Indonesia

Road Maintenance Improvement Project(2)

Field Survey: July 2003

1. Project Profile and Japan's ODA Loan

Site location map

Repair work in progress on a national road in an urban area

1.1 Background

Indonesia has been focusing its energies on road development for many years and has been aggressively promoting surface upgrades to existing national and provincial roads. The outcome was that by 1994 the network of national and provincial roads exceeded sixty thousand kilometers, whereupon the need for maintenance repairs in order to maintain the developed routes in favorable condition began to take precedence. At the time of appraisal, maintenance of national and provincial roads falls under the Provincial Public Works jurisdiction, with the work being undertaken by numerous sub-project groups organized by the branch offices (known locally as Cabang Dinas): subordinate organizations of the Provincial Public Works. Of the maintenance work that was being executed, small-scale repairs and clearing work (routine maintenance) on sections of surface classified as being in "stable" condition were not outsourced to private-sector contractors but were carried out under direct management based on cost and impetus considerations; however, many of the branch offices did not have sufficient capability to execute the necessary work due to shortfalls in the machinery allocated to them and problems were emerging in respect of efforts to improve road infrastructure.

In order to address these circumstances a JBIC survey was executed in 1991, and long-term plans devised to develop the routine maintenance system for national and provincial roads, which centered on the deployment of Routine Maintenance Units (RMU: a package of machinery for routine maintenance work) and the training of personnel. The first phase of these plans was executed via the "Road Maintenance Improvement Project", which was initiated in 1995 under yen loan funding. That project involved the provision of RMU to approximately 100

of Indonesia's 240 Provincial Public Works branch offices nationwide. This project represents the second phase of the plans. Reflecting the fact that roads in some regions had sustained serious damage due to landslides, boulders, flooding and earthquakes, etc., this Phase II Project also incorporated the provision of Disaster Recovery Units specifically targeting these areas.

1.2 Objectives

The project's objectives were to develop and improve the road maintenance management system for national and provincial roads by deploying Routine Maintenance Units (RMU) and Disaster Recovery Units (DRU) and providing training to maintenance personnel, and thereby contribute to infrastructure improvements and regional development targeting economic growth.

1.3 Outputs

(1) Equipment procurement

(i) RMU: Deployment of new RMU comprising a total of 26 units made up of 17 types of machinery, including dump trucks, wheel loaders, rollers, grass cutters, etc., to 191 Provincial Public Works branch offices in 26 provinces. Deployment of RMU (reinforcement) comprising a total of 19 units made up of 15 types of machinery, including the aforementioned, to the Provincial Public Works branch offices already owning a RMU.

(ii) DRU: Deployment of DRU comprising dump trucks, wheel excavator etc., to 48 of the Provincial Public Works branch offices covered by (i) in 22 provinces.

(2) Training: (i) Training for executing agency staff (30 members); (ii) domestic training for provincial instructors, inspectors, technicians and RMU project managers (2,126 members); and (iii) overseas training for the same personnel as cited under (ii) above (20 members).

(3) Consulting services in relation to (1) – (2) above.

1.4 Borrower / Executing Agency

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

1.5 Outline of Loan Agreement

Loan Amount Loan Disbursed Amount	7,300 million yen 5,639 million yen
Exchange of Notes Loan Agreement	December1996 December 1996
Terms & Conditions Interest Rate Repayment Date (Grace Period) Procurement	 2.7% 30 years (10 years) General untied
Final Disbursement Date	December 2001

