

ASIAN DEVELOPMENT BANK

PPA: INO 27078

PROJECT PERFORMANCE AUDIT REPORT

ON THE

**FLORES EMERGENCY RECONSTRUCTION PROJECT
(Loan 1241-INO[SF])**

IN

INDONESIA

October 2000

CURRENCY EQUIVALENTS

Currency Unit – Rupiah (Rp)

		At Appraisal (May 1993)	At Project Completion (May 1998)	At Operations Evaluation (April 2000)
Rp1.00	=	\$0.0004815	\$0.0001219	\$0.0001333
\$1.00	=	Rp2,077	Rp8,200	Rp7,500

ABBREVIATIONS

ADB	–	Asian Development Bank
BAPPENAS	–	Badan Perencanaan Pembangunan Nasional (National Development Planning Agency)
CDE	–	chief design engineer
CMT	–	core management team
DBST	–	double bituminous surface treatment
DGH	–	Directorate General of Highways
DGWRD	–	Directorate General of Water Resources Development
EIA	–	environmental impact assessment
EIRR	–	economic internal rate of return
IEE	–	initial environmental examination
km	–	kilometer
LTACC	–	loan and technical assistance coordination committee
MPW	–	Ministry of Public Works
NTADP	–	Nusa Tenggara Agricultural Development Project
O&M	–	operation and maintenance
OEM	–	Operations Evaluation Mission
m	–	meter
PCR	–	project completion report
PIU	–	project implementation unit
PPAR	–	project performance audit report
PWRS	–	Provincial Water Resource Service
RMT	–	reconstruction management team
TOR	–	terms of reference
WUA	–	water users association

NOTES

- (i) The fiscal year (FY) of the Government ends on 31 March.
- (ii) In this report, "\$" refers to US dollars.

Operations Evaluation Office, PE-552

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BASIC DATA
Flores Emergency Reconstruction Project (Loan 1241-INO[SF])

KEY PROJECT DATA (\$ million)	As per ADB Loan Documents	Actual
Total Project Cost	43.70	37.80
Foreign Exchange Cost	17.80	13.95
Local Currency Cost	25.90	23.85
ADB Loan Amount/Utilization	26.00	20.64
ADB Loan Amount/Cancellation		3.50

KEY DATES	Expected	Actual
Fact-Finding		27 Jan-19 Feb 1993
Appraisal		11-20 Mar 1993
Loan Negotiations	17-19 May 1993	24-25 May 1993
Board Approval		1 Jul 1993
Loan Agreement		2 Aug 1993
Loan Effectiveness	1 Nov 1993	27 Sep 1993
First Disbursement		29 July 1994
Project Completion		31 Mar 1997
Loan Closing	30 Sep 1996	31 Jul 1997
Months (effectiveness to completion)	35	42

BORROWER Republic of Indonesia

EXECUTING AGENCY Ministry of Public Works

IMPLEMENTING AGENCIES Directorate General of Highways
 Directorate General of Water Resources Development

MISSION DATA

Type of Mission	No. of Missions	No. of Person-Days
Fact-Finding	1	20
Appraisal	1	9
Project Administration		
Inception		
Part A	1	3
Part B	1	5
Review	5	25
Project Completion	2 ¹	53
Operations Evaluation	1	

ADB = Asian Development Bank.

¹ First mission was staff consultant's mission.

EXECUTIVE SUMMARY

Following the massive earthquake of December 1992 that destroyed lives and infrastructure on Flores Island in eastern Indonesia, the Government of Indonesia asked the Asian Development Bank (ADB) for emergency funds for reconstruction. ADB approved an emergency loan of \$26 million on 1 July 1993 from its Special Funds resources. In the coordinated efforts mounted by several external agencies to help with the reconstruction, ADB focused on roads, bridges, and water resources facilities because it was already supporting similar activities in the area. The Project aimed to rehabilitate national and provincial roads, bridges, surface and groundwater irrigation schemes, and flood control works.

As part of the preparation of this project performance audit report, the Operations Evaluation Mission (OEM) visited Flores, met with key government officials, interviewed beneficiaries, and made physical inspections of selected infrastructure. The objectives of this report are to evaluate (i) the processes and procedures in designing and implementing an emergency project; (ii) the quality of work done by ADB, the Government, and the consultants; (iii) the extent to which benefits are being sustained three years after loan closure; and (iv) lessons for future projects.

During project preparation, ADB performance was swift, innovative, and in line with the existing guidelines. Feasibility studies were not prepared, and the usual review meetings were substituted by a loan and technical assistance coordination committee meeting to accommodate the emergency. The project design included several special elements such as more than the standard amount of local cost financing, advance procurement, retroactive financing, and direct hiring. The Executing Agency was the Ministry of Public Works and the implementing agencies were the Directorate General of Highways and the Directorate General of Water Resources Development. Although there was a need to process the Project quickly, ADB emphasized the value of providing earthquake-resistant reconstruction to the extent possible. To ensure appropriate mitigating measures were designed against future earthquake risks, international consultants were engaged.

In implementing the Project, there were several coordination problems. Although direct hiring was approved by ADB, the Government's consultant approval procedures and disbursement channels were not modified to suit the emergency. As a result, the international consultants' appointments and the establishment of quality control procedures were delayed. However, physical works were initiated rapidly resulting in an initial period of work that was not supervised by international consultants. In addition, subsequent organizational changes made by the Government reduced the role of consultants to advisers rather than supervisors. This created a problem of balancing urgent reconstruction and long-term sustainability. A more proactive role by ADB during implementation may have helped to improve project quality. The OEM also observed that the infrastructure provided by the Project has deteriorated because of lack of maintenance and inadequate drainage systems.

The OEM confirms that the Project was relevant and the project design was conceptually clear and reasonably flexible to meet the emergency. It incorporated many features to accommodate the urgency of the reconstruction effort and provided adequate inputs to achieve the project objectives. The reconstruction of the national and provincial roads, as well as segments of the roads that were added for socioeconomic reasons, have improved the quality of life for the beneficiaries. The farmers are able to harvest two or three crops per year

depending upon their location. The road links built under the Project provide the sole means of access to some poor coastal villages. The OEM, therefore, assigns a successful rating to the Project.

Some key issues need to be resolved. Inadequate financial resources amid the financial crisis have resulted in poor routine maintenance of roads and structures. ADB and the Government should work together to find a viable solution to the long-term problem of the operation and maintenance of roads and bridges in Indonesia. ADB should also consider how to respond to bureaucratic delays by the borrower and problems caused by poor communications with remote areas during the processing of an emergency loan. It may have to stipulate that for borrowers to take advantage of the flexibility attached to ADB loans processed under emergency conditions, the government should make adequate arrangements to quickly process contracts, channel funds, and provide adequate quality control.

The lessons learned from the Project indicate that the *ADB Operations Manual* guidelines for processing emergency loans are adequate and appropriate. However, the Government of Indonesia should streamline its approval procedures to expedite the engagement of consultants and contractors to respond to emergencies. ADB help in building the capacity of borrowers to respond effectively to disasters, especially in disaster-prone areas, will be very valuable. Given the flexibility allowed in emergency loans, ADB staff need to play a proactive role during project implementation to ensure timely implementation and quality of work.

The Government needs to take urgent action on providing lateral stops on bridges in the earthquake-prone area to prevent extensive damage due from any future earthquakes. The provincial government should also ensure that routine maintenance is carried out not only because of the large economic investment, but also for safety and environmental protection.

I. BACKGROUND

A. Rationale

1. On 12 December 1992, an earthquake of magnitude 7.5 on the Richter scale occurred on Flores island¹ in eastern Indonesia. It was one of the most destructive in recent history. A wide range of infrastructure and agricultural facilities were destroyed including 750 kilometers (km) of roads, over 700 meters (m) of bridges, and 42 water resources facilities. The main damage occurred over an area of about 6,000 square kilometers, affecting the districts of Flores Timur, Sikka, Ende, and Ngada, and the towns of Maumere and Ende. To cope with the disaster, the Government of Indonesia used a three-stage program: (i) rescue and relief operations, (ii) rehabilitation and recovery, and (iii) reconstruction. A month after the disaster, the Government asked the Asian Development Bank (ADB) for emergency funds to reconstruct the damaged roads, bridges, and water resources facilities on a permanent basis.

2. Along with ADB, several other donor/lending agencies (Australian Agency for International Development, Overseas Economic Cooperation Fund, World Bank, etc.) made a coordinated effort to support reconstruction. Each agency concentrated on the sectors and locations in which it had experience. ADB's focus was on roads, bridges, and water resources facilities. ADB was already supporting national and provincial road rehabilitation and improvement programs under the tenth and eleventh road sector projects, as well as the Nusa Tenggara Agricultural Development Project (NTADP), which includes rehabilitation and expansion of irrigation facilities.²

B. Formulation

3. In response to the Government's 13 January 1993 request for assistance in reconstructing infrastructure damaged by the earthquake, the ADB Fact-Finding Mission visited Indonesia from 28 January to 19 February. The loan Appraisal Mission was fielded in mid-March and the draft appraisal report was ready in early April 1993. In view of the emergency nature of the Project, feasibility studies were not prepared and the requirement for management and staff review committee meetings was waived. A loan and technical assistance coordination committee (LTACC) meeting was held on 28 April 1993. Loan negotiations were held in Manila on 24-25 May 1993, and the loan was approved on 1 July and became effective on 27 September 1993.

