

Project Performance Audit Report

PPA: TIM 81890
(Final)

Water Supply and Sanitation Rehabilitation Projects Phase I (Grant 8185-TIM[TF]) and Phase II (Grant 8189-TIM[TF]) in Timor-Leste

December 2004

Operations Evaluation Department
Asian Development Bank

ABBREVIATIONS

ADB	–	Asian Development Bank
AusAID	–	Australian Agency for International Development
EAL	–	emergency assistance loan
GDP	–	gross domestic product
IDA	–	International Development Association
IEC	–	Information, education, and communication
JAM	–	Joint Assessment Mission
MICS	–	multiple indicator cluster survey
NGO	–	nongovernment organization
OEM	–	Operations Evaluation Mission
PCR	–	Project completion report
PID	–	Project implementation document
PMU	–	Project management unit
PSC	–	Project steering committee
TFET	–	Trust Fund for East Timor
UNTAET	–	United Nations Trust Administration for East Timor
WSS	–	Water Supply and Sanitation Service
WUC	–	water users committee

GLOSSARY

Aldeia	A village or hamlet.
Suco	A local government administrative area within a subdistrict.

NOTE

In this report, “\$” refers to US dollars.

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BASIC DATA

Water Supply and Sanitation Rehabilitation Project Phase I (Grant 8185-TIM)

KEY PROJECT DATA (\$ million)	As per ADB Grant Documents	Actual
Total Project Cost	4.5	4.5
Foreign Currency Cost	4.5	4.5
Local Currency Cost ¹	0.0	0.0
Amount of Grant/Use	4.5	4.5
 KEY DATES	 Expected	 Actual
Board Approval		31 Jul 2000
Grant Agreement		24 Aug 2000
Grant Effectiveness	24 Aug 2000	24 Aug 2000
Project Completion	30 Jun 2001	15 Jul 2001
Grant Closing	31 Dec 2001	30 Jun 2003
Months (effectiveness to completion)	10.0	11.5
 RECIPIENT OF GRANT	 Democratic Republic of Timor-Leste	
 EXECUTING AGENCY	 United Nations Transitional Administration in East Timor	
 MISSION DATA		
Type of Mission	No. of Missions	Person-Days
Fact-Finding	1	8
Project Administration		
Inception	1	8
Review	4	23
Review ²	3	55
Project Completion ³	1	22
Operations Evaluation ⁴	1	20
 PROJECT PERFORMANCE REPORT RATINGS		
Date	Implementation Progress	Development Objectives
December 2000	—	S
June 2001	S	S
December 2001	S	S
June 2002	S	S
December 2002	S	S
June 2003	S	S

— = no rating, ADB = Asian Development Bank, S = satisfactory.

¹ Instead of local currency, Timor-Leste uses the United States dollar.

² The Review Mission also reviewed Grant 8189-TIM: *Water Supply and Sanitation Rehabilitation Project Phase II*.

³ For grants 8185-TIM and 8189-TIM.

⁴ For grants 8185-TIM and 8189-TIM.

Water Supply and Sanitation Rehabilitation Project Phase II (Grant 8189-TIM)

KEY PROJECT DATA (\$ million)	As per ADB Grant	
	Documents	Actual
Total Project Cost	4.5	4.5
Foreign Currency Cost	4.5	4.5
Local Currency Cost ⁵	0.0	0.0
ADB Grant Amount/Use	4.5	4.5

KEY DATES	Expected	Actual
Board Approval		13 Jul 2001
Grant Agreement		27 Aug 2001
Grant Effectiveness	27 Aug 2001	27 Aug 2001
Project Completion	30 Oct 2002	30 Apr 2003
Grant Closing	30 Apr 2003	19 Mar 2004
Months (effectiveness to completion)	14	20

RECIPIENT OF GRANT Democratic Republic of Timor-Leste

EXECUTING AGENCY United Nations Transitional Administration in East Timor

MISSION DATA

Type of Mission	No. of Missions	Person-Days
Fact-Finding	1	20
Project Administration		
Inception	1	6
Review	1	4
Review ⁶	3	55
Project Completion ⁷	1	22
Operations Evaluation ⁸	1	20

PROJECT PERFORMANCE REPORT RATINGS

Date	Implementation Progress	Development Objectives
December 2001	S	S
June 2002	S	S
December 2002	HS	S
June 2003	HS	S

HS = highly satisfactory.

⁵ Instead of local currency, Timor-Leste uses the United States dollar.

⁶ The Review Mission also reviewed Grant 8185-TIM: *Water Supply and Sanitation Rehabilitation Project Phase I*.

⁷ For grants 8185-TIM and 8189-TIM.

⁸ For grants 8185-TIM and 8189-TIM.

EXECUTIVE SUMMARY

This report details the findings of a postevaluation of two phases of the Water Supply and Sanitation Rehabilitation Project (WSSRP) in Timor-Leste. This is the first evaluation carried out by the Operations Evaluation Department of the Asian Development Bank (ADB) in the newly independent country. The WSSRP was financed by the Trust Fund for East Timor—a multidonor fund to which ADB did not contribute—but the project was prepared and managed by ADB following ADB procedures.

Timor-Leste was a Portuguese colony for over 300 years. In 1975, as Portugal was preparing to grant independence to the territory, civil war broke out between those who favored independence and those who advocated integration with Indonesia. Indonesia intervened militarily and integrated Timor-Leste as its 27th province in 1976. The United Nations never recognized this integration. In January 1999, the Indonesian Government announced its intention to allow the Timorese people to vote for either autonomy within Indonesia or independence. The results of the poll on 30 August 1999 favored independence. Violence and destruction followed in September 1999, resulting in extensive damage to around 70% of the physical infrastructure. Agricultural production and trade were disrupted. About 75% of the population was dislocated and faced severe deprivation, as housing and crops, livestock, and other means of livelihood were destroyed. Out-migration of Indonesians left a large human resources gap, particularly in skilled areas.

The rationale for the project was to support the physical repair and rehabilitation of water supply and sanitation systems destroyed by the violence that followed the vote for independence, as well as to reestablish institutions and systems for managing, operating, maintaining, and developing urban and rural water supplies in an appropriate and sustainable manner.

The WSSRP produced many outputs, but sustainable operation of water supply schemes is problematic. For urban schemes, the main problems are inadequate water sources and a lack of maintenance and operation expenditure. For rural schemes, the main problem is the lack of viability of the community management model. The project did little in the area of sanitation. On the other hand, the physical infrastructure of the Water Supply and Sanitation Service (WSS) was reestablished in the capital and all 12 district towns. The project contributed to developing the capacity of WSS staff. Many planning documents were produced, but the large number of these was beyond the absorptive capacity of the emerging government.

There were strong political pressures to spread resources widely and to produce quick results. This reinforced the sense of urgency that prevailed. In fact, while there was an emergency caused by the post-referendum violence and destruction, by the time the WSSRP got under way (some 15 months after the destruction) there was no urgent requirement to address water supply and sanitation needs, even though a strong development need existed. The undesirable effects of the sense of urgency, and pressure to spread resources widely include:

- (i) An excessive focus on rehabilitation of existing poorly performing systems.
- (ii) A lack of option consideration, with insufficient consideration of whether the chosen option would produce the desired development results or meet the requirements for sustainability.

- (iii) A failure to reintroduce service charges, which makes doing so now politically difficult.
- (iv) The atomization of available funds across many subprojects, which imposed strong budget constraints on each and limited the choice of options and resulted in high transaction costs.
- (v) A less than desirable level of effort on capacity building.

While the WSSRP was formulated and implemented prior to the adoption of ADB's current disaster and emergency assistance policy, the experience provides useful lessons for dealing with post-disaster development. The conclusion is that ADB needs to ensure that interventions carried out in an emergency situation are consistent with sound development. There may be a need to separate the emergency response (which needs to take place quickly) and the development intervention, rather than trying to combine the two.

The project is rated partly successful. It was assessed as being relevant, efficacious (although close to partly efficacious), less efficient, with less likely sustainability, and moderate institutional development and other impacts. The performance of ADB and the Government (given the context of the establishment of a completely new administration) were satisfactory.

A challenge for the Government is how to ensure needed operation and maintenance expenditure for urban systems. The Government is moving slowly toward the reintroduction of user charges. However, even if successfully introduced, these will only be made available to WSS via budget provision. Creation of one or more corporate utilities would be one way of ensuring direct availability of user fees for system operation and maintenance. However, such entities often have problems, so careful consideration of the options in the Timor-Leste context will be needed before moving in this direction.

Although considered to be international good practice, the community management model adopted has not proven to be sustainable. This is because the model was based on incorrect assumptions about the nature of social relations in the communities involved.

The evaluation did not seek to answer the question as to whether ADB should continue to be involved in the water supply and sanitation sector in Timor-Leste. However, if ADB does, the report recommends that it focus on urban systems and capacity building of WSS. A number of bilateral and other agencies are active in the rural sector, and ADB should not directly engage in this area.

Bruce Murray
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I. BACKGROUND

1. This report details the findings of a postevaluation of two phases of the Water Supply and Sanitation Rehabilitation Project (WSSRP I and II) in Timor-Leste.¹ This is the first evaluation carried out by the Operations Evaluation Department of the Asian Development Bank (ADB) in the newly independent country. The WSSRP was financed by the Trust Fund for East Timor (TFET) but prepared and managed by ADB, following ADB procedures.²

A. Context

1. Political

2. Timor-Leste was a Portuguese colony for over 300 years. In 1975, as Portugal was preparing to grant independence to the territory, civil war broke out between those who favored independence and those who advocated integration with Indonesia. Indonesia intervened militarily and integrated Timor-Leste as its 27th province in 1976. The United Nations never recognized this integration. In January 1999, the Indonesian Government announced its intention to allow the Timorese people to vote for either autonomy within Indonesia or independence. The results of the poll on 30 August 1999 favored independence. Violence and destruction followed in September 1999, resulting in extensive damage to private and public buildings and basic infrastructure.³ A large part of the population was dislocated and faced severe deprivation, as housing and crops, livestock, and other means of livelihood were destroyed. Out-migration of Indonesians left a large human resources gap, particularly in skilled areas.

3. On 25 October 1999, following the formal separation from Indonesia, United Nations Security Council resolution 1272 established the United Nations Transitional Administration for East Timor (UNTAET). UNTAET served as the government, exercising all legislative and executive authority. UNTAET was charged with assisting the country to develop a constitution, organizing and conducting elections, and building the institutional capacity for electoral processes during the transition period. A legislative election was held in 30 August 2001, followed by a presidential election in 14 April 2002. On 20 May 2002, Timor-Leste became a fully independent republic. Timor-Leste became a member of ADB in July 2002.

2. Geographic

4. Timor-Leste comprises the eastern half of Timor Island. The country has a contiguous land area of 19,000 square kilometers with an additional 2,461 square kilometers in the Oecussi enclave in West Timor. Mountain peaks rise to 3,000 meters, so watercourses are steep and fast flowing and, because of the extended dry season, generally ephemeral. Timor has two

¹ ADB. 2000. *Report on a Project Grant from the Trust Fund for East Timor to the United Nations Transitional Administration in East Timor for the Water Supply and Sanitation Rehabilitation Project*. Manila; ADB. 2001. *Report on a Project Grant from the Trust Fund for East Timor (to be Administered by the Asian Development Bank) to East Timor (as Administered by the United National Transitional Administration in East Timor) for the Water Supply and Sanitation Rehabilitation Project Phase II*. Manila.

² ADB did not contribute to the TFET (Timor-Leste was not a member of ADB at the time), but ADB was appointed as a joint administrator (with the World Bank) of the TFET. ADB was responsible administering TFET projects in the infrastructure sectors, including water supply and sanitation. Contributors to the TFET were Australia, European Union, Finland, Ireland, Japan, New Zealand, Norway, Portugal, United Kingdom, United States, and World Bank.

³ It was estimated that 75% of the population was displaced and 70% of physical infrastructure destroyed or damaged.

seasons (wet and dry). The wet season normally runs from November to May. Annual rainfall ranges from 500 to 1,500 millimeters in the lower lying coastal areas to over 3,000 millimeters in the mountains. Depending on the location, average wet season rainfall ranges from 70% to 95% of total rainfall. The project document (footnote 1) observes “the generally unfavorable geology and steep topography in East Timor exacerbate the normal water resources difficulties faced during the dry season as rivers dry up and spring flows recede, often to very small flows. All this combines to produce a hydrological environment in which securing safe and reliable water sources for town and village supplies is difficult. Recurrent droughts exacerbate this problem.”

3. Economic

5. Output fell by over 30% following the withdrawal of Indonesia. However, there was strong recovery in the following years such that real gross domestic product (GDP) is estimated to have almost reached preconflict levels by 2001, driven largely by the international reconstruction effort and a rebound in agricultural production. Real GDP growth slowed to 3% in 2002, as the international presence was reduced. GDP was projected to contract by 2% in 2003.⁴ Growth is expected to gradually accelerate to around 5% by 2007. Central government fiscal operations are characterized by large deficits in the face of urgent reconstruction needs and only limited revenues. The balance is met mostly by grants from funding agencies. In the medium term, Timor-Leste expects to benefit from substantial oil and gas revenues, but continued budgetary support will be required in the meantime. Fiscal policy aims at containing expenditure at a level consistent with the availability of fiscal resources, which means strong fiscal constraints in the short term.

4. Social

6. The population of Timor-Leste is 924,642 (according to the 2004 census). A major population increase occurred since 2001. This was attributed to the return of refugees from West Timor as well as a high birth rate. Approximately 76% of the population lives in rural areas. Subsistence agriculture is the main economic activity. Forty-one percent of the population lives below the poverty line. Food shortages are reported every year, and malnutrition is prevalent. Forty-five percent of children under 5 years of age are below their “weight for age.” Major health problems are the high incidence of preventable communicable diseases, such as acute respiratory infections and diarrheal diseases, as well as parasites, malaria, tuberculosis, measles, typhoid, leprosy, yaws (a bacterial disease), filariasis, and encephalitis. There are high rates of infant mortality, under-five child mortality, and maternal mortality. Immunization coverage is low.⁵ As of 2001, about 75% of children enroll in grade 1 but only 47% reach grade 5. Only 50% of people 15–24 years of age are literate. The ratio of girls to boys is approximately equal in primary school, but the ratio of girls to boys is 58% in senior secondary school. Appendix 1 provides further details on the social context.