2. Results and Evaluation

2.1 Relevance

"Preventing the rapid deterioration of road structures" – one of the project's objectives – was consistent with the road sector targets outlined in Indonesia's national development plan and was gaining priority with each passing year. The project's relevance at appraisal is confirmed by the fact that under the five-year national development plan (REPELITA VI: 1994-1998), which was current at appraisal, the priority areas for road sector development were (1) the construction of new roads, predominantly to improve access to remote regions and achieve strategic development in urban and industrial regions, and (2) the maintenance of previously developed roads. Emphasis on the maintenance of existing roads subsequently gained precedence, underscored by a deficit of new investment funding attributable to the economic crisis of 1997, and increasing the need for the implementation of this project. Topping the list of priority issues in the infrastructure development sector of PROPENAS (the national development plan for 2000-2004), Indonesia's latest national development plan, which was current as of 2003, are improvements to maintenance of existing infrastructure, including roads, which confirms the relevance of the project at evaluation. Although the routine maintenance system has changed due to the abolition of Provincial Public Works branch offices (refer to Box 1), there has been no change in government policy since appraisal, which states that the routine maintenance of national and provincial roads shall be executed exclusively under direct government management. In Phase I, RMU were procured for 100 of Indonesia's 240 nationwide Provincial Public Works branch offices.

Table 1: Types of Road Works and the Scope Covered by this Project (shaded sections) (as of July 2003)

		Road Work Classifications[1)]			
		New construction	Improvement works	Periodic maintenance	Routine maintenance
Surface conditions of target sections		---	Unstable (extremely poor)	Unstable (poor)	Stable (good / normal)
Responsible official / work system	National	Central (DGRI) Outsourced	Provincial PW Outsourced	Provincial PW Outsourced	Provincial PW Direct management
	Provincial	Provincial PW* Outsourced	Provincial PW Outsourced	Provincial DPW Outsourced	Provincial PW Direct management
	Kabupaten / municipal	Kabupaten/municipal PW Outsourced	Kabupaten/municipal PW Outsourced	Kabupaten/municipal PW Outsourced	District/municipal PW Outsourced

* PW: Public Works

Note 1: Excluding new construction, the content of road works is as follows: (1) improvement works: large-scale overlay, width expansions, etc.; (2) periodic maintenance: overlay of paving less than 3cm thick, simple paving, etc.; (3) routine maintenance: filing, patching, sealing, weeding, clearing, etc.

Source: compiled from results of hearings with DGRI, etc.,

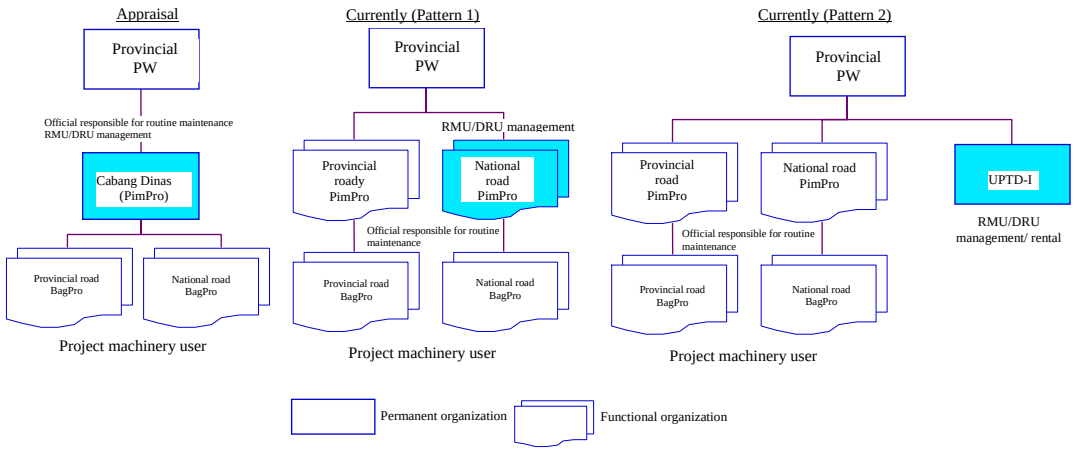
Box 1: Summary of Changes to the Routine Maintenance System Contingent Upon the Abolition of Provincial Public Works branch offices

Both pre- and post-implementation of the project, national and provincial road routine maintenance operations were / are positioned as road, bridge repair and maintenance projects of the Provincial Public Works . When the project was initiated, the Provincial Public Works branch offices functioned as repair / maintenance project offices, with routine maintenance individual sub-projects (BagPro) being executed under the supervision of project managers (PimPro): the managers of the offices. However, the Provincial Public Worksbranch offices were gradually phased out based on a 1992 directive issued by the Ministry of Home Affairs.