4. The Project also provided international consultants (70 person-months) to review designs and supervise construction. A chief design engineer (CDE) was provided (18 person-months) to ensure that appropriate earthquake-resistant design criteria were used. In addition, coordination consultants based in Jakarta were made available to coordinate the reconstruction

¹ Flores is one of the three largest islands of Nusa Tenggara Timur Province and has an area of 14,000 square kilometers with rugged, mountainous, and deeply dissected terrain. The earthquake and the resultant tidal wave caused the death of about 2,000 of the estimated one million people living in the affected areas.

² (i) Loans 952-INO(SF) and 953-INO: *Nusa Tenggara Agricultural Development Project*, for \$25 million, approved on 7 February 1989 and completed in September 1995; (ii) Loan 966-INO: *Tenth Road (Sector) Project*, for \$120 million, approved on 10 August 1989 and completed in October 1994; and (iii) Loan 1115-INO: *Eleventh Road (Sector) Project*, for \$150 million, approved on 7 November 1991 and completed in April 1998.

program.³ In the last six months of the Project, ADB approved a Government request for training in Australia and New Zealand in earthquake engineering and earthquake disaster management for 2-3 weeks⁴ for 40 government engineers from Jakarta, Flores, and 17 provinces.

5. During loan negotiations, important project design aspects were considered. ADB and the Government agreed the Project would give high priority to ensure that reconstruction works addressed inappropriate design standards for an earthquake-prone region. The Government confirmed that general reconstruction guidelines were under preparation for earthquake-resistant infrastructure design. The project title was amended by replacing “rehabilitation” with “reconstruction” to avoid misunderstanding within the Government system regarding the Project’s place in the third phase of the Government’s response to the disaster (para. 1).⁵

C. Purpose and Outputs

6. The main objective of the Project was to assist the Government with the efficient and expeditious reconstruction of the roads, bridges, and water resources facilities damaged by the earthquake. The Project consisted of two parts. Part A was to rehabilitate about 332 km of national and provincial roads and about 335 m of bridges. Part B was to (i) rehabilitate 10 surface irrigation schemes, 14 groundwater irrigation schemes, and 13 riverbank protection and flood control works; (ii) provide equipment; and (iii) finance the incremental operation and maintenance (O&M) of the irrigation schemes. The Project did not include a formal technical assistance component, but the international consultants provided considerable on-the-job training to their counterpart staff. Capacity building was not initially included in the design of the Project as it was already included in similar ongoing loans (Appendix 1). However, at the request of the Government, a training program was supported during implementation (para. 51).

D. Cost, Financing, and Executing Arrangements

7. The total project cost was estimated to be \$43.7 million, about 41 percent of it in foreign exchange. ADB provided \$26 million, amounting to about 60 percent of the total project cost, from its Special Funds resources to be used over the next three years. The balance of funds for the Project was to be provided by the Government. The loan was to be repaid in 35 years with a 10 year grace period and a service charge of 1 percent per annum.

8. A reconstruction management team (RMT) headed by a steering committee was appointed to implement the Government reconstruction program. The Ministry of Public Works (MPW) was the Executing Agency and worked under the guidance of the steering committee. Implementing agencies for parts A and B were the Directorate General of Highways (DGH) and the Directorate General of Water Resources Development (DGWRD), respectively.

E. Completion and Self-Evaluation

³ For coordination work, international consultants were engaged for 12 person-months and domestic consultants for 24 person-months.

⁴ At loan negotiations, it had been agreed that training would be provided if adequate funds remained after reconstruction.

⁵ Minutes of loan negotiations held on 24-25 May 1993.

9. ADB's project completion report (PCR) is of good quality, and is detailed and objective in its presentations. It reports that ADB responded expeditiously in assisting with the reconstruction effort, especially part A of the Project, which was focused on roads and bridges.⁶ By project completion, 345 km of roads and 361 m of bridges had been reconstructed, constituting 104 percent and 108 percent of the respective targets. The PCR indicates that part A was more successful due in part to the higher priority given to improving the road network and the greater attention it received from the district highway offices and the RMT. Under part B, 74 percent of the initially targeted irrigation systems were reconstructed and river channels were stabilized at 16 locations.⁷

10. The ADB PCR identified several useful lessons that are well supported by the evidence. The Operations Evaluation Mission (OEM) endorses many of these lessons. However, it did not cover aspects such as the training program that was added to the Project during implementation. The Indonesia Resident Mission administered the loan, prepared the ADB PCR, and gave the Project an overall rating of partly successful.

F. Operations Evaluation Office Evaluation

11. The objectives of this project performance audit report (PPAR) are to evaluate (i) the processes and procedures in designing and implementing an emergency project; (ii) the quality of work done by ADB, the Government, and the consultants; (iii) the extent to which benefits are being sustained three years after loan closure; and (iv) lessons for future projects. The OEM visited Jakarta, Kupang (the provincial capital), and several project sites on Flores Island. OEM members met with key government officials and interviewed beneficiaries and made physical inspections of selected roads; bridges; and water resources facilities—surface irrigation, tubewells, and river works.⁸ The views of ADB's concerned departments and offices and those of the Government and MPW were sought and noted to the extent possible.⁹

II. PLANNING AND IMPLEMENTATION PERFORMANCE

A. Formulation and Design

12. The project rationale and formulation was appropriate and in line with ADB's strategy of providing funds on concessional terms when an emergency threatens the normal development momentum of a developing member country (*Operations Manual*, section 26). From the beginning, the focus of the Project also matched Government commitment and the efforts of other aid agencies and good coordination was evident between the different external agencies and the Government. Each agency undertook reconstruction in the areas in which it had prior

⁶ The ADB PCR was based partly on a report prepared by a staff consultant after his mission to Flores from 11-24 May 1998.

⁷ The damage to the water resources facilities was less than thought at the time of project design.

⁸ Due to the poor archiving of documents, the OEM was unable to access any of the design drawings and calculations or project site correspondence.

⁹ Copies of the draft PPAR were forwarded to the Borrower and executing/implementing agencies on 14 August 2000 with a request that comments be provided within two weeks. Although the request was followed up subsequently, no comments were received; it is, therefore, assumed that neither the Borrower nor the executing/implementing agencies wishes to comment on the PPAR.

projects and the possibility of quickly providing experienced personnel. Although there was a need to implement the Project quickly, ADB emphasized the value of providing earthquake-resistant reconstruction to the extent possible.¹⁰ To ensure appropriate mitigating measures were designed against future earthquake risks, a CDE was to be engaged.

13. During project formulation, ADB followed its *Operations Manual on Rehabilitation Assistance after Disasters* and included several design features recommended in the manual. These design elements catered to the emergency nature of the Project. First, the loan was financed by ADB's Special Funds resources because of the high level of poverty on Flores and the increased burden caused by the earthquake. Second, it provided more than the standard amount of local cost financing because of inadequate government funds for such unplanned reconstruction (para. 7). Third, to facilitate expeditious implementation of the Project, ADB permitted advance procurement and retroactive financing up to 10 percent of the loan. Fourth, approval was given for the Government to directly appoint civil works contractors already engaged under the ongoing ADB-financed road and water resources facilities projects on Flores. Fifth, instead of providing supplementary financing for ongoing ADB projects, the required rehabilitation of both roads and irrigation schemes were included as components of the same loan. Finally, to enable timely release of funds, ADB agreed that the Government would establish a special account after loan effectiveness.

14. While the Project contained these useful design elements to facilitate smooth implementation, there were several coordination problems (para. 33). During project design, the coordination between parts A and B was inadequate. This was apparent in the terms of reference (TOR) for the two parts. The TOR had different quality control and supervision arrangements,¹¹ which caused confusion during implementation, exacerbated by the shared supervision arrangements between the World Bank and ADB-appointed consultants.¹² Although the intention to share the consultants was useful, having one set of clear and strict supervision and quality control procedures would have compelled the contractors, consultants, and local agencies to abide by the set procedures.

15. Early project formulation is crucial for an emergency loan and ADB appears to have responded well to this need. The LTACC meeting was held within three months of the Fact-Finding Mission, and the ADB Board of Directors approved the loan within six months of the Government request for it (para. 3). However, it took about three months from loan approval to loan effectiveness because of the time required to submit a legal opinion regarding the loan document by the Ministry of Justice. The Government made no special effort to speed up these legal procedures. Although direct hiring was approved by ADB, the government consultant approval procedures were not modified to suit the emergency nature of the Project and this led to delays in consultant approvals (para. 22).

