

ASIAN DEVELOPMENT BANK

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SPECIAL EVALUATION STUDY

ON

ASIAN DEVELOPMENT BANK CAPACITY BUILDING ASSISTANCE

FOR MANAGING WATER SUPPLY AND SANITATION

TO

REPUBLIC OF THE FIJI ISLANDS, KIRIBATI, PAPUA NEW GUINEA, AND

REPUBLIC OF THE MARSHALL ISLANDS

March 2003

ABBREVIATIONS

ADB	–	Asian Development Bank
BOD	–	Board of Directors
KPI	–	key performance indicator
MD	–	managing director
MIS	–	management information system
MWSC	–	Majuro Water and Sewerage Company
NRW	–	nonrevenue water
PDMC	–	Pacific developing member country
PNG	–	Papua New Guinea
PNGWB	–	Papua New Guinea Waterboard
PUB	–	Public Utilities Board (Kiribati)
PWD	–	Public Works Department (Fiji Islands)
RMI	–	Republic of the Marshall Islands
SES	–	special evaluation study
TA	–	technical assistance
WSS	–	Water and Sewerage Section (Fiji Islands)

NOTES

In this report, "\$" refers to US dollars.

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EXECUTIVE SUMMARY

Water is essential for human survival and progress. In the Pacific, countries face a range of unique challenges resulting from the islands' size, topography, geology, location, and climate. The impact of these factors varies across and within countries, making generalizations difficult, although they result in similar resource concerns: water shortages, water and land use issues, and constraints on financial and human resources. To address some of these issues, the Asian Development Bank (ADB) assisted a number of its Pacific developing member countries in the area of water supply and sanitation. This special evaluation study reviews ADB's experience in four countries—Fiji Islands, Kiribati, Papua New Guinea (PNG), and the Republic of the Marshall Islands (RMI)—to assess how ADB support affected institutional performance and to draw lessons for ongoing and future assistance.

Based on their characteristics, the four countries can be grouped into those with volcanic and larger landmasses and those consisting of coralline small islands. The Fiji Islands and PNG belong to the first group and have ground, surface, and rainwater sources that are largely abundant, although varying by season and geographical location. Kiribati and the RMI have very limited water resources and are heavily dependent on rainfall. Populations in all four countries are spread over large territories, much of them oceanic, but are relatively small in each location. Urban areas tend to be densely populated. The variability of water resource availability and the relatively small size and isolation of communities pose water supply challenges that are unique to Pacific countries.

Piped water supply systems exist in all four countries—albeit limited to urban locations—that consist of ground or surface water extraction and rainwater collection systems, water treatment plants, transmission and distribution networks, and household connections, including water tanks. Most of these systems were built in the 1960s with assistance from various sources and with some investment into upgrades and repairs since then. Water utilities vary in size, status, and responsibility ranging from sections of a government department in the Fiji Islands responsible for water supply and sanitation in rural and urban areas, to government-owned entities in Kiribati and the RMI providing water supply and sanitation services on the main islands of South Tarawa (Kiribati) and Majuro (the RMI), to a commercial statutory authority in charge of water supply and sanitation in provincial and district towns in PNG.

Between 1975 and 2002, ADB assistance for water supply and sanitation to these four countries amounted to about \$66 million for seven loans and about \$7 million for 15 technical assistance (TA) grants. While assistance was conceived separately for each country (there was no regional water supply and sanitation program), the loan and TA projects adopted similar goals: improving the operational and financial performance of water utilities, enabling them to provide better services to their clients and to become less dependent on government subsidies. These goals were to be achieved through a combination of institutional changes and investments in infrastructure, depending on the needs of the utility and on other funding priorities in the ADB program. In the Fiji Islands, two TAs were provided to develop a corporatization plan for the utility, while Kiribati, PNG, and the RMI received loans and TAs to overcome infrastructure bottlenecks and to introduce institutional changes. Together they formed the capacity-building assistance reviewed in this evaluation.

Capacity building was an explicit goal for each of the water utilities, but a strategy for doing this had not been developed for any of them. Institutional diagnostics to identify problems had been carried out to varying degrees but without a uniform approach to ensure analytical

standards. None of the diagnostics included detailed assessments of different stakeholders and how they would be affected by institutional change, determining supporters of and opponents to institutional change and the need for encouraging commitment. The design of capacity-building assistance was not specified in loan or TA documents, but was to be determined with the help of TA-financed consultants. The tasks of consultants included advisory services, line functions, system design, and staff development, with a bias toward the first two functions. Staff development received little explicit mention in most cases, and no training needs assessments were carried out. Instead, it was assumed that skills and knowledge could be imparted through on-the-job training and workshops, regardless of staff qualifications and complexity of tasks to be learned. In addition, terms of reference of consultants emphasized technical tasks over educational or teaching assignments that are required for capacity building, thus creating an incentive to get the technical job done rather than to build capacities for doing so. This bias was further compounded by time limitations. The resultant reports included numerous recommendations for institutional change, but they were not necessarily structured in a time-bound series of events or with identified parties that should take action. Implementation was largely left to the water utilities.

Changes in institutional performance addressed three levels: (i) corporate governance and management, including assistance to strengthen the board of directors (BOD), executive management, and operations management; (ii) operational performance, including output capacity, number of connections, coverage, service reliability, per capita consumption, nonrevenue water, and the ratio of utility staff per 1,000 connections; and (iii) financial indicators, including connection charges, tariffs, cost-recovery ratio, metering, billing, and collection ratios.

In the Fiji Islands, recommendations for corporatization were implemented, but short-lived. The water utility remains part of the government machinery, with no degree of independent decision making and with complete dependence on financial support from the central Government. Performance indicators have not improved, and in some cases have deteriorated.

In Kiribati, ADB assistance was effective in setting up a functioning BOD and is supporting executive and operations management through the development of a management information system (MIS). The MIS is not yet fully operational and its effectiveness will depend on the consolidation of all parallel information systems and reliance of management on the MIS. While a corporate plan was drawn up for the utility, capacities for corporate planning and plan implementation were not developed. Operational indicators have not changed, as infrastructure improvements are yet to be completed. As a result, financial performance has also not improved, since the utility is reluctant to suggest tariff increases without commensurate service improvements.

In PNG, no assistance was provided to the BOD, which is credited for the independence of the water utility. BOD members, however, depend on suggestions and decisions of executive management with little ability to exercise oversight functions. Assistance to strengthen the utility's corporate planning was provided prior to the appointment of staff in a corporate planning function, thus it is difficult to attribute current capacities to ADB assistance. Corporate goals, while being communicated to the operational level, are not fully implemented at that level. An MIS, developed under ADB assistance, has become defunct since the utility started developing a new centralized and more complex system. Operational indicators improved in one of the two project areas, where total output, total connections, and coverage increased, although they have not yet reached the expected levels since the project was completed only recently. The

other location suffered from the effects of a major volcanic eruption, requiring the relocation of the project site to an adjacent location where new infrastructure had to be built. Therefore, operational indicators have not yet regained the baseline situation, which is understandable in light of the calamity. Financial indicators for the utility as a whole are positive with total cost recovery at 110% of operation and maintenance costs and depreciation. However, the water supply systems in the project areas are unprofitable, recovering around 60–70% of their costs, requiring greater commitment to cost-cutting measures and increases in revenue generation and collection.

In the RMI, the composition of the BOD was changed in line with ADB recommendations. However, the BOD is ineffective, meeting irregularly if at all, and is dependent on the executive management for decisions. Recommendations for improving the strategic management of the utility have not been implemented, the executive management has not accepted commercial objectives suggested under the loan project, and significant changes to its physical scope have been reported. Operational indicators deteriorated over the baseline situation: output, the number of household connections, and coverage declined, and water supply continues to be available for on average only 3.5 hours per day. Water losses remain high, and financial performance is below expectations.

Overall, ADB assistance was relevant. Corporatization of two of the water utilities was attained, but did not translate into improved service delivery and commercialization of operations. Weaknesses in consultants' terms of reference reduced the effectiveness and possibly the efficiency of assistance. Results in the Fiji Islands and the RMI were below expectations and are unlikely to be sustained. In Kiribati, project completion needs to be awaited to assess sustainability, while in PNG the sustainability of project investments will depend on the utility's ability to apply corporate goals at the operational level.

The projects provided valuable lessons: (i) setting up BODs with the right composition was a good first step, but needs to be complemented with training for board members to fulfill requisite functions; (ii) performance-based principles were introduced to the utilities, generating the required data, but more needs to be done to ensure that data are actually used in decision making and that they are acted upon when performance falls short of targets; (iii) efforts to change operational procedures can be effective only if the utility—its management and staff—takes full ownership of necessary changes; and (iv) all stakeholders need to support corporatization plans to build politically acceptable solutions, increase transparency, and ensure sustained implementation of institutional changes.

For the future, it is important that ADB assistance spells out the purpose of corporatization (i.e., service improvements, greater independence and accountability, efficient management of valuable water resources) to ensure that these objectives are not replaced by a mechanistic exercise to change ownership structures. Functions of BODs should be spelled out, and further assistance is needed for executive management in areas of demand management, commercial operations, and performance-based management.

ADB's capacity-building approach needs to change. The institution undergoing change needs to be fully committed and systematic institutional diagnostics should be undertaken jointly before a decision is made on the areas and direction of change. A medium-term strategy for capacity building should be developed, providing the framework for continuous assistance with interim milestones (targets to be attained through individual TAs). Terms of reference of consultants need to be changed to give greater emphasis to the capacity-building role.

I. BACKGROUND

A. Challenges

1. The importance of water for human survival and progress is well recognized. A series of international meetings has been held over the past decades to raise awareness and discuss solutions to water issues. The challenge of managing water resources is directly linked to poverty reduction. Recognizing this link and the magnitude of the task, the Asian Development Bank (ADB) adopted a comprehensive water strategy in 2001.¹ In the Pacific, countries face a unique set of challenges resulting from the islands' size, topography, geology, location, and climate. The impact of these factors varies across and within countries, making generalizations difficult. However, Pacific developing member countries (PDMCs) of ADB share a similar set of resource management concerns: water shortages, water and land use issues, and constraints on financial and human resources. The following sections provide an overview of the country parameters of water utilities in, and ADB assistance to, four PDMCs that were selected for this special evaluation study (SES), namely the Fiji Islands, Kiribati, Papua New Guinea (PNG), and Republic of the Marshall Islands (RMI).

1. Country Parameters

2. All four PDMCs consist of groups of islands that are spread over large areas in the Pacific. Among them, PNG has the largest landmass, followed by the Fiji Islands. The main islands of both of these countries are volcanic in origin, providing them with ground, surface, and rainwater, albeit with large seasonal and geographical variability. In the Fiji Islands, the majority of the population lives on the two main islands, with the size of urban centers ranging from around 168,000 people in Suva, the capital, to 31,000 in Nadi. The outer islands have much smaller communities. In PNG 85% of the population lives in rural areas. Port Moresby, the capital, is the largest city with around 250,000 inhabitants, followed by Lae with around 78,000 people. None of the other towns has a population larger than 30,000 people. Kiribati and the RMI, by contrast, are small low-lying coralline islands with limited water resources in the form of water lenses² and variable rainfalls. Both countries have a high concentration of people on the main islands, and small communities in remote outer islands. In both urban and rural locations, the total population size is relatively small. All four PDMCs face similar challenges: (i) populations spread over vast areas, in some locations with high population densities, but generally small communities; (ii) high variability of water resource availability, seasonally and/or geographically; and (iii) difficult terrain.

2. Water Utilities

3. Piped water supply systems exist in all four PDMCs, although concentrated in the capitals or larger urban centers. In more remote locations, communities depend on less formal arrangements, using whatever water source is available. The piped water supply systems consist of ground or surface water extraction and rainwater collection, depending on available water sources, water treatment plants, transmission and distribution networks, and household

¹ ADB. 2001. *Water for All: The Water Policy of the Asian Development Bank*. Manila.