In 2000, when the field survey for the ex-post evaluation of the Phase I Project was conducted, it was reported that: "In the majority of cases, the Provincial Public Works branch offices – supposedly abolished under law – continue to exist and are functional." However, according to the explanation provided by the executing agency during this survey, the offices are disappearing across the nation.

Since the abolition of the Provincial Public Works branch offices, the PimPro respectively responsible for national and provincial road maintenance have been named provincial governors of separate organizations (see Pattern 1 below). Again, in some provinces, UPTD (regional technical execution units) have been established under the Public Works jurisdiction to provide consolidated management of infrastructure construction and maintenance management; the rights to ownership and management of machinery has been transferred to the UPTD, and a policy of leasing for respective national and provincial road BagPro is being employed in some areas (see Pattern 2). However, the executing agency does not officially recognize Pattern 2.

National / Provincial Routine Maintenance Systems Pre- & Post-Project Implementation



Note: PimPro = project manager, BagPro = sub-project, UPTD = Unit Pelaksana Teknis Daerah (Regional Technical Execution Unit), UPTD-I = provincial regional technical execution unit.

Source: compiled from the consultant's report, DGRI hearings and hearings conducted during site visits.

2.2 Efficiency

2.2.1. Outputs

(1) Equipment procurement:
This component was essentially implemented in line with the plan. Some machinery was added to reinforcement RMU and DRU in line with conditions in the regions of deployment.

(2) Training
(i) The training for executing agency staff employed in provincial government was implemented for 37 personnel, i.e. a larger number than cited in the appraisal plan.
(ii) The domestic training for provincial instructors, inspectors, technicians and RMU project managers was implemented for 1,529 personnel, i.e. a smaller number than cited in the appraisal plan. This change was based on the fact that the abolition of Provincial Public Works branch offices and rendered it necessary to increase the numbers of national and provincial road RMU project managers, thus the focus of the training was adjusted from the operator / technician level to the project manager level.
(iii) The overseas training was implemented as planned.
(iv) Extension of consulting services: Primarily due to the addition of the task of disseminating the Routine Maintenance Management System (RMMS) that was developed during the Phase I Project, the total number of consultation working hours was 1.7 times longer than in the original plan.

Figure 1: Key machinery: dump trucks, rollers, etc.

Figure 2: A DRU power shovel at work

2.2.2. Project Period

Scheduled to cover the period from December 1996 through March 2000 under the appraisal plan, the time required to make the aforementioned adjustments in machinery deployment and to clarify consultant selection criteria pushed completion back for a year and nine months to December 2001.

2.2.3. Project Costs

The depreciation of the local currency (rupiah) in and after 1997 meant that total project costs, at 6,041 million yen were significantly lower than the initially budgeted figure of approximately 9,673 million yen.

2.3 Effectiveness

2.3.1. Use Status of Routine Maintenance Machinery

During hearings with the executing agency and surveys conducted during site visits[1] it was confirmed that the machinery provided via this project is being employed to carry out routine maintenance operations under the direct management of Provincial Public Works. Results from the questionnaire survey revealed comparatively high figures for the eight sub-projects in seven provinces from which valid responses were obtained, where on average approximately 70 percent of major machinery provided was used during the past six months, although some was unusable due to breakdowns (refer to Table 3).

In terms of the use status of individual pieces of machinery, both executing agency responses (refer to Table 2) and beneficiary survey result (Table 3) evidence the longest operating times for vehicles and weed cutters, suggesting that there has been no significant change in the form of routine maintenance activities, which were predominantly undertaken manually prior to project implementation, and that machinery utilization to alleviate the burden of work is increasing. Operating times for heavy machinery are short by comparison; however, operating times for motor graders are increasing in West Java where deterioration of roads is severe due to heavy traffic: site visits further confirmed that wheel loaders are in use, a fact not evidenced by the data. Motor graders constitute part of the DRU machinery lineup but are being used for ground leveling for hard shoulders and other routine maintenance work. Moreover, on-site workers explained that when disasters such as major mudslides and the like occur, the dump trucks provided for DRU are being used in conjunction with those in the RMU, which suggests that the units are being utilized flexibly in response to actual needs.