¹⁰ The OEM recognizes and supports the idea that improved standards incorporating earthquake-resistant designs should be used and that the quality of work has to be improved. However, it believes that the earthquake damage was not solely due to inappropriate design standards and poor quality work. With magnitude 7.5 earthquakes, considerable damage can be expected regardless of the design standards or the quality of the work done in the affected area.

¹¹ The TORs for the roads consultant made clear their role in certifying payments to contractors, but the TORs for water resources facilities consultants were to assist the chief construction engineer to review and approve all payments of contractors. The TORs were prepared under a time constraint by different project divisions of ADB.

¹² The RMT consisted of several international consultants tasked with coordinating and supervising the reconstruction efforts. Of these, the CDE and coordination consultants were financed by ADB while the chief construction engineer and quality assurance engineer were financed by the World Bank.

B. Achievement of Outputs

16. The Project achieved most of its intended targets and restored mobility and production in the project area. After the earthquake, it was difficult to drive from one district to another due to landslides, washed out roads, and collapsed bridges. By project completion, 345 km of roads and 361 m of bridges had been reconstructed, constituting 104 percent and 108 percent of the respective targets. The OEM confirms the ADB PCR claim that reconstruction of the roads and bridges and the transport network had a considerable positive impact in the remote areas of Flores.¹³ Fourteen surface irrigation schemes and eight groundwater wells were constructed, and river channels were stabilized at 16 locations.¹⁴ Although the construction work was satisfactory, the full potential of the irrigation work has yet to be achieved due to problems with establishing water users associations (WUAs) and the need to rehabilitate some tertiary canals (para. 49). The PCR indicates that part A was more successful due in part to the higher priority given to improving the road network and the greater attention paid by the district highway offices to the RMT. However, the quality of works, efficiency of construction, and subsequent routine maintenance could have been better (para. 28). The OEM concurs with the PCR that many of the roads that were reconstructed are in need of routine maintenance because of silted side ditches, shrubs/grass on the shoulders, potholes, and cracks in the pavement.

C. Cost and Scheduling

17. The loan was closed on 31 March 1997, six months later than scheduled with a utilization of \$20,639,418, or 79 percent of the original loan amount. The actual project cost was 13.5 percent less than the total estimated project cost of \$43.5 million, mainly due to unused contingency funds. The overrun for consultancy services was more than offset by the savings on part B because of less than expected damage to the irrigation schemes and the rehabilitation of some schemes under another ADB project (footnote 2). At the request of the Government, \$0.387 million of the remaining funds was provided for a three-week overseas training course for MPW staff (para. 4).

18. Initially, funds from the Government budget were made readily available. The Government's PCR indicates that subsequently, in 1994/95, when the reconstruction work had gathered momentum, the Government budget process became more susceptible to delays. At times, implementing agencies did not have the funds to pay contractors. To reduce the problem and to expedite the work, ADB offered 100 percent use of its funds to pay the contractors on an interim payment basis, and then to adjust payments when counterpart funds were available. Because this solution was not in line with Government regulations, the flexibility offered by ADB was not used. In another instance, the Government was not able to take advantage of the O&M funds available from ADB for large irrigation schemes due to incomplete documentation, and insufficient time to revise budgetary allocations.¹⁵

19. Counterpart funding problems affected the progress of some of the construction and was one reason for the extension of the Project. Other reasons for delays were (i) extensive use of

¹³ The OEM carried out focus group interviews at the project sites it visited.

¹⁴ The irrigation work carried out was less than the target as the damage was overestimated at appraisal due to lack of information (para. 25). However, the ADB PCR (para. 7) notes that some repairs were carried out at high cost, diverting funds from smaller schemes.

¹⁵ Of the two large irrigation schemes (Mbay and Mautenda II) of over 500 hectares, the readiness index for the latter was low. Therefore, only Mbay qualified for ADB-financed O&M. Both these schemes were reported to be deteriorating rapidly.

hand tools for excavation because blasting was not permitted; (ii) unanticipated construction resulting for a lack of information prior to implementation;¹⁶ and (iii) the use of poorly qualified subcontractors, resulting in the need to do additional works after review by international consultants.¹⁷

20. The three-phase program (para. 1) used by the Government follows disaster management practices used in other countries. Phases 1 and 2 took care of most of the emergency stages of the work and were implemented within 2 weeks and 3 months, respectively. Phase 3 should have been classified not as “earthquake emergency reconstruction” but simply as “earthquake reconstruction.”¹⁸ The use of the word “emergency” seems to have perpetuated the idea that all of the work had to be done rapidly even at the expense of quality. The works done during phase 3 should have been scheduled using normal operating procedures with construction work starting on priority works after design drawings were approved in accordance with an approved quality assurance program. However, according to the Government’s PCR, due to the emergency nature of the Project, the Government allowed construction to begin on the basis of designs that were not subject to review, prior to the engagement of the consultants and formation of the RMT.

21. The Government’s PCR reports considerable pressure to start work before the consultant contracts were signed and the designs were reviewed. Although the federal budget was approved at the beginning of April, the funds reached the provincial offices of MPW at a much later date. Due to the need to expend all budgeted funds before the end of the fiscal year or lose the funding, contracts were rushed. This created unnecessary pressure to start physical works before the supervision consultants had been engaged and quality assurance procedures were fully in place.

22. The processing of the Project may have been expedited if the Government had adhered to a disaster management plan and not resorted to routine budgetary (para. 18) and MPW procedures for hiring consultants. The engagement of the design, construction supervision, and coordination consultants was originally scheduled for August 1993, but the international consultants for parts B and A were not mobilized until January and June 1994, respectively. The domestic consultants started work in January 1994. The CDE started work in April 1994.

23. Although there were delays in hiring the international consultants, physical works were initiated rapidly, resulting in an initial period of work that was not supervised by international consultants. Reconstruction of earthquake-damaged irrigation facilities and roadworks constructed under the ongoing ADB projects in the area started shortly after the earthquake. Scheduling data show that physical work for water resources facilities (part B) started on time soon after loan effectiveness and the roadwork started nine months after effectiveness. This meant that when water resources facilities reconstruction commenced in October 1993, the consultants for design and construction supervision were not in the field. The start of the roadwork, however, coincided with the hiring of the international consultant for supervision of part A.

D. Procurement and Construction

¹⁶ It was decided that the Lewoleba-Blauring road link needed to be increased from 10 km to 33 km, as the original design did not meet the socioeconomic needs intended.

¹⁷ For example, the Konga, Kalimati, and Wolowona bridges were reconstructed.

¹⁸ Incidentally, the parallel loan from the World Bank to rebuild damaged hospitals, clinics, schools, and some roads was titled Flores Earthquake Reconstruction Project.

24. **Procurement.** The Government contracting procedures that did not cater to emergency situations prevented the engagement of consultants prior to the commencement of construction (para. 22). Government procedures for the contracting of consultants were not modified for emergency works, even though the requirements for prequalifying and shortlisting the consultants and contractors for ADB approval were waived and direct appointments of previously engaged consultants were allowed. Another reason for the delay in engaging the international consultant for part B was a disagreement on an engineering design problem related to another DGWRD contract with the same consultant.

25. **Construction.** As expected, there were several small construction revisions to part A because of new information that became available during implementation. Most of the changes were related to increasing the length of two roads, shortening one road, and adjusting bridge locations and a number of structures. Changes were made to the scope of part B because the earthquake caused less damage than anticipated at appraisal¹⁹ and damage caused by a severe flood in 1995 was repaired. The OEM agrees that these changes were needed. At completion, six irrigation schemes required major reconstruction of headwall; in addition 0.3 km of primary, 9.6 km of secondary, and 1.8 km of tertiary canals were reconstructed. Approximately 2,500 m of gabion riverbank revetment, 1,500 m of stone masonry revetment, and 700 m of earth dike were constructed. Originally, 14 tubewells were reported damaged by the earthquake; 22 wells were drilled and of these, only 8 wells were fitted with pumps because the others did not meet the 5 liters/second safe yield requirement.

26. Several bridges were not built according to internationally recognized earthquake-resistant design standards because during implementation, DGH decided that standard designs would be used. Therefore, at present, some of the bridges do not provide for prevention of lateral sliding, and this issue needs to be addressed to prevent extensive damage from any future earthquakes. The international consultant's PCR for part B states that increased earthquake loading to raise a bridge's ability to withstand an earthquake, which was recommended by the Interim Geo-technical Report,²⁰ was not used because it required extremely large and costly structures. The DGWRD earthquake design standards for water resources facilities construction were, however, improved by increasing the earthquake loading Z factor (zone rating) for the eastern half of Flores Island from 1.56 to 2.11; this value was accepted by the RMT.²¹

E. Organization and Management

27. **Consultants' Performance.** The ADB PCR states that the performance of the civil works contractor was generally satisfactory, but the quality of works was poor at several bridges and irrigation headwalls probably due, in part, to poor supervision and lack of quality assurance procedures. The OEM agrees that poor construction supervision and lack of quality assurance procedures did contribute to poor quality. However, the contractor bears the responsibility for the quality of the works and is required to provide the quality specified in the contract documents. The acceptance of poor quality work by the consultants and government officials at

¹⁹ In all but two surface irrigation schemes unrestricted flow to irrigation continued even after the disaster, indicating the damage was minor. The groundwater wells provided under the Project were all newly drilled and not rehabilitated old wells.

