TIMOR-LESTE:
COMMUNITY-MANAGED WATER SUPPLY AND SANITATION

A Case Study from the 2004 Project Performance Audit Report for Water Supply and Sanitation Rehabilitation Projects Phase I (Grant 8185-TIM[TF]) and Phase II (Grant 8189-TIM[TF]) in Timor-Leste

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Penelope Schoeffel

Operations Evaluation Department

Asian Development Bank

Abbreviations

ADB	Asian Development Bank
NGO	nongovernment organization
OEM	Operations Evaluation Mission
PMU	project management unit
WSS	Water Supply and Sanitation Service
WSSRP	Water Supply and Sanitation Rehabilitation Project
WUC	water users committee

Glossary

aldeia	village or hamlet
suco	local government administrative area within subdistrict

Contents

I. 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 case study 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.

II. 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 development councils

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[1] Based on discussions with nongovernment organization staff members and David Hicks. 2004. *Tetum 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.

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 1 and 2.

Table 1: Services to *Aldeias* in 2001

Main Source of Service	Number of *Aldeia*	Proportion of *Aldeia* (%)
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: Asian Development Bank, 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*.

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

	Strata					
Source of Water	Urban	Major Urban	Rural	Highland	Lowland	Total
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.*

III. Community-Based Projects

9. In WSSRP Phase I and II, the project management unit (PMU) contracted international nongovernment organizations (NGOs)[8] and national NGOs[9] 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 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.

Water Supply and Sanitation Service Staff and Office, Oecussi

11. The communities were also given a short period (usually 4 days) of formal training, using participatory methods, on community organization

[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.

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.


Community-Managed Scheme Functioning Tap Stand

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]


Tool Set Provided to Water User Committee

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.


Pump and Motor at Oecussi Bore

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 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

[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.

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.

IV. 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 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 3 provides a summary of projects visited.

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

Project Location	Date Completed	Beneficiaries	Observations
1. Asian Development Bank-Managed Trust Fund for East Timor Projects			
Aileu District, Kabasi Fatin	March 2003	1,073 people in one periurban *aldeia*.	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 *aldeia* 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 *Suco* and Fahisoe *Suco*	February 2003	Manucassa had 41 households but now has about 140, due to returning refugees. No	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 *sucos*. The taps on one public tank and the

Project Location	Date Completed	Beneficiaries	Observations
		data is available for Fahisoe.	main tank distributor valve were vandalized. The WUC is inactive, and no fees are collected.
Liquica District, Tibar *Suco*	February 2003	Five *aldeia* (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 *Suco*	April 2003	Four *aldeia*.	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.
Oecussi District, Bobemeto	February 2003	One *aldeia* (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 *aldeia* (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 *aldeia* (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

Project Location	Date Completed	Beneficiaries	Observations
			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			
Maliana District, Tapu Multi Village Project	Due in early 2005	Eight *sucos* 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 sucos 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.

[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.
Source: Operations Evaluation Mission estimates.

18. As Table 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.

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


Community-Managed Scheme Missing Taps, No Water

(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.


Community-Managed Scheme Illegal Connection from Overflow Pipe

(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 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).

Community-Managed Scheme Vandalized Tap Stand

(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.

V. 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.

[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.

20. The former community coordinator, now a 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.


Community-Managed Scheme Missing Tap


Community-Managed Scheme "Home" Repair


Community-Managed Scheme Control Valve Removed

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.

[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.

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.

Community-Managed Scheme Missing Taps, Illegal Connection

Community-Managed Scheme Pipes Removed

24. However, the evidence from Timor-Leste and elsewhere[14] 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 people were not

[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.

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.

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

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.

Illegal Connection Running from Public Tap, Dili Area

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.

Tap Stand, Oecussi Showing Box with Meter, No Water

Leaking Storage Tank, Maliana

Empty Storage Tank, Oecussi

Empty Storage Tank, Maliana

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 locations[16] 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 4). Further, a system of local government is still being developed.

Table 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.

[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.

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.


Bore at Oecussi

32. An ADB impact evaluation study[19] 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.

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. ■


Storage Tank in Dili


Bore in Dili

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