ASIAN DEVELOPMENT BANK

RRP: RMI 32205

REPORT AND RECOMMENDATION

OF THE

PRESIDENT

TO THE

BOARD OF DIRECTORS

ON A

PROPOSED LOAN

TO THE

REPUBLIC OF THE MARSHALL ISLANDS

FOR THE

EBEYE HEALTH AND INFRASTRUCTURE PROJECT

July 1999

CURRENCY EQUIVALENT

The unit of currency of the Republic of the Marshall Islands is the US dollar.

ABBREVIATIONS

EIRR	-	economic internal rate of return
FEMA	-	Federal Emergency Management Administration
FIRR	-	financial internal rate of return
GDP	-	gross domestic product
KADA	-	Kwajalein Atoll Development Authority
KAJUR	-	Kwajalein Atoll Joint Utility Resources
KALGOV	-	Kwajalein Atoll Government
MISSA	-	Marshall Island Social Security Administration
MOHE	-	Ministry of Health and Environment
PHC	-	primary health care
PMU	-	project management unit
RMI	-	Republic of the Marshall Islands
TA	-	technical assistance
US	-	United States
USAKA	-	United States Army Kwajalein Atoll
USDOI	-	United States Department of the Interior

NOTES

(i) The fiscal year (FY) of the Government ends on 30 September. FY before a calendar year denotes the year in which the fiscal year ends.

(ii) In this report, "$" refers to US dollars.

CONTENTS

REPUBLIC OF THE MARSHALL ISLANDS
LOAN AND PROJECT SUMMARY

Borrower	Republic of the Marshall Islands
Project Description	The Project will be located in Ebeye and has the following components: (i) completing the unfinished Ebeye Hospital; (ii) increasing fresh water supply and upgrading the saltwater sewerage and effluent disposal system; (iii) expanding and improving the power generation and distribution system for safer and more efficient operation; (iv) supporting primary health care and outreach programs including youth health, health education, and family planning; and (v) providing project management and consulting services. Important project activities include institutional development and policy reforms, introduction of cost recovery and user fees for medical services, and budget and administrative reforms for health service management in the country; and increasing the role of the private sector in managing the utilities and basic urban services.
Classification	Primary — Human Resources Development Secondary — Environment
Environmental Assessment	Category B An initial environmental examination was undertaken; its summary is a core appendix.
Rationale	Ebeye is home to 13,500 people or 25 percent of the national population. It is a small islet in the Kwajalein Atoll with a land area of 0.36 square kilometers. This makes Ebeye one of the world's most densely populated areas. The population is increasing at 3.8 percent annually. About 1,200 are employed by the US army base located 6.5 km from Ebeye in the same atoll. While the average annual household income is high ($15,000), the overall quality of life is very low because health, water supply, sanitation, housing, and power supply services are poor. The Project is designed to improve the situation through the provision of proper facilities, introduction of necessary policy reforms, and institutional development.
Objectives and Scope	The main objectives of the Project are to (i) improve the delivery of medical care for Ebeye and proximate islands, (ii) strengthen primary health care and preventive services to the population, (iii)

rehabilitate and expand water supply and sewerage systems to meet the needs of the island, and (iv) upgrade the power generation and distribution system to provide reliable power.

Cost Estimates

The total cost is $11.6 million equivalent, of which $9.5 million is the foreign exchange cost, and $2.1 million equivalent the local currency cost.

Financing Plan

($ million)

Source	Foreign Exchange	Local Currency	Total Cost	Percent
Bank	9.25	0.00	9.25	79.7
United States Department of Interior Grant	0.25	0.22	0.47	4.0
Government	0.00	1.88	1.88	16.3
Total	**9.50**	**2.10**	**11.60**	**100**

Loan Amount and Terms

The Bank will provide a loan of $9.25 million equivalent from the Bank's Special Funds resources. The loan will have a repayment period of 32 years including a grace period of 8 years and a 1 percent interest charge during the grace period, and 1.5 percent thereafter. The US Department of the Interior will provide grant financing of $0.47 million.

Period of Utilization

Until June 2002

Implementation Arrangements

The implementation of the Project involves several agencies, the introduction of policy reforms, and the privatization of Ebeye's power and works utilities. Considering the nature of these activities, a project management unit will be established in Ebeye. It will be supported by a project steering committee and a project implementation coordination committee. The Project will be implemented over a 30-month period.

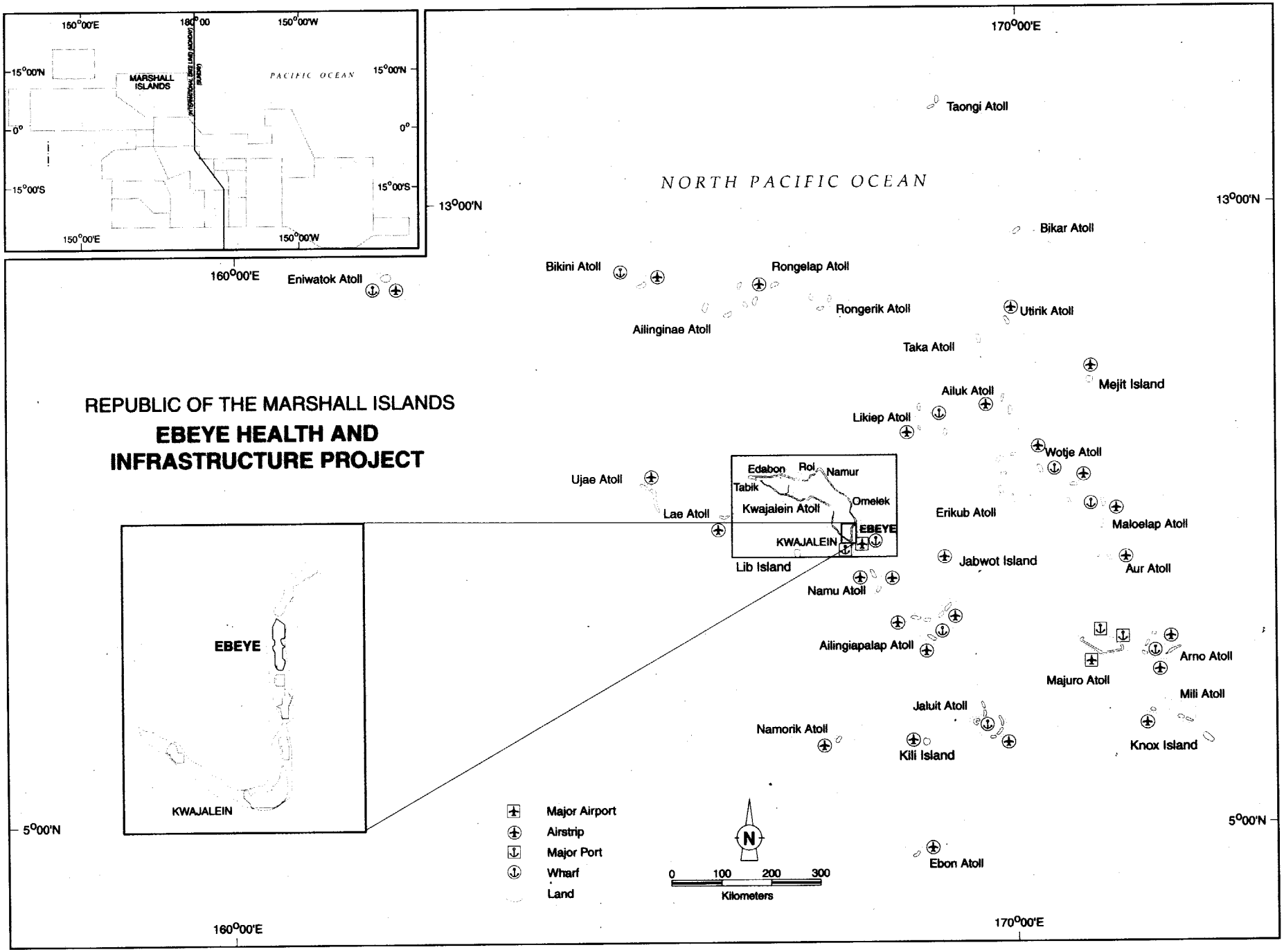
Executing Agency

Considering the scope of the Project, the Office of the President is designated as the Executing Agency.