[1] Visits were paid to routine maintenance organizations in East Kalimantan and West Java and inspections of road maintenance sub-projects conducted at two locations in each province.

Table 2: Executing Agency Responses on Average Unit Operating Times for Key Project Machinery (Unit: hours)

	99-02 Cumulative	99-02 Annual average
Pickup trucks[1)]	393	98
Dump trucks[1)]	143	36
Grass cutters	82	20
Baby rollers	50	13
Wheel loaders	38	9
Air compressors	34	9
Motor graders	9	2
Vibrating rollers	8	2

Note 1: Records of distances traveled were converted to hours using an average speed of 20km/h.

Source: DGRI questionnaire responses

Table 3: Unit Operating Hour Reports from Sub-Projects Visited (May 2002) (Unit: hours)

	East Kalimantan	West Java
Pickup trucks[1)]	9	-
Dump trucks[1)]	69	221
Grass cutters	154	64
Baby rollers	-	14
Air compressors	-	5
Motor graders	-	18
Vibrating rollers	40	10

Note 1: Records of distances traveled were converted to hours using an average speed of 20km/h.

Source: East Kalimantan and West Java Provincial Department of Public Works data.

2.3.2. Routine Maintenance Results and Stable Section Extensions

Routine maintenance work on national and provincial roads is showing signs of increasing across the board: in 2002 work was conducted on 19,000 km against 11,000km in 1994. The length of sections on which paving is in good condition (stable section) is also increasing and was 42,000km in 2002 against 35,000km in 1994; thus both parameters have improved as compared to pre-project levels.

2.3.3. Smoothing Traffic Flows on the Main Road Network

As shown in Table 4, traffic volumes on major roads are increasing in all regions; however, since this is also related to overall economic activity it is difficult to identify a causal link between these increases and the routine maintenance work. By contrast, all fourteen sub-project groups in eleven provinces that have submitted responses to the questionnaire state that: "traffic flows have become smoother thanks to routine maintenance on the sections in question". Reports were received containing data on traffic volumes, etc., for eleven sections in five provinces[2], and if these data are averaged, it becomes clear that despite approximately

Table 4: Average Annual Traffic Volume (Unit: vehicles/day)

Region	1998	2002
Sumatra	1,900	4,146
Java + Bali	5,754	13,906
Kalimantan	1,799	4,501
Sulawesi	1,025	5,203

Source: compiled from DGRI data

Figure 3: Site of a mudslide. 1000m^3 of sediments were removed using power shovels and dump trucks.

[2] Reports were received on eleven sections in East Kalimantan, West Kalimantan, Central Kalimantan, Central Sulawesi and South Sulawesi. Note that responses on traffic volume data were obtained for five sections only.

2.1-time increases in traffic volumes spanning the pre- and post-project period, travel times have decreased by around two thirds, whilst speeds are up by around 1.6 time. Whilst it is not possible to specify a relationship with routine maintenance activities, considered in isolation these data suggest that the work is increasing traffic volumes and facilitating traffic flows on the target sections.

Regarding the effects of DRU procurement, the following comment obtained evidences that the project is having its intended effect in West Java: “The supplied machinery has made it possible to clear sediments debris quickly, disaster recovery work times are shorter and traffic flows have become smoother.” And “use of several dump trucks to transport dirt helped shorten repair time.”

2.3.4. Recalculation of the Economic Internal Rate of Return (EIRR)

At appraisal, the EIRR was estimated to be 35.9 percent (project life: 13 years) based on a calculation in which project benefits were assumed as the vehicle operating cost (VOC) savings attributable to road surface improvements and costs as the project costs and routine maintenance costs[3]. The EIRR was not recalculated since it was not possible to obtain the necessary data when this evaluation was conducted. For reference, the EIRR values for all major road sections calculated by the executing agency using its own economic analysis program was collected, and revealed the median IRR value for road sections in South Sulawesi to be 61.8 percent.