² Groundwater lenses are located 0.5 to 2 meters below the surface of coral sand islands. The equilibrium between fresh, brackish, and seawater is delicate: over-extraction results in replacement of freshwater with seawater, which seeps into the lens through the porous coral ground, first turning the lens brackish until it becomes entirely saline. After a natural, but long, period of freshwater replenishment (through rainfall) the freshwater lens may regenerate. Another risk of contamination exists during heavy storms, if high waves wash over the low-lying islands. The porous ground is also highly susceptible to other contaminations, i.e., sanitation and other effluents.

connections, including water tanks. Individual rainwater and wellwater collection of households complements the piped water supply systems. Most of the physical infrastructure in all of the four PDMCs was built in the 1960s with assistance from various sources.

4. The water utilities vary in responsibility, size, and status. For instance, the level of independence of the water utilities ranges from being a ministry department in the Fiji Islands to an independent statutory authority in PNG. Three of the four utilities have an independent board of directors (BOD), and all utilities but one are dependent on subsidies from central government. Some key features of the utilities are summarized in Table 1.

Table 1: Key Features of Water Utilities

	Fiji Islands	Kiribati	PNG	RMI
Name	Public Works Department (PWD), through its Water and Sewerage Section (WSS) and operational divisions	Public Utilities Board (PUB)	PNG Waterboard (PNGWB)	Majuro Water and Sewerage Company (MWSC)
Status	Government department	Government-owned corporation	Commercial statutory authority	Government-owned company
Financial independence	Funded from central government budget	Subsidized from central government budget	Required to be self-financing and generate 10% rate of return on investment	Subsidized from central government budget
Oversight/corporate governance	PWD (operations) and Ministry of Finance (budget)	Board of directors	Board of directors	Board of directors
Executive management	Director	Chief executive officer	Managing director; five executive directors (administration, finance, corporate relations, customer relations, and technical services)	General manager
Executive management reports to:	Deputy secretary (planning and design), PWD	Board of directors	Board of directors	Board of directors
Operations management	Principal engineer (capital), and divisional engineers (for two regional operations)	Manager for water supply and sanitation	Three regional directors; branch managers in each town	Manager; administrative manager
Responsibility	Water supply and sanitation	Electricity, water supply, and sanitation	Water supply and sanitation	Water supply and sanitation
	Capital city, towns, minor schemes, and rural water supply	South Tarawa	Provincial and district towns	Majuro

Source: Special Evaluation Study.

5. In the Fiji Islands, the Public Works Department (PWD) is responsible for the operation and maintenance of water supply services in 12 cities and towns and 27 minor metered schemes, and sanitation systems including treatment facilities in 7 cities and town areas. It also supports rural water supply and borehole subsidy schemes. Water and sewerage services are provided through a Water and Sewerage Section (WSS), under a deputy secretary, planning

and design (responsible for planning, design, and major project construction), and a deputy secretary, operations (various operational divisions and sections). In PNG, the Waterboard (PNGWB) provides water supply and sanitation services to provincial and district towns, excluding rural water supply schemes (under the responsibility of the Ministry of Health), effectively charged with serving 10% of the total population. Since 1993, PNGWB has managed the water supply systems of 11 out of 20 provincial towns and 3 district centers, and sanitation systems in 7 of the 11 towns. The operations of water utilities in the two other PDMCs are concentrated in the capitals. In Kiribati, water supply and sanitation services are managed by the Water Section of the Public Utilities Board (PUB) and focus on South Tarawa, while in the capital of RMI the management and provision of water supply and sanitation services falls under the mandate of the Majuro Water and Sewerage Company (MWSC).

3. Asian Development Bank Assistance

6. Since 1975, ADB has provided 7 loans for \$65.7 million and 15 technical assistance (TA) grants for \$6.6 million for water supply and sanitation in the four PDMCs. Of these projects, 5 loans and 13 TAs have been completed. Further assistance is planned. Table 2 provides an overview.

Table 2: Asian Development Bank Assistance for Water Supply and Sanitation

	Fiji Islands	Kiribati	PNG	RMI
LOANS				
Approved (1975–2002)				
Number	–	1	4	2
Amount (\$ million)	–	10.2	45.6	9.9
% of total lending	–	67.6	5.2	12.7
Pipeline (2003–2005)				
Number	1	–	–	1
Amount (\$ million)	35.5	–	–	6.0
% of total lending	20.2	–	–	100.0
Project Status				
Ongoing	–	1	1	–
Completed	–	–	3	2
TECHNICAL ASSISTANCE				
Approved (1975–2002)				
Number	3	4	7	2
Amount (\$ million)	1.5	2.0	2.8	0.4
% of total TA approvals	7.4	19.7	6.3	2.2
Pipeline (2003–2005)				
Number	1	–	1	1
Amount (\$ million)	0.7	–	0.3	0.4
% of total TA approvals	12.1	–	3.6	21.6
Project Status				
Ongoing	–	2	–	–
Completed	3	2	6	2

– Nil.

Note: Some of these loans and TAs have been for urban development project that may have included water supply and sanitation components.

Source: Asian Development Bank.

7. ADB assistance to water supply and sanitation in the four PDMCs was conceived for each country independently, although all of them adopted similar goals, namely improving the operational and financial performance of water utilities, enabling them to provide better services to their clients, and becoming less dependent on government subsidies. These goals were to be

achieved through a combination of institutional changes and investments in infrastructure, depending on the needs of the individual utility and on other funding priorities in the ADB program. The specific objectives of assistance to the four PDMCs were as follows.

8. In the Fiji Islands, the objective of ADB's advisory TA³ was to assist in establishing WSS as a wholly government-owned limited liability company with clear commercial objectives, operational autonomy, and accountability. The TA included support for (i) institutional development, (ii) a legal and financial framework, and (iii) financial accounting and management reporting. A subsequent small-scale TA⁴ focused on legal issues that had not been completed under the advisory TA. In 1998, a project preparatory TA⁵ was approved; the associated loan is under preparation and is scheduled for approval in 2003.

9. In Kiribati, ADB's first TA⁶ aimed to develop a corporatization plan for PUB to introduce commercial principles and enhance its autonomy. The TA was followed by a loan⁷ and two associated TAs⁸ that aimed to "(i) implement institutional reforms in the management of the public utilities and environmental resources, (ii) improve the quality and availability of safe drinking water, (iii) rehabilitate and expand sewerage and sanitation systems, and (iv) promote hygiene and sanitation through better solid waste management." The loan project and one of the TAs are ongoing.

10. In PNG, ADB has assisted the water supply and sanitation sector since 1975,⁹ including several sector reviews¹⁰ and institutional studies.¹¹ ADB's Third Urban Water Supply project¹² aimed "to enhance living standards, support urban development, and improve environmental sanitation for the residents of Madang, Rabaul as well as communities close to Rabaul through the provision of improved and additional water supply." The loan, approved in 1992, was closed in 2002. Attached to this loan was an advisory TA¹³ for strengthening PNGWB's operational and financial management capacities with a focus on corporate planning and management,

³ TA 2621-FIJ: *Corporatization of the Water and Sewerage Section of the Ministry of Public Works*, for \$600,000, approved on 30 July 1996.

⁴ TA 3170-FIJ: *Implementation of Corporatization of Water Supply and Sewage Services*, for \$147,000, approved on 15 March 1999.

⁵ TA 3055-FIJ: *Suva-Nausori Water Supply and Sewage Project*, for \$800,000, approved on 18 August 1998.

⁶ TA 2811-KIR: *Corporatization Plan for the Public Utilities Board*, for \$100,000, approved on 17 June 1997.

⁷ Loan 1648-KIR(SF): *Sanitation, Public Health, and Environment Improvement Project*, for \$10.2 million, approved on 8 December 1998.

⁸ TA 3108-KIR: *Management and Financial Advisory Services for the Public Utilities Board*, for \$1,200,000, approved on 8 December 1998, and TA 3109-KIR: *Community Development and Participatory Development*, for \$300,000, approved on 8 December 1998.

⁹ TA 179-PNG: *Water Supply Project*, for \$165,000, approved on 11 November 1975, 278-PNG(SF): *Water Supply Project*, for \$13.5 million, approved on 11 November 1976, and 346-PNG(SF): *Second Water Supply Project*, for \$5.4 million, approved on 25 July 1978. The PNGWB did not exist at the time these projects were approved, and thus they were not included in the SES.

¹⁰ Sector reviews were undertaken in 1985, 1989, and 1994: TA 736-PNG: *Water Supply and Sewerage Systems Review*, for \$200,000, approved on 28 December 1985, TA 1257-PNG: *Urban Sector Profile*, for \$100,000, approved on 18 December 1989, and TA 2196-PNG: *Water Supply and Sanitation Sector Study*, for \$390,000, approved on 2 November 1994.

¹¹ *Papua New Guinea: Water Supply and Sewerage Systems Review, Institutional Study*, TA 736-PNG, Final Report, January 1987, and institutional reviews undertaken under project preparatory TA 1347-PNG: *Third Urban Water Supply Project*, for \$587,000, approved on 10 December 1990, and TA 3173-PNG: *Provincial Towns Water Supply and Sanitation*, for \$908,000, approved on 23 March 1999.

¹² Loan 1211-PNG: *Third Urban Water Supply Project*, for \$11.3 million, approved on 15 December 1992.

¹³ TA 1803-PNG: *Institutional Strengthening of the Water Board*, for \$400,000, approved on 15 December 1992.

including a management information system (MIS), nonrevenue water (NRW)¹⁴ management, and design of water and sewerage tariffs.

11. In the RMI, ADB assistance started in 1992 with a small-scale project preparatory TA,¹⁵ followed by a TA loan¹⁶ to prepare the investment project and an institutional strengthening TA, both approved in 1993.¹⁷ The investment loan was approved in 1995¹⁸ and closed in 2002. ADB's assistance aimed at improving (i) MWSC's financial planning and management, including a strategy for cost recovery, (ii) the legislative framework and accountability of MWSC, (iii) the reliability and availability of freshwater supply in Majuro, viz. the operations of MWSC, (iv) the conservation of freshwater sources, and (v) the seawater supply system, which feeds sanitation facilities.

12. At the regional level, a TA¹⁹ was implemented to assist in benchmarking of water utilities, and to help the Pacific Water Association assist its member utilities in performance improvement.

B. Evaluation

1. Purpose and Scope

13. The objective of this SES is to review how ADB's capacity building assistance affected the institutional performance of water utilities. The SES concentrated on projects that assisted main water utilities and piped water supply systems²⁰ in the four PDMCs, which were chosen as they implemented a number of projects for water supply and sanitation between 1975 and 2002. Many of the projects were only recently completed, a fact that was taken into account when assessing their outcomes.²¹ The SES assessed loans and TAs with explicit capacity-building objectives: two TAs in the Fiji Islands (footnotes 3 and 4), one loan and two TAs in Kiribati (footnotes 6 and 7, and the first TA mentioned in footnote 8), one loan and one TA each in PNG (footnotes 12 and 13) and in the RMI (footnotes 17 and 18). Appendix 1 provides details of these loans and TAs. The SES reviewed reports of other associated projects (such as sector studies or project preparatory work) in as much as they provided details useful to assess capacity building.

2. Defining Capacity Building

14. While ADB does not have a formal definition of capacity building, the SES adopted the understanding that it included assistance to develop the physical and institutional capabilities of water utilities and the environment in which they operate. This concept reflects the notion that (i) institutions operate within a context, and thus capacity building needs to be broader than just

¹⁴ Nonrevenue water measures water produced minus water billed. It includes both technical losses (leakages) and nontechnical losses (illegal connections, meter errors, incomplete billings, etc.).