²⁰ The Guidelines for Earthquake Loadings for Infrastructure Projects prepared under World Bank sponsorship by a seismic expert from the Institute of Technology in Bandung.

²¹ Z factor or zone rating is the geographic coefficient assigned to a specific area that is related to its potential earthquake intensity.

the time of handover indicates a lack of proper accountability for government procedures or contractual requirements.

28. The quality assurance program was not adequate and the enforcement of quality control was marginal. It appears that the quality assurance engineer did not fully understand the difference between quality assurance and quality control. Therefore, a quality assurance program, a system that defines how quality control is to be managed, was not set up as originally envisioned. Quality control followed normal Government construction procedures.²² The quality control required for construction was already defined in the contract specifications and the contract documents. No additional conditions were attached by the quality assurance procedure.

29. The consultants' performance suffered from implementation problems beyond their control. Delays in their appointments prevented the consultants from supervising initial works (para. 23). In addition, organizational changes reduced the role of consultants to advisers from supervisors (para. 32).

30. The consultants for both parts A and B prepared project benefit and monitoring reports. These reports included some economic information collected after project implementation, but they did not adequately evaluate the social impacts of the Project.

31. **Reporting Channels.** According to project design, the RMT was to implement ADB and World Bank projects under the direction of the steering committee. The steering committee comprised the deputy chairman for regional affairs of the National Development Planning Agency (BAPPENAS) as chairman, the secretary general of MPW as project director, and the director general for budgetary affairs of the Ministry of Finance. The RMT was established in Maumere, Flores, and assisted by consultants. The implementing agencies for parts A and B were respectively DGH and DGWRD.

32. This management structure was changed during implementation by the participating agencies. MPW decided²³ that the original implementation arrangements were not practical and established a Jakarta-based core management team (CMT), which reported directly to the secretary general of MPW. Under this system, the RMT remained in Maumere under the direction of the chief project manager who then reported directly to the head of the CMT. This organizational structure effectively made the secretary general of MPW the head of the steering committee and reduced the role of BAPPENAS. The RMT international consultants were designated advisers rather than supervisors, preventing them from providing good quality control procedures and certification of earthquake-resistant designs as intended during project design. The project documents indicate that ADB raised no objection to this organizational change.

33. Under the revised arrangements, the implementing agencies for parts A and B, DGH and DGWRD, controlled the budget, and the RMT was reduced from approval to advisory status and could not adequately control either design or quality control. Some of the civil works were under construction or completed before RMT certification and some certificates were issued *post facto* to meet the requirements of the Loan Agreement. Under these conditions, the RMT did not have the leverage to control the quality of the works. The transfer of power and relegation of the RMT staff from approval to advisory capacity negated some of the features that

²² According to project documents, it was difficult to find quality control engineers and technicians locally to provide the level of service required.

²³ A decree was passed by the secretary general of MPW that made clear the advisory role of the RMT and the important role of the head of the provincial public works office.

were intended to ensure that appropriate earthquake-resistant design would be used, that all designs would be approved prior to construction, and that quality assurance procedures would be followed.

34. The OEM considers that the original organization and management system was weak because the RMT did not have control of the funds, except to approve payments to the contractors. Such approval was at times obtained after the payments had been made. Disbursements were channeled through the routine MPW channels to local MPW authorities. For future projects, the OEM recommends that the agencies responsible for supervising project implementation must have control of disbursements. With the decentralization of financial and administrative authority to provincial governments, management of future emergency projects would likely be in the hands of provincial governments (para. 50).

35. In 1993, the reason for setting up the organization and management structure with the central government controlling virtually all activities was due to the limited levels of experience and capabilities of the provincial and local staff at the time. This influenced the MPW, ADB, and World Bank decision not to give the local government control of the Project when it was formulated. During implementation, as the local MPW staff and local government became more experienced, transferring the authority and the budget may have worked better in terms of organization and management. In future, the authority given to the provincial governor should be supplemented by a small team of experts.

36. **Covenants.** Most of the covenants in the Loan Agreement were met. A comparison of the status of the loan covenants as reported by the ADB PCR and the Government's PCR indicate differences of opinion.²⁴ The OEM's assessment of the loan covenant compliance status is presented in Appendix 2. The OEM generally agrees with the ADB PCR reporting on the status of compliance although it differs on a key management issue regarding the creation of the CMT. The OEM believes the covenants that were not complied with are (i) ensuring that appropriate, earthquake-resistant design criteria were applied as a mitigating measure against future earthquake risks, and approving all designs before construction started; and (ii) provision of adequate O&M for roads and water resources facilities construction.

III. ACHIEVEMENT OF PROJECT PURPOSE

A. Operational Performance

37. The planned strategy for organization and management was not adhered to and the flexibility allowed during implementation had both positive and negative effects.²⁵ On the positive side, the Project was completed without much delay and within the budget allocation. The roads were improved and opened to traffic, and the irrigation systems were operating. If the flexibility of the management process was not allowed during implementation, the Project would have had further delays and coordination problems. This may be why ADB staff agreed to shift the international consultant's role to become advisers rather than making approval decisions. On the negative side, improved earthquake design procedures were not used as intended, most

²⁴ The ADB PCR reported "not complied with" while the Government's PCR reported "complied with" for (i) covenant 1, performance of the steering committee; (ii) covenant 6, design approval required by the quality assurance consultants prior to construction; and (iii) covenant 27, the Government will ensure sound project O&M.

²⁵ Similar flexibility allowed on the Lampung Emergency Disaster program yielded the same results.

design work was approved by the RMT after construction started, a valid quality assurance program was not developed, and the quality of construction varied from good to poor. The labor force used did not have sufficient management, engineering, and construction abilities. To improve efficiency and quality control during implementation, a strong stand has to be taken by both ADB and the Government.

B. Performance of the Operating Entity

38. Since this was a reconstruction project and there was no operating entity, the construction was carried out on behalf of MPW. The Project did not have a major impact on MPW's financial performance, so an evaluation of MPW's financial statements is not relevant to the PPAR. The Government and MPW complied with a majority of the financial covenants (i.e., maintaining separate accounts properly and providing financial and economic information), but it only partially complied with the timely submission of audited financial accounts. Inadequate O&M funding affects the sustainability of the project outputs (para. 40).

C. Economic Aspect

39. Following the guidelines for emergency assistance involving reconstruction of damaged facilities in an emergency situation, an economic evaluation of the Project was not carried out at appraisal. The economic evaluations adopted under the Eleventh Road Sector Project based on the Government's appraisal models were used for this Project's roads and bridges component.²⁶ The economic analysis for the irrigation component was based on the NTADP²⁷ but was expected to exceed the returns of the NTADP because the marginal cost of repair was deemed to be lower than the cost of the original development. The multitude of small subprojects and the lack of data precluded a meaningful analysis at the project completion stage. The PPAR does not focus on the calculation of the financial or economic internal rate of return (EIRR), but concentrates on design and implementation issues related to emergency loans to identify lessons for the future.

D. Sustainability

40. The OEM observed that the project roads have severely deteriorated because of lack of maintenance and inadequate drainage systems. Properly designed and constructed drainage facilities would have more than offset the damage currently occurring because of poor drainage. Government officials on Flores reported that funds for routine O&M are virtually nonexistent. The district budgets are far too low to adequately maintain the roads and water resources facilities, and the farmers are reluctant to pay for the O&M of water resources facilities. The maintenance budget for the province as a whole is allocated by the Government according to the extent of facilities available in the province. However, the provincial office can decide how the budget is allocated within the province and O&M does not appear to be a priority in Flores. This has been a long-term problem in Indonesia and has become worse because of the financial crisis.

²⁶ The road model indicated an economic internal rate of return (EIRR) of 20 percent in all but three cases, which had an EIRR of only 12 percent but provided the sole means of access to poor coastal villages. The bridge model indicated an EIRR exceeding 16 percent for each bridge.

²⁷ NTADP irrigation schemes were estimated to have EIRRs of over 12 percent.