5. The Water Supply and Sanitation Sector

7. Prior to separation from Indonesia, less than half of Timor-Leste’s population was estimated to have access to safe water and sanitation, although official figures showed around 60%. The public water supply network covered the 13 district towns (including the capital, Dili)

⁴ International Monetary Fund. 2003. *Democratic Republic of Timor-Leste: 2003 Article IV Consultation*. Washington, DC.

⁵ World Health Organization Regional Office for South East Asia. *WHO Country Cooperation Strategy 2004–2008*. New Delhi.

and 49 of 63 subdistrict towns, but coverage was low (ranging from 25% to 40% in the central parts of the towns). All 440 rural villages had water supplies but most were of a low standard. Under Indonesian administration, town water supplies were the responsibility of the Directorate General of Human Settlements of the Ministry of Public Works. All town water supply schemes were heavily subsidized, although the Dili system required a lower level of subsidy. Rural water supply and all sanitation were the responsibility of the Department of Health, although the department's role was advisory, with communities being responsible for their water supply systems. There was generally a low level of service provision in rural areas.

B. Rationale

8. The rationale for the project was to support the physical repair and rehabilitation of water supply and sanitation systems destroyed in the violence that followed the vote for independence, as well as to “reestablish new institutions and systems for managing, operating, maintaining, and developing urban and rural water supplies in East Timor that are both appropriate and sustainable” (footnote 1).

9. Following the typology of ADB's current disaster and emergency assistance policy,⁶ the WSSRP contains elements of the emergency response and recovery phases. The policy indicates that the recovery phase starts with a joint damage and needs assessment with other partners (which took place in Timor-Leste) and is followed by the provision of “emergency, short-term transitional assistance,” with a start made on the design of “comprehensive medium to long-term rehabilitation and reconstruction programs for subsequent resource mobilization and implementation.” Immediate short-term recovery is seen as covering “rehabilitation of critical infrastructure [such as water supply and sanitation systems], as well as project preparation and capacity building.” This is what the WSSRP set out to do. In terms of content, if not timing, the WSSRP has many features of an emergency assistance loan (EAL). As described in the disaster and emergency assistance policy, “EALs are designed to mitigate immediate losses to priority assets, capacity, or productivity rather than to provide relief or comprehensive reconstruction. EALs provide immediate short-term transitional assistance.”

10. The link to ADB's current disaster and emergency assistance policy, which was not in effect at the time of preparation or implementation of the WSSRP, is made because the experience provides a useful opportunity to identify lessons regarding the provision of emergency assistance (para. 64).

C. Formulation

11. The WSSRP was identified by a World Bank-coordinated multi-agency joint assessment mission (JAM), which included ADB. The JAM was carried out in October and November 1999, around 1 month after the post-referendum destruction. It estimated the cost of a 3-year rehabilitation program for water systems and utilities at \$25 million, with a further \$8 million for drainage and sanitation. ADB staff prepared both phases of the WSSRP, assisted by a staff consultant in each case. Appraisal for WSSRP I was carried out over 5 days in June 2000. Grant negotiations took place over 2 days in July 2000, and ADB's President approved the grant on 31 July 2000—a fast-track process for ADB of 57 days. WSSRP II was appraised in March 2001, over a period of 10 days, with the President's approval 130 days later. The grant

⁶ ADB. 2004. *Disaster and Emergency Assistance*. Manila. Available at http://www.adb.org/Documents/Manuals/Operations/OMD07_15jun04.pdf. ADB. 2004. *Disaster and Emergency Assistance Policy*. Manila. Available at http://www.adb.org/Documents/Policies/Disaster_Emergency/disaster_emergency.pdf.

agreement for WSSRP I became effective in August 2000, 81 days after appraisal started. The corresponding figure for WSSRP II was 175 days (5.7 months).

D. Project Objectives

12. The goal of the two phases was basically the same, although stated somewhat more specifically in WSSRP II as “communities in East Timor with access to such water and sanitation services as are considered essential for public health, for protection of the environment, and for promotion of economic growth based on appropriate technology and management systems.” Neither project framework gave any indication of when the goal was to be attained or how progress would be measured. Subsequently, the project contributed significantly to the establishment of time bound targets and indicators for sector development.

13. The statement of purpose for WSSRP I was “enhanced community and institutional capacities for effective water supply and sanitation management; selected urban and rural water supply and sanitation facilities functioning; and, improved environmental health practices.” For WSSRP II the statement of purpose was “a project management unit [PMU] implementing rehabilitation projects and planning for future sector development; the WSS [Water Supply and Sanitation Service]⁷ with the capacity for policy development and aid coordination, improved financial and management information systems, and staff with greater skills; and, priority water supply and sanitation projects implemented.”

E. Cost, Financing, and Executing Arrangements

14. The financing was provided as grant money. Donors pledged an initial \$148 million to the TFET at a meeting held in Tokyo in December 1999. The trustee of the fund was the World Bank’s International Development Association (IDA), with IDA and ADB nominated as joint implementing agencies. IDA and ADB were required to report to a twice-yearly TFET donor council. A donor coordination committee was established in Dili, chaired by the World Bank. Operation of the TFET was guided by a resolution of the World Bank’s board of directors and IDA. This provided for 1% of TFET funds to be retained by the trustee, to meet central financial administration costs, and 5% to be given to the implementing agencies, to meet eligible operational costs.⁸

15. Each phase of the WSSRP was allocated \$4.5 million, of which \$654,000 (15%) was originally unallocated (Table 1). Water supply and sanitation works were expected to account for about 60% of the total in WSSRP I and in the event, they did (62%). The bulk of the unallocated amount was directed to capacity building and institutional management—the latter being largely consulting services. Under WSSRP II, 65% of the unallocated amount went into water supply and sanitation works, with 29% directed to sector management (the expenses of the PMU) with the balance of 6% directed to capacity building.

16. A more detailed cost breakdown was provided in each grant document. Under WSSRP I, sector management covered the cost of the PMU and preparation of a project implementation

⁷ For simplicity, the government entity responsible for water supply and sanitation services is referred to as the Water Supply and Sanitation Service (WSS). This evolved from UNTAET’s Office of Water and Sanitation and later Water and Sanitation Authority. WSS is also commonly known by its Portuguese name, Serviço de Águas e Saneamento or SAS.

⁸ As an aside, one might question the need for the implementing agencies, whose mandate is development, to deduct a percentage of the TFET to meet their costs.

document (PID).⁹ Capacity building under the first phase was entirely directed at reestablishing the physical infrastructure of WSS, the department created to manage public sector operations, in Dili and district centers. Water supply and sanitation works under the first phase were expected to cover Dili and district centers as well as a “quick response facility” for small contracts anywhere. WSSRP II had a very detailed cost breakdown, involving 7 subcomponents and 28 line items. However, this level of accuracy was misleading as the specific schemes to be rehabilitated were not identified. Community water supply and sanitation was added under the second phase, with an estimated expenditure of \$700,000, or 16% of the total. Urban sanitation improvement was also given a specific allocation of \$500,000 (11%) under the second phase.

Table 1: Expenditure Allocation and Disbursement

Category	Allocation		Disbursed	
	(\$)	(%)	(\$)	(%)
WSSRP I				
WSS Sector Management	633,000	14	706,346	16
Capacity Building and Institutional Management	556,000	12	1,013,243	23
WSS Implementation	2,657,000	59	2,780,411	62
Unallocated	654,000	15	0	0
Total	4,500,000	100	4,500,000	100
WSSRP II				
WSS Sector Management	486,000	11	677,636	15
Capacity Building and Institutional Management	585,000	13	621,136	14
WSS Implementation	2,775,000	62	3,201,228	71
Unallocated	654,000	15	0	0
Total	4,500,000	100	4,500,000	100

WSS = water supply and sanitation, WSSRP = Water Supply and Sanitation Rehabilitation Project.
Source: Project files.

F. Completion and Self-Evaluation

17. WSSRP I was completed in July 2001, virtually on schedule, a good achievement given the situation. This phase was financially closed in June 2003, some 18 months after the expected closing date. WSSRP II was completed in April 2003, about 6 months later than planned. It closed in March 2004, around 12 months later than expected. Although required under the grant agreement, the PMU did not prepare a project completion report (PCR). ADB has prepared a PCR.¹⁰ This rates the performance of the WSSRP (both phases) as successful, because the PCR claims that the project substantially improved access to water supply and sanitation services for about 112,000 people, improved management systems, and enhanced community empowerment. The PCR also rates the WSSRP as highly relevant; efficacious; efficient (noting that it was not possible to undertake financial or economic evaluation); sustainability as less likely; and with significant environmental, sociocultural, and other impacts.

⁹ The approach of preparation of a PID was adopted for all TFET-funded projects. Although not explicit in the documents, it can be assumed that the approach was adopted to shorten the approval process by including detailed design within the implementation period.

¹⁰ ADB. 2004. *Project Completion Report on the Water Supply and Sanitation Projects Phase I (Grant 8185-TIM[TF]) and Phase II (Grant 8189-TIM[TF]) in Timor-Leste*. Manila.

The PCR rates the performance of the Government as partly satisfactory. ADB's performance was assessed as highly satisfactory.

G. Operations Evaluation

18. The Operations Evaluation Mission (OEM) to Timor-Leste spanned a 2-week period in September 2004. Given the large number of subprojects spread across all districts, only a sample was inspected. The evaluation findings are based on this sample.¹¹ The sample covered urban schemes managed by WSS (in Dili and three district centers) and eight community-managed schemes in four districts. A large number of funding agencies was or is involved in the water supply and sanitation sector in Timor-Leste, and their experience was sought. This included field inspection of three projects funded by the Australian Agency for International Development (AusAID). The OEM was fortunate in that three former local staff members of the PMU participated in the OEM. Two of these are now staff members of NGOs that were contracted under the WSSRP. A former team leader was still present in the country working on an AusAID water supply and sanitation project. Most of the national NGOs involved were also able to provide input. Consistent with the approach adopted in the draft PCR, the two phases are rated as a single project.

II. PLANNING AND IMPLEMENTATION PERFORMANCE

A. Formulation and Design

19. ADB fielded an assessment mission in April and May 2000 to develop a draft sector development framework. Timorese counterparts accompanied the team to help determine priorities, strategies, and approaches to community participation and provide guidance on local realities. As well as conducting a sector assessment and developing a comprehensive strategic framework for sector development for the period 2000–2003, this mission developed specific project proposals for consideration by the TFET and others.

20. At the time of WSSRP formulation, grants (other than technical assistance grants) were not part of ADB's products. Staff members were required to follow ADB business processes so the template used was that of a loan report and recommendation of the President—in this instance, almost 80 pages (comprising 23 pages of main text and 10 appendixes of around 50 pages). While the same rigor should apply to the preparation of both grant and loan projects, the documentation should be consistent with the size of the operation and the context within which the project is taking place. A more succinct document would have sufficed, particularly given that an early output was a detailed PID. As it was, the exercise was repeated for approval of the second grant, with the document swelling to over 90 pages. ADB should review its documentation requirements for smaller operations.

21. The WSSRP I document distinguished between the emergency and rehabilitation and reconstruction phases, with the project clearly identified as being part of the latter, although a strong sense of urgency pervaded implementation of the WSSRP (paras. 51 and 64). The document noted that the challenge would go beyond restoring facilities to their pre-crisis state to

¹¹ The sample was chosen in consultation with ADB's Special Office for Timor-Leste to represent a cross section of schemes in terms of success, as determined by Special Office for Timor-Leste staff members. Drawing a random sample was not possible, because of access and time constraints. Based on consultations with a number of well-informed people, the OEM is confident that the sample of projects was representative of the WSSRP and, indeed, the sector as a whole.

ensuring sustainability through cost recovery. Unfortunately, this early recognition did not lead to success in this regard (paras. 42–44). Flexibility to respond in a rapidly changing environment was also stated as being important, but it was unclear in what ways flexibility was to be achieved, apart from provision of a quick response facility. Standard ADB processes were to be followed.

22. An initial environmental examination was carried out. This played no role in guiding implementation. The examination contained many statements about the development of environmental procedures and environmental monitoring that were supposed to occur.¹² None of this took place, as there was neither institutional capacity or budget for this type of activity. In any case, given the scope of works and the greater importance of other environmental problems facing the country, such environmental monitoring would seem to be of very low priority, or even quite unnecessary. More care is needed to ensure that proposed environmental monitoring is relevant to the context.

23. The WSSRP documents contain a summary initial social assessment. This noted the lack of (i) community participation in developing appropriate water supply systems; (ii) a sense of community ownership of the facilities; and (iii) motivation and capacity to manage, operate, and maintain the facilities. The assessment observed that communities took no action when technical problems arose. Rather, they reverted to previous methods of obtaining water and disposing of human waste. Stating that success in the water and sanitation sector depends on communities planning, managing, and implementing their own development, the assessment recommended participatory involvement in the earliest stages of implementation, through the use of NGO management with participatory rural assessment and participatory planning, supported by an information, education, and communication (IEC) campaign to change knowledge, attitudes, and practices relating to sanitation and hygiene. The social assessment offers no evidence that this approach would lead to sustainable outcomes and improved community health, although the approach was, and is, in line with prevailing models and principles for community development.¹³

24. No financial or economic analysis was incorporated in the design documents for either phase. Certainly for the first phase, if one accepts that an urgent need to rehabilitate water supply and sanitation systems existed (which this evaluation does not accept [para. 51]), it was sensible to not include this. However, financial analysis should have contributed to the design choices made for WSSRP I. The consequence of a lack of attention given to financial and economic analysis was that decision makers were not alerted to the longer term financial costs or societal costs and benefits of investing in the sector. Short-term humanitarian and political considerations were the main drivers for the choices made. While some may justify the need for this, it has undoubtedly contributed to reduced efficacy and a low likelihood of sustainability.