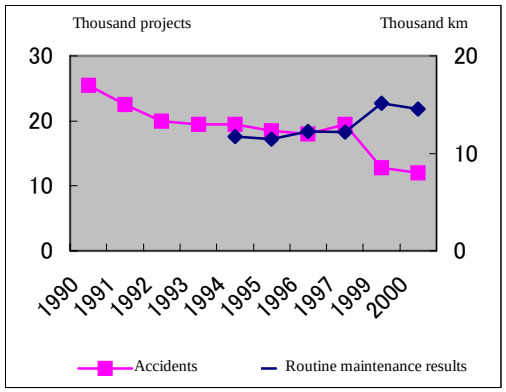
2.4 Impact

2.4.1. Improvements in Road Safety

Traffic accidents declined throughout the 1990s, with the decreases being particularly marked from 1999 onwards (Figure 4). The number of accidents had decreased to 11,000 incidents in 2000 as compared to the figure of approximately 20,000 in 1997. According to the results of the questionnaire survey (14 of 52 responses), all respondents in on-site surveys conducted for national road maintenance sub-projects (4 sites in 2 provinces) and the drivers we spoke to whilst moving between the sites (3 individuals) pointed to the following as being one cause of road accidents: “On sections where the road is cracked or has subsided, it is often necessary to stray across the center line in order to avoid these areas, thereby increasing the likelihood of a head-on collision.”

[3] The contribution made by routine maintenance activities was assumed to equate to 1-2% of the benefits.

Figure 4: Transitions in Accident Incidence



Source: compiled form Central Bureau of Statistics and DGRI data.

Figure 5: A vehicle driving over the center line on a cracked section of road slated for repair

2.4.2. Contribution to Socioeconomic Development in the Region

According to the results of the aforementioned questionnaire survey, “the improvements in road surface conditions have facilitated the flow of traffic and are helping to promote the region’s industries”.

2.4.3 Environmental Impacts

According to the executing agency, no negative impacts on environment followed by the project were reported. No land acquisition and resettlement by the project were took place.

2.5 Sustainability

2.5.1. Executing Agency (Provincial Public Works branch offices)

(1) Technical capacity

The training that was undertaken as part of this project was appropriately executed[4]. The executing agency reports that 78 percent of the personnel that received training continue to be employed in the same departments, that there is little leakage of knowledge or skills and no notable problems in this area. Since project completion, training has mainly been conducted at the regional training / repair depots set up by the executing agency (DGRI). In 2002, each depot provided training averaging 5-6 days to 14-31 routine maintenance personnel in an attempt to maintain / improve technical competence. Further, in East Kalimantan – the destination of one

[4] The training provided via this project followed the content and format of that used in the Phase I Project, which was evaluated, ex-post, as having been a success. Post-training test scores were up on all courses and respondents to the sub-project group questionnaire indicated improvements in both managerial and technical competence. As stated earlier, major reductions were made in the number of site-level personnel, whilst manager-level numbers were increased for this training program; however, there are no indications that this has resulted in a technical skills deficit. Both of the provinces visited employ part-time operators that have received training from the manufacturers, and it was understood that there are no technical problems with the operation of the machinery.

of the on-site surveys – training is being provided, predominantly to UPTD staff members, under the provincial government budget.

(2) Operation and Maintenance System

The operation and maintenance system for equipment is in a period of transition contingent upon the abolition of the Provincial Public Works branch offices. The routine maintenance of national and provincial roads falls under Provincial Public Works jurisdiction and is executed via multiple sub-projects that are overseen by national or provincial road maintenance project managers. Work machinery (RMU/DRU) is owned by the executing agency (DGRI), whilst its storage and management falls to the national road maintenance project managers in each of the provinces. However, since decentralization and the abolition of the Provincial Public Works branch offices, regional difference are emerging in the operation and management systems employed for the machinery (Table 5). Responsibility for the management of RMU/DRU was assigned to the national road maintenance project managers in line with the abolition of Provincial Public Works branch offices, the organizations that were formerly responsible for routine maintenance equipment. However, where the national road maintenance project managers are responsible, priority is assigned to the maintenance of national roads and there have been incidences of cases in which provincial road project and sub-project managers have had limited access to the RMU/DRU.