41. The OEM observed that the asphalt concrete pavement is generally in good to excellent condition, while the double bituminous surface treatment (DBST) is generally in poor condition, with many areas that require complete rehabilitation after being in service for only about four years. With proper routine maintenance, asphalt concrete should have a seven-year life, while DBST should have a life of approximately five years before periodic maintenance is required. Under the existing conditions, the OEM observed that DBST appears to have a life of about three to four years. This is due in part to poor construction techniques, but mainly due to inadequate drainage and lack of routine maintenance. Using current Indonesian cost data for life cycle analyses, sample cost evaluations by the OEM indicate that the costs for constructing an asphalt concrete pavement may be approximately the same as those required for a DBST surface. Considering that the routine maintenance costs and beneficiary vehicle operating costs are normally higher for DBST, preliminary analyses indicate that the placement of asphalt concrete rather than DBST on low-volume roads may be an economically viable option in Indonesia. The most economic option should be carefully considered by MPW, together with other treatment options.

42. The road and water resources maintenance equipment had not been delivered to the affected districts at the time of the ADB PCR, more than one year after loan closing. The equipment had still not been delivered to the national or provincial road maintenance units at the time of the OEM.²⁸

IV. ACHIEVEMENT OF OTHER DEVELOPMENT IMPACTS

A. Socioeconomic Impact

43. The national road runs the full length of Flores and serves as the main means of land transport between the main urban centers of Larantuka, Maumere, Ende, and Bajawa. The provincial roads are the feeder roads that lead from the villages to the national road and serve the farm-to-market economy. Reconstruction of the national and provincial roads, as well as segments of the roads that were added for social reasons, have improved the quality of life for the beneficiaries. Given the financial crisis that is very severely impacting Indonesia, the area would be in much worse condition if the roads and bridges had not been reconstructed.

44. The same is true for the reconstruction of the damaged water resources facilities. The rehabilitation of surface irrigation schemes and construction of underground irrigation restored irrigated farming, contributed to water supply development, improved flood protection facilities, and provided the beneficiaries with a means of livelihood. The farmers are able to harvest two or three crops per year depending upon their location. Without the irrigation infrastructure rehabilitated under the Project, the economic situation would be much worse than it is. However, production can be raised further if other inputs are provided in addition to irrigated water. To reach this potential, schemes are needed to repair the canals, which have not been properly maintained. In some areas, farmers are not keen on forming WUAs, preferring to rely on the Government to maintain the canals (para. 49).

²⁸Despite its efforts, the OEM was not able to trace the transfer documentation or the location of the equipment (small earth moving equipment, concrete mixers, and small compaction equipment).

45. Although such an emergency loan is intended only to rehabilitate infrastructure affected by the emergency, the Project included financing for three additional road links, some irrigation works, river structures, and tubewells, even though the earthquake did not damage all of them. The road links provided the sole means of access to poor coastal villages. Although the EIRR calculations at appraisal were low on some of these road links, subsidizing the socioeconomic benefits to these poor communities in remote areas is justified given the marginal cost incurred and the availability of skills, resources, and equipment in Flores at the time. The OEM supports para. 31 of the ADB PCR, which observe that the reconstruction of the roads had a considerable positive impact on the affected areas. In all cases, the social benefits gained by opening up remote areas justified including the works in the Project, although these were not rehabilitation works.²⁹

B. Environmental Impact

46. The procedure followed to obtain environmental clearance could be improved and more attention should have been paid to some of the problems indicated in the initial environmental examinations (IEEs). According to the ADB PCR, the rehabilitation of existing facilities was expected to have a minimal negative impact and was classified as environmental category B. For part A, IEEs that had been carried out under the ADB-financed tenth and eleventh road sector projects were accepted in May 1994 subsequent to project approval. The IEE for part B was carried out *post facto* and accepted in February 1995, so its recommendations were not incorporated in the project design.

47. The IEE of part B cautions against the development of irrigation wells because of saltwater intrusion. It strongly advised that tubewells should not be dug without detailed hydrologic investigations. However, no information was available that this advice was systematically followed. Additionally, mining of sand and gravel in the Kalimati River was said to have had a negative effect (e.g., changes in river current, bank erosion) on river stabilization works, so the mining was to be stopped. During the field inspections, the OEM did not observe any mining or signs of current mining activity in the river channel.³⁰

48. The lack of proper maintenance of structures and roads can lead to landslides that threaten human lives as well as erosion and other forms of environmental degradation. Urgent maintenance is needed for economic, environmental, and safety reasons.

²⁹ The updated *Operations Manual on Rehabilitation Assistance after Disasters* incorporates provisions for funding “easily achievable improvements” (section 25).

³⁰ Visual impacts of previous mining activities are not discernible after a passage of time.

C. Impact on Institutions and Policy

49. **Water Users Associations.** The OEM agrees with the view expressed in both ADB and the Government's PCRs that the establishment of WUAs was not very successful. The provincial and local authorities did not fully appreciate the Government requirements for turning over the irrigation systems to the farmers, and the farmers were not keen to accept the responsibility of maintaining the systems. However, the local government officials have in the meantime gained a better understanding of the requirements to turn over a project to the farmers, and are continuing to train farmers in the establishment of WUAs. The OEM believes that farmers' reluctance to accept the maintenance responsibilities stems from several reasons: (i) the novelty of irrigated agriculture in the area, (ii) ineffective training in establishing a WUA and understanding its benefits, (iii) high level of other inputs needed for cultivation, (iv) lack of agricultural extension services, and (v) generally low income levels on the island. Promoting the establishment and operation of WUAs will need a more rigorous and coordinated effort with agricultural extension services, as well as participatory attempts at training, using expert farmers who have been successful in working with WUAs.

50. **Decentralization.** The new organizational structure in the Government administrative system transfers the authority and budgets to the provincial government under the new decentralization program. While this will enable closer monitoring of provincial projects in remote areas by local authorities, it will also create the need to ensure accountability for the funds spent for both efficiency and governance purposes. As such, good monitoring mechanisms are needed, with performance indicators that can be evaluated by the national level. Nongovernment organizations may be able to help develop and monitor these performance indicators.

51. **Technical Assistance.** Although the original project scope did not include a formal technical assistance component, the international consultants did provide considerable on-the-job guidance to the domestic consultants. The contractor's inexperienced local staff gained training and knowledge that will improve construction capabilities on Flores. Following a Government request, overseas earthquake engineering and disaster management training was provided to 40 government engineers.³¹ The training was provided on how to respond to different stages of emergencies, as well as preparedness to handle emergencies. Middle management staff were selected for the training at ADB request.

52. None of those trained, and interviewed by the OEM, had contributed to the development of a disaster management plan after their training or shared the knowledge they had gained with others. Under the new decentralized structure, the disaster management plan should include a management team under the provincial governor.³² Representatives from the public works, health, social, law enforcement, and communications sectors should be included in a predetermined task force so that each member knows his or her responsibilities in the event of an emergency and can prepare to collect the necessary information and update it regularly.

³¹ Altogether, about 86 government engineers and managers have attended the disaster management and earthquake engineering courses funded by ADB's Flores Emergency Reconstruction Project and Lampung Emergency projects. The World Bank funded a similar training program before ADB.

³² The Provincial Emergency Disaster Management Plan gives full authority to the governor.

V. OVERALL ASSESSMENT

A. Relevance³³

53. The Project was highly relevant given the need to respond to a disaster on Flores Island, and to prevent a slowdown of economic activity resulting from the disaster. The Project complemented the Government's disaster response efforts. ADB's experience in the sector and the project area enabled it to respond to the emergency appropriately.

B. Efficacy³⁴

54. The project design was relevant to achieve the project objectives, and it incorporated many features to accommodate the urgency of the reconstruction efforts. The Project helped to improve transportation and trade, restored or in some instances increased agricultural production, and provided accessibility to remote areas of the island. The Project was successful in achieving several of its objectives, but achieving the balance between urgent reconstruction and long-term sustainability was one of the key problems.

C. Efficiency³⁵

55. The inputs provided by ADB were sufficient to complete the Project. ADB was quite flexible in providing additional inputs (i.e., O&M equipment, training program) to improve the efficiency of project implementation. These would have been very useful had the Government paid adequate attention to long-term impacts. However, the Government was not prepared or sufficiently flexible to process a loan in an emergency situation. Resorting to normal bureaucratic procedures during urgent reconstruction resulted in delays, confusion regarding management, and lapses in quality control.

D. Sustainability³⁶

56. Although the Project included various provisions for sustainability (training, maintenance equipment, and earthquake-resistant design), inadequate attention was paid to these provisions during implementation and this situation continues to the present. The training was not used to build a disaster management strategy and the lessons learned by the trainees were not shared with others. The roads are not being maintained. Due to the economic crisis, routine

³³ Relevance is the consistency of the Project's goals, purposes, and outputs with the Government's development strategy, ADB's lending strategy for the country, and ADB's strategic objectives at the time of approval and evaluation.

³⁴ Efficacy refers to the achievement of purpose. It reflects the extent to which the physical, financial, and institutional purposes adopted at project approval, or as formally modified during implementation, are achieved.

³⁵ Efficiency compares the achievement of project purpose to the use of inputs. It is based on the implementation performance with consideration of the EIRR or cost-effectiveness for the investment.