¹⁵ TA 1775-RMI: *Majuro Water Supply Project*, for \$100,000, approved on 30 October 1992.

¹⁶ Loan 1250(SF)-RMI: *Majuro Water Supply Project (TA Loan)*, for \$700,000, approved on 9 September 1993.

¹⁷ TA 1946-RMI: *Institutional Strengthening of the Majuro Water and Sewer Company*, for \$250,000, approved on 9 September 1993.

¹⁸ Loan 1389(SF)-RMI: *Majuro Water Supply and Sanitation Project*, for \$9.2 million, approved on 29 September 1995.

¹⁹ TA 5883-REG: *Performance Benchmarking for Pacific Power and Water Utilities*, for \$250,000, approved on 22 December 1999.

²⁰ In a number of PDMCs, assistance to water supply and sanitation is part of other projects that focus on rural development or health sector improvements. These were not included in the SES.

²¹ Project completion reports exist for the first two loans to PNG (footnote 9), which are not included in the SES. For the other projects, no completion report exists for the TA loan to the RMI that was closed in 1997 (footnote 16) and two others that were closed in 2002 (footnotes 12 and 18) with completion reports scheduled for 2003.

focused on an institution in isolation; (ii) to attain improvements in operational performance, changes are often required across various dimensions of an institution, i.e., management, human and financial resources, organizational and physical elements, etc.; and (iii) that institutional reform as well as training are subset activities of a broader capacity-building process. Institutional reform involves changes to structure and operating procedures, normally aimed at increasing efficiency and improving institutional performance.

3. Methodology

15. The SES centers on performance indicators that had been targeted for improvements in the design of projects. A common set of indicators was developed for all four PDMCs and was used in discussions with staff of water utilities to observe changes in performance and to identify ADB's contributions thereto. The Operations Evaluation Mission²² reviewed project documentation, identified performance indicators, and carried out fieldwork between 30 October and 22 November 2002. Discussions were held with representatives from government, executing agencies, water utilities (including members of their respective BODs), communities, and project staff (counterparts, consultants, and ADB staff). Project sites were visited and facilities inspected, and a number of households were visited to collect feedback on end-user satisfaction with service delivery. The draft SES was circulated to stakeholders in recipient countries and within ADB. Their comments were incorporated in the final report.

16. The report is structured to first analyze the process of institutional change to assess how institutional problems were identified, processes designed, and changes implemented, followed by an assessment of changes in institutional performance in the four participating water utilities, and an overall assessment, lessons identified, and key issues for the future.

II. THE PROCESS

17. Capacity building was an explicit objective of the loans and TAs under review. While a series of loans and TAs were approved in each of the four PDMCs, a medium-term strategy for building capacities of water utilities was not articulated for any of them. Therefore, the combination, timing, and sequence of assistance (lending and TA) may have been derived from immediate needs of utilities or from the availability of funds and other priorities in country programs, rather than from strategic capacity-building choices.

A. Diagnostic: Identifying Problems

18. Project documentation discussed institutional problems to varying degrees depending on the amount of information collected during project preparation. There was no uniform approach to institutional diagnostics, whether they were carried out by ADB staff during project formulation or by consultants under advisory or project preparatory TA. For instance, loan documentation for PNG (footnote 12) included more details on institutional parameters than the more recent consultant report financed under the project preparatory TA for the Fiji Islands (footnote 5), which discussed institutional issues in a cursory manner, despite these having affected the sustainability of previous TAs (para. 32). In the RMI, institutional issues had been discussed in detail in annual reviews carried out under the Operations and Maintenance Improvement Program²³ prior to ADB's TA (footnote 17). The TA consultants summarized and complemented

²² Caroline D. Heider, Principal Evaluation Specialist (Team Leader), and Stephen Ramsey, International Consultant.

²³ This program is funded by the United States. It includes financing maintenance costs in some sectors. In the water supply and sanitation sector, assistance is limited to analyzing institutional issues and recommending how these should be overcome.

data provided in these annual reviews and developed an action plan for institutional reform, which was included in the subsequent ADB loan (footnote 18).

19. Documentation does not allow assessing the extent to which the governments and executing agencies were involved in identifying institutional problems, but it is assumed that counterparts raised institutional issues during project processing. Government plans for institutional change were summarized in project documentation to illustrate the relevance of ADB assistance to the process. However, none of the diagnostics included detailed assessments of different stakeholders affected by institutional reform. Such analysis should determine winners and losers, and thus identify individuals or institutions likely to support or block reforms. It would also assess the existing commitment to institutional change, or what is needed to encourage such commitment, if necessary.

B. Designing Assistance for Capacity Building

20. Project documents did not contain detailed plans for institutional reforms or capacity building, which were to be developed under TAs, except for the RMI where the investment loan (footnote 18) included an action plan for institutional change developed under the prior TA.

21. All projects used the services of consultants, who were to provide, among other things, on-the-job training. No external or long-term training was financed. To understand the role of consultants, the detailed terms of reference were analyzed by grouping the tasks under four functions: advisory (problem analysis and recommendations), line (undertaking tasks in place of staff), systems development, and staff development. The analysis shows a bias toward advisory and to some extent line functions, although in some instances the difference is blurred and tasks could be interpreted either way. The development of systems took a third level of importance, requiring consultants to develop new procedures or MIS and draft manuals. Staff development received little explicit mention in most cases, and no discussion took place of staffing issues, shortages of qualified staff, or staff retention at the water utility after training. No assessment of training needs or analysis of how these needs are best fulfilled was done for any of the projects. Instead, it was generally assumed that skills and knowledge could be imparted through on-the-job training and workshops, regardless of staff qualifications and complexity of tasks to be learned. For instance, performance-based management principles were embedded in the adoption of key performance indicators (KPIs), but little attention was given to developing competencies in using KPIs for management purposes, i.e., for taking necessary action when KPIs indicated shortcomings.

22. The structure and wording of terms of reference thus emphasized technical tasks over the more educational or teaching assignments that capacity building needs to entail. This situation automatically introduced a bias toward "getting the job done," as the yardstick for assessing consultants' performance, rather than developing capabilities of counterpart staff to do the same job without assistance. An attempt to engage staff more actively is being tried in Kiribati where the consultant developing the MIS under the institutional strengthening TA (footnote 8) works intermittently, requiring PUB staff to undertake specific tasks in the interim periods. In principle, this approach could be an effective way for building capacities, provided staff take initiative and engage in tasks to be done in the absence of the consultant, which reportedly is not always the case. Time allowed for attaining capacity-building goals was normally too short, creating a further incentive for consultants to get the technical job done rather than focusing on building local capacities, which invariably is more time-consuming.

23. Consultants' assignments resulted in reports with extensive recommendations, which sometimes, but not often, were structured and phased according to a rational sequence of events that should occur to effect institutional reform. A positive example was the action plan in the loan project for the RMI (footnote 18), where milestones were set for a gradual attainment of targets for KPIs. Otherwise, targets were defined in terms of operational and financial KPIs, but without specification of how soon they could be attained. Processes were not well defined for attaining institutional change, i.e., little if any detail was provided on how recommendations were to be put into practice. Recommendations were not addressed to specific actors, resulting in inertia as several stakeholders waited for another to take the first step.

C. Implementing Change

24. Less assistance was provided to actually affecting change. Outputs were produced more or less in line with expectations specified in loan and TA documents. On the institutional side, these included plans (corporatization, corporate planning, tariff revisions, etc.), operational procedures accompanied by some initial training to familiarize staff, and MIS. In terms of physical infrastructure, the projects in PNG and the RMI were implemented, albeit with changes in scope; in PNG, changes were caused by the volcanic eruption in Rabaul; in the RMI, modifications were due to disagreements of the managing director (MD) with the original project design. In Kiribati, project implementation is still under way. Appendix 1 includes details on the outputs produced under each project. The institutional reports included recommendations, but largely left putting proposals and procedures into action to the water utilities. This approach led to varying results. For instance, suggestions to enhance oversight functions resulted in establishing an effective BOD in Kiribati, while in the RMI the BOD exists nominally, but does not operate effectively.

25. In the Fiji Islands everything was prepared under the TA to institute changes: necessary documents (legislation, cabinet submissions, etc.) were drafted for the corporatization of WSS, which was implemented but short-lived. While the institutional framework had been worked out, insufficient consideration was given to political factors and too little time was allowed (and no assistance provided) for transforming the institutional culture of WSS or actually separating it from its host ministry. As a result, the corporatization took place on paper and was reversed during the political upheavals of 1999 and 2000.

26. In Kiribati, systems are being developed and staff trained on the job, although it remains to be seen how sustainable these efforts will be, and whether for instance the integrated MIS will replace the various other information systems (manual and on spreadsheet) that now operate in parallel. Oversight capacities seem to have been created with the establishment of the BOD, although its functioning depends on the capabilities of nominated members since no training was provided to build competencies. Similarly, the assignment of a resident financial manager in a line position has not resulted in the development of an intrinsic commercial direction to operations, since the consultant had departed by the time the position was filled with a permanent staff. The physical construction of capital works is expected to affect operational KPIs, although only few (if any) initiatives have started to develop competencies for improving operational performance.

27. In PNG, investments in infrastructure built the physical capacity to improve operations, but efforts to develop other systems to enhance financial and operational performance were less effective, because much of it remained in the realm of recommendations with little support for actual implementation. For instance, the MIS developed under ADB TA (footnote 13) was deemed insufficient under a subsequent TA (footnote 10), which recommended a sophisticated

MIS that, for the last 2 years, has been implemented with PNGWB's own funding (para. 37). The new MIS (not yet functional at the time of evaluation) promises to be a tool for performance-based management. Little, if any, assistance was provided to building branch level capacities to make use of such a tool, and until now decisions at that level have seemed driven by technical rather than commercial considerations (para. 39). The NRW program has not been put into practice and the workshop for meter calibration and repair is limited to operations in Lae.

28. In the RMI, the action plan for institutional reforms was included under assurances and as an appendix to the report and recommendation of the President on the investment loan (footnote 18), but without measures to ensure that the action plan be implemented. As a result, few of the proposed institutional measures have actually materialized as seen in the performance against KPI targets.

III. CHANGING INSTITUTIONAL PERFORMANCE

29. ADB assistance aimed to improve the institutional performance of water utilities in three areas: corporate governance and management, operations, and finance. The following sections of the SES (i) summarize KPIs that were specified in project documentation, (ii) provide details of current performance against these KPIs, and (iii) discuss KPIs that have not been included in the projects but that are considered useful for monitoring institutional performance.

A. Corporate Governance and Management

30. Projects in all PDMCs were concerned with corporate governance and management of water utilities. Corporate governance was to be improved by a focus on BODs to reduce political influence and introduce an oversight body. Objectives for improved operational and financial performance aimed at, among other things, improving management practices. They were implemented through executive management, involving MDs²⁴ and senior management teams, and operations management. KPIs in the area of corporate governance and management are mostly qualitative, and thus baseline and performance data had to be descriptive rather than numerical.

1. Board of Directors

31. Essential criteria for the functioning of the BOD were its composition (balanced between government and nongovernment representatives), competences (expertise represented on the BOD), and functioning (frequency and content of meetings). In PNG, the BOD had existed since the establishment of PNGWB and no assistance was provided by ADB.²⁵ In the other three PDMCs, ADB promoted setting up of BODs and suggested its composition. The objectives of the BOD were described as ensuring greater autonomy of the water utilities. Such a goal implied that BODs were expected to ensure that management decisions were based on professional and commercial grounds (i.e., free of political interference) and that oversight was exercised over the executive management of the utilities. These expectations were, however, not articulated in loan or TA documentation, or spelled out in consultants' reports.