Procurement

The Project requires advance procurement action, retroactive financing of up to $500,000 is required to complete the suspended contract for the hospital.

Consulting Services	The Project will require 36 person-months of consulting services in the following areas: (i) establishment and operation of the project management unit; (ii) design of rehabilitation work for the hospital, water supply and sanitation systems, and power station and distribution system; and (iii) implementation of primary health care. The consultants will be selected and engaged in accordance with the Bank's *Guidelines on the Use of Consultants*.
Estimated Project Completion Date	December 2001
Project Benefits And Beneficiaries	The direct beneficiaries are the entire population of Ebeye, particularly women, children, and the poor. They will receive improved health care services, a reliable and safe water supply, and improved power supply.


REPUBLIC OF THE MARSHALL ISLANDS
EBEYE HEALTH AND INFRASTRUCTURE PROJECT
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MARSHALL ISLANDS
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I. THE PROPOSAL

1. I submit for your approval the following Report and Recommendation on a proposed loan to the Republic of the Marshall Islands (RMI) for the Ebeye Health and Infrastructure Project.

II. INTRODUCTION

2. In May 1997, the Bank responded to a request from the Government to assist in completing the unfinished new hospital at Ebeye on Kwajalein Atoll. Hospital construction started in 1994 was stopped in early 1997.

3. The Bank approved a small-scale technical assistance (TA)[1] to assess the status of the unfinished hospital structure and a special study to assess the health sector needs of Ebeye. The loan Fact-Finding Mission visited Ebeye in May 1998. It was concluded that a more holistic approach was required than merely completing the unfinished structure, as (i) there is an urgent need to replace the existing hospital; (ii) the health benefits expected to be derived from the hospital can neither be attained nor sustained if reliable and adequate power and safe water are not available to the entire community; and (iii) sanitation services need to be improved. Therefore, an integrated approach augmented by primary health care (PHC) and community health programs was considered necessary to improve quality of life in Ebeye.

4. The Fact-Finding Mission considered several alternatives for the hospital, including rehabilitation of the old hospital and the option of abandoning the present site, and redesigning and relocating the facilities. However, it was determined that the best option and least cost solution was to complete the unfinished new hospital building, rectifying deficiencies and reconfiguring floor plans to meet the basic and secondary level medical needs of the community. The proposal presented here reflects the final outcome of the analysis of all possible options.

5. The Appraisal Mission[2] visited Ebeye from 4 to 14 May 1999. The Mission discussed details of the Project with Government officials and concerned agencies at Majuro and Ebeye, and conducted policy dialogue with the Government on a number of important sector issues. The project framework is attached as Appendix 1.

III. BACKGROUND

A. Sector Description

1. The Country

6. The RMI is made up of five islands and 29 coral atolls, with a total land area of only 181 square kilometers (km^2) dispersed over 2 million km^2 of ocean. Its population of about 61,000 is currently growing at a rate of 3.8 percent a year, with 70 percent living in the two main urban

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[1] TA 2844-RMI: *Ebeye Hospital*, for $90,000, approved on 19 August 1997.

[2] The Mission comprised T. Sen, Senior Project Specialist/Mission Leader; M. Dugue, Health Specialist; M. Fujimura, Economist; and R. Clendon, Senior Counsel. R. Muller, Private Sector Unit Coordinator under TA 2757-RMI, joined the Mission in Ebeye. S. Boland, Public Sector Reform Program (PSRP) Coordinator, also assisted the Mission under TA 2755-RMI.

centers, Majuro and Ebeye. Internal migration to these cities is resulting in high population growth rates, higher than the country's average.

7. The country has a dual economy, with a subsistence sector coexisting with a public sector and a cash economy supported by substantial transfer payments from the US. Under the Compact of Free Association with the United States (US), grants accounted for an average of 71 percent of total Government expenditure and 59 percent of total revenue during FY1991-FY1995 underpinning the high per capita gross domestic product (GDP) of $1,600. The funding under the Compact of Free Association will be declining over the next two years as the current agreement ends in 2001. Declines in output during 1995-1998 reflected not only the drop in external assistance but also the necessary cuts in government expenditure and employment made under the Public Sector Reform Program. Agriculture and fishing output contracted by 20 percent in FY1997, and fell again in FY1998 because of the effects of typhoon Paka (December 1997) and El Niño. Copra production continued to be adversely affected by low producer prices, interisland transport problems. Food and livestock production fell. Fisheries production contracted when unprofitable Government-owned long-liner and purse-seiner vessels ceased operations in FY1996. In line with the economic recession, the inflation rate fell from almost 10 percent in FY1996 to 5 percent in FY1997, and an estimated 4 percent in FY1998. This contractionary pattern is likely to continue as the economy adjusts to tighter budgetary conditions.

8. The national statistics for the Marshall Islands reflect a number of health concerns. Infectious and parasitic diseases such as diarrhea, respiratory infections, leprosy, and tuberculosis remain serious problems while noncommunicable diseases such as diabetes, heart disease, and alcoholism are of increasing concern. Poor food habits, dependence on canned products, and lack of opportunities for outdoor activities are major contributing factors to the high incidence of lifestyle diseases. Evidence of malnutrition among children exists. Overcrowding in urban areas, high fertility rate, and the unwelcome effects of modern lifestyles have a direct impact on health status. The most noticeable characteristic is the significant proportion of preventable diseases.

9. Given the country's geography, access to health services is a continuing problem. The Ministry of Health and Environment (MOHE) defines objectives, policies, and strategies for the health sector, and is responsible for the provision of health services to the population. MOHE operates two hospitals, in Majuro and Ebeye, and 60 primary health centers on the outer islands. MOHE is responsible for overall health budget management except for funds from "US section 177." In 1986 the 177 Health Care Plan was established under the Compact to provide health services to the population of the four atolls affected by US nuclear testing during the 1950s. The plan is administratively independent from MOHE. Until recently, most medical services were free.

10. The 80-bed hospital in Majuro and an existing old 30-bed hospital in Ebeye provide preventive, primary, and secondary health care services. Tertiary care is provided abroad on a referral basis. Most patients are referred to the Trippler Army Hospital in Honolulu under a special US program for Micronesia. Referral is financed by the Government under a special insurance scheme administered by the Marshall Island Social Security Administration (MISSA). In 1997, overseas referrals absorbed about 25 percent of the health budget financed by MISSA. With the appointment of an external administrator for the overseas referral program in 1997 and implementation of stringent referral requirements, savings of more than $1 million were obtained in 1998. Referral costs are expected to drop by another $500,000 over the next two years because of increased use of low-cost referral centers such as the Philippines.