³⁶ Sustainability focuses on the likelihood that human, institutional, and financial resources are sufficient to support achievement of purpose and goals over the economic life of the project.

maintenance of existing structures are given low priority. If this problem is not dealt with immediately, the project roads will deteriorate severely.

E. Institutional Development and Other Impacts³⁷

57. Due to the project implementation and as a result of on-the-job training of many local workers and contractors, the level of development in the construction industry in Flores improved (para. 51). Skills also developed on the job at the provincial level for project management, which may be useful with the new decentralization policy being implemented. However, the benefits of the training program were not sustained and, therefore, it appears that the disaster management plan is not well developed and may not be activated immediately at the provincial level in case of a disaster. The government budgetary allocation procedures, as well as contractual assignments to handle emergency situations, also need substantial improvement.

F. Overall Project Rating

58. Although some reconstruction facilities did not strictly comply with the earthquake reconstruction specifications, the new structures still constitute substantial improvements over those that were replaced. The Project has provided immediate benefits to residents of Flores, opening up inaccessible areas, facilitating economic activity, and enabling irrigated cultivation throughout the year instead of only during the rainy season, thus reducing poverty in this remote island. However, the Project encountered several implementation problems, which affected the long-term sustainability of its benefits. The OEM, therefore, concurs with the ADB PCR's partly successful rating of the Project and as per PPAR rating criteria assigns a successful rating for the Project (table).³⁸

Overall Assessment Rating

Criterion/Weight	Assessment	Rating Value	PPAR Rating	Weighted Value
1. Relevance/20%	Highly Relevant	3	3	0.6
	Relevant	2		
	Partly Relevant	1		
	Irrelevant	0		
2. Efficacy/25%	Highly Efficacious	3	2	0.5
	Efficacious	2		
	Less Efficacious	1		
	Inefficacious	0		
3. Efficiency/20%	Highly Efficient	3	1	0.2
	Efficient	2		
	Less Efficient	1		
	Inefficient	0		
4. Sustainability/20%	Most Likely	3		
	Likely	2		

³⁷ The improvement in the executing agency's or the country's ability to make effective and efficient use of its human, financial, and natural resources effectively and efficiently in the use of economic, environmental, and social activities. It could also incorporate improvements in other development impacts not considered elsewhere.

³⁸ Under the new rating scheme provided, previous partly successful rating can mean both successful and less than successful.

	Less Likely	1	1	0.2
	Unlikely	0		
5. Institutional Development and Other Impacts/15%	Substantial	3	1	0.15
	Moderate	2		
	Little	1		
	Negligible	0		
Overall Rating	Highly Successful	>2.5		1.65
	Successful	1.6<S≤2.5		
	Less than Successful	1≤LS<1.6		
	Unsuccessful	U<1		

LS = less than successful, PPAR = project performance audit report, S = successful, U = unsuccessful.

G. Assessment of ADB and Borrower Performance

1. Borrower Performance

59. The Government had a full sense of ownership of the Project and was indeed keen to help restore economic activity in poverty-ridden and remote Flores Island with the use of the emergency funds available at the time. However, a lack of readiness to handle situations of this nature prevented the Project from benefiting fully from this initial commitment. Government procedures for quickly providing legal opinion, contracting consultants, and providing budgetary approvals were not modified for emergency works (para. 21). As a result, the physical work preceded the mobilization of consultants, affecting the quality of output. To shorten the response time and make emergency projects more effective, the Government should streamline its approval procedures for processing such projects. During the later stages of implementation, some delays occurred because counterpart funds were not available. The Loan Agreement allowed for advance action and retroactive financing, but the Government did not take advantage of this procedure because it was difficult under existing Ministry of Finance regulations to provide the counterpart funds before loan approval. The experience gained during project implementation appeared to have given the Government the confidence to delegate the project implementation responsibility to the provincial level. This transfer of authority by Government, however, led to problems of quality assurance.

2. ADB Performance

60. During project preparation, ADB performance was swift, innovative, and in line with the existing guidelines. During project implementation, there were eight review missions including a midterm review in February 1995. These review missions consisted mainly of engineering experts. A more interdisciplinary approach may have helped establish sustainable WUAs. The initial review missions were separate for parts A and B. The later review missions identified problems with O&M policies in Nusa Tenggara Timur Province and recommended that villages take part in simplified maintenance programs. The missions also suggested the establishment of WUAs and introduction of irrigation operation management procedures. ADB was generally responsive to the physical needs of the Project. Subsequent to the Midterm Review Mission, ADB approved MPW's request for maintenance equipment.

61. However, ADB's review of management of the Project and emphasis on quality control could have been improved. The ADB PCR notes that ADB should have (i) insisted on stricter compliance with the quality assurance aspect of the civil works, (ii) ensured a stronger role for the consultants as envisaged at appraisal, and (iii) encouraged BAPPENAS to play a more active role than it did in coordinating the reconstruction activities. The OEM agrees with the ADB

PCR that a more proactive role by ADB would have improved project quality and management (paras. 27 and 42). However, it appears that during implementation ADB staff were reacting to the emergency and willing to focus on timely implementation and, therefore, did not object to the changes in project management adopted by MPW.

VI. ISSUES, LESSONS, AND FOLLOW-UP ACTIONS

A. Key Issues for the Future

62. The O&M problem of roads in Indonesia has been a long-term issue, which has not yet been successfully resolved.³⁹ ADB should work with MPW, now the Ministry of Settlement and Regional Infrastructure,⁴⁰ to develop viable maintenance programs that can be sustained under the current budget restraints.⁴¹ Future policy dialogue with Government should discuss how to provide a sustainable maintenance budget. If such a budget is not provided, the economic analysis of future projects should only reflect the estimated life of the structures under actual maintenance conditions.

63. To effectively respond to disasters, the adequacy of current guidelines for the National/Provincial Emergency Disaster Management Plan need to be assessed. Simpler and separate guidelines for national and provincial plans would prevent unnecessary delays. The plans should include coordination with the public works, health, social, law enforcement, and communications sectors. The plans should identify the roles of bilateral and multilateral aid agencies such as the United Nations, the Red Cross, and other private relief organizations in the disaster management team.

64. To improve the response time and effectiveness of priority reconstruction following an emergency, Government needs to streamline its approval procedures to expedite the engagement of consultants and contractors for such work. To take advantage of the conditions attached to ADB loans processed under emergency conditions, the Government should make adequate procedural arrangements to quickly process contracts, channel funds, and provide adequate quality control. The validity of these arrangements needs to be verified at the appraisal of such emergency loans.

B. Lessons Identified

65. ADB's *Operations Manual* (section 26) on Rehabilitation Assistance after Disaster (issued on 19 June 1989), which was in effect at the time of project appraisal, provided good guidance for the design of the Project. The guidelines indicated are suitable and adequate. The OEM supports the minor changes made to section 25 of the manual (issued on 12 December 1995). However, the *Operations Manual* guidelines assume the Government will respond quickly to the emergency. Given the bureaucratic delays and poor communications associated with remote areas, the *Operations Manual* should allow for revisions in initial damage estimates and timing during project implementation.

³⁹ ADB's Postevaluation Information System indicated the problem of inadequate O&M of roads as far back as 1985.

⁴⁰ The Ministry was renamed in 2000.

⁴¹ Innovative methods such as self-help programs and village-contracted work were suggested in the ADB PCR in view of the economic crisis.

66. ADB should help to build the capacity of borrowers to respond effectively to disasters, especially in disaster-prone areas.

67. The project management organization should ensure that those responsible for enforcing quality control also have the financial control and effective power to reject payments to contractors. To ensure the quality of project implementation, it is also important to have a capable project monitoring office, and this should be made a focus of appraisal and review missions. This would help ease the problems caused by procedural delays of loan processing and contractual arrangements and enable supervision of reconstruction efforts from the beginning.

68. During the design of emergency projects, the classification of civil works should be carefully evaluated to distinguish between emergency works and works that can be implemented under normal contracting procedures. The contracting procedures should be set depending upon this priority classification.

69. Due to the significant damage caused by the inadequate drainage systems provided during road construction in Indonesia, the practice of concentrating on the pavement structure and minimizing drainage costs should be revised to ensure that adequate cross-culverts and lateral side ditches are provided in future road projects.

70. Given the flexibility allowed in emergency loans, ADB staff need to play a more proactive role during project implementation to ensure timely implementation and quality of works.

C. Follow-Up Actions

71. Lack of proper routine maintenance of structures and roads not only affects the economic investment but can also be a threat to human lives (e.g., through landslides) and lead to environmental degradation (e.g., through erosion). Therefore, the provincial government should ensure that routine maintenance is carried out immediately.

72. Some of the bridges constructed under the Project do not provide for prevention of lateral sliding, and this needs to be addressed urgently by DGH to prevent extensive damage from future earthquakes.