²⁴ The title of the senior executive differs for each water utility. For the purpose of the SES, the term MD is adopted for all.

²⁵ Members are drawn from Government (departments of finance, health, and public works) and from the private sector (chamber of commerce and professional associations of engineers, accountants, and management). The BOD composition ensures a broad range of skills and experience and is structured to preserve the independence of the PNGWB. The BOD fulfills oversight functions, largely endorsing the management decisions of the MD.

32. In the Fiji Islands, recommendations to set up a BOD were implemented, but the BOD was short-lived. Political circumstances reverted initial attempts at corporatizing WSS. At the time of evaluation, the BOD had been defunct for several years. WSS is part of the Ministry of Public Works without any degree of autonomy or separate BOD. In Kiribati, the composition of the BOD was amended in line with the recommendations of the TA, and comprises two government representatives, two representatives from state-owned enterprises, three representatives from the private sector, and one women's group representative. The BOD meets on a monthly basis and appears to be very active, in some cases taking executive responsibilities, which at this stage may be useful, although this should not become standard practice in the long term. In the RMI, the composition of the BOD has also been amended in line with the recommendations of the TA, such that it now comprises three government representatives (the Minister of Public Works, a senator, and the Chief Secretary) and three private sector representatives, and thus has the technical competence to operate effectively. It is chaired and controlled by the Minister, but meets rarely so that its independence and authority have been compromised and it is unable to fulfill its purpose.

33. Loans or TAs did not specify functions of BODs or determine criteria for assessing whether BODs were fulfilling their expected roles, although e.g., in the RMI the TA specified that the BOD should meet on a monthly basis and review financial statements and the budget. The SES reviewed BOD activities in the following areas, based on roles that BODs typically should fulfill.

- (i) **Budgetary control.** BODs approve the budgets of water utilities in PNG and Kiribati prior to start of the year. In the Fiji Islands, budget preparation seems to be largely a mechanical exercise, as allocations are subject to government approval. In the RMI, the BOD had not received or reviewed the 2003 budget by November 2002.
- (ii) **Oversight: performance monitoring.** ADB provided assistance to some of the utilities for setting up systems for generating performance data with executive management as the prime users (para. 37). Less, if any, consideration was given to BODs' use of performance data (to fulfill their oversight function), and the capacity of BOD members to interpret and use the data. As a result, BODs receive largely financial data and less information on KPIs that would allow them to oversee MD decisions. In the Fiji Islands, expenditures are reported against budget allocations, but it is unclear how far this is monitored or questioned at any level, particularly in the absence of a BOD. In Kiribati, performance review is against the detail of the budget (i.e., expenditure monitoring) and without using results indicators, possibly because the MIS is not yet in place. In PNG, overall and branch performance is reported on a monthly basis in detail, with a number of quantified KPIs, and is subject to review and comment, even though the underlying data have shown some inconsistencies. In the RMI, performance information is circulated to BOD members, but not formally reviewed in the absence of meetings.
- (iii) **Tariff setting.** While loans, TAs, and consultants' reports made recommendations for adjusting tariffs, the role of BODs in the process was not well defined. As a result, BODs have taken different stances. In PNG, management and BOD have consistently pushed for tariff increases, driven by the need to generate a 10% rate of return on investments. In the RMI and Kiribati, BODs have not addressed tariff issues and tariffs remain unchanged,

despite support and recommendations of TAs. The absence of a BOD in the Fiji Islands leaves tariff issues to decision makers at the political level.

- (iv) **Strategic directions.** Loan and TA documents or consultants' reports did not specify whether BODs should play a role in determining strategic directions of the utilities—and if they were to, what the role should be. Assistance was provided to executive management, without BOD involvement, for preparing corporate plans. While members of each BOD express views on strategic goals, it is not clear how far executive management are influenced by them or take them into account.

2. Executive Management

34. KPIs for the executive management of the water utilities, i.e., the function of MDs and senior management teams, included their strategic planning capacities (business plans for expansion and operations), budgets and finance, and monitoring operational and financial performance. This section of the SES is concerned with the capacities of senior management teams to exercise management responsibilities and what ADB contributed to building these capacities.

35. Indicators for assessing strategic planning capacities include the availability of resources to undertake planning activities, the strategic planning output, and the linkages between strategic planning and operations management. ADB projects supported the development of corporate plans in all four PDMCs, focusing on corporate goals for the utilities. They did not include a perspective on water resource management (conservation of water sources), but at the operational level included goals for reducing NRW.²⁶ Consultants, in their advisory functions, were to prepare plans in consultation with senior staff (individually or through participatory workshops). The capacity building element of this area of assistance was not well defined and there is a strong likelihood that consultants produced plans rather than building capacities for doing so.

- (i) In the Fiji Islands, PWD developed a strategy, documenting objectives and key results areas, which reportedly were formulated by WSS management. It is not clear whether existing competences for preparing corporate plans can be attributed to ADB TA, as the plan originates from a more recent initiative driven by the Ministry of Finance. In addition, as impressive as the plan may be, almost none of it effectively translates into budgets (which are approved based on historic allocations) or daily operations.
- (ii) PNGWB has the in-house capabilities to define corporate strategies. ADB assisted in providing a consultant for corporate planning, who completed his work prior to the appointment of the corporate planner. Similar to the Fiji Islands, the impressive quality of corporate plans has not found its way into consistent implementation. For instance, plans for expanding service areas still exist, but are not pursued at head office or branch level.
- (iii) The two smaller bodies in Kiribati and the RMI both lack strategic planning capacity. In MWSC, the expatriate MD controls strategy, but has not, for example, developed 5-year capital plans, as recommended in the action plan in the ADB project (para. 28). In PUB, a consultant developed the corporate plan,

²⁶ Reducing NRW implies improving demand-side management in that technical losses at user level can be reduced through repairs, immediate attendance to leaks, and more care in closing taps after use.

but it is unclear how much management input has been made to this task, and, in the absence of a corporate planning function, how much capacity was built.

36. Corporate plans, when prepared, were not linked to financial management capacities to put the plans into practice, including raising financial resources for investments in infrastructure rehabilitation and expansion, or operational improvements. The utilities seemed dependent on government subsidies and externally financed projects.

37. For executive management to fulfill its role in overseeing the financial performance and health of the utility, the MD/management team needs to be competent, have clear financial and commercial objectives, and have the necessary information. It appears that ADB expected the financial and commercial objectives to be set through corporate plans and MIS established through the projects to enable management teams to oversee operations.

- (i) In the Fiji Islands, the TAs did not succeed in introducing a sense of commercial operations. The various sections of PWD operate under the constraints of a public service culture where incentives to reduce costs or increase revenues are nonexistent, since budget allocations do not depend on revenue generated and expenditure for cost-saving measures requires justification and shifting allocations between budget lines.
- (ii) The overall commercial objectives in Kiribati and the RMI are ambivalent, and the management and financial resources either ineffective or absent. In Kiribati, the TA is funding the development of a computerized MIS, which is being undertaken in a participative way. However, PUB's ability to manage the MIS, once it is completed, remains to be seen.
- (iii) PNGWB has the necessary management and financial staff and clear objectives to recover costs and target profitability. However, branch managers focus on technical operations and less on commercial objectives (para. 39). The institutional strengthening TA (footnote 13) prepared a branch-level MIS, which meanwhile has been considered insufficient and is being replaced by a system developed with PNGWB's own funds. The new MIS, not yet finalized and tested, appears complex and possibly overly ambitious, and is reliant on data that are not necessarily consistent or reliable.

38. Generally, data were available in all four PDMCs to calculate KPIs (see section III.B and III.C). However, with the partial exception of PNGWB, none of the utilities placed any reliance on KPIs to manage their operations, even where these have been specifically prepared as part of the TA. In all four PDMCs, a lack of performance-based management is apparent and impacts operations management.

3. Operations Management

39. At the level of operations management, KPIs include technical and commercial management capacity, clear objectives of management and the availability of information to manage appropriately. In all cases managers were primarily technical managers, focusing on the provision of a service to the community. Commercial management capacity at this level in all four utilities was noticeably lacking. None of the utilities conveyed any real attempt or wish to optimize revenue or reduce costs. While the necessary information, in the form of management information and KPIs, was often unavailable or not yet available, (e.g., in Kiribati), the availability

of branch information, indicators, and targets, as prepared in PNG, appeared to make little difference.

B. Operational Performance

40. Operational performance can be improved through investments in infrastructure and/or institutional changes in operating procedures or maintenance practices. ADB supported investments in infrastructure expansion or improvements in three of the PDMCs, namely Kiribati, PNG, and the RMI, while recommendations for institutional changes were made to water utilities in all four PDMCs.

1. Water Supply

41. All projects included some, though not all, KPIs that are typical for water supply, such as output capacity, number of connections, coverage (percentage of total households receiving water supply), service reliability (number of hours of supply), per capita consumption, NRW, and the ratio of utility staff per 1,000 connections. As shown in Table 3, the choice of indicators, availability of baseline data, and specificity of targets varied greatly among the PDMCs. Overall, NRW was the most commonly used KPI, i.e., used in all projects (except the Fiji Islands) for which baseline and targets were specified. The projects in PNG had the most comprehensive and specific sets of benchmarks and target KPIs.

42. **Output per day.** Growth targets for output increase were associated with investments in infrastructure, and thus did not apply to the projects in the Fiji Islands. For the RMI, a specific target was set for the increase in output, while for PNG an overall target for the entire PNGWB system was set but none for Madang and Rabaul, the towns where the project was implemented. In Kiribati, no specific target was set for the output per day, but the project was expected to increase water available to customers, necessitating an increase in output. In reality, output increased in Madang, while in Rabaul the destruction of the town during the eruption of a volcano in 1994 required a complete change of plan, focusing on new development of a water supply scheme in the adjacent town of Kokopo, rather than service extension. As a consequence, the output per day has not recovered the baseline position. In the RMI, the MWSC MD strongly disagrees with the assessed potential of the Laura fields and these have not been developed in line with the project. Current output has fallen behind the baseline, reflecting, in management view, the realities of the situation, which are that water resources are unable to match demand and that consumers must rely also on household rainwater collection.

43. **Service reliability (daily hours of service supply)** was not an issue in PNG and no target was set, as both project towns have 24 hours water supply per day. Ambitious targets were specified for the two smaller utilities (PUB/Kiribati and MWSC/RMI), where service supply was to increase from a few hours a day to 24 hours. Yet both have seen little change in actual supply; in Kiribati, because the infrastructure improvements are not yet completed, and in the RMI because of the MD's disagreement that service hours should be extended in view of limited water resources and water storage capacities. The rapid survey in PNG and Kiribati confirmed the hours of service availability and the quality of water (Appendix 2).

44. **Total water connections.** Specific targets for increasing connections were set for PNG. In Madang, the number of connections increased by 60%, although it fell short of the target. In Rabaul, the number of connections is well below target and has not yet recovered the baseline position, due largely to the changed plan for developing a new system. In the RMI, where an

increase in number of connections was not sought, the actual number has decreased from the baseline.