11. Table I shows the FY1999 funding sources and amounts for national health care. MISSA collects and manages funds for the basic health insurance scheme, which is funded by a 2.5 percent payroll deduction matched by an equivalent amount from the employer. User fees charged for hospital visits and consultations are a source of revenue ($240,000 for FY1999). These are separately listed as they are turned over to MISSA as part of its general revenue collection.

Table 1: Composition of National Health Care Budget for FY1999

Source	Projected 1999 Budget ($)	Percent of Total
Local		
General Fund (Government budget)	2,767,628	23
MISSA	4,014,448	33
External		
US Compact Funds	1,785,000	15
US Section 177	1,963,000	16
US Federal Grants	1,502,208	13
Total	**12,012,284**	**100.0**

MISSA=Marshall Island Social Security Administration; US=United States.
Source: Government of RMI. 1999. Five-Year National Health Plan. Majuro.

12. Until recently, power, water, and sanitation was managed and operated country-wide by wholly owned Government corporations with limited autonomy. The utilities in Majuro are gaining more autonomy in management, tariff setting, collection, and other financial matters. The objective is to attain self-sufficiency and ultimately be privatized. Significant improvements have been made by the Majuro Electric Company, which operates a 10.5 megawatt power plant. The company is now self-sufficient, receiving no subsidies from the Government.

13. The country depends entirely on rainfall and desalination of seawater to meet its potable water needs. Desalination plants are operated only in major urban centers; the rest of the country depends almost entirely on rainwater. In most places, saltwater flushing systems are used for sanitation and sewerage. This reduces the per capita fresh water needs, which can more or less be met from rainwater. In most areas including the major centers, households have their own rainwater catchment and storage systems.

2. Ebeye

a. Physical

14. Ebeye is a small islet (0.36 km^2 land area), located on the eastern side of Kwajalein Atoll, which is considered the largest atoll in the world. Ebeye is the second largest urban center of the RMI after the capital Majuro. It is located about 441 km northwest of Majuro, and is only 6.5 km from the US military base located in the same Kwajalein Atoll, US Army Kwajalein Atoll (USAKA). The near-shore environment of the atoll has a significant impact on the population, as it provides food and frequently bathing facilities. Coral death along the coastlines of Majuro and Ebeye is responsible for eutrophication of lagoon waters especially evident near those homes lacking toilet facilities. The 1999 population of Ebeye is close to 13,500 and is expected to

increase to over 17,000 by 2005. Ebeye is already one of the world's most densely populated areas with 37,000 people per km^2. Ebeye has a highly urbanized community with a relatively high proportion of immigrants from outer islands. Over 50 percent of the population is below 15 years of age.

b. Local Economy

15. The presence of USAKA has had a profound impact on the indigenous population throughout the Kwajalein Atoll, especially Ebeye. About 1,200 people or one person from each household in Ebeye is employed by USAKA. The average household (10 members) income in Ebeye is relatively high, about $15,000 per annum. Since 1947, USAKA has provided employment with wages almost equivalent to those paid on the US mainland. Statistical data released by MISSA in March 1998 pertaining to employment in Ebeye in 1997 indicates that 74.6 percent of wage earnings are derived from employment by USAKA.

16. Another substantial source of income to residents of Ebeye who own land on Kwajalein is the rental paid by USAKA for the use of the military base and a part of the atoll commonly known as the midcorridor. Apart from military-related economic activity, the economy of Ebeye has not done well in recent years, partly because of the country's poor economic performance. Following strong growth through the early and mid-1980s, real GDP per capita has declined reflecting strong population growth and reduced Government spending. This pattern is expected to continue as the economy adjusts to tighter budgetary conditions. The population continues to increase as people migrate to Ebeye from the nearby atolls, attracted by the prospect of finding employment at USAKA base located on the nearby island of Kwajalein. The leasing arrangement with the US military installations and missile testing prevents people from living in several parts of the atoll resulting in additional migration to Ebeye. There is no major industry or business activity in Ebeye except for one medium-sized supermarket, two large stores, and one 20-25 room hotel.

c. Organizational Setup

17. Currently all development and infrastructure-related government activities in Ebeye and the other surrounding islands is undertaken by the Kwajalein Atoll Development Authority (KADA). The KADA board is empowered to manage and execute all programs funded by federal grants or through direct Compact payments. KADA can receive direct funding from external sources. It is responsible for its own financial management. Kwajalein Atoll Joint Utility Resources (KAJUR) was established to operate and manage the power generation and distribution and water supply system for Ebeye. KAJUR is a wholly owned subsidiary of KADA and is controlled by the KADA board, with representation from the private sector. Over the past years, KAJUR has consistently received annual Government subsidies of $300,000 to $500,000. Both KADA and KAJUR lack necessary institutional capability, technical expertise, and adequate internal financial controls. Both have poor project implementation performance. It is in this context, that the Government has agreed to privatize KAJUR and to directly intervene through MOHE in the completion and management of the hospital.

d. Social Service and Utilities

18. Despite high household income and willingness to pay for essential services, the quality of life in Ebeye is poor. Housing standards are very low with sections resembling squatter areas. Social services and utilities (water supply, sanitation, and power) are poorly maintained.

19. The number of patients with disorders caused by high-density living and crowded living quarters is growing. Waterborne diseases associated with lack of a safe water supply and poor sanitation are also significant. Young children are particularly at risk, with diarrhea and gastroenteric diseases being especially common. The situation is aggravated by the absence of proper medical facilities to serve a young and growing population. The existing 30-bed hospital is so rundown that it can no longer be rehabilitated. In addition, the demand for health care services is increasing because of population growth and the high prevalence of lifestyle diseases. In 1994, the United States Department of the Interior (USDOI) agreed to provide grant financing of $4.5 million to build a new hospital to provide primary and secondary health care for Ebeye. KADA, the executing agency for the project, was to contribute $1.5 million. The hospital was expected to provide urgently needed health care services especially to women and children at a level currently not available on the island. The same year, the Bank approved the Health and Population Project[3] to improve the delivery of essential health services and to promote primary health care in the RMI. The project provided $900,000 for medical equipment for the Ebeye Hospital.

20. The new hospital ran into a series of design and implementation problems and remains incomplete. The major problems were (i) inadequate attention to design features necessary for the harsh tropical island environment, (ii) inexperience in undertaking such specialized construction, (iii) inability to provide adequate counterpart funds, and (iv) inadequate control and financial management. Financial resources available were not sufficient to complete the hospital.

21. Ebeye has no natural surface water like streams, rivers, and ponds/wells. The surface elevation seldom exceeds 2 meters above sea level, and rainfall soaks rapidly into the very porous ground. Thus the community must use rainwater catchment tanks. While Ebeye has an artificially constructed area dedicated to collecting rainwater, the low rainfall (less than 250 centimeters/year) forces dependence on desalination of seawater to supplement the city's freshwater sources. The water supply system on Ebeye has never been able to service the total demand of the island and per capita availability of fresh water has perpetually been below the minimum requirement. At best, the water is available 4 to 6 hours per day and then only for one hour at a time. The social cost of this is very high, with people, particularly children, having to travel to Kwajalein to obtain drinking water or to do the laundry. In July 1997 the desalination plant broke down. Water for drinking and cooking was then ferried twice a week from USAKA and distributed by water tankers. While the US is prepared to provide assistance in such emergency situations, it is not a viable long-term solution. Due to the nature of the atoll, underground water is salted and unfit for drinking. Ebeye has a separate piped distribution system for seawater for toilet flushing and fire fighting. The piped sewerage system using saltwater provides basic sanitation and has been instrumental in preventing major outbreaks of communicable disease.