¹² For example, the project document states “Environmental parameters to be monitored will be defined by the PMU, and will include raw water quality, treated water quality, delivered water quality, need for and effectiveness of drainage systems, water pressure in piped systems, environmental conditions in river and spring catchments including pollution and land clearing, landslide and erosion problems affecting water supply and sanitation facilities, efficiency and effectiveness of sanitation facilities, and growth of algae in reservoirs....They will also be responsible, in cooperation with local communities, for monitoring construction and post-construction environmental aspects of the project. The PMU will liaise with Water Supply Authority and the Interim Health Authority to monitor environmental health statistics as part of the project’s focus on environmental health education.”

¹³ Para. 28 of the WSSRP II document states that “The establishment of community-managed water supplies is a lengthy process, requiring extensive community consultation and participation to ensure sustainability”. However, only a very limited time was provided under the WSSRP.

B. Achievement of Outputs

25. Appendix 2 provides details of planned and actual outputs. Most planned outputs were produced, but many have not continued to deliver the services intended. The OEM inspected three urban systems and found that one (Oecussi) was out of operation, due to a lack of fuel for the pump and possible pump malfunction, and one (Maliana) was supplying only a limited amount of water, because the source was insufficient for the town and the owners of the source during the dry season. This system had also been damaged and only partially repaired after a landslide. The third, on the outskirts of Dili, was functioning more or less satisfactorily, but weekly interruptions to the supply occurred, due to power outages and water shortages and rationing of supply at the end of the system. The systems inspected provided household connections and public taps. Evidence was seen that those close to the reservoir left connections running and used water for nonhousehold purposes. Illegal connections were commonly seen. Water meters installed under the WSSRP were frequently missing.

26. The main problems faced by WSS-managed urban water supply schemes are

- (i) A lack of recurrent budget available in a timely manner to meet operation and maintenance needs;
- (ii) A centralized and slow decision-making and purchasing system by the Dili headquarters of WSS that results in districts not taking action in a timely fashion;
- (iii) The WSS still faces skills shortages, particularly in terms of management. Also, the more advanced technical skills are still in short supply; and
- (iv) An inability to ration scarce water among users.

27. In one of the driest months of the year, the OEM inspected 10 community-managed projects implemented by national NGOs (and in a few cases international NGOs) with community contributions of labor and materials. Eight of those inspected (in 4 districts) were among the 16 community systems completed in 7 districts, and 2 were AusAID projects completed at around the same time as those supported by the WSSRP. None of the water users committees (WUCs) was active, and no fees were being paid. In addition, the maintenance programs agreed to by the WUCs were not being carried out, and the OEM found:

- (i) Users are not communities but groups of communities, without any experience or local mechanisms for cooperation on issues such as water, where conflicting interests exist.
- (ii) Systems are subject to disputes between users at the top and bottom of each system, as those at the top use most of the water. Private connections are common, with the better-off households using hosepipes to take water for both domestic and agricultural use.
- (iii) Disputes over water use resulted in acts of vandalism to several systems.
- (iv) One project was cancelled because the owners of the source refused to share water with other groups in the so-called community.

- (v) Where there is water, it is being wasted; taps are left running and leaks have not been repaired. Taps are often missing.
- (vi) Drainage of wastewater is often poor. Puddles and ponds of stagnant water provide a breeding ground for mosquitoes that carry malaria, dengue fever, and filariasis.
- (vii) Women are not involved in management.¹⁴
- (viii) Ineffective amateur repairs were common. Pipes were not buried in many locations.¹⁵
- (ix) Sanitation work under the WSSRP was not significant.

28. Appendix 3 provides a detailed analysis (and illustrative pictures) of these problems and issues, which are not peculiar to Timor-Leste.¹⁶ Although the lead time for community management training was very short in this instance and no follow-up support provided, the OEM doubts whether more training would have made much difference.

C. Procurement and Construction

29. Procurement was carried out by the PMU according to ADB procedures and was generally effective, particularly given the difficult supply conditions in the country at the time. The quality of construction of urban systems by contractors was variable. The services of the limited number of contractors operating were in high demand. Consequently, not many options were available, and getting contractors in a timely fashion proved difficult, particularly for the relatively small contracts involved. The quality of construction of community schemes was generally of a poorer standard, which is not surprising given the logistical and other difficulties involved.

D. Project Management and Supervision

30. Consultants managed the WSSRP (Appendix 4 lists the consultants). A national project manager was engaged at the start of the project but he left in February 2001. The manager was not replaced during the first phase. A replacement was recruited for part of the second phase. Although envisaged, no project steering committee (PSC) was established. The evolutionary development of the new government in Timor-Leste, with numerous changes in structure and personnel, did not permit a PSC to function. Such a body is a standard part of most projects. However, expecting one to function in this context was probably unrealistic.

31. Throughout, the job of the project managers was made more difficult by twin pressures. First, the political pressure to spread the benefits as widely as possible was intense. Project managers were responsive to this, with the result that the project was operating across many sites (with the realities of difficult access and poor or nonexistent communication), thereby making close supervision difficult. Second, funding agencies and the political leadership wanted

¹⁴ Para. 83 of the WSSRP project document states that the Project "will take account of the different needs of men and women and the old and the young," but it was unclear how.

¹⁵ In some steep, rocky localities, burying pipes would have been very expensive, but in other areas, pipes could have been buried as part of the local contribution.

¹⁶ The problems were also substantially recognized in the PID. Given this, the measures the PID recommended to ensure sustainability were not supported by the evidence presented.

to see quick results. Again, the project was as responsive as it could be to this, which militated against effective project management. This pressure also reduced the extent to which responsibility could be handed over to local staff. Such pressures are common in post-emergency and post-conflict situations. Within the context, the project was well managed.

32. The project documents set quite unrealistic expectations with respect to monitoring and evaluation.¹⁷ The PSC was expected to strengthen project monitoring but was not formed. The PMU was expected to produce a report 3 months after project startup, establishing a system for project performance management. If produced, this could not be found. However, the PMU did produce a spreadsheet of progress against physical and financial indicators for each component, and progress was reported regularly. Outcomes were not monitored or reported. No self-monitoring was carried out.

33. ADB undertook regular supervision missions from headquarters, although throughout 2002 this was by an assistant project analyst only. ADB's Special Office for Timor-Leste provided very close support with weekly meetings generally being held with PMU staff. If ADB's support had a fault, it was the lack of supervision by a water supply and sanitation specialist, which might have contributed to the sustainability problems being addressed earlier and more forcefully. A midterm review was envisaged and carried out. This did not produce any significant change in direction. ADB prepared eight multisector TFET progress reports between 2000 and 2004, for discussion at biannual development partner meetings. Donor coordination was good in terms of avoiding overlaps but not so effective in developing common approaches and sharing lessons.

E. Performance of Consultants and Nongovernment Organizations

34. Overall, the quality of system design was mixed. The pressure to deliver quick results meant that water sources were often not assessed as to their adequacy. Redesign work was required in several instances. The focus was on rehabilitating existing and often poorly performing systems, rather than on designing schemes fit for the purpose. The politically driven need to spread resources widely limited the scope for more robust system design. Supervision by PMU staff was reasonable in terms of coverage, particularly given the circumstances, although this did not prevent substandard work by contractors in a number of cases (such as leaking storage tanks). Given the sense of urgency and the large number of subprojects, the time available for the consultants to transfer skills was limited—a problem compounded by a lack of counterpart staff with the basic skills.¹⁸ Notwithstanding this, there were positive results in human resources development, such as staff members with computer-aided design skills and others with the ability to operate the asset management and billing systems developed under the project. The development of legislation was a significant contribution as was the reestablishment of WSS in the districts.

¹⁷ For example, the WSSRP I project document states “Water Supply Authority staff in each district will collaborate with the PMU to monitor project activities, outputs and outcomes in their respective district.” The WSSRP II document goes further in saying “Plans for self-monitoring and ongoing sharing among groups will be made in conjunction with follow-up training and support at every level throughout the project.”

¹⁸ An analysis of post-conflict problems and issues in Timor-Leste, acknowledging the language problems referred to in para. 35, notes that “With very few individual exceptions, the expatriate experts focused almost entirely on doing their jobs, instead of also gradually bringing in, training and empowering local individuals...The problem was exacerbated by the UNTAET decision to recruit government employees ‘from the bottom up’—which meant that until late 2001 there were no Timorese civil servants in senior or middle management positions, which made it practically impossible for Timorese ministers to exercise real policy influence.” Schiavo-Campo, Salvatore. 2003. *Financing and Aid Management Arrangements in Post-Conflict Situations*. See also Rohland, Klaus, and Sarah Cliffe. 2002. *The East Timor Reconstruction Program: Successes, Problems, and Tradeoffs*.

35. Generally, the quality of the reports by international consultants engaged in planning ranged from good to excellent, although the output of some (such as in the community development, health, and IEC areas) could not be located. The main problem was a lack of capacity to act on the reports produced. Also, domestic consultants and counterpart staff spoke little if any English. Most of the international consultants spoke English but not Tetun or Portuguese. However, many spoke Bahasa Indonesia and could communicate in this language. Most of key reports and planning documents were written in English. Summary translations were made in a few cases. The problems of language reduced the immediate usefulness of much of the consultant output. Overall, the performance of the consultants was generally satisfactory, but too many consultants were producing plans and studies for the absorptive capacity of the new Government.

36. The performance of the NGOs was generally satisfactory within the context. One contract with an international NGO was cancelled for poor performance, while project files indicate that the PMU was dissatisfied with the technical capability of some others. The quality of national NGO reports was mostly poor, which is not surprising given that these were required to be written in English. National NGOs were strongly of the view that their involvement in the project contributed significantly to developing their capacity.

III. ACHIEVEMENT OF PROJECT PURPOSE

A. Development of Water Supply and Sanitation Systems

37. Trends in the provision of water supply and sanitation services are shown in Table 2. The data provide a single estimate of water supply and sanitation coverage in 1997, before independence, and three subsequent estimates. The 2004 census did not include questions on water supply or sanitation. The 2001 *suco* survey showed a decrease in access to safe water.¹⁹ However, the current sector investment policy expresses the view that while coverage decreased as a result of damage caused by the post-referendum violence, this was limited and generally quickly repaired, at least in urban areas.²⁰ The policy states that the decrease was due mainly to the low operational robustness of the systems coupled with a period of limited or no maintenance activity. The OEM concurs with this. The *suco* survey showed that access varied by district—about 32% of the population had access in western districts and around 50% in central and eastern districts. This difference persisted in the 2002 Multiple Indicator Cluster Survey (MICS).²¹ The MICS also highlights considerable differences in access in urban and rural areas.

38. The overall picture is of little progress in increasing water supply coverage. While the MICS showed that Dili's coverage exceeded the pre-independence level, the subsequent WSS estimate was much lower. The difference probably reflects a different interpretation of access, with this being defined in the latter case as access to a functioning system. These differences in interpretation mean the data must be treated with some caution. However, it seems fairly safe to conclude that little progress has been made toward achieving the purpose with respect to water supply. While systems were repaired and extended, limited sustainability and an overall decline

¹⁹ United Nations Development Program, United Nations Trust Administration for East Timor, ADB, and World Bank. 2001. *Survey of Sucos: Initial Analysis and Implications for Poverty Reduction*. Dili.

²⁰ Ministry of Transport, Communication, and Public Works; Ministry of Agriculture, Forest, and Fisheries; Ministry of Development and Environment; and Ministry of Health. 2004. *Water Supply and Sanitation Sector: Priorities and Proposed Investment Program*. Dili.

²¹ United Nations Children's Fund. 2002. *Multiple Indicator Cluster Survey*. Dili.

in system performance, due to a lack of maintenance and operational support, were encountered by the OEM.

39. The situation with respect to sanitation coverage is also confused by different understandings of what constitutes adequate sanitation. Data in Table 2 may indicate that some progress was made. However, the WSSRP made almost no contribution to sanitation coverage (226 latrines were provided).

Table 2: Access to Water Supply and Sanitation Services
(% of population)

Indicator	1997	2001	2002	2003 (estimate)
Access to Safe Water				
Rural	62	44	31–51	46
All Urban	—	64	65–75	50
Dili	78	—	82–87	55
Overall	62	50	40–57	—
Access to Safe Sanitation				
Rural	10	33	8–13	19
All Urban	54	70	37–55	45–55
Dili	—	—	54–72	70
Overall	—	—	16–33	—

— = not available.

Sources: 1997 Government of Indonesia Census; 2001 *Suco* Survey; 2002 Multiple Indicator Cluster Survey; 2003 estimates and informal surveys by the Water Supply and Sanitation Service.

B. Institutional Development

40. The project rehabilitated, restored, and reequipped WSS operational facilities in Dili and 12 district headquarters. It laid the groundwork for improved planning and implementation and for reestablishing the human and institutional capacity needed to provide water supply and sanitation services. Staff skills were upgraded in areas such as computer-aided design, operation of asset management and billing systems, and water supply system operation and maintenance. These skills have been retained and the systems installed continue to operate, although the billing system needs to be completed following the passage of legislation establishing fee rates. The WSSRP developed the legislation. A recent European Union evaluation of the TFET concluded that the proliferation of PMUs was a waste of resources. The evaluation expressed the view that integration of the PMUs into government ministries was a viable option, but this was hindered by confusion over whether they were responsible to development agencies or the government, and also by substantial differences in salaries between domestic consultants and ministry staff.²² In the case of WSSRP, the PMU was located with WSS, but it was not integrated into it.

C. Planning and Sector Management

41. Approximately one quarter of the funds in WSSRP I were used for policy and planning, such as a legal and regulatory framework, water supply and sanitation standards and

²² Phung, C. N., and Bauer, J. F. 2004. Interim Evaluation of the Trust Fund for East Timor. Draft.

guidelines, a waste management plan, and a water tariff study. These were largely conducted before the new Government was formed. Given this, there was limited scope for building a sense of national ownership of these policies and strategies. Also, carrying out such detailed planning in times of rapid change ran the risk of a high rate of redundancy. Given this, quite a lot of the work was premature, although much of the analysis could still be useful, provided it can be made available to current and future policy makers and planners. Although provided to WSS, the information could no longer be found there according to a former project manager.

D. Sustainability

42. The sustainability of urban and rural water supply systems provided by the WSSRP is problematic. The OEM's criteria of sustainability is (i) systems meeting the basic needs of all users all year; and (ii) systems being managed and maintained either by WSS (in the case of urban schemes) or a WUC, according to the principles agreed among the users during implementation (in the case of rural schemes). Based on these criteria, none of the schemes inspected were operating in a sustainable manner.