Table 3: Summary of Operational Performance Indicators (Water Supply)

Indicator	Fiji Islands	Kiribati	PNG			RMI
			Overall	Madang	Rabaul	
Output per day (m³)						
Baseline	152,000	None	20,971	5,000	3,200	2,700
Target	N/A	Not specified	24,538	Increase	Increase	5,000
Current	170,000	1,230	58,339	5,807	1,908	2,246
Achievement	N/A	N/A	Yes	Yes	No	No
Service reliability (daily hours of service supply)						
Baseline	None	None	None	None	None	None
Target	None	24	None	None	None	24
Current	20	1	Not known	24	24	3.5
Achievement	N/A	No	N/A	N/A	N/A	No
Connections (total number)						
Baseline	None	None	None	1,671	1,650	1,550
Target	None	Not specified	None	3,200	3,280	None
Current	115,169	3,832	17,206	2,679	1,052	1,437
Achievement	N/A	N/A	N/A	No	No	N/A
Coverage						
Baseline	73%	70%	None	57%	70%	95%
Target	None	Increase	None	100%	100%	None
Current	73%	80%	5%	82%	60%	43%
Achievement	N/A	Yes	N/A	No	No	N/A
Per capita consumption						
Baseline	None	34 liters	None	None	None	None
Target	None	None	None	None	None	None
Current	100litres	30 liters	180 liters	51 liters	16 liters	Not known
Achievement	N/A	N/A	N/A	N/A	N/A	N/A
Nonrevenue water						
Baseline	None	None	34%	31%	22%/25%	30%
Target	None	25%	20%	20%	20%	<25%
Current	59% (est.)	50% (est.)	38%	35%	32%	29%-39%
Achievement	N/A	No	No	No	No	No
Staff per 1,000 connections						
Baseline	None	None	27	23	36	None
Target	None	15	None	15	15	None
Current	Not known	Not known	55 (est.)	12	15	18
Achievement	N/A	N/A	N/A	Yes	Yes	N/A

N/A = not applicable, est. = estimate, m³ = cubic meter.

Sources: Project documentation for baseline and target; water utilities' records and SES for current.

45. **Coverage.** In Kiribati, coverage was targeted to increase from 70% (without a specific target) and currently stands at 80%, even before infrastructure investments are completed. In PNG, coverage of the entire population is very low, but in the project areas coverage in Madang increased markedly from 57% to 82%. In Rabaul, coverage has yet to recover to the baseline 70%. In both cases, the target of 100% has not been achieved. In the RMI, no increase was anticipated, but the large number of inactive accounts suggests that real coverage has fallen to only 43%.

46. **Per capita consumption** was not used as an indicator in any of the projects, although it is implied in other indicators (such as output and service reliability) and in the desired outcomes: (i) PNG, in the removal of capacity constraints, (ii) the RMI, where total production and hours supply were targeted, and (iii) Kiribati, where existing per capita consumption of town supply has always been inadequate for basic human needs. Data show great variations in consumption

levels, and discussions with the water utilities indicated that there were no plans in place for demand management initiatives, even in places where consumption was high and could be managed better to reduce unnecessary wastage at consumer level.

47. **NRW.** This indicator was used in all projects. Specific targets were set in each of the projects, except the Fiji Islands. In all cases, NRW has deteriorated over the baseline position, even in places like Kiribati and the RMI where the availability of water is a critical issue. High levels of NRW were attributed to leakage, significant numbers of illegal connections, and billing inefficiency. All of these factors have a large impact on revenue and costs, and thus on the financial health of the utilities. While aware of targets set for reducing NRW, none of the utilities had a leakage detection program in place or other measures for reducing NRW, in spite of TA inputs for developing such programs.

48. **Staff per 1,000 connections.** This KPI was set as a target in PNG and Kiribati. In the former, staffing levels were particularly high. For the two project areas, Madang and Rabaul, the targets have been met, although PNGWB-wide figures appear to show a significant increase in staffing over the baseline position. In Kiribati a target was set, but the shared administrative and billing functions mean that a true staffing level for the water supply section is unavailable. A similar approach was recommended in the RMI, but not implemented, and staffing levels prior to project implementation are unknown.

2. Sanitation

49. Fewer indicators than for water supply relate specifically to the provision of sewerage services. Overall, the projects accorded little priority to indicators to help monitor the provision of sanitation services, even in cases when the expansion of systems was financed (Kiribati and the RMI). Sewerage is secondary to water supply as an activity for all of the utilities, and similarly reflects the lack of available data and progress on sanitation coverage. Baseline information was not available for any of the utilities. Although no specific targets were set for projects that included assistance to sanitation facilities progress can be seen. In South Tarawa (Kiribati), PUB estimates that 2,000 connections exist, reporting an increase in coverage from 38% to 42%, although no baseline was recorded at project approval. In Majuro (the RMI), sewerage services increased from 1,338 connections in 1998 to 1,828 in 2001. Coverage has increased from about 39% to 54%, utilizing the salt water supply, rather than scarce water resources. In PNG, PNGWB assumes that all those who have access to safe urban water supply have access to “adequate” sanitation, which typically is not piped or treated. There has been no expansion of sanitation service in the Fiji Islands, which remains at 15%. In all four PDMCs, access to sanitation services lags considerably behind access to water supply.

C. Financial Indicators

50. Similar to operational KPIs, the choice of financial indicators varied across projects. In composite, financial KPIs included fees charged for connections and reconnections, tariffs, metering, billing, collection, cost-recovery ratios, and debt service ratios. Table 4 shows that while KPIs were mentioned in loan and TA documentation, only few projects included specific targets and those that were set have largely not been met.

51. **Connection charges.** There were no set targets for the Fiji Islands, the RMI, and Kiribati, although in all three cases fixed charges are levied.²⁷ In PNG, the project suggested

²⁷ In the RMI, actual costs are charged if they exceed the standard fixed charges.

that PNGWB introduce fees that reflect the cost of connection, as a contribution to its objective of cost recovery. Instead, PNGWB ceased to charge for connections to encourage additional connections and widen the customer base. Customers are, however, required to lodge a billing bond, which is a positive contribution to debt recovery. For sanitation, the Fiji Islands, Kiribati, and the RMI charge connection fees. PNG does not, for the same reason it does not charge for water connection.

Table 4: Summary of Financial Performance Indicators

Indicator	Fiji Islands	Kiribati	PNG			RMI
			Overall	Madang	Rabaul	
Connection charges						
Baseline	None	None	None	None	None	None
Target	None	None	At cost	At cost	At cost	None
Current	Fixed charge	Fixed charge	Free	Free	Free	Fixed charge
Achievement	N/A	N/A	No	No	No	N/A
Tariffs						
Baseline	None	None	Stepped	Stepped	Stepped	None
Target	None	Increase	Increase	Increase	Increase	Stepped
Current	Unchanged	Unchanged	Increased	Increased	Increased	Unchanged
Achievement	N/A	No	Yes	Yes	Yes	No
Cost-recovery ratio						
Baseline	69% O&M	None	76%	None	None	60% O&M
Target	None	100% O&M	100%	Not specified	Not specified	100% O&M
Current	45% O&M	69% O&M	110%	60%	68%	89% O&M
Achievement	N/A	Partial	Yes	N/A	N/A	No
Metering						
Baseline	None	0%	98%	Not specified	Not specified	30% estimate
Target	None	100%	None	Not specified	Not specified	100%
Current	100%	1%	100%	100%	100%	98% estimate
Achievement	N/A	No	N/A	N/A	N/A	No
Billing						
Baseline	Not specified	Not specified	Not specified	Not specified	Not specified	Not specified
Target	Not specified	Not specified	Not specified	Not specified	Not specified	Not specified
Current	90% (est.)	Not known	Not known	Not known	Not known	Not known
Achievement	N/A	N/A	N/A	N/A	N/A	N/A
Collection						
Baseline	None	None	None	None	None	None
Target	None	90%	Not specified	Not specified	Not specified	90%
Current	56%	Not known	95%	84%	91%	86%
Achievement	N/A	N/A	N/A	N/A	N/A	No

N/A = not applicable, est. = estimate, O&M = operation and maintenance.

Source: Project documentation for baseline and target; evaluation mission for current and achievement.

52. **Tariffs.** Tariff increases were targeted for Kiribati, PNG, and the RMI, but not for the Fiji Islands.²⁸ PNGWB successfully achieved tariff increases, with government approval, that allowed it to move to profitability for the utility as a whole. However, the profitability of the operation depends on the system in Lae, which is cross-subsidizing smaller and less profitable schemes, including those in Madang and Rabaul, which are not profitable. ADB recommended introducing a regional tariff structure, reflecting the cost of water supply in each location, but this has not been implemented, as it would also increase the price of water supply in small locations, possibly beyond the limit of affordability. Tariffs of the utilities in the other three PDMCs remained unchanged for many years, reflecting either government refusal to raise them (the Fiji Islands) or the MD's unwillingness to increase them until an improved service was evident

²⁸ The feasibility study (footnote 5) for the forthcoming loan recommended tariff increases, which have not been adopted by the Government.

(Kiribati and the RMI). In these cases, the utilities remain reliant on specific revenue subsidies or subventions. For sanitation, MWSC charges flat rates without pursuing cost recovery, while Kiribati does not charge for these services (possibly because of poor service delivery). A stepped charge for sanitation services exists in the Fiji Islands and PNG, but the SES could not establish whether the current rates are sufficient to achieve cost recovery.

53. **Cost-recovery ratio.** Project documents defined targets based on the perceived circumstances of the utilities. In PNG, profitability was an immediate prospect. Against a baseline of 76%, a target of 100% cost recovery was agreed that required setting cost-reflective tariffs and improving billing efficiency and cost control. In 2002, PNGWB achieved 110% total cost recovery (covering all operating expenses and full depreciation), but in Madang and Rabaul, recovery rates were only 60% and 68% and require further improvement. In the RMI and Kiribati, targets were set at 100% of operation and maintenance costs (realistically excluding other costs). At the time of evaluation, the cost-recovery ratios were 89% and 69% respectively. Both utilities remain completely reliant on government subsidy, and neither has increased tariffs or made major efforts to reduce costs.²⁹ In the Fiji Islands, current performance has deteriorated to only 45% against a baseline 69%, emphasizing the need for reform.

54. **Metering** is key to revenue optimization (via billing) and to accurate assessments of leakages and per capita consumption. PNG and the Fiji Islands both had a high baseline level of metering, and both remain 100% metered, although metering accuracy remains a problem. Assistance to PNGWB in this area resulted in setting up a workshop in Lae. Other branches send bulk meters for testing to Lae, but the same would be uneconomical for household meters. No meter testing equipment is available and no programs are in place in Madang and Rabaul. Increasing the number of metered connections was targeted in Kiribati and the RMI, where the baselines were zero and 30%, respectively. MWSC now meters almost all connections, while in Kiribati the metering system had fallen into disuse before the project started, and management does not intend to revive a discredited system. Instead, PUB management plans to restrict water supply to a predetermined known quantity, making metering unnecessary.

55. **Billing efficiency** is a key parameter in the optimization of utility revenues, comparing what should be billed with what has been billed. Billing efficiency depends on accurate meter reading and billing, and requires checks and balances in the metering and billing systems. Loans and TAs did not set specific targets for billing efficiency, although accurate billing is a prerequisite to improved collection ratios. In PNG, ADB TA had introduced a branch-level MIS, which reportedly helped improve billing efficiency. However, PNGWB with its new MIS is centralizing the billing system with the hope of increasing accuracy and reducing possibilities for manual adjustments at branch level. The ADB-financed MIS in Kiribati is computerizing the billing system (presently still operating in parallel to existing manual systems) with the potential to improve billing accuracy. In the Fiji Islands and the RMI no assistance was provided.

56. **Collection efficiency.** This KPI was included in projects in Kiribati and the RMI, although no baselines were determined. Targets of 90% were established for MWSC and PUB, perhaps the two most deficient utilities in this area at the time. MWSC made major efforts to improve billing and collection and has seen its collection rates increase to 86%. PUB was unable to supply the information, due to current uncertainties in its billing records. PNGWB continues to enjoy the highest collection rates, although this varies from branch to branch, and contributes directly to its profitability. In the Fiji Islands, the rate has declined to an

²⁹ In the RMI, the subsidy is paid in lieu of the Government's water bill payments and compensation fees to landowners. At present, government transfers are less than the outstanding water bills.

unsatisfactory 56%. The causes, which may be real, or based on metering and billing inaccuracies, need to be thoroughly investigated.