22. The sewerage system is the only infrastructure item that works with some limitations, but it is also affected by the lack of reliable electric power to operate the sewage pumps. The unstable power situation also affects the pumping and treatment of effluent, making it almost impossible to keep the streets and the hospital clean and sanitary. Often equipment has to be borrowed from USAKA to help maintain the sewerage system because the Public Works Department has no equipment to unclog sewerage lines.

[3] Loan 1316-RMI: *Health and Population,* for $5.700 million, approved on 22 September 1994.

23. Provision of electric power and potable water in Ebeye is the responsibility of KAJUR. The electric power system is based entirely upon three diesel generator sets connected to an overhead distribution system operating at 13.8 kilovolts. Waste heat from the diesel engine exhausts provides heat for the associated water desalination plant to produce potable water. The power plant facilities are still in good condition, but are deteriorating at an increasing rate due to the lack of proper maintenance. The two Enterprise engines in the power station are in reasonable condition, and with small capital input, both units could be restored to near original rating. Only one of the two generators is presently operational resulting in limited output and frequent outages lasting several days. Since July 1997, KAJUR has been plagued by serious problems with the generation of electricity and supply of potable water, caused by breakdowns due to lack of maintenance; these are compounded by financial problems due to inability to collect electricity bills. KAJUR lacks the financial resources to undertake regular maintenance or even to buy fuel. Private sector involvement in the operation of KAJUR and installation of debit meters under the Project is expected to address the cash flow problems in the medium term.

24. The present state of the power distribution and supply system is less than satisfactory. The high voltage distribution system is close to collapse and will not be able to continue to perform its designed task. The condition of the electric poles and wirings of the overhead distribution system poses a serious safety hazard and regular power outages. In addition, the low voltage system was installed in an ad hoc manner, and needs proper sectionalization and rationalization of load.

B. Government Policies and Plans

25. The only multilateral development bank active in the RMI, the Bank is currently providing assistance to the Government to undertake policy reforms in the public and health sectors in the country. Through these policy reforms and strategic directions, the Government plans to improve efficiency and effectiveness of public service delivery. In Ebeye, the Government intends to strengthen local administration, including KADA and Kwajalein Atoll Government (KALGOV). This as well as the privatization of KAJUR and outsourcing of sewerage and sanitation are in line with the policy direction of developing private sector initiatives and downsizing the public sector as envisaged under the reform program, which is supported by a Bank loan.[4] The Government expects that privatization of KAJUR will not only ensure the availability of reliable and adequate power and water for Ebeye, but also help reduce and eventually eliminate Government subsidies by almost $500,000 per annum.

26. The Government is strongly emphasizing the development of PHC. The major objective of the ongoing Health and Population Project, is to improve PHC activities and promote more efficient utilization of health sector resources. The concept of cost recovery through user fees was introduced under this project and will be further reinforced through conditionalities of the proposed Project.

27. In the area of water supply and sanitation, the ongoing Majuro Water Supply and Sanitation Project[5] reflects the sector strategy. It is to improve the water supply and sanitation in Majuro, and promote commercialization of the water utility. The Government plans to eventually privatize the water supply and sewerage in Ebeye along the same lines through appropriate policy measures and tariff-setting mechanisms. In essence, Government plans and policies for

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[4] Loan 1513-RMI: *Public Sector Reform Program*, for $12,000 million, approved on 30 January 1997.

[5] Loan 1389-RMI: *Majuro Water Supply and Sanitation*, for $9.200 million, approved on 29 September 1995

Ebeye are to improve public and essential service availability and delivery to the same level as that made available to Majuro residents.

C. External Assistance to the Sectors

28. The US is the primary source of external assistance to Ebeye. USDOI agreed to finance up to $4.5 million of the new hospital construction in Ebeye in 1994. Of this, close to $4.0 million has been disbursed. The US has indicated that additional grants beyond the $4.5 million are not available for the hospital.[6]

29. In 1998, emergency assistance was provided by the US Federal Emergency Management Administration (FEMA) during the severe drought brought about by El Niño. Seawater desalination equipment (reverse osmosis units) at Majuro and Ebeye, water tanker trucks, and trailer-mounted water tanks were provided. A private company from the US operated the equipment, under a contract, financed by FEMA. The total value of the assistance package including drought relief is in excess of $10.0 million. At the conclusion of the emergency, the equipment will be transferred to the Government at minimal cost.

30. USAKA has also provided other assistance. Recently, mobile power generators were installed at sewerage pumping stations, so that the pumps can remain operational during power outages. The continued operation of the seawater distribution system and the sewerage system (although the sewerage treatment plant does not perform effectively and continues to discharge semitreated sewerage into the lagoon) is probably all that has prevented a major disease outbreak in Ebeye's overcrowded conditions.

31. In addition, the US provides a significant contribution to the Ebeye economy. On an ongoing basis, payments and assistance provided by USAKA in Ebeye include (i) about $13.2 million in lease payments to landowners, (ii) $2 million in taxes paid to the RMI by US nationals residing in the country, and (iii) sale of surplus property at highly preferential rates. This is in addition to the $13 million paid annually in salaries to residents of Ebeye working at USAKA. Until the reverse osmosis plants were provided by FEMA, USAKA was providing barged water twice a week as part of their support program.

D. Bank Assistance and Lessons Learned

32. The Bank has approved 7 loans from the Special Funds resources to the RMI totaling $43.05 million since 1991, and 32 TA grants totaling $13.0 million including 6 for project preparatory TAs. The total cumulative disbursement as of 30 June 1999 was $27.6 million or 64 percent of the total loans approved. Four loans are under implementation, involving health, education, water supply and sanitation, and public sector reform. Progress in all four projects are satisfactory although the education project[7] is slightly behind schedule. Delay has been experienced in the submission of audited financial statements. This has now been addressed by contracting private auditors to undertake an audit of project accounts funded from loan proceeds. During 1998, good implementation progress was achieved in all cases and no difficulties were encountered with the availability of counterpart funds.

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[6] The conditions of the grant require that the funds disbursed should be paid back if the project is not completed. However, in this case, USDOI funding has been treated as a "sunk" cost, in selecting the best option.

[7] Loan 1249(SF)-RMI: *Basic Education Development*, for $8.000 million, approved on 09 September 1993.

33. The first Bank loan to the RMI health sector was approved in September 1994 and became effective in March 1995 (para. 19). The aims of the project are to help the Government improve the quality of health and family planning services, and strengthen the country's PHC program through community involvement, health personnel training, more efficient management, and improvement of PHC infrastructure. The training and the civil works components have made good progress, although there were some delays during the early part of implementation. Most of the health centers are now built and staffed. Proper accounting records are maintained. Community involvement has been strong in the setting up of the 24 community health councils. The health promotion and seminars components have lagged behind. Also, the maintenance program for health facilities is inadequate. Recently a private company was contracted to supervise maintenance of both Ebeye and Majuro hospitals, and a maintenance technician was recruited for Ebeye. The Government needs to further increase the allocation of health funds for PHC and support it with a community outreach program.

34. Bank experience in the water supply and sanitation sector is limited to the ongoing Majuro Water Supply and Sanitation Project (para. 27). The project was designed to provide safe and reliable water supply and improve the sewerage system. Most components are completed; some are not yet operational. There were no difficulties with contract execution, quality of work, or financial reporting.