43. Provision for adequate funds for operation and maintenance is essential for sustainability. Cost recovery from users is one way of providing such funds. The consultants recognized the need for cost recovery from the beginning. However, there were (and are) two major obstacles to the introduction of user charges. First, little political support existed for water charges. The Indonesian administration did levy minor charges for urban water supply. However, a strong sentiment existed among the new political leaders that water should be free. Notwithstanding this, the Government is slowly moving toward introducing user charges, first in Dili and later in district centers. The enabling legislation was passed in February 2004. An IEC campaign designed to generate popular support for user fees is reportedly about to get underway. Despite passage of the required law, many are skeptical about the political feasibility of actually introducing user fees, particularly given the current and declining service standard in most cases. The second problem with the introduction of user fees is that the costs of collection would fall on WSS, but the fees would go to the central Government, with no guarantee that they would be returned to WSS to meet its operation and maintenance expenses.

44. The sustainability of village water supply systems was expected to follow from the participatory implementation methodology. This included a short period of training on management, maintenance, and collection of fees, and provision of maintenance equipment to WUCs. This requirement was included in the terms of reference of the NGOs implementing the 16 community-managed water supply systems. However, these measures have not been sufficient to ensure sustainability. Sustainability will require institutional support. Forty-one percent of the Timor-Leste population lives below the poverty line, and most of the poor live in rural areas. In effect, the current policy allocates responsibility for providing water supply and sanitation services to the rural population (76% in 2001), funding agencies, NGOs, and various communities that do not share a common interest. WSS is nominally an adviser on village water supply systems—it has only one community development worker per district—but it is not responsible for these systems. WSS lacks an inventory of systems and has no detailed data on activities by NGOs (such as locations where projects are undertaken, status of projects, status of water systems) because NGOs do not generally provide this information. A comprehensive inventory is said to be a long-term target of WSS.

IV. ACHIEVEMENT OF DEVELOPMENT IMPACTS

A. Socioeconomic Impact

45. The main socioeconomic benefits were expected to be improved health, employment creation, and enhanced capacity of NGOs and local contractors. The health impacts are likely to be limited because of failed and failing systems, or systems that are inadequate for the dry season. Where systems are working, other health hazards arise from poor drainage (para. 47). Those whose basic needs for water are being met in all seasons benefit in terms of saved labor. Some employment was also created, but much of this was voluntary labor. The WSSRP contributed to the growth of civil society in Timor-Leste by improving the capacity of NGOs.

46. The anticipated empowerment benefits for women did not eventuate and were probably an unrealistic expectation. However, where the systems function as planned, men and women benefit from the convenience and other advantages of an accessible piped water supply.²³ National NGOs still have much to learn about gender and development, and little effort was made to overcome cultural barriers to women's participation. Only small amounts of land were needed for WSSRP facilities (holding tanks, etc.). This land was either government land, with existing facilities in place and free from settlement, or private land. Compensation for loss of productive assets (but not for use of the land) was negotiated with private landowners. For the use of their land, the owners were generally given a free household connection to the water supply system. Disputes over access to water sources on private land appear to be common in the absence of a mechanism to resolve such disputes.

B. Environmental Impact

47. In localities where the project successfully provided piped water, the OEM observed negative environmental health impacts. Adequate wastewater drainage was often lacking around private households and public taps. Typically, puddles and small ponds of stagnant water collected near houses, providing a breeding ground for mosquitoes that spread malaria, dengue fever, encephalitis, and filariasis. These areas also attracted domestic pigs that wallow in the wastewater, and their manure attracted flies that also carry diseases. Thus, the health benefits of piped water are at risk of being negated by the creation of other conditions that encourage the spread of diseases. Such problems are the norm and are not unique to the WSSRP. Nonetheless, the WSSRP was not able to ensure adequate drainage in most cases—a problem exacerbated by leaking taps or free flowing water.

C. Impact on Institutions and Policy

48. The project contributed to reestablishing the physical infrastructure of WSS. Operations were restored in all districts by rehabilitating offices and workshops and reequipping these. The institutional framework was developed with the provision of the necessary technical standards and operational guidelines, and policies and legislation. However, some of these policies and procedures remain to be put into practice. Further development of WSS capacity is essential to maintain the infrastructure provided by the WSSRP.

49. The institutional arrangements for the community water supply systems are very unsatisfactory. The WUCs do not have the capacity to manage the systems, nor do they have the support from the so-called communities that use the systems (Appendix 3). In the absence

²³ Water is collected and carried by women, men, and children in Timor-Leste.

of the legal registration and empowerment of the WUCs, a supportive system of local government, and the capacity of WSS to operate beyond the level of district towns and some subdistrict centers, the systems are not likely to achieve a fraction of their expected 25-year service life. Follow-up support will be needed, or these investments will be wasted.

V. OVERALL ASSESSMENT

A. Relevance

50. The WSSRP is rated as relevant. It was based on the results of the JAM and the clear need for restoration and improvement of water supply and sanitation systems. It also drew on a comprehensive sector assessment led by ADB. The project is relevant in terms of current ADB regional and country strategy (including the current Pacific regional strategy, which also covers Timor-Leste). The project is consistent with current ADB emergency assistance policy. However, the experience gained during implementation of this project highlights problems associated with so-called recovery phase operations, as distinct from normal development operations (paras. 64 and 65). The project had a good fit with current government strategy.

51. Based on an assessment of the likelihood that the design would lead to the achievement of the project's purpose, the WSSRP was not so relevant. Although not part of the immediate post-conflict emergency phase, the WSSRP was still viewed as an emergency rehabilitation project. The state of emergency created a pervasive sense of urgency in the WSSRP. In fact, while there was an emergency caused by the post-referendum violence and destruction, by the time the WSSRP got under way (15 months after the destruction) there was no urgent requirement to address water supply and sanitation needs, even though a strong development need existed. For much of the population, access to water was little different from the pre-independence situation. There was (and is) a huge development challenge to improving water supply and sanitation, but this does not call for urgent action inconsistent with sound development. The social context was insufficiently understood, which led to the adoption of the community management model. Although widely promoted in the development world, this model was based on incorrect assumptions regarding the nature and functioning of communities in Timor-Leste.

B. Efficacy

52. The WSSRP is rated as efficacious, although close to partly efficacious. The project delivered many outputs. Particularly noteworthy is the reestablishment of WSS offices in districts. However, water supply and sanitation systems outside of Dili have generally failed to deliver the expected development results, or the results obtained have been relatively short-lived and/or their future sustainability is in doubt. Further support can, in the case of urban schemes, help produce the benefits expected from the investments made to date. The project contributed to building the capacity of WSS, which has a presence in each district town with facilities provided by the project, but WSS's reach beyond this is very limited. This, along with preparation of legislation (now passed) and the development of asset management and billing systems are the major successes of the WSSRP.

C. Efficiency

53. The WSSRP is rated as less efficient. The decision to spread money thinly in a post-conflict situation, with little or no government or private sector, imposed high transaction costs in terms of consultant input. A more focused approach could have improved efficiency. Little

attempt was made to integrate financial and economic analysis into decision making. It was not possible to undertake any quantitative assessment of efficiency of investment because central procurement, a lack of records, and high degree of complementary funding means costs by scheme could not be determined. Development partner coordination was good in terms of avoiding overlaps but less effective in terms of developing common approaches or identifying what was not working.

D. Sustainability

54. Sustainability is rated as less likely. Sustainability is a major issue. The Government has not yet reintroduced charges for water in urban areas. Even if it does succeed in this, there is no guarantee that operating and maintenance costs will be met in a timely fashion. Community management has not proven sustainable in rural areas. On the other hand, the capacity of WSS continues to improve.

E. Institutional Development and Other Impacts

55. There were moderate institutional development and other impacts. The WSSRP made a significant contribution to development of the NGO sector and a more modest contribution to development of the local private sector. Few positive results were noted in the areas of gender, environment, poverty, or governance.

F. Overall Project Rating

56. The overall rating of the WSSRP is partly successful.

G. Assessment of Asian Development Bank and Borrower Performance

57. The performance of ADB is rated as satisfactory. Supervision intensity was good. ADB management was good in terms of administrative support but would have benefited from supervision by a water supply and sanitation specialist. The midterm review could have made more changes to improve the relevance of the design. ADB procedures impose quite high transaction costs for small projects. Compliance with these in the context of Timor-Leste required a lot of expensive consulting time. The performance of the Government is rated as satisfactory, given the context of creating a new government from an almost zero base.

VI. CONCLUSIONS, LESSONS, AND FUTURE DIRECTIONS

A. Conclusions and Issues

58. Sustainability of urban water supply services is not simply a matter of introducing water charges. In the absence of a corporate entity that can retain these funds to meet operational expenses, there is a high risk the needs of WSS may not be met, or may only be met in a partial and/or non-timely fashion. Also, centralized decision making in Dili may lengthen response times and prevent the use of least-cost options (e.g., purchasing fuel in Indonesia, in the case of Oecussi).

59. Project achievements were almost entirely in the area of water supply. Little was achieved in sanitation. This limits the likely achievement of health benefits. In some cases, other development partners provided latrines and training in sanitation. Notwithstanding this, a lack of results in the sanitation subsector was the general experience of other projects. The main

reasons for the lack of results are cultural factors, the absence of effective awareness campaigns, and insufficient resources being directed to sanitation.

60. As ADB moves to the greater use of grants—as a consequence of the Asian Development Fund replenishment—it needs to review its documentation requirements and business processes, to ensure that these add value and are appropriate for the circumstances. Proposed environmental and other monitoring need to be realistic and relevant to the context.

61. In a post-conflict situation, there is tremendous pressure to deliver quick results. However, problems clearly exist in trying to combine quick results with sound development. It may be preferable to create a distinct separation between quick results (e.g., by delivering water by tanker or in bottles) and development (e.g., construction and operation of water supply schemes). Rehabilitation of poorly performing systems is not likely to be a sound development option. ADB may need to play a role in informing political decision makers about the possible consequences of overly hasty action, but they will need to be given alternatives, so their political objectives are met.

62. The WSSRP was a TFET-funded undertaking to which ADB did not contribute financially. The trust fund concept has the potential to reduce complexity in post-conflict situation by pooling funds. However, a number of contributors to the TFET also had bilateral programs in the same sectors, so this benefit was negated to some extent.²⁴

B. Lessons

63. The community management model has not proven to be sustainable because it did not take account of actual social relations, which are household- and kin-based (rather than community-based). This lack of sustainability was not a result of poor implementation (although community preparation was limited in this case) but a consequence of incorrect assumptions about the nature of communities.

64. There was no special urgency to improve water supply and sanitation systems by the time the WSSRP got underway. While the needs of the people remained great, the adoption of an “emergency mentality” had a number of undesirable effects and consequences. These include:

- (i) An excessive focus, with insufficient thought to the new context, on the rehabilitation of systems designed under the Indonesian administration, which consequently led to insufficient consideration of options.
- (ii) A mind-set that centered on results being achieved quickly to address the emergency, which also contributed to a lack of option consideration and hasty delivery of outputs with insufficient attention given to whether these were sufficient to achieve development results, or meet the requirements for sustainability.

²⁴ One issue that arises from the experience is that the physical works carried out under WSSRP were generally identified through signs and notices as parts of an ADB-TFET project. Care needs to be taken to ensure that the contributors to such pooled funds receive credit.

- (iii) A failure to reimpose charges for water at the time of rehabilitation of urban services, which makes doing so now politically difficult, particularly given that the service delivery standard has slipped in many instances.
- (iv) The atomization of available funds across many subprojects imposed strong budget constraints on each subproject, which, again, limited the choice of options and contributed to a lack of sufficiency of outputs to produce development results. It also resulted in high transaction costs that limited the funds actually available for development. That a strong political desire exists to see funds widely distributed needs to be recognized, but the costs and undesirable consequences of doing this need to be made clear.
- (v) An emphasis on delivering results to address the emergency meant action took precedence over building local capacity, although the achievements in terms of capacity building in WSS were significant.

65. In light of the experience with the TFET-funded WSSRP, ADB should be careful in designing projects under the provisions of its emergency assistance policy. It may not be realistic to achieve emergency response and development objectives in a single intervention. Designing projects to achieve development objectives needs sound analysis. This is complicated by the changed circumstances brought about by the emergency. Therefore, a too hasty response may be counter productive.

C. Future Directions

66. If ADB continues to support the water and sanitation sector in Timor-Leste, it should deal with urban schemes and capacity building for WSS, or its successor corporate utility or utilities.²⁵ Priority should be given to ensuring the long-term technical viability and sustainability of town systems. To ensure that revenue collected is made available for operation and maintenance, consideration should be given to the establishment of regional or district utility corporations, even if these require subsidies from the Government in the medium term. Having suggested this, it needs to be recognized that such utilities are not a panacea. Many problems, including those of governance, frequently arise. Therefore, any moves in this direction should be carefully considered, taking into account all options. In other words, further study is needed.

67. ADB should not become involved in the provision of water supply to rural areas, as a number of other agencies are active in this subsector. However, ADB could consider supporting a short- and medium-term institution-building strategy to increase the sustainability of rural water supply systems and the provision of water to the poor. The long-term goal should be to integrate all levels of piped water supply services under public regional or district water corporations. These corporations should eventually take over all small and medium gravity systems in rural areas and be responsible for collecting fees and maintaining services. As an interim measure, while the institutional arrangements are developed, and as WSS capacity is built, a fund could be established for the short term (5 years) for WSS to contract national NGOs to service groups of community-managed systems at the district or subdistrict levels. Initially, this should be pilot tested in two or three districts. The national NGOs would be empowered by WSS to collect a fee for service from each user household, repair and maintain systems, ensure

²⁵ This evaluation did not seek to answer the question of whether ADB should be involved in the water supply and sanitation sector. Suggestions are made on the basis of an assumption that ADB will continue to have some involvement.

that wastewater does not create a health hazard, mediate disputes between water users, and promote conservation of water resources. The national NGOs would work closely with district WSS and local government, as it emerges. The Government must be prepared to exercise its option of taking over ownership of the systems and even closing the system if noncompliance with rules persists.