Table 5: Division of Responsibility for Maintenance of Project Machinery (as of July 2003)

	DGRI policy (written notification sent to all provinces in 2000)	Current status in West Java	Current status in East Kalimantan
Owner	DGRI	Recognized to be DGRI	Recognized to be the provincial government[1)]
Manager	National road maintenance project manager	National road maintenance project manager	Provincial regional technical execution units (UPTD-I) [2)] (units are borrowed from UPTD-I by the party executing routine maintenance)
Storage location	No specific reference	National road maintenance sub-project workshops	UPTD-I workshops (same as West Java prior to decentralization)
Users	Both national and provincial road maintenance sub-projects	National road maintenance sub-projects (occasionally loaned out for provincial road maintenance sub-projects)	Both national and provincial road maintenance sub-projects
Official responsible for maintenance	Sub-projects for minor works Regional DGRI depots[3)] for high-level works	National road maintenance sub-project workshops	UPTD-I workshops (sub-project workshops prior to decentralization)

Note 1: A notice to the effect that "the provincial government owns the RMU/DRU" was sent to DGRI in 2002, followed in 2003 by a communication stating that: "Monthly reports from the project manager to DGRI are to be abolished; henceforth the UPTD will submit reports to DGRI on a quarterly basis."

Note 2: Organizations widely established since decentralization that fall under provincial, district or municipal jurisdiction and supervise operations in a specific sector. In East Kalimantan four UPTD responsible for roads, bridges, bridge construction and maintenance have been established per area. Further, according to the executing agency, West Java has established a Routine Maintenance Body, which performs the same function as the UPTD, with this body being responsible for the machinery supplied via the Phase I Project.

Note 3: DGRI has established eight training / machinery repair depots nationwide. However, the majority are currently functioning only as training centers due to central government budget shortages.

Source: compiled from questionnaire responses provided by the executing agency, hearings with West Java and East Kalimantan Provincial Departments of Public Works, and the consultant's final report

On occasion, there is insufficient communication and a lack of cooperation over equipment operation among national and provincial road entities, thus although a uniform system for road maintenance has been established across the nation, it is necessary to build a system that reflects the division of authority under decentralization.

(3) Financial Status

The cost of undertaking routine maintenance work is funded from the State budget in the case of national roads and from provincial government budgets when the work is undertaken on provincial roads. According to the executing agency (DGRI), despite nominal increases in State budget allocations for national road maintenance since 2000, on a dollar basis, the budget for 2002 (approx. Rp170 billion) had shrunk to a third of its 1994 level. In 2002, the per-kilometer budget was at the same level as in 1994 (Rp9.2 million) on a Rupiah-base, but less than a quarter of the level for the same year on a dollar-base. Operation and maintenance budgets have been declining since decentralization, and the maintenance budget for national roads is becoming ever tighter. The only information on provincial road maintenance budgets came from the hearing conducted in East Kalimantan, which was allocated equivalent to Rp14 million per-kilometers for personnel and raw materials costs in fiscal 2003, suggesting that conditions are more favorable as compared the national road maintenance budget.

2.5.2. Operation and Maintenance Status

According to executing agency records, the condition of project machinery at this time is as shown in Table 6 below. Eighteen months after final disbursement, 88 percent of the machinery provided was in "favorable" working condition. With the machinery provided via the Phase I Project (procured in 1993 and 1996), more than half was in "poor" or "extremely poor" condition 7-10 years later and it is possible that the condition of Phase II Project machinery will deteriorate, undermining the sustainability of project effects.

Topping the list of machinery in poor condition in the on-site surveys were small machines, such as grass cutters; however, since heavy machinery and vehicles are unusable due to the inability to procure spare parts in the country or too expensive to use even they are available, they were frequently classified as being in "poor" condition. At sub-project sites visited, efforts were being made to get maximum use out of the machinery, with parts from machinery that had become inoperable being used for other machinery, innovative ideas employed for broken parts, and so forth.