35. The Bank is providing assistance for the Public Sector Reform Program (para. 25), which aims at comprehensive reforms of the public sector in the country. The release of the third tranche of the loan has been delayed to allow time for the RMI to meet the remaining tranche conditions. The Government is currently taking steps to expedite compliance.

36. A major lesson learned from the Bank's involvement in the RMI is that the Government has to be fully informed and committed to the projects, and to reforms that are an essential component for their success and sustainability. Adoption of new enabling legislation, regular review of performance, and periodic reviews of tariff structure, in particular, are crucial for sustained operation in the health, and water supply and sanitation sectors. These are built into the design of the Project.

E. The Bank's Country and Sector Strategies

37. The Bank's operational strategy for the RMI envisages a proactive role for the Bank involving policy reforms, capacity building, structural adjustments, and sector development with the timing and selection of the mix to be determined by considering the country's situation and the need to improve the quality of life of the people.

38. The Bank's health policy promotes the principles of (i) flexibility and responsiveness to the specific needs of the member country, (ii) promotion of PHC, (iii) targeting of assistance to high-risk populations, particularly the poor, children, and women of reproductive age; and (iv) equitable and efficient resource allocation. Accordingly, the Bank's health sector strategy in the RMI focuses on supporting PHC activities including establishing PHC centers in the outer islands, improving in-country health service delivery capability, encouraging community participation, and helping the Government to augment the financial resources for the health sector by implementing user fees.

39. The Bank's strategy in the water supply and sanitation sector focuses on the conservation and efficient use of water, the provision of adequate safe and reliable water to the population, and improved cost recovery to ensure sustainability of operations. The Bank

recognizes the need for safe and reliable power supplies, water supplies, and sewerage services to public health, the promotion of economic development, and improvement of the urban environment. The Bank supports upgrading and expanding water supply and sewerage services in urban areas, introducing tariffs that will enhance the financial resources of water supply institutions and discourage excessive water use, and improving billing and collection efficiency. In view of the difficulties encountered by the public sector in Ebeye, the Bank is promoting private sector participation in the provision of basic urban services.

F. Policy Dialogue

40. Project processing involved substantial policy dialogue. Activities under the Project will reflect several reforms that are part of the Government's Public Sector Reform Program (para. 7). It is envisaged that the water and power facility will be operated and managed through private sector involvement to ensure efficiency and sustainability of the operation and timely bill collection. This will help ensure better operation and maintenance, as well as help protect the investment. The new hospital will increase user charges for partial recovery of its recurrent expenditures. The preliminary examination of socioeconomic characteristics of Ebeye households indicates that households have adequate ability to pay and are willing to bear the increased financial burden in return for an assured supply of power, safe water, and quality health services. The necessary conditions and a detailed list of policy reforms required under the Project are presented in Appendix 2. Additionally, compliance with sector reforms included under the Health and Population and Majuro Water Supply and Sanitation projects (paras. 19 and 27) is being closely monitored. Agreement was reached on a number of specific actions to be undertaken for the successful implementation of the Project and the sustainability of the services as described below.

1. Health Services

41. Action will be taken on two fronts, namely, (i) introduction of user fees for medical services, and (ii) budget and administrative reforms for the health sector.

42. The Government has taken the first step toward cost recovery in the health sector by introducing user charges; this was approved by the Cabinet on 6 March 1998. The new fee structure remains substantially below the actual cost. The Government needs to continue to gradually increase user fees to bring them in line with the actual cost of services, provided that the accessibility of PHC services to the poorer sections of the community is not reduced. In addition, efforts are required to improve fee collection, which is currently very low (30 percent). Without supplementing Government finances through increased user fees, the operation of the new Ebeye Hospital will be difficult to sustain. Accordingly, the Government has agreed to increase in-patient fees and institute a differentiated fee structure based on the number of beds per room.

43. The public expenditure and current revenue situation calls for more efficient utilization of available resources. Strengthening in-country services will reduce dependence on expensive overseas referrals. MISSA funds, a significant component of MOHE's health budget and therefore is a key resource which needs to be managed more effectively. A reallocation of MISSA funds to priority programs of MOHE will improve the delivery of in-country medical care, reduce off-island expenditures, and result in overall savings. These savings provide the only realistic and sustainable solution to funding the incremental recurrent expenditures of the new Ebeye Hospital. As part of the reforms, which have been included as specific assurances under the Project (para. 119), the Government will

(i) restructure the organization of the health care delivery system to (a) provide more effective primary care and prevention, (b) shift from referral to on-island care, and (c) improve operating efficiency and management;

(ii) increase and improve collection of health fund contributions by employers and employees;

(iii) enforce compliance with the Cabinet directive regarding referral conditions, and increase the use of low-cost referral centers;

(iv) reduce the administrative cost of the Health Fund; and

(v) increase the premium for the supplemental Health Benefit Plan to make it financially self-sustainable, requiring no subsidy from other health funds.

2. Private Sector Involvement in Utilities Management

44. The management and operation of utilities by KADA through its subsidiary, KAJUR, has been poor. As a result, the supply of power and water in Ebeye has remained inadequate, unreliable, and costly. While the problem of power and water for the hospital could be solved by including captive supply systems for the hospital, this does not provide a long-term or viable solution to the problems of Ebeye.

45. Private sector participation in the operation of KAJUR is considered the most viable option. The Government is committed to such private sector participation for the provision of basic services in Ebeye.

46. The basic approach would be to seek private sector involvement and a long-term concessionaire for the provision of basic urban services in Ebeye. Under such an arrangement, the contractor would assume responsibility for customer relations and tariff collection, and therefore assume the revenue risk. Assets are owned by the Government but are operated by the contractor for a specific period, under predetermined conditions. It is important that (i) arrangements are made as transparently as is practicable, (ii) a sound legal regulatory framework is put in place to deter overpricing, (iii) remuneration arrangements adequately compensate the contractor so that the business is financially viable, yet penalize poor performance, (iv) appropriate provisions are made to ensure continuity of service in case of disputes, and (v) risks are identified and anticipated by both parties.

47. During project processing, the KADA and KAJUR joint board examined the options, accepted private sector involvement in KAJUR operations, and agreed to take the first step toward private sector management of utilities in Ebeye. It was agreed to initially award a management contract to a qualified private operator for a period of 18-24 months, and subsequently bid out a long-term concession contract or other form of private sector involvement. The management contract option allows for immediate private sector involvement, and therefore the prospect of an early solution to the power and water problems. Appropriate bonus/penalties will be incorporated in the contract to ensure a viable utility operation. It provides adequate time to undertake preparatory work, including proper bidding procedures required to reach an appropriate and mutually advantageous concession agreement with a private entity on a long-term basis. During the duration of the management contract, better assessment of operations can be made, and the necessary legal and regulatory frameworks put in place.

48. Accordingly, a time-bound program was agreed to and incorporated as an assurance under the loan (para. 119 [i]). The selected private operator of the management contract will be appointed by 1 September 1999 and will assume full control by 1 October 1999 (start of the fiscal year). Several private companies have already expressed interest in managing and operating the utilities in Ebeye. Within 18 months, and no later than October 2001, a longer term arrangement will be in place.

49. Other suggested policy reforms considered crucial to the sustainability of the Project are detailed in Appendix 2. These include implementation, maintenance, and recurrent cost-related reforms that were negotiated and confirmed at appraisal. Related assurances are described in para. 119.