68. A national strategy is needed to improve rural sanitation and to provide development partner-subsidized material for self-help household latrines, based on an economy of scale. There are many appropriate technologies and a study is needed to collect information on local habits and associated environmental and health issues. The study should evaluate the different latrine systems that were introduced and propose a suitable model or models. Environmental sanitation should be promoted through local government as it emerges, through the formation of village women's committees, wherever this is feasible, and in primary school curricula. However, sanitation development at the household level is more appropriately carried out by agencies other than ADB.

69. Much of the policy work and master plans produced under the WSSRP were not immediately used, and these are in danger of becoming lost. To avoid this, ADB should catalogue the information, and make this available on an Internet site established for WSS.

SOCIAL CONTEXT OF TIMOR-LESTE

A. Background

1. Since the devastation of lives and property in 1999, Timor-Leste appears to be making a good progress toward recovery. However it remains one of the poorest countries in the region, with very limited infrastructure and a new and inexperienced government, an absence of effective local-level government, and a severe shortage of skilled and qualified people in every sector. Civil society has grown rapidly since 2000. Whereas before 1999 few nongovernment organizations were present, there are now 440 (of which 50 claim experience in water and sanitation).

2. A number of major studies to assist planning for the transitional phase provide good social data for future analysis and program planning. These include the 2001 Survey of *Sucos* (local government administrative areas within subdistricts), which was co-prepared by the Asian Development Bank (ADB); 2001 *Household Survey* of living standards; *Participatory Potential Assessment* of 2002, managed by the United Nations Development Program; 2002 *Health Profile*, managed by the World Health Organization; and the 2002 Multiple Indicator Cluster Survey, prepared by United Nations Children's Fund. Most of these data were brought together in *Poverty in a New Nation: Analysis for Action* (2003). The Government's vision for development is presented in *East-Timor 2020: Our Nation, Our Future*. (2003). Useful development partner reports include the ADB Timor-Leste Progress Reports 1–8, (2000–2004), and *Initial Poverty Assessment* (2000), World Health Organization *Country Cooperation Strategy*, and United Nations Children's Fund *Master Plan* (2004–2008).

B. Population

3. East Timor has a population of 924,642, according to the provisional population counts from the 2004 census (Figure A1). The 2001 figures are from the *Suco Survey*,¹ and the subsequent population increase is attributed to the return of refugees from West Timor as well as a high birth rate.

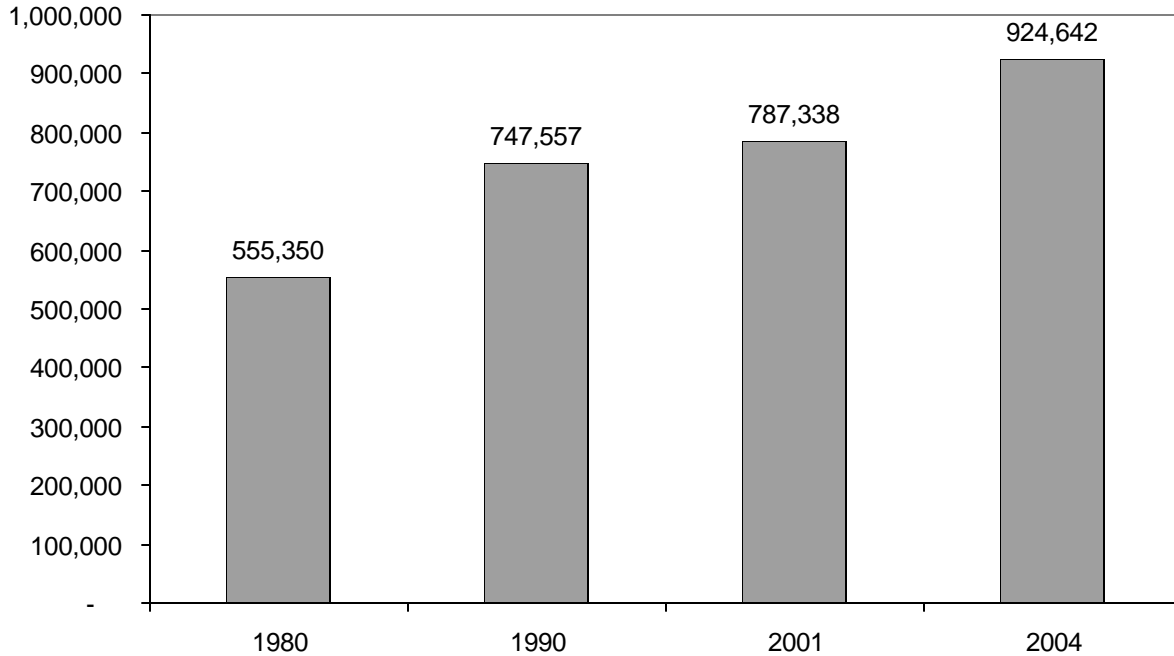
4. The population of Dili increased 39% since 2001, and the growth is visible in the rapid rehabilitation of existing residential areas and in the new informal settlements springing up around the town.

5. The 2001 estimate of a sex ratio of 50.6% of males to 49.4% of females in the population is confirmed by the census data. This is probably due to a higher masculinity ratio (slightly more males are born than females) and possibly a shorter life expectancy among women in some districts. However this remains to be confirmed by future analyses of the census data. Estimates based on the 2001 data are that 48% of the population is under 17 years of age. Timor-Leste is reported to have one of the world's highest population growth rates.²

6. Timor-Leste is administratively divided into 13 districts, 67 *postos* (subdistricts), 498 *sucos*, and 2,336 *aldeias* (villages or hamlets).

¹ United Nations Development Programme, *United Nations Trust Administration for East Timor*, ADB, and World Bank. 2001. *Survey of Sucos: Initial Analysis and Implications for Poverty Reduction*. Dili.

² Press release for the launching of the first census report, September 2004.

Figure A1: Population Change Since 1980

Source: Census Bulletin No. 1, September 2004.

C. Poverty

7. Per capita income was \$460 in 2002. The Timor-Leste Millennium Development Goals (MDG) Report (2004) and Poverty Analysis estimate 41% of the population is living below the poverty line of \$1.65 per day on a purchasing power parity basis, and 20% of the population lives on less than \$1.00 per day on a purchasing power parity basis.

8. Approximately 76% of the population lives in rural areas. Agriculture is the main source of income in 94% of *sucos*, but the main crops (maize, rice, and root crops) are grown for subsistence, and less than 20% of *sucos* sell their harvests. Fifty-seven percent of *sucos* have some irrigation. Those with year-round irrigation can grow two or three crops a year, but the great majority of people grow only one. Food shortages are reported every year, and 80% of *sucos* reported insufficient food in the month of January. Forty-five percent of children under 5 years of age are below the weight for the age.

9. Most people have rebuilt their houses following the post-referendum destruction. The exceptions are refugees recently returned from West Timor, many of whom are living in makeshift accommodation. The majority, being without money, have built using traditional materials of thatch and bamboo and salvaged materials, but in many areas where destruction was high, development partners provided cement for flooring and in some areas roofing iron as well.

D. Gender

10. Women are formally subordinate to men, although Timorese culture places a high value on women, and men are not considered to be fully adult until married. Men pay a bride price for

their wives in most parts of the country, which is raised by their older kinsmen. An alternative to a bride price in some districts is for the husband to provide a service to the wife's family. Violence against women is reportedly high. In rural areas, it is socially unacceptable for women to travel unless they are accompanied by their husbands.

11. MDG indicators show that in the 15–24 age group, the ratio of literate women to men is 96%. Women have a 35% share of nonagricultural employment and 28% of seats in parliament. A small minority of women hold positions as chiefs of *sucos* and *aldeias*.

E. Health

12. Major health problems are a high incidence of preventable communicable diseases, such as acute respiratory infections, diarrhoeal diseases, parasites, malaria, tuberculosis, measles, typhoid, leprosy, yaws, and filariasis and encephalitis. Sexually transmitted infections are common, with about 31 cases per week reported in urban areas in 2003. Eight cases of HIV³ infection, mainly among sex workers, were reported.

13. Infectious disease accounts for about 60% of deaths, particularly among children. Malnutrition is prevalent among women and children. The infant mortality rate is high, at 88 deaths per 1,000 live births. Deaths are commonly caused by infections and prematurity and birth trauma. The mortality rate for children under 5 years of age is estimated at around 125 deaths per 1,000 children. A high maternal mortality ratio, estimated at 800 per 100,000 women, is associated with short birth intervals, early marriage, and teenage pregnancy. Less than 10% of couples of reproductive age use any form of contraception. Immunization coverage recommenced in 2001, but routine coverage is still low.⁴

14. By 2001, over 200 health facilities were operating, including 117 mobile clinics, 88 health posts, 54 health centers, and 8 in-patient health centers. Five regional hospitals are being established, and one national hospital is being upgraded. The World Health Organization estimates that an optimal number of community-level health care facilities was restored at district and *posto* levels, but it notes that these were largely reconstructed without access to water. The *sucos* study estimates that the average time it takes most people to reach the nearest health facility is 70 minutes.

F. Education

15. In 2001, 900 schools were operating, of which 70% were primary, and 80% were government-operated. The number of classrooms was only 14% below the level prior to the 1999 violence. Teacher to pupil ratios are very low—between 66 and 85 students per teacher.

16. The *sucos* study showed that 80% of *sucos* reported that almost all children under 10 attended school and 48% of those at school were girls. MDG statistics for 2001 show that net primary enrolments were 73%, and the proportion of children starting grade 1 who reach grade 5 is 47%. Fifty percent of 15–24 year olds were literate. The ratio of girls to boys was 91% overall—128% in primary school and 58% in senior secondary school. No data exists regarding tertiary-level gender ratios.

³ Human Immunodeficiency virus.

⁴ World Health Organization Regional Office for South East Asia. 2004. *World Health Organization Country Cooperation Strategy 2004–2008*. New Delhi.

G. Other Services

17. According to the 2004 MDG report, 56% of the population had sustainable access to an improved water source. However, water delivered by rural supply systems is not tested, and the proportion delivering safe water is not known. The *sucos* study of 2001 found 7% of *aldeias* provided piped water to houses, and 34% had access to a public tap or pump.

18. Twenty percent of *aldeias* has access to electricity infrastructure (although power is not always available), which is 10% less than before the separation. The *sucos* study showed that most people live more than a 20-minute walk from a road usable by motorized vehicles and more than a 30-minute walk from a paved road.

PROJECT OUTPUTS

A. Detailed Project Outputs for WSSRP-I

Component	Planned Outputs	Actual Outputs
Component A: Water Supply and Sanitation Sector Management and Implementation Program		
<p>1. Establishment of a PMU in the United Nations Trust Administration for East Timor's (UNTAET) Water Supply and Sanitation Service (WSS)</p> <p>2. Planning for the sector: preparation of program implementation document (PID)</p>	<ul style="list-style-type: none"> • Effective PMU; close coordination with water supply and sanitation development partners, nongovernment organizations (NGOs), and communities by September 2000 • Detailed water supply and sanitation implementation plan for fiscal year 2003 completed by December 2000 • Indicative plan for subsequent 2 years and beyond completed by December 2000 	<ul style="list-style-type: none"> • PMU established; regular contacts maintained with the East Timor NGO Forum and local and international NGOs and development partners involved in the sector. • Project implementation document completed and approved by UNTAET • Sector management and investment framework completed and approved by UNTAET
Component B. Capacity Building and Institutional Development Program		
<p>Short-term support (i.e., priority activities in support of ongoing rehabilitation projects, as identified by WSS and the PID)</p>	<ul style="list-style-type: none"> • Repairs and fit-out to priority WSS buildings (workshops, stores, and generator buildings) in the main towns of each of 12 districts (excluding Dili) • Replacement of priority tools, equipment, and materials in the main towns of each of 12 districts (excluding Dili) • Replacement of priority information technology and communications equipment in the main towns of each of 12 districts (excluding Dili) • Capacity-building technical assistance packages 	<ul style="list-style-type: none"> • WSS offices and stores constructed and renovated in all 12 district towns • PMU and WSS district offices provided with priority tools and vehicles, equipment, and materials • Radio equipment procured and installed in 12 WSS district offices • The following technical assistance was provided: <ul style="list-style-type: none"> (i) Water supply design (documentation and contract supervision) (ii) information, education and communication (IEC) program developed and implemented (iii) Policy, legislation, and guidelines prepared (iv) Water supply tariff study completed

Component	Planned Outputs	Actual Outputs
		<ul style="list-style-type: none"> (v) Water supply and sanitation technical standards and guidelines completed (vi) Solid waste management plan for Dili completed (vii) Water quality improvement plan completed
Component C: Water Supply and Sanitation Implementation Program		
<p>1. Quick response facility (comprising provision of resources sufficient to respond rapidly to urgent town and village water supply and sanitation repair and rehabilitation needs of Timor-Leste)</p> <p>2. Dili water supply repair and rehabilitation program (comprising provision of resources to repair and rehabilitate Dili water distribution network to complement upstream rehabilitation being undertaken by the Japanese Government)</p>	<ul style="list-style-type: none"> • Emergency repairs and rehabilitation to Dili and district water supply systems through the following: <ul style="list-style-type: none"> (i) Rehabilitated or new bores in Dili and Suai (ii) River crossing pipe realignment (Viqueque) (iii) Solid waste removal from damaged buildings and drains in Dili (iv) Generator sets and fuel tanks for standby power for WSS bores (v) Miscellaneous design and construction services • Repairs and rehabilitation to Dili water supply system through provision of the following: <ul style="list-style-type: none"> (i) Design and construction of Bidau Santana system; (ii) Design and construction of transmission main to Becora, including Bekosi bore (iii) Pipe replacement in Motael area and zone isolation (iv) Hera system rehabilitation (v) IEC programs to support WSS field activities. 	<ul style="list-style-type: none"> • Three bores completed in Dili and two in Suai; one Suai bore abandoned • Completed • Completed by Sanitation Section of WSS • Four generator sets with associated equipment supplied to WSS • Subcontract for drafting services awarded and work completed • Works in Bidau Santana completed • Works for Bekosi bore and Becora completed • Works deferred because the Japanese project design for the Dili Water Supply Project was delayed • Works completed • IEC programs implemented by Bia Hula, a local NGO