D. Overall Performance

57. The utilities portray commercial performances that range from operating profitably (PNGWB), to making some, but insufficient progress against coverage of operation and maintenance costs (PUB and MWSC), to deteriorating performance (the Fiji Islands).

58. PNGWB as a whole displayed a determination to achieve and maintain profitability, which is, however, entirely dependent on its operations in Lae. Management does not seem to have a clear strategy to increase its area of operations, potentially spreading its overheads and increasing profitability. At branch level, there was no indication that managers were targeting a commercial approach, either through revenue optimization (additional customers, billing accuracy, reducing illegal connections, and debt recovery) or through cost reductions where there were clear opportunities. Both the branches visited were incurring losses. This did not seem to be an issue of great concern to either of the branch managers, even though branch targets were set, or at the head office. Indeed it was not clear how far the head office monitored and managed branch operations effectively.

59. Both MWSC and PUB are struggling to cover even operation and maintenance costs, and are, therefore, making heavy losses. Neither displayed any commercial concerns, relying instead on ongoing government support. Neither has pushed measures for increasing revenues (through tariff reforms or reducing illegal connections and outstanding debt) nor for reducing costs (reducing NRW and staffing levels that are higher than necessary).

60. PWD operates as a ministry department without incentives to improve operations or financial performance. Indicators show that its performance is deteriorating.

61. The position of governments is ambivalent, generally displaying a desire to reduce subsidy payments (Kiribati and the RMI) or to see the maintenance of consistent profitability (PNG). However, this did not always translate into a willingness to settle government accounts for water and sanitation, to support tariff increases or staff reductions, or to see more active pursuit of debt collection through disconnections and court proceedings.

IV. CONCLUSIONS

A. Overall Assessment

62. ADB assistance to the water utilities in the four PDMCs was relevant. At the time of design, goals coincided with those of the respective government and certainly addressed critical needs in the PDMCs both in terms of water resource management and institutional reform of water utilities.

63. The objective of corporatizing water utilities, in the sense of setting up the utilities as separate entities, was attained in Kiribati and the RMI. PNGWB had been set up as an independent entity before ADB assistance, while in the Fiji Islands assistance failed to support the corporatization process due to the lack of long-term political support. In terms of achieving the associated objective of increasing the commercial focus of the water utilities, projects were less successful. This is manifest in the absence of commercial goals for three of the four utilities, and in PNG where the goal exists it is not being implemented effectively at operational

levels. KPIs, such as NRW, have not been met by any of the utilities. Efforts to introduce cost-cutting measures and secure revenue are inadequate. Early indications of meeting the objective of delivering better services were met in one project location in PNG and to some extent in the RMI. In Kiribati, project implementation has not progressed sufficiently to comment on the attainment of service improvements, and more time will be needed in the other PDMCs for achievements against this objective to be measured.

64. Building capacities and implementing institutional changes is a time-consuming process, something not sufficiently recognized in ADB's TA modality, and it is difficult to assess whether projects employed the most cost-effective approaches. Design weaknesses, though, indicate that resources were not best used for attaining capacity-building goals.

65. Regarding sustainability, none of the projects or TAs considered water resource management as a central issue, although it is essential for sustained water supply. Performance against other aspects of sustainability is as follows.

- (i) **Fiji Islands.** The results of the two TAs were not sustained, as political support for corporatization failed and none of the other suggested system changes has been implemented. However, negotiations are under way for the gradual upgrading of operations through creation of a water and sewerage department followed by a water and sewerage corporation or authority when cost-recovery levels permit autonomous operations.
- (ii) **Kiribati.** As investments in capital works have not been completed, no comment can be made on their sustainability, which will depend on the Government's willingness and ability to increase tariffs. At present, tariff increases are postponed until service quality is improved. Given the strong commitment to the BOD, this institutional change may be sustained, although its functioning and effectiveness will depend on the competence of its members. The MIS, introducing new accounting and billing systems, is under implementation. Whether it will be sustained depends on PUB's commitment to integrate all operations into the MIS and adopt it as the main management tool.
- (iii) **PNG.** The sustainability of investments in capital works will depend on PNGWB's ability to introduce stringent cost-cutting measures, improve billings and collections, and negotiate further tariff increases. At present, the Madang and Rabaul operations are financially unsustainable. Corporate planning functions exist and are sustained, although they cannot be attributed clearly to ADB assistance, which took place prior to hiring the current corporate planner. The branch-level MIS developed under ADB TA was not sustained but is being replaced by a new MIS developed by PNGWB from its own resources. Programs for NRW, including leakage control, are not in place. The workshop for meter calibration and repair, established in Lae, is operational but too far removed from branch operations to have an effective impact on operations in the project locations.
- (iv) **RMI.** The sustainability of investments in capital works is questionable, given the poor financial performance of MWSC, which as a matter of policy depends on government subsidies. Most of the other institutional changes were not attained.

66. Social impacts of the projects in terms of improving health indicators have not materialized and are unlikely to, given that piped water is mixed with rainwater collected by households, the hygienic condition of which depends on the cleanliness of water tanks. Other impacts on time savings, convenience, cost of water supply, or the environment (groundwater and surrounding seawater) were not reported—it is too early though to make a full impact assessment.

B. Lessons

67. Projects tended to focus on the corporate structure (ownership). The examples of well-functioning public utilities in other parts of the world indicate that (private) ownership is not necessarily essential to efficient operations. However, corporate structure is an important ingredient to defining the identity of utilities and to helping develop corporate goals and institutional culture. For instance, in the Fiji Islands, where corporatization ultimately failed (para. 25), WSS remains a public service function that is bound by administrative requirements. An additional, essential ingredient that has to go hand in hand with corporatization is commercialization, which instills a drive to minimize costs and generate revenue. As shown in the SES, commercialization does not follow automatically from changes in corporate structure. Among the four utilities, PNGWB has the strongest commercial orientation but is still struggling to instill this as corporate culture at all levels.

68. Measures to introduce commercial principles that included establishing or strengthening BODs, prescribed, rightly, their composition to involve members of the private sector, assuming that they would bring commercial thinking to the operations of the BOD and the utility. While successful in the case of PUB, this measure is highly dependent on the qualifications of members of the BOD and performance might vary with changes in membership. In PNG and the RMI, BOD members exercise only minimal oversight functions, basically endorsing all suggestions of the respective MDs, making the performance of the utility dependent on the qualifications and performance of the MD. The lesson to be drawn from this experience is that determining the composition of the BOD alone is insufficient to ensure that it fulfills its purpose.

69. The notion of performance-based management was introduced into all utilities through the application of KPIs, with a focus on collecting data or developing MIS for data collection and reporting. However, the value of data lies in its use, i.e., the competence of directors and managers at all levels (BOD, executive, and operations) to understand and act upon data. No specific efforts were made to analyze whether these competencies were in place and whether capacity building was needed. The lesson that can be drawn from the experience in the four PDMCs is that more consideration should be given to the actual use of data and not only data generation. This will ensure that all levels of management understand performance-based management and commercial principles of operations.

70. Projects aimed to change operating procedures in various areas of the utilities. Approaches used for this purpose ranged from preparing new systems and documenting and handing them over, to developing systems in a joint effort, as currently under way in Kiribati. None of the approaches seems effective, unless there is full commitment and engagement of management and staff in the utilities: the drive for institutional change has to come from within. Unless such commitment exists, long-term consultants might fulfill line functions with little or no skills passed to staff, or systems may be developed in isolation, with only brief periods of training for users to mechanically follow new procedures. Introducing a change in institutional culture, as implied in the corporatization process, requires a different approach (para. 76).

71. Last, but not least: all stakeholders need to be involved in and support the corporatization process. As seen in the example of the Fiji Islands, corporatization was politically unacceptable, as it was equated with privatization and increases in water tariffs, a choice that was politically risky. At present, the public considers water supply and its cost purely from a “lowest tariff” perspective, but is unaware of the cost to the state, and thus the indirect burden on taxpayers, of water supply. A lesson that can be drawn from this experience is the need for greater awareness creation (and transparency of corporate performance), not only in terms of water resource management issues (as presently done in Kiribati), but also of the financial and operational implications of the current status of water utilities.

C. Key Issues for the Future

1. General

72. Corporatization continues to be an important feature of ADB’s assistance to water utilities in the Pacific. Based on the lessons drawn from this evaluation, it is suggested that future projects deal more explicitly with aspects that need to be put in place to ensure that corporatization leads to the ultimate goal of efficient operations.

73. Spelling out the purpose of corporatization is important. Corporatization is not a goal in itself and, in the case of water utilities, is not just driven by profit-maximization motives. Instead, the purpose is to manage scarce and valuable water resources in an efficient way, i.e., minimizing water losses and providing a service of acceptable quality. As can be seen from the SES, efforts focused on corporate structure and operating systems, but insufficient attention was given to the goals that were to be attained through corporatization.

74. Developing additional criteria for BODs is essential to ensure that they can fulfill their functions. Composition of members and procedural requirements (like monthly meetings) are important first steps. In addition, the following aspects should be analyzed at the time of project formulation and decisions taken by executing agencies and ADB staff processing the loan as to whether assistance may be needed.

- (i) **Function.** Establish a clear understanding of the role of the BOD, namely to ensure the utilities’ independence from political interference and to exercise oversight over the executive management, and thus ensure professional management of the utility.
- (ii) **Leadership.** It is crucial that an individual of appropriate caliber and political weight (without political attachment) leads the BOD to establish political independence, organize BOD meetings regularly and professionally, and call the MD to account for his or her actions.
- (iii) **Composition.** It has correctly been assumed that an injection of private sector expertise can positively impact BOD operations. It is important that BOD members appreciate the importance of their role and have the necessary competence and experience. They need to understand the strategic directions of the utility and their role in monitoring the performance of the utility and of the MD’s decisions. It may be necessary to provide specific training to BOD members both to understand the nature of their responsibilities, and to equip them with the requisite know-how to review operations, including the use of KPIs.

This type of training needs to be organized regularly, possibly for BOD members in the Pacific region, to ensure that new BOD members benefit as well.

75. It is important to include management in capacity-building efforts. While systems need to be developed by specialists, and staff trained to use these systems, management has to support changes and understand how new systems can help in management functions. This is particularly so for MIS, where KPIs should be produced to inform executive and operations management to enable them to take management decisions. Three areas which seemed most absent in all of the four utilities, but would require to be developed, were:

- (i) **Demand management:** knowledge of how demand management impacts on scarce water resources and on the revenue base of the utility.
- (ii) **Commercial operations:** knowledge of how to develop commercial operations, with a focus on putting measures into practice for revenue optimization and cost control.
- (iii) **Performance-based management:** use of management information to measure and monitor performance and to effect performance improvements based on the information available.

76. Capacity building requires a different approach. Full commitment is required of the institution that is undergoing change, more time has to be allocated to the process (years rather than months, as typical for TAs), and the role of consultants needs to be gradually reduced from one of acting as example in line functions, to support while utility staff perform jobs, to distant expert advisory through twinning arrangements. Existing regional water associations, such as the Pacific Water Association, can play an important role in sharing information and in helping in benchmarking exercises.

77. As shown in the case of PNG, TAs were provided over several years, but in most cases they resulted in institutional analyses and did not support implementing institutional changes. It is suggested that capacity-building assistance is based on a strategy that manifests medium-term commitment of ADB and the water utility and provides directions and a framework for a series of TAs. The capacity-building strategy should be based on a systematic institutional diagnostic, including:

- (i) **External parameters:** water resources and their management, stakeholders and political pressures, and legal context;
- (ii) **Internal management structures and practices:** strategic goals, commercial aims, financial management, structure, reporting channels, human resources (policies, issues, and incentives), etc.; and
- (iii) **Operations:** client focus, investment choices, service delivery, operation and maintenance programs, leak detection, etc.