IV. THE PROPOSED PROJECT

A. Rationale

50. A new hospital is urgently needed to meet the rising demands of the increasing population at Ebeye. A detailed analysis concluded that completing the unfinished new hospital structure is the best option as compared with building a redesigned new hospital from scratch. Further, an integrated and holistic approach is required

51. Available data reveals a pattern of disease dominated by preventable conditions, i.e., diseases related to dietary habits and alcohol, teenage pregnancies, and premature births. PHC and preventive activities are the most appropriate strategy. Some PHC and health promotion activities have already been indigenously developed and implemented by the hospital personnel for Ebeye and the nearby outer islands. These are provided by outreach nurses trained by the World Health Organization and volunteer health workers from the community. They have resulted in a decreased average length of hospitalization for chronic diseases such as diabetes and hypertension, thus reducing the need for more hospital beds. Supporting these PHC activities will ensure a positive impact on the health of the local population and optimize resource utilization.

52. To decrease the hospitalization rate on Ebeye, the Project will support health education activities focused on reducing the incidence of preventable diseases, both communicable and noncommunicable. The increased use of safe water and nutritional education will be the two priority areas. As availability of healthy food, particularly fruits and vegetables, is a precondition to improving the people's diet, the Project will help to start a pilot project of small gardening on one of the nearby islands.

53. With more than 50 percent of the population under the age of 18, preventive and health promotion activities directed toward youth are of major importance. The objective of the youth health program started by Ebeye health personnel is to address the physical, mental, and social well-being of young people from 12 to 25 years. Twenty-five percent of the pregnancies on Ebeye are for women less than 20 years (4 were less than 15 years in 1998). The medical needs of teenage pregnancies are an important aspect of health services in Ebeye. The Project will help to expand the program started by Ebeye health personnel.

54. As part of the training of community health workers, a household survey was organized in 1997 to gather information to determine the health profile of the population. A total of 1,203 households were surveyed. One of the most striking results of this survey was in the area of

family planning. The total protection rate (number of women using birth control by any method) is only 11.7 percent, mainly women who already have children. The protection rate involving condoms is 0.1 percent. Information on family planning indicates that a more aggressive approach is needed if acceptance of birth control is to increase, especially by the youth. The Project will support the family planning program as part of the youth health program, through campaigns and additional training of health workers and volunteers.

55. The proper operation of the hospital is dependent on the availability of adequate and reliable power and water. Careful assessment and study of the social dynamics determined that building a hospital with captive power and water was neither practical nor sustainable in Ebeye. In recognition of the interrelationship between health, sanitation, and hygiene, it is proposed that an integrated approach be taken that will ensure completion of the hospital and restoration of water, sanitation, and power utilities to the island as a whole. Considering the high incidence of waterborne diseases, this integrated approach for water supply is the only viable solution. Alternative options of sourcing water and power from Kwajalein island through USAKA were considered. However, these options were found to be too costly and had several technical and operational difficulties. The Project's integrated approach addresses the basic needs of the community, goes far beyond completing a hospital structure to improving quality of life, and is consistent with the Bank's health objectives for the RMI as outlined under the Health and Population Project (para. 19). Under the given conditions this provides the best opportunity for an effective, sustainable, and long-term solution to the problems of the island.

B. Objectives and Scope

56. The main objectives of the Project are to (i) improve the delivery of quality medical care for Ebeye and proximate islands, (ii) strengthen PHC and preventive services to the population, (iii) rehabilitate and expand water supply and sewerage systems to meet the needs of the island, and (iv) upgrade the power generation and distribution system. The Project has five components. A detailed description and cost breakdown for each subcomponent is provided in Appendix 3.

1. Completion of Ebeye Hospital

57. Completion of the unfinished new Ebeye Hospital includes (i) rectification and remedial work because of the poor design of the building and/or inadequate specifications; (ii) repair and restoration work to correct problems arising from implementation delays and exposure of unfinished building, materials, and equipment to the harsh environment; (iii) additional civil works, and provision of medical and other equipment (including an incinerator) considered essential but not included in the original design; and (iv) changes that will improve functionality and extend the economic life of the hospital structure.

58. For planning purposes, the cost of this component was divided into three phases. Phase I includes all works undertaken prior to contract suspension in December 1997, and paid for by the USDOI grant and Government funding, and not eligible under the loan. Phase II comprises the balance of the work not yet started under the suspended contract primarily relating to finishing works and provision of services. Phase II work will be eligible for funding under the loan. The four activities listed in para. 57 will constitute the work scope for Phase III and will be funded under the proposed loan.

59. Works under Phase II and III will enable the hospital to be operated more efficiently with minimum personnel, reduce recurrent costs, decrease the consumption of electricity by reducing

the use of air-conditioning, and extend the life of the building. Emergency water and power supply is included.

2. Water Supply and Sanitation

60. The water supply and sanitation component is aimed at increasing the fresh water supply to 1,000 m^3/day and upgrading the saltwater sewerage and effluent disposal system. This component will include (i) rehabilitating catchment tanks and distribution networks, and installing meters; (ii) providing a 500 m^3/day reverse osmosis plant; (iii) providing a water treatment plant; and (iv) rehabilitating and upgrading the sewerage treatment plant and pumping facilities.

3. Power Generation and Distribution

61. The component is aimed at providing adequate power to Ebeye and improving the distribution system for safer and more efficient performance. It will include (i) overhaul of engines and generators; (ii) rehabilitating the power station and supplying necessary tools and spares; (iii) installing auxiliary generator units, fuel tanks, cooling water pumps, etc.; (iv) installing underground distribution lines and debit meters; (v) replacing secondary feeds and connections; and (vi) training staff in operation and maintenance.

4. Support of PHC and Outreach Program

62. This will include (i) a youth health program, (ii) health education, and (iii) a family planning component to support overall health improvement.

63. The youth health program will provide training for six young volunteer community health workers in collaboration with the World Health Organization, assistance for organizing workshops for the young people of Ebeye and nearby islands, and one consultant in youth health promotion and program design.

64. The health education component will train community health workers and professional health workers on nutrition, the proper use of water for hygiene, and meal preparation (particularly for young children); organize four workshops for women when safewater is available through the water component; and provide for a consultant and basic equipment to start the pilot small-gardening project, when land arrangements are complete.

65. The family planning component will train health workers and volunteers, particularly young community health workers; and initiate awareness campaigns and conduct workshops targeting men and condom use.

5. Project Management and Consulting Services

66. The Project is to establish and set standards for the management of health services and operation of utilities. Strong project management is required. In-country technical and managerial capability will be strengthened through on-the-job training, workshops, and seminars. The Project provides 36 person-months of international and about 24 person-months of local consulting services. Consultant will be utilized in the following areas:

(i) establishment and operation of a project management unit (PMU) responsible for timely and cost-effective delivery of the physical components (18 person-months);
(ii) hospital design and rehabilitation, technical support for utilities, and provision of financial and managerial expertise to the PMU (3 person-months);
(iii) construction supervision for all components (15 person-months);
(iv) specialist inputs to develop and bid out privatization options for KAJUR (6 person-months;
(v) suitable training of nationals in the operation and maintenance of both water and power utilities including financial management, control, and project monitoring system (6 person-months);
(vi) assistance in implementing an equitable and sustainable cost-recovery program (3 person-months);
(vii) establish a project management system for the Project and related activities to include organization, planning process, setting of performance indicators, and monitoring mechanism (6 person-months); and
(viii) other specialist inputs as required.