B. Detailed Project Outputs for Phase II

Components	Planned Outputs	Actual Outputs
Component A: Water Supply and Sanitation Implementation Program		
<p>1. Quick response facility (comprising provision of resources sufficient to respond rapidly to urgent town and village WSS repair and rehabilitation needs of Timor-Leste)</p> <p>2. Dili water supply rehabilitation and improvement (comprising provision of resources to repair and rehabilitate Dili water distribution network to complement upstream rehabilitation being undertaken by the Japanese Government)</p>	<ul style="list-style-type: none"> • Quick-response design services • Quick-response construction contracts • Quick-response equipment procurement • Miscellaneous capacity building • Repairs and rehabilitation to Dili water supply system through provision of the following: <ul style="list-style-type: none"> (i) Small contracts for miscellaneous work (ii) Design and documentation for small miscellaneous small-scale work (iii) Equipment procurement for distribution system repair and improvement (iv) Construction of priority distribution system augmentation (v) Installation of meters for large consumers (vi) NGO contracts for IEC programs, community mapping, and problem solving 	<ul style="list-style-type: none"> • Minor design tasks completed; drafting services contracted • Electrical supply upgrading in Dili pumping stations; fencing and associated land acquisition works completed in Dili; small-scale drain cleaning and manhole rehabilitation in Dili; improvement of water supply infrastructure in Dili's Zone 10 • Pump procured for Bidau Santana borehole; materials procured for upgrading of water treatment plant for Dili and Oecussi. • Nine university students given on-the-job training to assist PMU and WSS staff members. • Detailed implementation program prepared and agreed upon with WSS • Additional development work for Comorro F bore; Comorro G well completed • Design for distribution mains improvement in Beto (Zone 1); design and documentation for warehouse at Dili distribution depot • Equipment for Comorro F and G boreholes procured • None • Contract for installation of 224 water meters for nondomestic services procured • IEC programs completed

Components	Planned Outputs	Actual Outputs
<p>3. District town (public) water supply repair and rehabilitation (focusing on district capitals and priority works consistent with agreed master plans)</p>	<ul style="list-style-type: none"> (vii) Installation of gauging stations on surface water sources and rehabilitation of meteorological stations • Repairs and rehabilitation to district towns (public) water supply system through provision of the following: <ul style="list-style-type: none"> (i) Contracts for town water supply repair and rehabilitation (ii) Small contracts for miscellaneous work (iii) Design and documentation for small and miscellaneous small-scale work (iv) Equipment procurement for distribution system repair and improvement (v) NGO contracts for priority rehabilitation and repair and associated IEC programs (vi) Installation of gauging stations on surface water sources 	<ul style="list-style-type: none"> • Deleted and made part of integrated water resources management technical assistance • Water supply systems works in Gleno, Liquica, Manliana, Oecussi, Suai, and Viqueque completed • Intake improvement works at principal surface water sources for Gleno and Maliana completed • Installation of new reservoir for Gleno completed • Rehabilitation of the transmission main and construction of new reservoir for Maliana completed • Rehabilitation of part of Viqueque transmission main completed • Construction of new intake, transmission main, reservoir, and distribution main in Lauhata (Liquica) completed • Construction of new transmission main and installation of new pump in Suai completed • Construction of new bore, reservoir, distribution mains, and transmission main in Oecussi completed • Installation of gauging stations deleted, to be part of ADB technical assistance on integrated water resources management
<p>4. Community water supply and sanitation rehabilitation and improvement (focusing on periurban, subdistrict, and rural WSS systems through NGOs and/or support from other bilateral programs)</p>	<ul style="list-style-type: none"> • Rehabilitation and improvement of community water supply and sanitation using community participatory approaches, integrated with hygiene promotions programs commencing in September 2001, through the following: <ul style="list-style-type: none"> (i) Design and technical services for priority systems 	<ul style="list-style-type: none"> • All 15 contracts awarded to 10 local and six international NGOs were completed

Components	Planned Outputs	Actual Outputs
	<ul style="list-style-type: none"> (ii) Equipment procurement for priority works (iii) NGO contracts for priority rehabilitation and improvement through community participatory processes (iv) Support and funding for extensions to approved projects and programs through other bilateral and/or multilateral programs 	
Component B: Capacity-Building and Institutional Development Program		
<p>1. Capacity building and technical assistance (comprising training and capacity building for system development and implementation, water resources, aid coordination, and environmental monitoring)</p>	<ul style="list-style-type: none"> • Training programs for WSS staff members • Management and financial information systems • Water resources study • Tariff and billing system implementation 	<ul style="list-style-type: none"> • Activities added at inception report stage include the following: <ul style="list-style-type: none"> (i) Development of hydraulic network software (ii) Four East Timorese given on-the-job computer-aided design training (iii) Seven senior WSS officers training in Bangkok, Perth, and Sydney on water supply technology and pricing and asset management and water resources sustainability (iv) Twelve WSS local staff members received various training in English, bookkeeping, accounting, and participation in the 3rd International Water Association Congress in Melbourne • Deleted and assistance to be provided through the Ministry of Finance • Deleted, became part of ADB Integrated Water Resources Management technical assistance • Tariff study completed; billing system developed and installed (still to be used)

Components	Planned Outputs	Actual Outputs
<p>2. Information technology and communications equipment (comprising computer equipment, including local area network and communications system for WSS, including the PMU office)</p>	<ul style="list-style-type: none"> • Asset management system implementation • Major projects, donor and NGO coordination • Environmental monitoring and evaluation • Local area network for WSS, including the PMU • Reliable Internet and e-mail access by March 2002 	<ul style="list-style-type: none"> • Completed • Five-year water and sanitation development plan prepared • Deleted and implemented under ADB TA for Integrated Water Resources Management • WSS and the PMU implemented and improved the local area network, back-up facility, Internet access, and advanced photocopying capability within the PMU; capacity to provide services to WSS in the future made available • Internet and e-mail access provided
Component C: Project Management Unit		
<p>Establishment of the PMU within WSS</p>	<ul style="list-style-type: none"> • Effective PMU; close coordination with WSS, development partners, NGOs, and communities by August 2001 	<ul style="list-style-type: none"> • PMU established; close coordination maintained

COMMUNITY-MANAGED WATER SUPPLY AND SANITATION

A. The Development Model

1. The second phase of the Water Supply and Sanitation Rehabilitation Project (WSSRP) provided for the rehabilitation and improvement of community water supply and sanitation using community participatory approaches and integrated hygiene promotion programs in seven districts. The 16 subprojects were based on a well-established model of community participation, planning, and management. The principles include (i) participation of users in integrated management; (ii) involvement of women; (iii) implementation of a demand responsive approach, with the community placed at the center of development; and (iv) creation of users associations. This model was developed to provide water on a self-help basis to the rural poor. It has been an internationally endorsed approach since 1992.

2. This appendix examines why this model did not work as envisaged in any of the Asian Development Bank (ADB) projects, or in other development partner projects seen or discussed with development agencies working in the water and sanitation sector in Timor-Leste.

B. Institutional Background

3. Timor-Leste is administratively divided into 13 districts, 67 subdistricts, 498 *sucos* (local government administrative areas within subdistricts), and 2,336 *aldeias* (villages or hamlets). A new system of local government has yet to be established. At present, each *suco* and *aldeia* is at least nominally represented by a chief, who may or may not be a traditional leader. The Government is commencing a program of local elections to allow each *suco* and *aldeia* to choose its chief democratically.

4. In the Timor-Leste context, communities may be defined as clusters of households headed by men related by a common ancestor,¹ which cooperate with one another, and share some resources (e.g., land). Such communities are found at the *aldeia* level in rural areas.² A *suco* is not a community in this sense, although the population is likely to speak the same language (24 local languages, excluding Portuguese, Bahasa Indonesia, and English, are spoken as main languages in Timor-Leste).³ People from the same *suco* will also share customs and cultural values and are likely to use the same primary school and health center, if these services are provided in the subdistrict. Larger communities, such as church congregations, also exist in *sucos*. In some *sucos*, local organizations established by the resistance movement are reportedly still well established, and in some, development committees created under the Community Empowerment Program (para. 5) are said to be still active.

5. ADB provided technical assistance to prepare the Community Empowerment Program in 2000.⁴ The program aimed to create a bottom-up system of local government based on

¹ Based on discussions with nongovernment organization staff members and David Hicks. 2004. *Tetun Ghosts and Kin*. Long Grove: Waveland Press Inc. Second Edition.

² Urban and periurban *aldeias* are often not communities, as they tend to comprise numbers of unrelated households.

³ The Tetun language is spoken as a main language by 19.5 *sucos* and is used as a *lingua franca*. It has been declared the national language, along with Portuguese.

⁴ ADB. 2000. *Community Empowerment Program*. Manila.

development councils to promote rural and community development and rehabilitation.⁵ ADB provided training for district and subdistrict facilitators; assisted in the establishment of district, subdistrict, and village councils to receive and disburse community development projects; provided grants to subdistrict councils; and provided assistance to refine the design and plans for longer-term assistance. Its context was the governance vacuum after the violence and destruction that followed the referendum for independence in 1999. Development councils were created in about 450 *sucos* (each *aldeia* elected one male and one female representative) using participatory approaches to plan local development priorities and project requests. Preexisting leaders were excluded from the council formation process. The United Nations Transition Administration for East Timor did not want to formally establish local government before an elected national government was in place (which was not until May 2002).

6. Implementation of the program was contracted to Oxfam Australia in 2000 and immediately staffed by a team of 200 national facilitators. The Community Empowerment Program drew on the Trust Fund for East Timor to fund hundreds of projects related to infrastructure, training, communication, and poverty alleviation and microeconomic and social development projects, including 412 water, irrigation and sanitation projects. Most were of low technical quality. By 2003, the Water Supply and Sanitation Service (WSS) was already being requested to rehabilitate many of them.⁶ The Community Empowerment Program was subject to competing goals, and the first goal (rapid disbursement of funds) defeated the second (institution and capacity building). Eventually the development councils came to be seen mainly as a mechanism for obtaining project funds.⁷

7. Under the Government's current policy, urban water supply systems, including those of district centers and some subdistrict centers, are the responsibility of WSS. In rural areas, where the great majority of the population lives, water supply is the responsibility of individual households or the community. The secretary of state for water and electricity summarized the philosophical approach to community-based water supply and sanitation management when he told the Operations Evaluation Mission (OEM) that "the Government's desire is to eliminate a passive mentality at the local level and encourage the people to take responsibility for their own well-being."

8. Details on the provision of services are provided in tables A3.1 and A3.2.

⁵ Community Empowerment Program development councils were to have five key functions: (i) preparing and executing village development plans that addressed local needs in agriculture, health care, education, communications, and income generation, as determined by the community; (ii) producing village codes of conduct and resolving disputes; (iii) managing village funds; (iv) relaying the priority development needs that could not be met through local efforts to subdistricts and districts; and (v) strengthening participation and democratic practices. Conroy, John, et. al. 2004. *An Independent Evaluation of Community Empowerment and Local Governance Project*. Conflict Prevention and Reconstruction Working Papers, no. 14. Washington, DC: World Bank.

⁶ Smith, Alan. 2003. Community Water Supply and Sanitation in East Timor. *Development Bulletin* 63 (November).

⁷ Chuong N.P., and J.F. Bauer. June 2004. *Interim Evaluation of the Trust Fund for East Timor Annex 6: Case Study. Rural Development*. European Commission.

Table A3.1: Services to *Aldeias* in 2001

Main Source of Service	Number of <i>Aldeia</i>	Proportion of <i>Aldeia</i> (%)
Electricity Available	472	20
Piped Water to the House	168	7
Piped Water to a Public Tap	595	25
Public Pump	117	5
Other	1,454	62

Source: ADB, United Nations Development Program, United Nations Trust Administration for East Timor, and World Bank. *The 2001 Survey of Sucos. Initial Analysis and Implications for Poverty Reduction.*

Table A3.2: Distribution of Population by Main Source of Drinking Water and Selected Strata in 2002
(%)

Source of Water	Strata					Total
	Urban	Major Urban	Rural	Highland	Lowland	
Piped Water	37.4	45.4	25.5	27.2	29.4	28.7
Own Connection	25.9	30.6	8.1	10.3	13.6	12.6
Public Tap	12.4	14.7	17.4	16.9	15.8	16.1
Pump	25.1	34.0	5.9	0.4	15.7	10.6
Protected Well	5.1	3.5	5.7	2.9	6.8	5.5
Protected Spring	4.9	1.7	13.5	18.1	8.1	11.4
Rainwater	0.0	0.0	0.0	0.0	0.0	0.0
Unprotected Well	9.9	1.1	8.6	4.1	11.3	8.9
Unprotected Spring	10.3	7.8	34.7	41.1	22.5	28.6
Pond, River, or Stream	3.5	1.7	6.1	6.1	5.1	5.4
Other	2.8	4.7	0.0	0.0	1.1	0.7

Source: United Nations Children's Fund. 2002. *Multiple Indicator Cluster Survey.*

C. Community-Based Projects

9. In WSSRP Phase I and II, the project management unit (PMU) contracted international nongovernment organizations (NGOs)⁸ and national NGOs⁹ to construct or rehabilitate 16 community-managed water supply projects in Aileu, Baucau, Covalima, Liquica, Los Palos, Manatutu, and Oecussi districts. In most instances, the contracted international NGO subcontracted the work to a national NGO partner. The selection process followed criteria established by the Government. The PMU employed two nationals, a community coordinator and a technical coordinator, to monitor and supervise NGO contractors. In the first phase, national NGOs were contracted to provide information, education, and communication programs in project locations. However, no reports are available on these activities.

10. The WSSRP provided national NGOs with computers, scanners, printers, and motorcycles. The contactors were required to obtain community backing for the projects using

⁸ Action Contre la Faim, International Rescue Committee, Oxfam Australia, Oxfam International, and World Vision.

⁹ Bia Hula, Centro Purpuh-Ira Timor, Formosa, FORTE, Hamoris Timor Oan, and ProBem.

participatory methods. They were required to actively promote the involvement of women. The communities (usually comprising several *aldeias* and sometimes more than one *suco*) were required to provide the labor and materials, such as stones and gravel, and take part in every aspect of construction, and to learn how the system worked.