APPENDIXES

Appendix 1 Loans with the Ministry of Public Works as Executing Agency

Appendix 2 Compliance with Loan Covenants

LOANS WITH THE MINISTRY OF PUBLIC WORKS AS EXECUTING AGENCY

Loan No.	Project	Approval Date
0012(SF)	Tajum Irrigation	17 Jun 1969
0058(SF)	Gambarsari-Pesanggrahan Irrigation Rehabilitation	13 Dec 1970
0081(SF)	Sempor Dam and Irrigation	2 Dec 1971
0092(SF)	Wampu River Flood Control and Development	4 Apr 1972
0236	Karangsambung Multipurpose	6 Nov 1975
0243	Teluk Lada Area Development	17 Nov 1975
0261	Road Improvement	13 Apr 1976
0277	Second Road	28 Oct 1976
0301	Lodoyo Irrigation	29 Jul 1977
0347	Third Road	27 Jul 1978
0352	Bali Irrigation	7 Sep 1978
0363	Teluk Lada Area Development (Phase II)	31 Oct 1978
0389	South-East Sulawesi Transmigration and Area Development	12 Dec 1978
0429	Fourth Road	19 Nov 1979
0434	Tulungagung Drainage	6 Dec 1979
0475	Cibaliung Irrigation	30 Oct 1980
0479	Lower Citanduy Irrigation	3 Nov 1980
0480	Northern Sumatra Irrigation Study	3 Nov 1980
0484	Fifth Road	15 Nov 1980
0522	Bali Irrigation Sector	7 Sep 1981
0575	Sixth Road	29 Jun 1982
0581	Irrigation Package	4 Sep 1982
0582	Tulungagung II and Baro Raya Irrigation	4 Sep 1982
0627	Second Irrigation Package	9 May 1983
0638	Second Irrigation Sector	12 Sep 1983
0639	West Nusa Tenggara Irrigation Study	12 Sep 1983
0685	Arakundo-Jambu Aye Irrigation and Flood Control	5 Jul 1984
0692	Seventh Road (Sector)	8 Sep 1984
0741	Eighth Road	14 Sep 1985
0769	Central Java Groundwater Irrigation Development	2 Dec 1985
0799	Third Irrigation Package	10 Nov 1986
0818	Irrigated Command Area Development	1 Dec 1986
0860(SF)	Third Irrigation Sector	7 Nov 1987
0861	Third Irrigation Sector	7 Nov 1987
0863	Ninth Road (Maintenance) Sector	14 Nov 1987
0919	Second Medan Urban Development	0 Nov 1988

(Reference in text: page 2, para. 6)

Loan No.	Project	Approval Date
0952(SF)	Nusa Tenggara Agricultural Development	7 Feb 1989
0953	Nusa Tenggara Agricultural Development	7 Feb 1989
0959	Second Brackishwater Aquaculture Development	0 May 1989
0966	Tenth Road (Sector)	0 Aug 1989
0983	Secondary Cities Urban Development (Sector)	9 Nov 1989
0984(SF)	Secondary Cities Urban Development (Sector)	9 Nov 1989
1017	Integrated Irrigation Sector	17 Apr 1990
1018(SF)	Integrated Irrigation Sector	17 Apr 1990
1115	Eleventh Road (Sector)	7 Nov 1991
1126	Central Java Groundwater Irrigation Development	16 Nov 1991
1232	Third Local Roads	5 May 1993
1241(SF)	Flores Emergency Reconstruction	1 Jul 1993
1296	Second Integrated Irrigation Sector	20 Jan 1994
1335	Eastern Islands Roads (Sector)	19 Nov 1994
1352	Rural Water Supply and Sanitation Sector	2 Feb 1995
1378(SF)	Farmer Managed Irrigation Systems	11 Sep 1995
1383	Sumatra Urban Development (Sector)	16 Sep 1995
1428	North Java Road Improvement	23 Jan 1996
1475	Segara Anakan Conservation and Development	17 Oct 1996
1476(SF)	Segara Anakan Conservation and Development	17 Oct 1996

COMPLIANCE WITH LOAN COVENANTS

Covenants in Loan Agreement	PCR Comments on Compliance	PPAR Comments ^a
Execution of Project; Other Matters (Schedule 6) Project Coordination and Implementation		
<p>1. At the central level, a steering committee will be in charge of overall coordination and management of the reconstruction program. The steering committee will be chaired by the deputy chairman for regional affairs of the National Development Planning Agency (BAPPENAS) and will include the secretary general of the Ministry of Public Works (MPW) and director general of budget of the Ministry of Finance.</p>	<p>Not complied with. The steering committee was established, but did not take an active role in the Project due to the formation of the core management team (CMT) at MPW. BAPPENAS was involved in budgets and occasionally chaired wrap-up meetings.</p>	<p>MPW created the Jakarta-based CMT that reported directly to the MPW secretary general, which effectively made the secretary general the head of the steering committee and reduced BAPPENAS to a secondary role. Since the change was not objected to by the Asian Development Bank (ADB), the wording of the covenant should have been revised. Under these conditions, the CMT interpretation, "complied with," would be correct.</p>
<p>2. MPW, under the guidance of the steering committee, will have the overall responsibility for implementing the Project through the reconstruction management team (RMT). The RMT will be responsible for coordinating project implementation. The RMT will operate (i) at the central level through a secretariat headed by the project director, and (ii) in Flores through the project manager assisted by an assistant project manager, and finance and administration and design/construction supervision consultants. The Borrower will ensure that at all times during project implementation, the RMT will be adequately staffed and equipped.</p>	<p>Complied with.</p>	
<p>3. The implementing agencies will establish project implementation units (PIUs) in the project area, which, under the coordination and supervision of the project manager, will be responsible for implementing their respective components of the Project. The Borrower will ensure that at all times during project implementation, the PIUs will be adequately staffed and equipped.</p>	<p>Complied with.</p>	

PCR = project completion report, PPAR = project performance audit report.

^a Blank indicates that the PPAR has no additional comments to those in the PCR.

Covenants in Loan Agreement	PCR Comments on Compliance	PPAR Comments ^a
<p>Environmental Aspects</p> <p>4. For all works to be constructed under the Project, initial environmental examinations (IEEs) and, if deemed necessary by the Borrower or ADB, environmental impact assessments (EIAs) will be undertaken in accordance with the Borrower's EIA procedures and such other procedures as ADB may request. The results of the IEEs and EIAs, if applicable, will be submitted to ADB for its approval prior to the construction of the works concerned. The design of all works will be in accordance with the findings and recommendations of the IEEs and, if applicable, EIAs for the works concerned.</p>	<p>Complied with, but IEEs were prepared <i>post facto</i>.</p>	<p>ADB IEEs were prepared <i>post facto</i>.</p>
<p>Quality Assurance</p> <p>5. Within three months after the effective date (27 September 1993), the Borrower will establish in the office of the deputy chairman for regional affairs of BAPPENAS a program for quality assurance and post-reconstruction planning to ensure the quality of design and construction and for more effective planning to mitigate the effects of future earthquakes.</p>	<p>Complied with. The Borrower did not take an active role in the Project and field quality assurance programs were not effective.</p>	
<p>6. The Borrower will ensure that the design of any construction works to be undertaken under the Project will be certified by the quality assurance consultants prior to the commencement of the construction of such works.</p>	<p>Not complied with. Certification was <i>post facto</i>.</p>	<p>A chief design engineer was engaged as a member of the RMT consulting team to ensure that appropriate design criteria were applied as a mitigating measure against future earthquake risks, and to approve all designs before construction started. This was not complied with because most of the design was approved <i>post facto</i>.</p>
<p>Land Acquisition</p> <p>7. The Borrower will take all necessary measures to ensure that land required for the Project will be made available promptly as needed.</p>	<p>Complied with.</p>	
<p>Selection and Implementation Criteria for Irrigation Schemes</p> <p>8. The final selection, design, and implementation of the irrigation schemes to be rehabilitated under the Project will be undertaken in accordance with the criteria that have been agreed upon between the Borrower and ADB.</p>	<p>Partly complied with. Groundwater schemes did not exist at the time of the earthquake.</p>	

^a Blank indicates that the PPAR has no additional comments to those in the PCR.