C. Technical Justification

1. Ebeye Hospital

67. Ebeye has an existing 30-bed hospital located in the center of the island facing the ocean side. The building is badly deteriorated because of poor initial construction, the harsh and corrosive environment, and inadequate maintenance over the years. Funds and personnel for housekeeping and maintenance have not been committed. In 1993, the hospital was in such state of disrepair that KADA, in consultation with MOHE, decided to build a new hospital. USDOI agreed to provide a grant of $4.5 million. Upon completion of the new hospital, the old hospital is to be decommissioned and abandoned or used as nurses quarters, if suitable.

68. Maintenance of the old hospital is budgeted at less than 1 percent of the current annual operating budget. This extremely low level of expenditure for hospital maintenance has been a regular practice for the RMI and a major factor in the current deterioration of the existing hospital. Recently, the Bank approved utilization of maintenance and equipment-related funding under the Health and Population Project (para. 19) to help fix the leaking roof of the existing hospital and purchase critical life-saving equipment.

2. Water Supply and Sanitation System

69. Until May 1998, water was ferried twice a week from USAKA. A single tanker transported the water to Ebeye households with storage tanks. Others had to take the ferry across to Kwajalein and fill as many plastic containers as they could carry. Securing water had become the major activity for most of the population. Others, who had access (visitation), would visit USAKA daily to use the facilities for their water needs. Under an emergency plan, FEMA provided three new 100 m^3 per day capacity reverse osmosis desalination plants. The three units, which were operated by a private contractor, produced 300 m^3 per day for almost three months. The units had a significant impact on the availability of water. The visits to USAKA, long lines for catchment water, and transportation of water from Kwajalein were no longer part of life on Ebeye for that period. Since then the situation has reverted to fetching water from USAKA mostly by school-going children. With an additional reverse osmosis unit of 500 m^3/day capacity,

and improved collection and storage facilities for rain water, the Project will augment the fresh water capacity to produce an average of at least 1,000 m^3/day or about 0.8 m^3/day per capita.

70. The sewerage system is the only infrastructure item that is presently operating with power produced from emergency generators. Likely many additional and illegal connections have been made to the existing system, resulting in more sewerage and wastewater entering the system than was ever intended by the designers. The reserve capacity built into the system has been eroded over time and is in the process of slow decline. The effluent treatment plant needs rehabilitation. Once upgraded and rehabilitated, the system will be able to handle the increased throughput of wastewater, as it was originally designed to handle 1,500 m^3 of fresh water from the desalination plant and the saltwater flushing system

3. Power

a. Generation

71. The power plant on Ebeye is in generally good condition but due to the lack of a proper maintenance program, is deteriorating quickly. There are two main Enterprise engines in the power station. A recently installed Caterpillar engine has been unreliable, it suffers from overheating and vibration. Ongoing litigation will probably not be resolved soon. Suitable additional capacity (e.g., 800 kW units from USAKA) will need to be installed to meet the peak load requirements of the island.

72. The power plant ancillary equipment and powerhouse are not in good condition. A substantial investment is required to ensure reliable operation. The lube oil filtration plant does not function as designed. The existing fuel tanks are in poor condition and have inadequate capacity. They need to be replaced with larger units. With more storage capacity and adequate working capital, the cost of fuel is likely to be reduced by about 30 percent. The heat exchangers for units no. 1 and 2 need to be overhauled. There is an increasing environmental problem arising from poor oil handling techniques, and it is only a matter of time before oil contamination reaches the lagoon. Storage of lube oil and solvents is also unsatisfactory.

b. Distribution System

73. The present state of the power distribution supply system in Ebeye is less than satisfactory and is unsafe. The high voltage distribution system is close to collapse and will not be able to continue to perform its designed task. The low voltage system was installed in an ad hoc way to accommodate the very densely populated area. Access to the top of poles is a dangerous task and is becoming worse as the hardware corrodes. The poles themselves are degrading; many are showing signs of collapse. The entire high voltage distribution network urgently needs to be placed underground. The low voltage wiring though unsightly is not in such poor condition and can continue to be used. While the corrosive nature of the environment makes it advisable to eventually place the entire distribution network underground, this will be difficult for the low voltage service lines because of the lack of space between houses.

D. Cost Estimates

74. The Project is estimated to cost $11.6 million equivalent (including contingencies and service charges). Of this, $9.5 million (81.9 percent) is for foreign exchange costs, and $2.1 million equivalent (18.1 percent) for local currency costs. Table 2 provides a summary of the cost estimates. A summary of the project costs is given in Appendix 4.

Table 2: Cost Estimates
($ million)

Cost	Foreign Exchange	Local Currency	Total Cost
A. Base Costs			
1. Completion of Hospital	3.800	0.500	4.300
2. Water Supply and Sanitation System	1.480	0.290	1.770
3. Power Generation and Distribution System	1.750	0.550	2.300
4. Support for PHC	0.600	0.150	0.750
5. Consulting Services	0.650	0.350	1.000
Subtotal (A)	**8.280**	**1.840**	**10.120**
B. Contingencies			
1. Physical Contingencies	0.803	0.185	0.988
(10 percent)	0.321	0.075	0.396
2. Price Contingencies (4 percent)			
Subtotal (B)	**1.124**	**0.260**	**1.384**
Service Charges	**0.096**	**0.000**	**0.096**
Total	**9.500**	**2.100**	**11.600**

PHC = primary health care.

E. Financing Plan

75. The Bank will provide a loan of $9.25 million equivalent from its Special Funds resources, representing 79.7 percent of the total project cost. The loan will finance 97.3 percent of the foreign exchange cost of $9.5 million. The loan will have a repayment period of 32 years, including a grace period of 8 years, with an interest charge of 1 percent during the grace period and 1.5 percent thereafter. Under the Bank's new graduation policy, the maximum generally applicable financing limit for RMI projects has been reduced under transitional arrangements from 80 percent to 75 percent for projects approved in 1999. However, Bank policies permit the financing of a higher percentage particularly in cases when only foreign exchange is financed by the Bank. USDOI will contribute $470,000 in grant financing for the construction of the hospital building, and the Government will finance the remaining $1.88 million equivalent.

76. Apart from the USDOI grant funding for the completion of the hospital, it was agreed that USAKA will provide two reconditioned 800 kW generators and two fuel tanks from surplus property. These will be installed and commissioned with appropriate accessories under the Project. The Operation and Maintenance Improvement Program of USDOI has also committed to provide $50,000 in annual grant funding as maintenance support for the hospital upon its completion.

77. The proposed financing plan is given in Table 3; details are provided in Appendix 5. The Government assured the Mission that adequate counterpart funds will be made available as the Ebeye Hospital is the Government's priority project.

Table 3: Financing Plan
($ million)

Source	Foreign Exchange	Local Currency	Total Cost	Percentage
Bank	9.250	0.000	9.250	79.7
USDOI Grant	0.250	0.220	0.470	4.0
Government	0.000	1.880	1.880	16.3
Total	**9.500**	**2.100**	**11.600**	**100.0**

USDOI = United States Department of the Interior.

F. The Executing Agency

78. In view of the multisector design of the Project involving health, power, and water, as well as several agencies (KADA, KAJUR, KALGOV, etc.), it was agreed that the Executing Agency for the Project will be the Office of the President. The Office of the President and its nominated interagency coordinator will be responsible for overall supervision, coordination, and planning.

79. A project steering committee will be established before loan effectivity to provide high-level policy guidance. Its members will include senior-level representatives from MOHE, Ministry of Finance, KADA, and the Office of the President. The committee will meet quarterly, and more often if necessary, throughout project implementation.