Table 6: Current Status of Phase I and Phase II RMU / DRU

Project	As of December 2001					As of June 2003				
	Unit No.	Equip. No.	Condition			Unit No.	Equip. No.	Condition		
			Good	Poor	Extremely Poor			Good	Poor	Extremely poor
Phase I	103	3,605	2,335 (64%)	1,270 (35%)	16 (1%)	103	3,605	1,694 (47%)	856 (24%)	1,055 (29%)
Phase II	238	6,243	6,243 (100%)	-	-	238	6,243	5,519 (88%)	398 (6%)	326 (6%)

Note: Data on additionally procured machinery is excluded.
Source: compiled from the consultant's final report and questionnaire responses provided by the executing agency.

Figure6: A Generator under Repair during a Sub-project Workshop

As one of the causes of the rapid deterioration of machinery, equipment is being utilized more than originally envisaged and it is assumed that this is imposing an excessive burden on the machinery. During on-site visits, wheel loaders, motor graders (DRU machinery) and other heavy machinery was being used to perform tasks that are considered to exceed the scope of routine maintenance i.e. "localized filling and patching, sealing, grass cutting, and clearing," as "routine maintenance activities" (e.g. the removal and resurfacing of 100m

stretches of paving, the rerouting of roads to circumnavigate collapsed hard shoulders, etc.), from which it is inferred that the machinery is being used more than anticipated. In the road status list compiled by the executing agency as a means of determining the type of work and the budget for individual sections, road sections categorized as being in “poor” condition were slated for routine maintenance in a number of regions, which suggests that there is potential for RMU/DRU to be used for large-scale tasks equivalent to periodic maintenance and/or improvement works.

3. Feedback

3.1 Lessons Learned

Underscored by budget shortfalls, routine maintenance machinery is also being used for tasks covered by the scope of periodic maintenance and/or improvement work. Whilst this is contributing to improved road stability there is a risk that the work will impose an excessive burden on routine maintenance machinery.

From the 1990s through to the present, the results of routine maintenance work have surpassed those from improvement works and periodic maintenance by a wide margin. This evidences the fact that a large percentage of national and provincial roads are in stable condition, but simultaneously suggests that repair work may be being conducted as “routine maintenance” on unstable sections that should in fact be targeted for improvement work and/or periodic maintenance. Whilst these circumstances will contribute to increasing road stability overall, consideration must be given to the fact that it is imposing an excessive burden on the routine maintenance machinery and that this runs the risk of impeding the execution of proper routine maintenance operations.

3.2 Recommendations

[To the executing agency] To enable the long-term utilization of project equipment, a road maintenance improvement plan that will clarify the responsibility for and funding of national and provincial road development must be formulated and put into effect.

With decentralization and the abolition of the Provincial Public Works branch offices, the former managers of the routine maintenance equipment, responsibility for the management of the RMU (Routine Maintenance Units) and DRU (Disaster Recovery Units) has fallen to the project managers responsible for the maintenance and repair of national roads. In this connection, there is evidence to suggest that this is limiting the access to the RMU/DRU for projects / sub-projects being executed on provincial roads. By contrast, in East Kalimantan, the newly established UPTD (regional technical execution units) have assumed overall

responsibility for the RMU/DRU and are leasing out the machinery for both national road and provincial road sub-projects. Both methods have their advantages and disadvantages, but it is hoped that the executing agency will study the system which will enable routine maintenance of both national and provincial roads to be executed efficiently, and that it will formulate and implement an effective and financially sustainable road maintenance improvement plan.