11. The communities were also given a short period (usually 4 days) of formal training, using participatory methods, on community organization and management, technical management of the system, sanitation and hygiene, and health promotion. The communities subsequently met to elect office bearers for a community water users committee (WUC) and to choose one or two people as WUC technicians. The community agreed to set a monthly fee to be levied on each household and paid to the treasurer of the WUC. The elected WUC leader was given custody of a set of tools for repairing the system.

12. When the system was formally handed over to the community, the WUC signed a contract guaranteeing that they would manage the system and that if they did not meet this obligation, the system would become the property of the Government.¹⁰

13. The technology selected for the water supply projects was gravity fed systems in which water is collected from a spring or stream into a reservoir or head tank and fed through a pipeline to a distributor tank, which supplies smaller public tanks with taps, or public tap stands, depending on the scale of the system. In some areas, the water source is below the villages and a pump is required to take the water up to the reservoir or head tank.

14. Traditionally, people in the highlands, mainly women and children, collected and carried water from springs or rivers in the bottom of valleys. Since the 1980s, the Indonesian Government or development partners had provided various highland areas and some lowland areas with gravity systems. On technical and cost-effectiveness grounds, gravity fed systems appear ideal for a large proportion of the population who live in the interior on mountain ridge tops. Ground water suitable for wells is rarely found in these areas, but wells are widely used by populations in urban and rural lowlands (Table A3.2).

15. A few projects included latrine construction, if the communities wanted them and funds permitted, and if a way of allocating funds could be agreed upon.¹¹ In some cases, latrines were promised as a follow-up, but no funds were made available for this purpose. (No complete report providing an overview on the final inputs of each subproject was made, possibly because the two supervisors could not write a report in English.) The subprojects that included a latrine component used double pit construction, with a cement cover topped by a small square water tank and a latrine plate inset beside it. Beneficiaries provided labor and local materials.

D. Inspection of Completed Projects

16. The OEM asked ADB's Special Office for Timor-Leste to select a range of completed government- and community-managed projects representing a range of success levels. As a control, the OEM also visited three Australian Agency for International Development projects, of

¹⁰ NGO contractors were required to provide a full report including "as built" technical specifications, copies of the WUC agreements, and photographs of implementation.

¹¹ The national NGO ProBem was given a contract, exclusive of water supply, for construction of a total of 126 latrines in four villages in different districts, (two in Baucau, one in Liquica, and one in Lospalo). Apparently, these villages had WUCs and therefore a water supply. The selection criteria are not explained in the report. The international NGO (International Rescue Committee) provided 100 household latrines and three latrines at the local church, along with rehabilitation of two water supply systems in Bobemeto subdistrict, in Oecussi district.

which two were completed in approximately the same period. The visits were made in September, late in the dry season (although in some years the dry season lasts until December or January). The WSSRP's former community coordinator and the technical coordinator participated in the OEM. In their opinion, of the WSSRP's 16 completed community-based subprojects, 10 were successfully functioning (delivering water) and 6 were not.

17. The OEM's criteria of success were (i) that the system supplies water to all users all year, including the dry season, and (ii) that the system was being managed and maintained by the WUC according to the principles agreed among the users during implementation. Table A3.3 provides a summary of projects visited.

Table A3.3: Summary of Community-Managed Water and Sanitation Projects Inspected

1. Asian Development Bank-Managed Trust Fund for East Timor Projects

Project Location	Date Completed	Beneficiaries	Observations
Aileu District, Kabasi Fatin	March 2003	1,073 people in one periurban <i>aldeia</i> .	No water was found at the lower end of the system. A second pipe was installed for private connections, some using the water for agriculture and brick making. Six public taps were disconnected by the local chief, who removed sections of pipe "for its protection." According to the chief, some tap stands were broken, and one was destroyed, (reportedly by an angry person who could get no water). The <i>aldeia</i> is dominated by migrant settlers from other localities who outnumber the original inhabitants. ^a The water users committee (WUC) is not operational, no fees were collected.
Aileu District, Manucassa <i>Suco</i> and Fahisoe <i>Suco</i>	February 2003	Manucassa had 41 households but now has about 140, due to returning refugees. No data is available for Fahisoe.	The water source belonging to Manucassa is shared with Fahisoe. The supply of water is now insufficient due to the increased population and demand in Manucassa, so there is a water dispute between the two <i>sucos</i> . The taps on one public tank and the main tank distributor valve were vandalized. The WUC is inactive, and no fees are collected.
Liquica District, Tibar <i>Suco</i>	February 2003	Five <i>aldeia</i> (3,360 people).	The water is insufficient for users at the bottom of the system because the users at the top take most of the water, for agricultural and other uses. Taps were broken and illegal hosepipe connections were made to all the public tanks. A distributor valve to regulate the supply was removed. The WUC was inactive, and no fees were paid. Continuing deforestation of the watershed was pointed out as a public concern.
Liquica District, Ulmera <i>Suco</i>	April 2003	Four <i>aldeia</i> .	The water is sufficient for all users. The lower public tank was surrounded by stagnant water. Of five taps on the tank, four were removed and the pipes were attached to hoses supplying private connections, for agricultural and other uses. No fees were collected. No WUC exists.

^a Two other ADB and Trust Fund for East Timor subcontracted projects in the locality at Lausi and Sarin *aldeias* were reported to be in the same state.

Project Location	Date Completed	Beneficiaries	Observations
Oecussi District, Bobemeto	February 2003	One <i>aldeia</i> (60 households).	The water supply is adequate to supply all users, but one of the two tap stands provided is located rather inaccessibly located in a private compound. Several better-off households take water by hosepipe from both tap stands to their houses and adjacent vegetable plots and animal pens. Poorer households carry water in plastic bottles and buckets. One tap is missing. The WUC is inactive, and no water fees are collected.
Oecussi District, Bobemeto	February 2003	Two <i>aldeia</i> (90 households)	Three new distribution pipes were connected to the storage tank since handover. Two pipes are shared illegal private connections and one is linked to a defunct pipeline and tank that was not completed by the development partner when the water source was denied by the owners. A group of households took this initiative themselves. Water is being used for cement block making by one household. Taps are missing. The WUC is inactive, and no fees are collected.
Oecussi District, Bobemeto, Oebaha	July 2003	Two <i>aldeia</i> (300 households).	One public tank with four taps is empty and abandoned. The tank had water for only 1 month. The water level in the second tank is very low. People using the second tank have tried to link the reservoir to another water source, resulting in slightly saline water without an increased supply. The WUC is inactive, and no fees are collected.

2. Australian Agency for International Development Projects

Location	Date Completed	Beneficiaries	Observations
Maliana District, Tapu Multi Village Project	Due in early 2005	Eight <i>sucos</i> and 2 subdistricts (1,200 households).	A large gravity system is still under construction. Seven nongovernment organizations have contracts for community preparation and technical implementation. Management arrangements will include heads of <i>sucos</i> and representatives of the church and district governments. The project includes a latrine component. The Australian Agency for International Development has no evidence of sustainable results from the new approach, but it expects that the long lead and preparation time will result in sustainable management.
Maliana District, Oeleo	Early 2003	Seventy-five households.	Very low water pressure was noted (i.e., a trickle of water). All public tanks have missing taps, illegal connections, and use disputes, as some households are taking water for agriculture. No agreement was reached on who is responsible for repairing the broken pipe. No functioning WUC exists, and no fees are collected.
Maliana District, Atabar, Migir	Rehabilitated in 2003	No data.	Water is abundant. Taps are missing. Many hosepipe connections off public tanks are visible. No WUC exists. Fees are collected by subscription when a need to fix something is perceived.

Source: Operations Evaluation Mission estimates.

18. As Table A3.3 indicates, none of the systems inspected met the OEM's criteria of success. The problems summarized in the following list were all familiar to staff of international and national NGOs and other agencies. The reasons for poor performance are as follows:

- (i) WUCs are not active, and fees are not collected. After less than 2 years, none of the subprojects have functioning WUCs, and none collect fees regularly. People interviewed said they did not pay fees because they were never asked to pay; because "nothing needed fixing"; because they did not trust the WUC to manage the fund; because water was not being shared fairly; or because some other users refused to pay, so they, too, stopped paying.
- (ii) Women were not involved in management. Women are the primary users but are not members of the WUCs, as far as could be ascertained. NGO representatives said cultural norms prevent women from speaking in front of men at public meetings, so they are not nominated or elected, although efforts were made to get women to attend public meetings for planning the subprojects. Women working for national NGOs did not take part in fieldwork, according to their male colleagues, because it was socially unacceptable for women to travel around without their husbands. The national NGO staff mentioned that women are less educated than men and are less likely than men to be literate or speak the *lingua franca* (Tetun), which was used in community meetings. National NGOs have much to learn about gender and development. No effort seems to have been made to find alternative ways to involve women, such as by establishing women's advisory committees.
- (iii) Designs of some public tanks and tap stands did not provide an adequate area of concrete surface for washing clothes, thus women had to take the water to their houses, rather than washing clothes at the water source.
- (iv) Systems were subject to disputes between users, sometimes within the *aldeia*, between households, and sometimes between *aldeias* or *sucos*. Typically, the source of dispute is that the people living near the top of the system used most of the water. On those systems supplying water (at least to the top tanks or tap stands), individual households were using hosepipes, sometimes connected to metal pipes, to take water from the public tank for household and agricultural use. Better-off households were taking more water than poor households (who could not afford to buy hosepipes).
- (v) Disputes sometimes resulted in acts of vandalism. In two cases seen where there was a dispute between two groups of users over water use, the regulatory valve (that could be used to allow upper and lower users to take turns in using the water) was removed. In one case, those deprived of water smashed tap stands or taps and removed pipes.¹²
- (vi) Water, where it was present, was being wasted. Taps were often seen running and unattended. There was also inadequate wastewater drainage. Large puddles or ponds of stagnant water adjacent to houses provided breeding grounds for mosquitoes and encouraged the spread of malaria, filariasis, dengue fever, and

¹² The OEM inspected the Dili periurban Bidau Santana and Bidau Masar systems and observed vandalized meters and illegal connections and heard reports of disputes over use of public tanks.

- encephalitis. Pigs wallowed in the wastewater, and their manure attracted flies, a further health hazard.
- (vii) Taps were typically missing. Most taps were of poor quality and broke easily. In two observed cases, the taps were vandalized. In remote areas, purchasing taps was difficult, and good quality taps were hard to obtain and more expensive (if obtainable at all).
 - (viii) Amateur repairs were common. For example, strips of rubber inner tube were used to decrease leaks in pipes and taps, and wire was used to hold damaged taps in place. In one case, individuals tried to connect the head tank to another source, which resulted in reduced water quality without an increased supply. These repairs were not done by WUCs but by users of the taps, on their own initiative.
 - (ix) Water sources were underestimated. In one case, the two public tanks were empty or almost empty because the source was inadequate in the dry season.
 - (x) Sanitation was only minimally addressed in the projects. Improved latrines were supplied in four locations. Budgets did not permit everyone to be provided with the materials for an improved latrine in areas where everyone wanted one, and deciding how to allocate a limited number was difficult. In some locations, people were not very interested in making or improving latrines.

E. Sustainability Issues

19. Representatives of NGOs specializing in water and sanitation drew the OEM's attention to the problem of sustainability and community management before the field visits. They said the weakness of ADB subprojects was the short time allowed for training and preparing communities to manage the systems. They described rural people as "passive" and having a "dependent mentality." They saw Timor-Leste culture and low levels of education as a significant obstacle to establishing good community management arrangements. They believed that if NGOs were funded to provide a longer period of social preparation and training, and to follow up on projects after handover, the problem could be overcome.

20. The former community coordinator, now an national NGO leader, analyzed the problematic outcomes of the WSSRP's community subprojects as follows:

- (i) A range of technical options should be offered to communities with discussions of the advantages and disadvantages of each.
- (ii) Projects should comprise a package of water supply, wastewater disposal, and latrines and disease prevention education.
- (iii) Time allowed for community training should be longer.
- (iv) PMUs should employ more local staff to supervise the national NGO contractors.
- (v) NGOs from Timor-Leste need more training by international NGOs or international consultants on technical and social aspects.
- (vi) WUCs should be provided with 3–6 months of follow-up services after handover.

21. While the OEM shares these conclusions, there is no evidence that a longer period of preparation or limited follow-up would have led to greater sustainability. Most analyses of sustainability problems are based on the assumption that the cause is lack of education, awareness, understanding of democracy, and inability to organize for collective betterment. This assumption encourages development partners and NGOs to propose solutions in terms of more time and resources for preparation and follow-up.

22. An example of this perspective is presented in a recent ADB published discussion of sustainability issues.¹³ The authors refer to the internationally accepted model in which poor communities are expected to become actively involved in water-related development projects by managing and maintaining water infrastructure and systems and contributing to water projects' capital costs, as well as operation and maintenance costs. They note that the approach is enshrined in the four Dublin Principles agreed at an international conference on water and environment and endorsed at the Rio Earth Summit, as well as every subsequent declaration on water since 1992.

23. The authors acknowledge that people need to be organized in the first place to articulate their needs and represent them to governments or NGOs, and this may not be the case when projects are designed. The authors note that local officials or leaders may not be effective and that prior information is needed to enable people to make rational choices. They point out that communities are expected to recognize the needs of all members, irrespective of internal divisions of status and gender. They also criticize projects designed on the assumption that new institutions can be established after only a few days training, and with no impact assessment or studies of local beliefs, practices, and institutions. They conclude with a call for more efforts toward community empowerment, bottom-up capacity building, and participatory planning. They advocate studies that will "win the argument for community participation, management and empowerment" by gathering the evidence of successful community involvement, for stronger emphasis on community development approaches, and for more pilot projects of community participation in water resource management.

24. However, the evidence from Timor-Leste and elsewhere¹⁴ suggests that the model may be the problem, rather than the water users. The model and the literature on the subject argues that if sufficient time and correct methods are devoted to training and raising awareness, people will voluntarily obey collectively agreed rules to equitably share, pay for, and take care of common property without sanctions to enforce the rules. As detailed previously, this was not demonstrated in any of the projects inspected. Maintenance was makeshift and management nonexistent. Where the water supply was abundant, taps were left running and water was taken for agricultural as well as household needs. Wastewater formed stagnant pools for disease vectors. Where water was in short supply, disputes broke out between users sharing the system, particularly if those users at the top were taking most of the water.