78. The strategy should also include information on human resources, which are the key to capacity building. Qualifications of management (BOD, executive, and operations) and staff, and training needs should be analyzed, assessed, and an appropriate staff development program developed. Such analysis invariably has to take into account issues of staff retention, incentive systems, and career options.

79. The capacity-building strategy should include a phased approach (including milestones with specific time horizons) for developing capacities at all levels of the water utility. These milestones can be conceived as stages that a utility needs to attain at the end of one TA to qualify for receiving a follow-on TA, thus ensuring that TA resources are accessible over a longer period of time, while also creating an incentive to achieve results.

80. Terms of reference for capacity-building tasks should be changed to reflect different performance criteria, differentiating clearly between advisory and line functions, and areas in which systems and staff competencies should be developed. Greater emphasis should be given to the latter, for which goals (or outcome criteria) should be specified in terms of capabilities established within the counterpart agency rather than outputs that can be produced by consultants, but may not become incorporated into the institution or change its performance.

81. KPIs should be used uniformly across projects and PDMCs. Uniformity will be in line with regional activities and create the basis for possible partnerships between utilities in the region. The KPIs used in the SES could serve as minimum standard, which can be expanded once the need arises.

2. Country-Specific

82. **Fiji Islands.** PWD has the greatest institutional challenges ahead. Being part of a ministry, it is deprived of the autonomy to take independent decisions, and having no access to and limited influence over its revenue and expenditure, there are no incentives for it to operate efficiently. Suggestions to establish a separate water and sewerage department, outside the Ministry of Public Works, are unlikely to overcome institutional problems associated with the public service culture. To assist institutional reform, it is essential for ADB to support the process of building broad-based consensus for corporatization within various parts of government and within the public at large. Otherwise, future investments for upgrading physical infrastructure are at risk unless the institutional environment that will ensure its sustainability is created. The process of consensus-building should start with an analysis of “winners and losers,” including actual and perceived risks. The analysis should be followed by activities (such as workshops, public media campaigns, etc.) to change perceptions and increase the number of supporters of institutional change. Considerations of financial performance and financial impacts should be built into the process from the beginning. Building on the outputs of the past TAs, a medium-term capacity building plan should be developed, including (i) setting up corporate governance and management systems; (ii) setting up WSS as a separate entity, including separating assets; (iii) analyzing and streamlining operating procedures and systems; (iv) reviewing personnel requirements and producing skills development plans; (v) developing a financial management plan, including internal financial management competences for budgeting, cost analysis, and cost reduction measures, and planning/financing of rehabilitation, expansion, and improvement programs; and (vi) implementing infrastructure improvements together with staff training to ensure that preventive maintenance is undertaken. ADB should consider supporting the capacity-building process in the medium term with a series of TAs, designed to attain specific institutional changes.

83. **Kiribati.** The implementation of the investment project needs to be sped up before significant changes in operational performance can materialize. The currently strong involvement of the BOD in day-to-day operations is an appropriate interim measure, but in the medium term it should evolve into an oversight function over MD decision making. For the MIS to become fully functional, it is important that all transactions become integrated into it and that it becomes the main instrument for collecting, computing, and generating management

information. For this to occur, the (acting) finance manager will have to assume ownership of the MIS. Environmental concerns remain in spite of efforts (under ADB TA) to generate greater awareness of sources of contamination and the need for better control.

84. **PNG.** For PNGWB the main issue is to implement corporate goals at the branch level, i.e., to ensure that branch managers are not only aware of KPIs, but actively aim to attain them. For instance, branch managers know targets for NRW, but there is little in the way of proactive programs to attain them. Greater efforts are needed to reduce costs and improve revenue collections. These measures should be taken regardless of whether PNGWB is privatized or not.

85. **RMI.** Assistance to the RMI underwent significant changes during project implementation due to disagreements between the MD of MWSC and ADB over the project design. The SES shows that operational performance has, by and large, not improved, as a number of recommendations for institutional improvements have not been implemented. The loans and the attached TA have been closed, removing leverage or means to introduce further changes. A postevaluation might be necessary to establish where the project went wrong and what measures are needed to rectify the situation.

SUMMARY OF PROJECT DETAILS

A. Fiji Islands

TA 2621-FIJ: Corporatization of the Water and Sewerage Section of the Ministry of Public Works, for \$600,000, approved on 30 July 1996. Advisory technical assistance (TA).

Objective: The overall objective of the TA was to assist Ministry of Public Works, Infrastructure and Transport and its Water and Sewerage Section (WSS) in establishing WSS as a wholly government-owned limited liability company with clear commercial objectives, operational autonomy, and accountability.

Scope: The TA covered (i) institutional development, (ii) legal and financial framework, and (iii) financial accounting and management reporting.

Inputs: 22.5 person-months of consulting services. Of these, 17.5 person-months were to be used for international consultants with expertise in institutional development, finance, legal issues, and personnel. Five person-months of domestic consulting services were to be used for a financial accountant.

Status: Completed in January 2000.

Outputs/Outcomes: The TA resulted in a corporatization plan that was briefly implemented, although without affecting a physical separation of assets. A board of directors had been set up. All efforts were reversed with the political turmoil of 1999 and 2000, returning WSS into its previous position of a section within the Ministry. The TA left no visible imprint.

TA 3055-FIJ: Suva-Nausori Water Supply and Sewage Project, for \$800,000, approved on 18 August 1998. Project preparatory TA.

Objective: The objective of the TA was to prepare a master plan for sector development and select and prepare an investment project. Both of these aspects were to contribute to the human and economic development of the Fiji Islands.

Scope: The TA included preparing a master plan and a feasibility study.

Inputs: 22 person-months of international consulting services.

Status: Completed in March 2000.

Outputs/Outcomes: The TA produced the master plan and the feasibility study as anticipated. The investment loan is under processing with expected approval in 2003.

TA 3170-FIJ: Implementation of Corporatization of Water Supply and Sewage Services, for \$147,000, approved on 15 March 1999. Advisory TA.

Objective: The overall objective of the TA was to assist the process of improving the efficiency of service provision in the Fiji Islands by supporting the implementation of corporatization of WSS, and ensuring that the Fiji Water Company was in a position to commence its operations on 1 July 1999.

Scope: Legislative framework under which the Fiji Water Company; compliance program for meeting regulators' requirements; business plans; and a process for the review and approval of capital expenditure.

Inputs: 4.5 person-months of consulting services for two consultants, one each in the field of legal reforms and management.

Status: Declared completed in June 2002, but not yet financially closed.

Outputs/Outcomes: Outputs were not available to the evaluation mission, but the outcomes of the TA were adversely affected by the political changes that took place in 1999 and 2000.

B. Kiribati

TA 2811-KIR: Corporatization Plan for the Public Utilities Board, for \$100,000, approved on 17 June 1997. Advisory TA.

Objective: The principal objective of the TA was to develop a plan for the transformation of the Public Utilities Board (PUB) into a corporation to be run on commercial principles with enhanced autonomy and authority.

Scope: The TA was to (i) develop a corporate strategic plan for the new corporation; (ii) review the existing organization structure of PUB and recommend appropriate changes; (iii) assess the feasibility of divisionalization of PUB activities and design an appropriate cost/profit-driven structure; (iv) review and evaluate the legal/legislative framework of the utilities sector and recommend required modifications; (v) propose required personnel and other resources to carry out PUB's functions effectively; and (vi) determine the training needs of staff in accounting, financial management, billing and collection, operation and maintenance, and project administration.

Inputs: 2.5 person-months of international consulting services and 2.0 months of domestic consulting services.

Status: Completed in 1999.

Outputs/Outcomes: Report/corporatization plan for PUB.

1648-KIR(SF): Sanitation, Public Health, and Environment Improvement Project, for \$10.2 million, approved on 8 December 1989. Investment loan.

Objective: The overall objective of the Project is to improve the development potential of Kiribati and the health and well-being of its people through a sustained program of improvements in water supply, sanitation services, solid waste disposal, and environment conservation.

Scope: The project will (i) implement institutional reforms in the management of the public utilities and environmental resources, (ii) improve the quality and availability of safe drinking water, (iii) rehabilitate and expand sewerage and sanitation systems, and (iv) promote hygiene and sanitation through better solid waste management.

Inputs: Physical infrastructure and consulting services to assist in implementation and supervision tasks.

Status: Under implementation.

Outputs/Outcomes: Not yet attained.

TA 3108-KIR: Management and Financial Advisory Services for the Public Utilities Board, for \$1.2 million, approved on 8 December 1998. Advisory TA.

Objective: The objective of this TA is to strengthen the institutional base needed for sustainable development of water and sanitation services. The institutional strengthening and reforms under the TA will enhance the capacity of PUB for reliable, safe, and efficient delivery of water, sewerage, and power services to its customers.

Scope: Specifically, the TA will: (i) support the development and implementation of the program for restructuring PUB; (ii) provide advisory support to improve the management, finance, accounting, administration, operation, and maintenance capacities of the restructured PUB; and (iii) assist PUB in the preparation and implementation of a human resources development program for their management and staff.

Inputs: 18 person-months each for a management and a financial advisor, and a total of 6 person-months for specialist services in the fields of accounting, billing, and collection, management information system (MIS), and computers and software.

Status: Extended until end-2002.

Outputs/Outcomes:

The TA suggested setting up cost centers, which has been implemented, even though administrative functions remain centralized covering all three services provided by PUB, i.e., electricity, water, and wastewater. Therefore, a true picture of the cost of each of the operations is not available.

The financial advisor took a line position and fulfilled day-to-day financial management functions. The current financial manager was hired after the consultant left and received no on-the-job training.

The implementation of the MIS is under way. It is designed as an integrated system, linking billings, collections, and production data. The new MIS co-exists with a manual system (paper records) and with a spreadsheet system kept by the finance manager, which reportedly has a comprehensive set of data, while the computerized MIS still misses out on some cash transactions. The executive management and the board of directors receive monthly reports generated with the MIS, but reportedly rely on the reports produced by the finance manager.

C. Papua New Guinea

1211-PNG 3rd Urban Water Supply Project, for \$11.3 million, approved on 15 December 1992. Investment loan.

Objective: The objectives of the project were to enhance living standards, support urban development, and improve environmental sanitation for the residents of Madang and Rabaul as well as communities close to Rabaul through the provision of improved and additional water supply. The scope of the project included increasing the physical capacity to supply water (with baseline and concrete targets). In addition, the project was to encourage the Papua New

Guinea Waterboard (PNGWB) to strengthen key aspects of operational and financial management. The socioeconomic objectives of the project were: (i) to improve the living standards and personal hygiene of the people in the project area, (ii) to facilitate economic activities in the project area, and (iii) to contribute to the reduction in poverty in the households presently not served by piped water supply.

Scope: The project scope included physical infrastructure in Madang and Rabaul (construction of treatment plant, deep wells, pumping stations, transmission and distribution networks) and institutional aspects (through TA 1803-PNG).

Inputs: Physical infrastructure to improve operational performance.

Status: Completed in 2002. Project completion report scheduled for 2003.

Outputs/Outcomes: Physical infrastructure in Madang and Kokopo; implementation had to be relocated from Rabaul to Kokopo due to the eruption of a volcano that destroyed much of Rabaul. The evaluation mission visited facilities and had the impression that they were in good order. However, a detailed technical assessment was not conducted given the evaluation's focus on capacity building.

TA 1803-PNG: Institutional Strengthening of the Water Board, for \$400,000, approved on 15 December 1992. Advisory TA.

