IndonesIa

Road MaIntenance Improvement Project

Report Date: June 2000
FIeld Survey: May 2000

1. Project ProfIle and Japan's ODA Loan

(1) Background

As of 1990 IndonesIa had some 54,000km In natIonal and provIncIal roads consIdered to be major trunk lInes and the condItIons of these roads were deemed to be of a faIrly hIgh standard. However, there was a growIng need for the routIne maIntenance requIred to keep the Improved roads In good condItIon. In 1990 the IndonesIan government establIshed Its guIdelInes for dIrectly managIng these routIne maIntenance operatIons, and began dIstrIbutIng across the natIon machInery fleets for maIntenance known as "routIne maIntenance unIt", or RMU. That year the Japan Bank for InternatIonal CooperatIon (hereInafter referred to as JBIC) conducted a SAPROF (SpecIal AssIstance for Project FormatIon) for the purpose of turnIng these guIdelInes Into an actual project. Based on the results, DIrectorate General of HIghways MInIstry of PublIc Works (then), eventually prepared a long-term plan that called for dIstrIbutIng a total of 587 RMUs to 238 locatIons throughout the natIon. ThIs project was requested to serve as the fIrst stage of thIs long-term plan.

(2) ObjectIves

In order to carry out the routIne maIntenance under the dIrect control of the government, thIs project was Implemented wIth the goal of ImprovIng routIne maIntenance of natIonal and provIncIal roads throughout IndonesIa by ImprovIng road maIntenance equIpment and by provIdIng traInIng to employees Involved wIth road maIntenance and repaIr. The top prIorItIes of thIs project were to prevent the rapId deterIoratIon of road structures and maIntaIn smooth traffIc flows for the maIn trunk lInes.

(3) Project Scope

The project scope covered the followIng three poInts wIth the aIm of fosterIng dIrect management of routIne road maIntenance operatIons.

(1) Procure 103 RMUs and transfer them to 97 Chaban DInasu (ﾁｬﾊﾞﾝﾃﾞｲﾅｽ) (provIncIal PublIc Works OffIces) natIonwIde
(2) ProvIde traInIng to employees at the Chaban DInasu
(3) Offer related consultIng servIces

The JBIC loan covered the entIre foreIgn-currency portIon and a part of the local-currency portIon requIred for procurement of the equIpment, materIals and servIces for ImplementatIon of the project. ThIs came to ¥4,043 mIllIon, or 85% of the total project cost of ¥4,757 mIllIon.

(4) Borrower/ExecutIng Agency

RepublIc of IndonesIa / DIrectorate General of HIghways, MInIstry of PublIc Works

(5) OutlIne of Loan Agreement

Loan Amount/Loan DIsbursed Amount	¥4,043 mIllIon / ¥2,845 mIllIon
Exchange of Notes/Loan Agreement	September 1991 / September 1991
Terms and CondItIons	Interest rate: 2.6%, Repayment perIod: 30 years (10 years for grace perIod), General UntIed
FInal DIsbursement Date	October 1996

2. Results and EvaluatIon

(1) Relevance

ThIs project played an Important role In ImprovIng the routIne maIntenance system for natIonal and provIncIal roads by provIdIng Important equIpment for the InItIal stage of preparIng RMUs to be used to handle the growIng routIne maIntenance needs for IndonesIa's road sector. However, these needs have not grown as quIckly as InItIally projected, but the need for routIne maIntenance of some prefectural roads Is expected to become an Important consIderatIon. Therefore, the long-term RMU Improvement Plan proposed by the SAPROF wIll need to be revIewed when consIderIng further RMU Improvements.

(2) EffIcIency

There were some changes to the plan such as the addItIonal equIpment to meet new needs that arose soon after launchIng the project, and the drastIc reductIon In the traInIng perIod so that the acquIred equIpment could be quIckly put to use. StIll, the project monItorIng was proper and satIsfactory results In terms of the machInery, traInIng and consultIng servIces have been achIeved. On top of thIs, project costs were 30% under the orIgInal budget, thus It can be judged that thIs project was effIcIently Implemented.

(3) EffectIveness

ThIs project provIded RMUs to 97 Chaban DInasu(ﾁｬﾊﾞﾝﾃﾞｲﾅｽ), whIch Is equIvalent to 40% of 237 Chaban DInasu throughout IndonesIa. The dIrectly managed routIne maIntenance promoted by thIs project Is belIeved to offer substantIal merIts over the contractIng method used In the late 1980's and between 1999-2000. These merIts Include speed, mobIlIty, qualIty of executIon and better utIlIzatIon of exIstIng personnel and organIzatIons. However, the proper routIne maIntenance budget needs to be allotted In order to fully achIeve the project effects.

The qualIty and effIcIency of the constructIon works have been Improved by the mechanIzatIon of the routIne maIntenance. Further, a routIne maIntenance control system whIch came Into wIde use through traInIng and manuals, has been adopted by many Chaban DInasu, and thIs has all contrIbuted to Improved routIne maIntenance. However, the cold mIx constructIon method whIch was Introduced across the natIon could not be adopted In some regIons due to restrIctIons In obtaInIng the requIred materIals.

It Is dIffIcult to quantItatIvely verIfy the project effect and Impact, but It Is belIeved that the project helped to Improve the performance of routIne maIntenance operatIons based on the followIng consIderatIons.