25. The OEM discussed these issues with users and local leaders in different project locations in Timor-Leste, as well as with national NGO staff. These discussions revealed that

¹³ Calaguas, Belinda, and Jennifer Francis. 2004. Community Capacity Building and Empowerment: Wasting Resources or Ensuring Sustainability? *Water and Poverty: The Themes*. ADB Water for All Series, No 4.A. Collection of thematic papers prepared for the 3rd World Water Forum, Kyoto, 16–23 March, 2003.

¹⁴ Schoeffel, Penelope. 1997. *Myths of Community Management: Governance, Sustainability, and Rural Development*. In State, Society, and Governance in Melanesia Seminar series, Research School of Asian and Pacific Studies, Australian National University, No.12. Schoeffel, Penelope. 1995. Cultural and Institutional Issues in the Appraisal of Projects in Developing Countries: South Pacific Water Resources. In *Project Appraisal* 10:3 pp. 155–161.

people were not unaware but were unwilling to act collectively because of a lack of effective incentives and sanctions. In some areas, where electricity was provided, people pointed out that those who use electricity must pay or be disconnected. Little incentive exists for users to conserve water or share it fairly. Sanctioning individuals with disconnection of water is not possible, without punishing all the users of a public tank or tap stand. Those who do not pay, or who use more than their fair share to the detriment of others, can not be refused access. Nor can they be effectively sanctioned in other ways. WUCs and other local leaders do not have that kind of authority over people. In three cases, attempts by WUCs to regulate the supply of water to upper and lower public tanks, using the valves provided for this purpose on the system, resulted in individuals removing or destroying the valves to prevent rationing.

26. The technical adviser for water supply and sanitation projects funded by a bilateral development partner said that on her projects the problem of fair distribution of water has proved intractable on low-cost systems, even in small-town water supply systems providing household connections. As an experiment, she is planning to bury a tank at the upper part of a system and equip it with a hand pump on top, so water can only be drawn proportionately to the effort invested in drawing it. The Australian Agency for International Development's Community Water and Sanitation Project team leader suggested that the solution is to divide the storage tanks into units. Each should hold water proportionate to the minimum requirements (30 liters per day per person) of the population of each *aldeia*, (with allowance for population growth over the life of the system, which is expected to be 25 years). Each *aldeia* should be connected to its section of the tank with a separate pipe. However, this solution does not solve the problem of households that take more than their fair share. Each tank could be metered and the cost of the water divided among the users, as is intended for public tanks and tap stands in the urban systems. This will also be hard to enforce unless the users all share the water equitably.

27. Further, these solutions also involve imposing a technical solution on a community or at least persuading the members to accept it, contrary to the bottom-up participatory planning method so widely advocated.

28. The OEM discussions with NGOs exposed other problems in balancing participation and efficacy.¹⁵ In some lowland locations, groups of related households would be best served by encouraging them to dig wells in safe locations¹⁶ and providing them with well rings and winches.¹⁷ If groundwater is present, wells are a more sustainable option than piped gravity systems. Wells are also more sustainable than hand pumps that may breakdown and, if the well is sealed, prevent access. However, they are a good option where well water may be polluted. However, given a choice, people will always prefer the option of piped water and will press strongly for it over other options. Household connections are likely to be most preferred, and if this is not an option due to cost, those who do not live near a public tank or tap will increase their access to water by illegally attaching a hosepipe to it, if they can afford to buy one.

¹⁵ See: Mosse, David. 2002. *People's Knowledge, Participation, and Patronage: Operations and Representation in Rural Development*. Cooke, Bill, and Uma Kothari, eds. 2002. *Participation: the New Tyranny?* London: Zed Books.

¹⁶ Wells must be located away from latrines, animal pens, and graves, to ensure that groundwater is not contaminated.

¹⁷ The United Nations Children's Fund uses this approach, assisting village entrepreneurs in making the cement fixtures. This approach includes wells, water storage jars, and pour flush latrines in its package of assistance for improved water and sanitation. However, in discussions with the OEM, United Nations Children's Fund staff reported a success rate of only about a 50–60% in Timor-Leste. Lack of technical supervision was raised as a sustainability issue by some NGOs.

29. Furthermore, if participatory planning approaches are strictly followed, sanitation is likely to be given very low priority, even though it is a significant public health issue in Timor-Leste. If people are unaccustomed to using latrines, they will be unlikely to give high priority to investing their own time and resources in making them.¹⁸ When latrines are given to people who do not perceive the need for them, they may be unused or used for other purposes than those intended (e.g., for storage or as laundry or cooking areas).

30. Community-managed systems have been widely implemented by development partners in Timor-Leste because government services for water and sanitation extend only to the district level and staff numbers, technical capacity, and operating funds are insufficient to enable district offices of the WSS to manage the many small gravity systems in the district. The district offices have problems enough managing the town water supply systems they are responsible for (Table A3.4). Further, a system of local government is still being developed.

31. Forty one percent of the Timor-Leste population is living below the poverty line, and most of the poor live in rural areas. In effect, the current policy allocates responsibility for providing water supply and sanitation services to the rural population (76% in 2001) to development partners, NGOs, and communities.

32. An ADB impact evaluation study¹⁹ found that community participation was lacking in the community-level projects evaluated and asserts that “enhanced community participation in decision-making and project development activities tends to increase the likelihood of project sustainability. In addition, people who actively participate in construction are much more likely to be able to operate, maintain and repair facilities when this is required.” However, the only evidence for this assertion cited in the study is community-level water systems in the Philippines, where sustainability is said to be associated with good leadership and preexisting multipurpose institutions, such as *barangay* associations.

¹⁸ In Manucassa, Aileu district, an international NGO provided materials and technical supervision for construction of about 50 household-owned latrines after the WSSRP’s water supply system was handed over to the WUC. The latrines were well maintained and apparently used. The women interviewed in this subproject area seemed to have good knowledge of hygienic practices, causes of common illnesses, etc.

¹⁹ ADB. 2002. *Impact Evaluation Study on Water Supply and Sanitation Projects in Selected Developing Member Countries*. Manila.

Table A3.4: Summary of Town Water Supply Systems Visited

Project Title and Location	Completed	Beneficiaries	Observations
Dili-Bidau Santana and Bidau Masar	2002	Reported to serve 283 households, but the number appeared considerably greater. Some households contain up to 15 people.	Drainage is poor around private and public tap stands (risk of malaria and dengue). An increase in population at the end of the system has led to rationing in the dry season and conflict over use and maintenance of public tanks.
Oecussi Water Supply Rehabilitation	March 2003	No data.	Water was not supplied because the pump was not operating, due to a lack of fuel and possible breakdown. The design and construction of public tanks was of a high quality.
Maliana Water Supply System	May 2003	The number of people connected is 12,742 (758 households). The remainder use eight tap stands.	The reservoir is almost empty, and the water is being drawn by the landowners in the dry season. Also, the main pipe was damaged by a landslide and only roughly repaired.

Source: Operations Evaluation Mission estimates.

33. The OEM concluded that piped water supply systems are unlikely to be sustainable in any circumstances in Timor-Leste without an established and qualified institution that is empowered by the state to manage them; carry out repairs and maintenance, collect user fees, and impose regulations on use and sanctions on abuse.



Bore in Dili



Storage Tank in Dili



Public Tap Stand in Dili Area
Showing Leaking Taps, Poor
Drainage, and Animal Presence



Illegal Connection Running from
Public Tap, Dili Area



Community-Managed Scheme
Missing Taps, No Water



Community-Managed Scheme
Missing Taps, Illegal Connection



Tool Set Provided to
Water User Committee



Community-Managed Scheme
Illegal Connection from Overflow Pipe



Community-Managed Scheme
Control Valve Removed



Community-Managed Scheme
Non-Functioning Tank and Tap Stand.
Pipe Cut to Access Water



Water Supply and Sanitation Service Staff and Office, Oecussi



Bore at Oecussi



Pump and Motor at Oecussi Bore



Empty Storage Tank, Oecussi



Tap Stand, Oecussi Showing Box with Meter, No Water



Empty Storage Tank, Maliana



Leaking Storage Tank, Maliana



Community-Managed Scheme
"Home" Repair



Community-Managed Scheme
Functioning Tap Stand



Community-Managed Scheme
Missing Tap



Community-Managed Scheme
Vandalized Tap Stand



Community-Managed Scheme
Pipes Removed

CONSULTANT SERVICES PROVIDED

A. Water Supply and Sanitation Rehabilitation Project (Phase I)

- | | | | |
|-----|-----------------------|---|--|
| 1. | Mr. Alan Smith | - | Team Leader/Community Development Adviser |
| 2. | Michael Ponsonby | - | Team Leader, WS&S (Water Supply and Sanitation) Planner, and Project Design Specialist |
| 3. | Margaret Joan Mockler | - | Community Development and Health Promotion Specialist |
| 4. | Geoffrey Howard Drew | - | Water Supply and Sanitation Technologist |
| 5. | Gary Mclay | - | Institutional Development and Capacity Building Specialist |
| 6. | Richard Rettke | - | Technical Adviser (Water Supply System Planning and Design) |
| 7. | Graham Port | - | Chief Technical Adviser |
| 8. | Joao Gomes | - | Project Manager (local) |
| 9. | Nancy Bergau | - | Information, Education and Communication Consultant |
| 10. | Peter Gerard Dinan | - | Consultant, Planner |
| 11. | Peter Benson | - | Technical Adviser (Water Legislation Specialist) |
| 12. | Graeme Barr | - | Consultant |
| 13. | Stephen Kirby | - | Consultant |
| 14. | Ed Gruber | - | Consultant |
| 15. | Geoff Mills | - | Technical Adviser for Oecussi Water Supply Treatment Plant |
| 16. | Nilo Chito Sun | - | Technical Adviser (Water Institution Economics Specialist) |
| 17. | Graham Costin | - | Team Leader (replacement) |

B. Water Supply and Sanitation Rehabilitation Project (Phase II)

- | | | | |
|-----|-------------------------|---|---|
| 1. | Graham Costin | - | Team Leader/Sector Capacity Development Adviser |
| 2. | Malcolm Ehrlich | - | Chief Technical Adviser |
| 3. | Peter Benson | - | Consultant for Policy, Legislation, and Regulation |
| 4. | Mike Ponsonby | - | Consultant for Support for Water Supply and Sanitation Service (WSS) |
| 5. | Alvaro Abrantes | - | Project Manager (local) |
| 6. | Ilidio Ximenes da Costa | - | Community Development Officer |
| 7. | Steve Kirby | - | Technical Adviser for Oecussi Water Supply System |
| 8. | Bernadi Sitompul | - | Technical Adviser (Planning, Design, and Construction Supervision for Maliana Water Supply) |
| 9. | Ed Gruber | - | Technical Adviser for Design and Rehabilitation of Viqueque |
| 10. | David Biggart | - | Technical Adviser (Planning, Design, and Construction Supervision for Suai Transmission) |
| 11. | Than Soe | - | Technical Adviser (Liquica) |
| 12. | Rudi Adian Riyanto | - | Technical Adviser (Gleno) |
| 13. | Isabel Belo | - | Finance Officer (local) |
| 14. | Robert Dewhirst | - | Community Water Supply and Sanitation Specialist |

**Management Response on the
Project Performance Audit Report on the
Water Supply and Sanitation Rehabilitation Projects
Phase I and Phase II in Timor-Leste
(Grants 8185/8189-TIM[TF])**

On 2 February 2005, the Director General, Operations Evaluation Department, received the following response from the Management.

Management found the report well prepared and useful in highlighting key issues and lessons learned from the Water Supply and Sanitation (WSS) Rehabilitation Projects, Phases I and II.

The PPAR found weaknesses in the community management model used in rural areas and villages. We agree that relying on community management of piped water supply systems carries high sustainability risks, particularly where (i) there are few resources and little time for community "preparation", (ii) government and non-government institutions are unable to back-up community management groups, and (iii) post-conflict conditions have disturbed and weakened community cohesion and institutions. It is also evident that social relations in rural Timor-Leste are more household and kin-based than community-based *per se*. These realities mean that (i) simple and traditional WSS technologies based on households and clusters will frequently be more appropriate than piped systems even though planned benefits such as quantity of water and time savings may be less, and (ii) bilateral donors with sufficient grant funds for mainstreaming community "preparation" have an advantage in supporting community-based rural WSS. The Australian Agency for International Development (AusAID) is leading rural WSS in Timor-Leste.

The PPAR found that the projects achieved little in sanitation—in fact, may have worsened local environmental sanitation because of poor drainage from public standpipes and washing areas. Global experience shows that the demand characteristics of sanitation and hygiene are different from those of water supply and that it does not necessarily work just to include a sanitation component in a water supply project. But two things are clear: (i) the local environmental sanitation impacts of water supply must be adequately mitigated in the design and implementation of a water supply project, that is, through the provision of adequate drainage and disposal from public water points; and (ii) stand-alone sanitation and hygiene interventions should parallel water supply projects in order to fully capture the health benefits of improving access to clean water supplies. We agree with the PPAR "Future Directions" recommendation to focus on supporting urban WSS and capacity building. ADB does not have a comparative advantage in supporting rural WSS in Timor-Leste, whereas bilateral donors do have and AusAID is already taking the lead. Strong urban WSS agency would eventually be able to expand services to districts and sub-district towns and could support community management groups. The PPAR recommendation is consistent with PARD's early programming discussions with the Government for the new ADF development grants. ADB investments in urban WSS would be conditional upon the Government's performance and commitment to key sector reforms on governance and tariffs, and would entail capacity building commensurate with capital investments and agreed performance benchmarks.

Regarding the PPAR recommendation to establish a short-term fund to contract national NGOs to support existing community-managed systems, this needs to be put to the Government and AusAID as an option to be considered. Likewise, ADB could recommend the preparation of a national strategy to improve rural sanitation. Meanwhile, ADB could focus on urban WSS in Timor-Leste should this be agreed by ADB and the Government. We support the recommendation to help the Government catalogue and post on a WSS website relevant reports, plans and other information produced by the projects.