Objective: The objectives of the TA were: (i) to assist PNGWB to strengthen its institutional capabilities in operational and financial management, and (ii) to improve its institutional and legal frameworks. To achieve the first objective, the TA will focus on: (i) corporate planning and management, including MIS; (ii) NRW management; and (iii) design of water and sewerage tariffs. To achieve the second objective, the TA will focus on (i) the Government's policies and procedures relevant to the water and sewerage tariffs and capital contribution; and (ii) existing laws and regulations, and institutional arrangements, which govern PNGWB's operations.

Scope: The scope of the TA included study visits, the preparation of a nonrevenue water (NRW) action plan, and detailed proposals for improvements in the institutional and legal frameworks and reorganization of PNGWB, revision of existing water and sewerage tariffs, establishment of corporate policies and objectives, including corporate planning, and provision of equipment to support the NRW action plan.

Inputs: 13 person-months of consulting services, provided by a management consulting firm in cooperation with a water utility, with five experts in the fields of corporate planning, computer programming, tariff setting, NRW management, and metering.

Status: Completed in December 1994.

Outputs/Outcomes:

PNGWB has a corporate plan and an expressed corporate vision represented by the executive management. However, the translation of corporate goals to the operational level is weak, where operations are maintained from a technical point of view but with little or no commercial orientation. It was noted during TA implementation that the corporate planner joined PNGWB only once the TA consultant had completed his assignment. Therefore, no on-the-job training took place.

The computer programmer reportedly developed an MIS that was functioning at the branch level, with reports sent to the head office, until the end of 2001. In 2002, PNGWB started implementing its new MIS, which is yet to be fully operational. Branch offices reported being content with the MIS provided under the TA, although staff at the head office reported that the system did not have enough checks and balances and too many adjustments to billing could be made at branch level without controls.

The final report contained a section discussing tariffs and recommending a schedule for tariff increases. The recommendations have not been implemented and no capacity seems to have been built.

NRW is one of the key performance indicators (KPIs) included in the monthly branch reports to head office. However, in day-to-day operations, branch managers were not aware of current NRW levels nor were active programs in place for NRW management.

A workshop was set up in Lae that is equipped to check and repair meters. Branches send bulk meters to Lae, but not household meters, which would be too costly. Otherwise, branches are neither equipped nor staffed to check meters on their accuracy.

D. Republic of the Marshall Islands

1250-RMI(SF) Majuro Water Supply Project, for \$700,000, approved on 9 September 1993. TA Loan.

Objective: The objective of the TA loan was to assist the Government—through provision of consulting services—in carrying out detailed engineering design and other preparatory work to establish a cost-effective basis for the investment project.

Scope: The scope of the TA loan included necessary engineering services for the investment project, including an assessment of the capacity of existing facilities, estimation of future water demand, and determination of the water supply system's storage requirements, necessary surveying, and geotechnical investigations, detailed engineering designs and cost estimates, preparation of and assistance in evaluating prequalification and tender documents, and preparation of an environmental impact assessment.

Status: Completed in January 1997.

Output/outcome: Investment project.

TA 1946-RMI: Institutional Strengthening of the Majuro Water and Sewer Company (MWSC), for \$250,000, approved on 9 September 1993. Advisory TA.

Objective: The main objectives of the TA were to (i) improve MWSC's financial planning and management, (ii) recommend a strategy for improving cost recovery and for improving MWSC's financial position, (iii) improve the reliability and availability of freshwater supply in Majuro in time of drought, and (iv) optimize the operations of the seawater supply system.

Scope: The consultants were required to review MWSC's operations and records covering the freshwater, seawater, and sewerage systems as well as the technical, organizational, financial, and commercial aspects of the operations to the extent necessary for their studies.

Inputs: Three experts for a total of 10 person-months to be implemented over a 6-month period. The consultants were to conduct a diagnostic of the institutional and legislative framework, and financial and operations management, and provided some hands-on operational advice.

Status: Completed in May 1995.

Output/outcome: The outcome of the TA resulted in an action plan for institutional development that was included in the investment loan (below). No further TA was provided under that loan to help implement the action plan.

1389-RMI(SF): Majuro Water Supply and Sanitation Project, for \$9.2 million, approved on 29 September 1995. Investment loan.

Objective: The project had several objectives relating to the (i) physical objectives of the water supply and sewerage facilities, (ii) institutional improvements, and (iii) improvements to Majuro's environment. Policy and institutional objectives were to improve (i) the conservation of potable water; (ii) the efficiency of water supply and sewerage operations; (iii) the legislative framework and accountability of MWSC; and (iv) cost recovery, by improving MWSC's billing and collection efficiency.

Scope: The scope of the project included investments in capital works in the water catchment area, well field development, raw and treated water storage, transmission, and distribution, treatment and pumping facilities, seawater distribution system, sewerage system, and institutional support for project implementation.

Inputs: Upgraded physical infrastructure to help MWSC achieve operational targets.

Status: Completed in 2002.

Output/outcome: The scope of the project changed during implementation. The chief executive of MWSC raised a number of contentious issues, including a faulty project design, which resulted in MWSC's insistence on changing the scope of work. The evaluation mission did not investigate these changes or inspect all facilities given its focus on capacity building.

RAPID END-USER SURVEY

1. Section III of the main text illustrates changes in the operational performance of utilities, which can have an immediate impact on the quality of services, the outreach or population covered, and on health and environmental indicators. The evaluation undertook a limited household survey to generate feedback on the quality of services and resultant impacts in Papua New Guinea (PNG) and the Republic of the Marshall Islands (RMI). In PNG, 25 households and institutions were interviewed, including a warden representing 500–600 people and the manager of a church-owned water connection that provided water to a community of around 500 people. In the RMI, 15 households were interviewed in different parts of Majuro. Households were selected at random, but included only those that had water connections. The utilities' databases were insufficient to construct a sample that included households with long-term connections versus those that had been connected recently. As a result, only very few respondents (i.e., four households in PNG and three households in Majuro) had received their household connection after project implementation.

2. In the Fiji Islands, the results of the TA were short-lived and therefore had no impact on actual service provision. In Kiribati, some changes in management and financial performance had taken place, but infrastructure developments were still under implementation so that the operational performance had not changed. Therefore, no household surveys were undertaken in the Fiji Islands and Kiribati.

A. Quality of Services

3. Household surveys confirmed improvements in operational performance in PNG and the RMI as reported by the utilities. The reliability, quantity, and quality of water supply had improved and were to the satisfaction of customers.

4. **PNG.** All households had individual connections—the policy of the Papua New Guinea Waterboard (PNGWB) is not to install communal standpipes. Wealthier families had the piped water supply connected to water tanks, which existed before and were connected to the in-house plumbing. Some of the other income groups had water tanks and kept them for drinking water. Lower-income groups previously had water tanks, but these had fallen into disrepair and were not replaced by the housing commission (responsible for management and maintenance of housing in these areas). Therefore, free household connections offered by PNGWB were an attractive source of water supply, which in the case of lower-income groups were installed as taps in the garden/compound. Among the poorest families, one household might apply for a water connection and would sell water to neighbors without access to water.

5. All households reported receiving 24 hours water supply, unless there were interruptions due to burst pipes and major maintenance and repair jobs. The quantity of water supply was good. Several respondents felt that the supply had improved compared to 3–5 years ago (i.e., prior to completion of the project), when supplies were not as reliable. Households in one part of Madang reported supply shortages during the dry season. Their location on a hillside was the main reason for the drop in water pressure during that time of the year. The quality of water was generally found satisfactory with no problems with color, smell, or contamination (dirt or particles). However, all respondents reported traces of chlorine, which made piped water less palatable as compared to rainwater (the preferred choice of drinking water). This assessment seems more due to being accustomed to untreated water for drinking purposes than problems with water treatment.

6. Wealthier households had indoor flush toilets, connected to septic tanks, middle-income families used on-plot pit latrines, while the poorest households had bucket toilets or used communal facilities. No changes in sanitation facilities were reported.

7. **RMI.** All households had individual connections in the form of water taps in their garden, with the exception of one household where the connection was feeding into the existing water tank. All households had additional water tanks for rainwater collection, using rainwater for drinking water and piped water supplies for bathing, cooking, washing clothes, and cleaning. In times of water shortages (dry season and more pronounced during drought periods), piped water supplies are used for all purposes and if water quality drops, bottled drinking water is purchased. Households with new water connections previously used rainwater for drinking and brackish water from shallow wells or water supplies of neighbors for washing and cleaning.¹ Customers confirmed the schedule of water supply stipulated by MWSC (i.e., eight hours a day on three days a week) and used the hours when water supply was available to fill up water tanks and other vessels. Water pressure was generally satisfactory and had improved much in locations further away from the pumping stations, which previously was a problem. The water quality was reported satisfactory, although the smell of chlorine was a regular occurrence and some households reported discoloration and brackishness of water, which occurred after regularly scheduled interruptions in water supply. Overall, users were satisfied with the water supply and reported little difference between rainy and dry seasons, unless there was a severe drought. Three households had called the water utility to complain and found the customer services desk responsive to inquiries and quick to fix reported problems.

8. All households had sanitation facilities with flush toilets using regular tap water or seawater, depending on location. None of the households reported changes to sanitation facilities, except for the RMI where new seawater connections had been made.

B. Outreach

9. The coverage area and extent to which new connections were made were discussed in para. 45 for water supply and para. 49 for sanitation. Records of water utilities were insufficient to assess comprehensively the service coverage by income strata. The limited household survey undertaken during the SES chose households at random. It included households from different income groups and ascertained that poorer households did have access to water supply and sanitation.² However, the household selection was not representative of all customers and therefore no conclusion can be drawn whether poor households receive equal access to service provision.

C. Livelihood, Health, and Environment

10. Respondents of most households did not recollect a change in expenditure for water since the improvements had been made in the water supply system, because they had been

¹ It is customary to use water supplies without actually paying for the use of water. The household that applied for the household connection bears the cost of water supply, regardless of whether and how much water is used by neighbors.

² The condition of housing was used as the first criteria for determining which income stratum the household might belong to. This first impression was verified with questions about income sources, although no detailed income and expenditure profile was developed.

connected to the water supply system previously.³ Water demand depended on the need to supplement rainwater and thus was determined by weather patterns rather than cost of water, which indicates that current water rates are affordable. The only exception was those households that had newly installed connections. For all of them the cost of water had increased, because previous sources of water had been for free (rainwater and shallow wells). Since most households had had water connections prior to project implementation, improvements in convenience (e.g., time saved for collection water) were not significant.

11. None of the households were using water for additional livelihood activities (e.g., growing produce for sale), although in poorer areas of Rabaul (PNG), some households with water supply connections sold water to their neighbors at profitable rates. One community church in PNG had organized a water supply connection and sold water to community members in the neighborhood, providing around 500 people with water.⁴ In 2001, the church charged rates for water that generated around \$350 equivalent surplus over the water bills due to PNGWB. The surplus was used to pay those who were working at the water station (attending to customers who were buying water) and build up reserves for building a new church.

12. Almost all households in PNG and the RMI had rainwater collection systems, which continued to be used for drinking water purposes, sometimes mixing rainwater with piped water supply. Given this situation, it would be hard to attribute changes in health indicators, if any, to changes in the piped water supply system. Therefore, no data were collected on health indicators.

13. None of the projects reported significant improvements in sanitation systems (para. 49 in the main text). Discussions with environmental protection agencies indicated that limited data are collected, but whatever information was available it did not indicate improvements to groundwater or surrounding seawater quality.

³ A more pronounced change in expenditure pattern may occur if customers switch providers, e.g., from water vendors to a piped supply system. For example, in Rabaul many customers had previously been reliant on water drums, and would have derived significant benefit to the development of town supply. For those customers who had water supply connections before and after project implementation, expenditure increases were attributed to changes in tariff but not to changes in water consumption patterns.

⁴ Households in the community lived too far from the distribution system, i.e., more than 26 meters, which would have required them to pay for household connections.