Comparison of Original and Actual Scope

Item	Planned	Actual
1. Outputs		
1. Machinery procurement		
1) Routine Maintenance Units (RMU)	191 new units 47 units reinforced Total: 5,859 items	Unit number as planned Machinery lineups adjusted Total: 5,970 items
2) Disaster Recovery Units (DRU)	48 new units Total: 384 items	Unit number as planned Total: 478 items
2. Training	Total: 30 individuals	Total: 37 individuals
1) Training workshop Executing agency staff	Total: 298 individuals	Total: 325 individuals
2) Module 1 Provincial inspectors, RMU project managers	Total: 348 individuals	Total: 409 individuals
3) Module 2 Provincial inspectors	Total: 1,480 individuals	Total: 795 individuals
4) Module 3 Provincial operators, technicians	Total: 20 individuals	As planned
5) Overseas training		
3. Consulting services	Total: 90MM	Total: 118MM
1) Core team	Total: 352MM	Total: 476MM
Professional A (international)	Total: 240MM	Total: 543MM
Professional B (local)	-	-
Technician (local)	Total: 114MM -	Total: 121MM Total: 84MM
2) Training service team		
Professional A (international)		
Professional B (local)		
Technician (local)		
2. Project period		
1. Machinery procurement		
1) Tender / contract	July 1996 – September 1997	October 1996 – July 1997
2) Procurement / transportation	October 1997 – June 1998	November 1997 – December 2001
2. Training	October 1997 – June 1998	August 1998 – December 1998
1) Preparation	July 1998 – December 1999	December 1998 – May 2000
2) Execution		
3. Consulting services	October 1996 - September 1997	October 1996 – February 1998
1) Selection	October 1997 – March 2000	May 1998 – December 2001
2) Service provision		

3. Project costs		
Foreign currency	7,300 million yen	4,342 million yen
Local currency	2,337 million yen (50,804 million rupiah)	1,297 million yen (79,427 million rupiah)
Total	9,637 million yen	6,041 million yen
ODA loan portion	7,300 million yen	5,639 million yen
Exchange rate	Rp1 = 0.046 yen (as of November 1996)	Rp1 = 0.016 yen (average between September 1997 and December 2001)

Third Party Evaluator's Opinion on
Road Maintenance Improvement Project (2)

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Relevance

The sixth five-year national development plan (REPELITA VI 1993-1998) mentioned two priority areas for road-sector development: construction of new road and maintenance of existing road. The project was intended to address the second priority area as the background part of the report described the situation of road maintenance authority by the time of appraisal as having "insufficient capability to execute the necessary work due to shortfall in machinery and skill." Although Evaluator agrees that the problem and the proposed solution had some degree of relevance, the root cause of the problem was partially addressed. This may put the effectiveness of project to solve the problem rather limited.

On the other hand, from legal perspective, the project granted a strong relevance to the government policy and development program priority as the economic crisis in 1997 reduced government ability to purchase new machinery or provide intensive training. Other strong proponent for the project relevance is that there has been no change in government policy regarding the hierarchical authority for national/provincial road maintenance since the time of appraisal. These reasons make Evaluator convinced that the relevance of the project at present time is as strong as that of the time of appraisal.

Priority-wise, national and provincial roads have always been important for economic activity therefore its availability and readiness sits on the top priority of government policy. The coverage of the project was nation-wide while the scope of the project was an extension of similar project in 1995 (Phase 1). Only by completing this Phase 2, the optimum benefit of Phase 1 can be realized. This puts the realization of Phase 2 project necessary.

Impact and Sustainability

Logically convincing, the project has been able to improve road quality and safety. As the frequency of road maintenance become more often, we may expect that more safe-roads lead to shorter travel time, more traffic volume but less-congested, more satisfied drivers, as well as an increasing number of economic activities in general. In term of road safety, we may expect that more safe-roads available will reduce the likelihood of traffic accident. The chart in the report might be evidence that showed such causality: as more roads are routinely maintained, lesser number of traffic accidents is likely. Negative impact is less likely to happen and environmental impact is, in my opinion, none.

The sustainability of the project benefit seemed secured for short period, but is challenging for future time. Dramatic changes in government policy and shift in authority locus due to decentralization trend seemed to be too difficult to anticipate by the time of appraisal. The longer sustainability of the project currently depends on the executing agency (DGRI), some way beyond the project's control.

Overall, Evaluator agrees that the project has been designed accordingly to meet government's relevance and priority, has been implemented efficiently, and has brought benefit to many people all over the country. The project benefit's sustainability remains a challenging issue in the future.