/plan.

Impact

In general, the overall goal of the project has been achieved, i.e. in terms of positive impacts on local economic and social development as well as on local road finances. 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 government gives higher priority on financing road construction and much lower priority or even neglects and forgets the financing for its maintenance. In addition, local road development projects usually have been carried out without incorporating the larger transportation system, i.e. local-regional-national transportation system. Furthermore, road development projects have been treated based on a partial/sector approach (i.e. on road development) rather than a more comprehensive one (i.e. on regional development – road and land use, etc.). Finally, given the lack of qualified local human resources, the project should incorporate a capacity building component, i.e. in terms of human resource development as well as institutional capacity building.