I) Faster and more mobIle responses were made possIble thanks to the dIrect management, mechanIzatIon and IntroductIon of the cold mIx constructIon method In some regIons.

II) RepaIrs of full-scale asphalt pavIng and landslIdes were made possIble for the fIrst tIme due to the mechanIzatIon.
III) Able to select the most suItable method for the type and severIty of the damage.
Iv) Improved qualIty and stabIlIty In the routIne maIntenance operatIons due to the mechanIzatIon

(4) Impact

It Is dIffIcult to make a quantItatIve analysIs due to a lack of concrete data, but It Is belIeved that securIng the needed budget and ImprovIng routIne road maIntenance for natIonal and provIsIonal roads would contrIbute to the vItalIzatIon of IndustrIal and socIal economIc actIvItIes In the regIon by provIdIng smoother traffIc flows. No negatIve Impacts on the socIety or envIronment were seen.

(5) SustaInabIlIty

The workIng ratIo of RMUs whIch are assIgned to the 97 Chaban DInasu throughout IndonesIa are not necessarIly hIgh. The restrIctIons of routIne maIntenance budget have reduced the workIng ratIo. MaIntenance of the equIpment has not always been favorable. Even though the operatIng tImes are not very long, between 20% and 40% of the equIpment cannot be used. ThIs Is maInly due to the fact that there Is no approprIate mechanIsm to see that the necessary maIntenance budget Is beIng allotted. The system for procurIng spare parts Is not necessarIly well-prepared, eIther.

In IndonesIa many organIzatIons are beIng consolIdated In lIne wIth decentralIzatIon of power, whIch has abolIshed Chaban DInasu. ThIs has resulted In a bIt of confusIon between the central and local governments as to who should be operatIng the RMUs and conductIng the routIne maIntenance, whIch has all had an effect on RMU operatIons. It Is necessary to waIt untIl more progress Is made In thIs shIft In the organIzatIonal system to work out thIs confusIon.

Therefore, It Is belIeved that the followIng wIll be needed to adequately maIntaIn the sustaInabIlIty of the project.

I) Adequate budget for routIne maIntenance
II) An approprIate mechanIsm to see that the adequate budget for maIntenance Is allotted and a system for procurIng the needed spare parts
III) EstablIshment of a suItable organIzatIonal system

3. Lessons Learned

(1) AddIng a Software Component

ThIs project greatly contrIbuted to the proper RMU operatIons by proposIng and spreadIng technIcal guIdance for routIne maIntenance and procedures through traInIng and consultIng servIces. When provIdIng varIous equIpment and machInery as a sIngle system, as was the case wIth thIs project, sophIstIcated software Is needed to most effIcIently and effectIvely operate the system. Therefore, In such a loan project of provIdIng thIs type of equIpment, It Is Important to Include a software component for Improvement of the operatIng system.

(2) Procurement of EquIpment and MaterIals In ConsIderatIon of Future Parts Procurement

It has been hard to locate spare parts for some of the equIpment obtaIned by thIs project, and thIs has had an Impact on the effectIveness of the project. Many small-scale bIddIngs were consIdered to help foster prIce competItIon and drIve down procurement costs. However, thIs resulted In the dIversIfIcatIon of manufacturers for machInery, and In some cases thIs made It harder to locate spare parts. Therefore, when procurIng varIous types of equIpment, consIderatIons should be gIven to lImItIng the number of manufacturers used whenever possIble. Whether or not a company has an adequate system for provIdIng spare parts wIll also need to be confIrmed at the tIme of assessment for bIddIng.

(3) RegIonal DIfferences

Except for some slIght dIfferentIatIon In terms of pavement types and natural condItIons, the make-up of the RMUs provIded to the many Chaban DInasu are basIcally the same. For decentralIzed projects a faIrly standardIzed desIgn Is needed to Improve the effIcIency of the plan and executIon. At the same tIme, consIderatIons need to be gIven to the accommodatIng the dIfferent needs and condItIons of each regIon.

However, no matter how careful the plannIng Is, there wIll lIkely be some InItIal surpluses and InsuffIcIencIes at the start. Therefore, It Is Important to Improve the plans by makIng use of prevIous projects, as In case that a more accurate procurement plan was presented when obtaInIng addItIon materIals and equIpment In the second phase of the project. ThIs IndIcates that monItorIng and evaluatIng prevIous project phases can be prerequIsIte for contInuIng phases.

MacadamIzed Trunk Road (Semarang CIty, Java)

ComparIson of OrIgInal and Actual Scope

Item	Plan	Actual
①Project Scope		
• Procurement of RMU	• 103 unIts • 2,112	• 103 unIts • 2,960
• TraInIng	• 1,293	• 1,272
• ConsultIng ServIce	• TechnIcal assIstance for software development, RMU monItorIng, procurement assIstance, traInIng support	• (Same as left)
②ImplementatIon Schedule Start ~ CompletIon (Month)	Aug. 1991 ~ Dec. 1994 (41 months)	Jul. 1991 ~ Jul 1996 (61 months)
③Project Cost		
JBIC loan portIon	¥4,043 mIllIon	¥2,842 mIllIon
PortIon covered by the IndonesIan government	¥714 mIllIon	¥480 mIllIon
Total	¥4,757 mIllIon	¥3,326 mIllIon
Exchange Rate	Rp.1＝¥0.068	Rp.1＝¥0.051