Covenants in Loan Agreement	PCR Comments on Compliance	PPAR Comments ^a
<p>Operation and Maintenance (O&M) of Irrigation</p> <p>9. The O&M for the irrigation schemes rehabilitated under part B of the Project will be carried out in accordance with the Borrower's "Statement of Policies for Irrigation Operation and Maintenance," issued in October 1987. The Borrower will introduce efficient O&M, and ensure the continued application thereof, for each surface irrigation scheme that is rehabilitated under the Project upon completion of the rehabilitation works.</p>	<p>Not complied with. Neither of the two irrigation schemes eligible under the Project—Mbay (1,418 ha) and Mautenda II (1,236 ha) entered the efficient O&M program.</p>	
<p>10. The responsibility for O&M of the irrigation schemes rehabilitated under the Project will be as follows:</p>	<p>Complied with. However, the systems are deteriorating due to lack of O&M funding.</p>	
<p>(i) The Provincial Water Resources Services (PWRS), with the cooperation of the farmers concerned, will be responsible for the O&M of the main surface irrigation facilities, including secondary canals and drains. Responsibility for the efficient O&M of primary and secondary surface irrigation facilities, which still rests with the central government of the Borrower, will be transferred to the PWRS upon the completion of the rehabilitation of such facilities.</p>		
<p>(ii) The water users associations (WUAs), farmers' groups, and individual farmers concerned, under the guidance of the PWRS, will be responsible for the O&M of the tertiary and onfarm surface irrigation facilities. Surface irrigation schemes with service areas of less than 500 ha will be transferred to the concerned WUAs upon the completion of the rehabilitation of such facilities and the O&M of the facilities under these schemes will become the full responsibility of such WUAs, under the guidance of, and with assistance from, the provincial and district irrigation committees and services.</p>	<p>Not complied with. None of the 13 surface water schemes were turned over to the WUAs.</p>	
<p>11. Prior to the introduction of efficient O&M, the level of the Borrower's contribution to the O&M of each surface irrigation scheme covered by part B of the Project will be maintained at least at the FY1993 level in real terms.</p>	<p>Assumed to have been complied with. Records not available.</p>	

ha = hectare.

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Covenants in Loan Agreement	PCR Comments on Compliance	PPAR Comments ^a
<p>12. Except as ADB may otherwise agree, the level of funding for O&M by the Borrower will be increased and financing by ADB proportionally decreased, as follows, in order to meet the following portion of additional costs resulting from the introduction of efficient O&M in the schemes rehabilitated under the Project: (i) second year of project implementation—20 percent, and (ii) third year—40 percent of the cost of efficient O&M of each scheme (except for tertiary and onfarm facilities).</p>	<p>Not complied with. The two qualified schemes did not enter the efficient O&M program.</p>	
<p>13. The Borrower will encourage the farmers in the project area to form WUAs and ensure such WUAs operate in a systemwide association. The PWRS will be responsible for strengthening the WUAs through the provision of relevant training and extension services.</p>	<p>Partly complied with. WUAs are not yet functioning.</p>	
<p>Benefit Monitoring and Evaluation</p>		
<p>14. MPW, with the assistance of the project consultants, will monitor and evaluate the Project's benefits and activities by collection and analysis of data, including road condition surveys, traffic volume surveys, crop production surveys, and any other information that may be required to undertake a proper evaluation of the performance of the Project. The field information will be collected prior to the commencement of civil works, and one year and four years after the completion of the Project.</p>	<p>Partly complied with. A project benefit monitoring and evaluation study was carried out for part A. Crop production information is inaccurate. The project monitoring unit at PWRS is not functioning.</p>	
<p>Midterm Review</p>		
<p>15. A comprehensive midterm review of the Project will be conducted in the fourth quarter of 1994 by the Borrower and ADB. The Borrower and ADB will, in the course of the review, jointly assess the achievements and weaknesses of the Project, technical and institutional problems in implementation, and will agree on corrective measures. Such assessment will include, but not be limited to, a review of the environmental aspects of the Project and compliance with the terms of the operation and maintenance provisions of this Schedule and Section 4.09 to this Loan Agreement.</p>	<p>Complied with in February 1995.</p>	
<p>Particular Covenants (Article IV, Section 4)</p>		
<p>4.01 The Borrower will ensure that the Project is carried out with due diligence and efficiency and in conformity with sound administrative, financial, engineering, construction, and environmental practices.</p>	<p>Partly complied with. Quality assurance programs were inadequate and an audited financial statement for FY1997 has not been received.</p>	

^a Blank indicates that the PPAR has no additional comments than those indicated in the PCR.

Covenants in Loan Agreement	PCR Comments on Compliance	PPAR Comments ^a
4.02 The Borrower will make available, promptly as needed, the funds, facilities, services, land, and other resources that are required, in addition to the proceeds of the loan, for the carrying out of the Project and for the O&M of the project facilities.	Complied with.	
4.03 In the carrying out of the Project, the Borrower will ensure that competent and qualified consultants and contractors, acceptable to the Borrower and ADB, are employed upon terms and conditions satisfactory to the Borrower and ADB.	Complied with.	
4.04 The Borrower will ensure that the activities of its departments and agencies with respect to the carrying out of the Project and operation of the project facilities are conducted and coordinated in accordance with sound administrative policies and procedures.	Complied with.	
4.05 The Borrower will make arrangements satisfactory to ADB for the insurance of the project facilities to such extent and against such risks and in such amounts as will be consistent with sound practice.		
4.06a The Borrower will ensure that records and accounts are maintained adequate to identifying the goods and services and other items of expenditure financed out of the proceeds of the loan, to disclose the use thereof in the Project, to record the progress of the Project (including the cost thereof) and to reflect, in accordance with consistently maintained sound accounting principles, the operations and financial condition of the agencies of the Borrower responsible for the carrying out of the Project and operation of the project facilities, or any part thereof.		
4.06b The Borrower will (i) ensure that separate accounts are maintained for the Project; (ii) have such accounts and related financial statements audited annually in accordance with sound auditing standards by auditors acceptable to ADB; (iii) furnish to ADB, as soon as available but in any event not later than six months after the end of each related fiscal year, unaudited copies of such accounts and financial statements, and not later than nine months after the end of each related fiscal year, certified copies of such audited accounts and financial statements and the report of the auditors relating thereto, all in the English	Partly complied with. Received for FY1996 in Bahasa, Indonesia. Report for FY1997 due December 1997 has been submitted.	

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Covenants in Loan Agreement	PCR Comments on Compliance	PPAR Comments ^a
language; and (iv) furnish to ADB such other information concerning such accounts and financial statements and the audit thereof as ADB will from time to time reasonably request.		
4.07a The Borrower will ensure that all such reports and information are furnished to ADB as ADB will reasonably request concerning (i) the loan, and the expenditure of the proceeds and maintenance of the service thereof; (ii) the goods and services of the loan; (iii) the Project; (iv) the administration, operations, and financial condition of the agencies of the Borrower responsible for carrying out of the Project and operation of the project facilities or any part thereof; (v) financial and economic conditions in the territory of the Borrower and the international balance-of-payments position of the Borrower; and (vi) any other matters relating to the purpose of the loan.	Complied with.	
4.07b Without limiting the generality of the foregoing, the Borrower will ensure that brief quarterly and annual reports are furnished to ADB on the carrying out of the Project and on the O&M of the project facilities. Such reports will be submitted in such form and in such detail and within such a period as ADB will reasonably request, and will indicate, among other things, progress made and problems encountered during the period under review, steps taken or proposed to be taken to remedy these problems, and the proposed program of activities and expected progress during the following period.	Complied with. Consultants submitted regular progress reports.	
4.07c Promptly after physical completion of the Project, but in any event not later than three months thereafter or such later date as may be agreed upon for this purpose between the Borrower and ADB, the Borrower will prepare and furnish to ADB a report, in such form and in such detail as ADB will reasonably request, on the execution and initial operation of the Project, including its cost, the performance by the Borrower of its obligations under the Loan Agreement and the accomplishment of the purposes of the Loan.	Complied with. Consultants prepared a completion report for parts A and B, and the CMT prepared the Government's PCR.	
4.08 The Borrower will allow ADB's representatives to inspect the Project, the goods financed out of the proceeds of the Loan, and any relevant records and documents.	Complied with.	

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Covenants in Loan Agreement	PCR Comments on Compliance	PPAR Comments ^a
<p>4.09 The Borrower will ensure that the project facilities are operated, maintained, and repaired in accordance with sound administrative, financial, engineering, construction, and environmental practices.</p>	<p>Not complied with. The O&M of roads, bridges, and water resources facilities needs to be better funded and district agencies and farmers need to improve their efforts. Maintenance equipment for the roads must be transferred to the districts.</p>	<p>As observed by the Operations Evaluation Mission and as reported to them by government officials on Flores, O&M is virtually nonexistent. The district budgets are far too low to adequately maintain the roads and water resources facilities, the farmers do not understand their commitment to O&M, and the maintenance equipment purchased for parts A and B have not been delivered to Flores.</p>
<p>Allocation and Withdrawal of Loan Proceeds (Schedule 3)</p>	<p>Complied with.</p>	
<p>Except as ADB will otherwise agree, the Borrower will establish immediately after the effective date (27 September 1993) a special account at Bank Indonesia or a state-owned commercial bank to expedite disbursements under the Loan. The special account will be established, managed, replenished, and liquidated in accordance with ADB's "Guidelines on Imprest Fund and Statement of Expenditures Procedures" dated November 1986, including any amendments thereto and detailed arrangements agreed upon between the Borrower and ADB. The initial amount to be deposited into the special account will not exceed \$5,000,000.00.</p>		

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