80. A PMU, to be established in Ebeye before loan effectivity, will have responsibility for day-to-day implementation of the Project. The PMU will be managed by a full-time project manager and be supported by counterpart staff for accounting and secretarial support services. Designated local counterpart staff will also be assigned to the PMU for training and familiarization with project management and Bank procedures. A project implementation committee will be established to advise the project manager on technical matters and to ensure that appropriate actions are taken to resolve any implementation issues that may arise. The committee will be established before loan effectivity and meet as often as required but at least monthly. It will be chaired by a project director and will comprise representatives of MOHE, KADA, KAJUR, KALGOV, USAKA, and other concerned agencies. The proposed project organization chart is provided as Appendix 6.

G. Implementation Arrangements

1. Procurement

81. All procurement of goods and services financed by the Bank will be carried out in accordance with the Bank's *Guidelines for Procurement.* The PMU will be responsible for developing specifications, and for preparing and evaluating bids, with the assistance of the PMU consultant recruited under the Project. Contracts for the purchase of equipment estimated to cost more than $500,000 and civil works estimated to cost more than $1.0 million will be carried out using international competitive bidding procedures. International shopping procedures will be followed for purchase of equipment between $50,000 and $500,000 and for civil works contracts estimated to cost $1.0 million or less. Smaller purchases estimated to cost less than $50,000 will be carried out through direct purchase procedures. Procurement packages based

on the implementation schedule requirements will be prepared by the PMU. Indicative procurement packages are given in Appendix 7.

82. Procurement of the civil works covered under Phase II, i.e., those works already contracted to AIC Micronesia Inc., will proceed as provided under the existing contract. This is in accordance with the Bank's *Guidelines for Procurement* (para. 3.05 [v]), which permit direct negotiation or single tender in circumstances when the civil works to be undertaken are a natural extension of an earlier or ongoing job, and the engagement of the same contractor will be more economical and will ensure compatibility of results in terms of quality of work. It will be a condition for the effectiveness of the Loan Agreement that the existing contract with AIC Micronesia together with the full terms and conditions under which the civil works are to be resumed must be acceptable to the Bank.

83. AIC Micronesia, Inc. is a company registered in the Marshall Islands but forming part of the AIC group of companies. The AIC group is headed by AIC International, Inc., an American company incorporated in Washington State, but with its base of operations in Guam. AIC Micronesia was contracted in 1995 to execute the services and finishing of the new hospital. The contract was suspended in December 1997 for lack of funding and has not yet been resumed. Works completed to date are paid for, and there are no liquidated damages, unpaid interest or other claims pending, although this point will be confirmed in writing by the contractor as one of the other conditions for the effectiveness of the Loan Agreement. Documentation provided by KADA shows that the original award was based on competitive bidding by international bidders in accordance with well-defined selection criteria similar to those used by the Bank for international competitive bidding. The performance of the AIC Group, as evaluated from the quality of work performed, their managerial capacity, and financial standing have been commendable. AIC Micronesia has satisfactorily executed all tasks required under the suspended contract up to the extent that funds were available. Work was suspended upon request of the Government and USDOI. Under the circumstances, continuing with AIC Micronesia to complete the balance of the contracted but unfinished work would be the most advantageous option.

2. Consulting Services

84. Consultants under the Project will be recruited in accordance with the Bank's *Guidelines on the Use of Consultants*. Consultants will provide essential service and operational support, build capacity in the local institutions, and conduct training and staff development activities. Individual consultants will be engaged except for the PHC component for which a firm may be engaged. Broad terms of reference for the project manager and other consultants are in Appendix 8. More detailed terms of reference for consultants/specialists will be prepared during implementation.

3. Implementation Schedule

85. It is envisaged that the Project will be implemented over a 30-month period and completed by the end of 2001. With proper project scheduling and management the hospital construction can be completed within 10-12 months after obtaining authority to proceed. The power and water components also need to be completed within the same time to ensure normal hospital operation. It is therefore proposed that the hospital be made operational starting FY2001. The proposed implementation schedule is attached as Appendix 9.

4. Imprest Account

86. To facilitate project implementation and ensure the timely release of funds, a portion of the proceeds of the Bank loan will be deposited in an imprest account, which will be established with an initial deposit of $400,000. The account will be established, operated, and maintained in accordance with detailed arrangements agreed to by the Government and the Bank, consistent with guidelines in the Bank's *Loan Disbursement Handbook.* It will be used for eligible expenditures under the Project. The Bank's statement of expenditures procedure may be used for reimbursement of expenditures and for liquidation of expenditures paid out of the imprest account that do not exceed the equivalent of $50,000 per expenditure.

5. Reports, Accounts, and Audit

87. The PMU will maintain separate records and accounts for the Project, and will have the accounts and related financial statements, together with the imprest account and the statement of expenditure records, audited annually by independent auditors, not later than nine months after the end of the fiscal year to which they relate.

88. The PMU will provide the Bank with quarterly progress reports on project implementation. Within three months of the physical implementation of the Project, the PMU will provide the Bank with a project completion report on the execution and initial operation of the project facilities, including the cost and compliance with the loan covenants.

6. Midterm Review

89. A comprehensive review of the Project will be carried out by the Government and the Bank about 12 months after loan effectiveness, at a mutually agreed time. The midterm review will evaluate project progress, benefit monitoring and evaluation, and implementation arrangements. It will identify weaknesses, if any, in the project design and its implementation, and will suggest remedial measures for consideration by the Government and the Bank. The terms of reference of the midterm review are given in Appendix 10.

7. Advance Action and Retroactive Financing

90. The Government has requested advance procurement action and retroactive financing to ensure that work can begin immediately. The Bank's management has approved advance action for the following:

(i) the recruitment of an individual PMU support consultant to assist the PMU and a hospital architect and planner to undertake redesign of the floor plan and air-conditioning system (the PMU support consultant will assist in selecting and recruiting the individual hospital architect); and

(ii) the mobilization of the civil works contractor to complete the balance of the suspended Ebeye Hospital contract and restoration of the work completed to date.

91. The Bank's Management has recommended retroactive financing up to $500,000 for activities under item (ii), subject to approval by the Board.

8. Anticorruption Measures

92. The hospital and other projects in Ebeye have had a history of lax controls and poor financial management. For this Project, in particular, there is a need to establish sound accounting, internal control, and auditing systems to ensure that (i) project accounts are maintained properly and periodically audited; (ii) the imprest account is efficiently used and its operation strictly monitored; and (iii) statement of expenditure records are properly maintained and made readily available for examination. In this context and in line with the Bank's new anticorruption policy, the necessary accounting and reporting systems and financials controls for the Project will be established, and made robust and stringent. If necessary, specialists will be recruited under the loan to undertake these tasks. The Bank will undertake regular monitoring of the Project. Project accounts will generally be audited annually or more frequently as required. Separate imprest accounts will be maintained for the Bank and Government funds, and operated with proper internal control systems.

93. To strengthen project supervision and management, the PMU will be established prior to loan approval and staffed with qualified, technical and financial personnel who will be tasked with quarterly reporting of physical and financial progress. A construction supervision contract will ensure compliance with technical and quality specifications. Proper works completion certification will be required prior to payment of contractors.

94. It is expected that with private sector involvement in KAJUR, record-keeping, financial controls, and accountability will improve. The proposed management contract will include performance-based penalties and bonuses; this will require the maintenance of proper accounts. For the hospital operation, the newly introduced health management information system will be implemented in Ebeye, and other accounting procedures being followed in Majuro will be applied. These measures are intended to ensure strengthening of accounting and internal control systems of the operating entities.

H. Environmental and Social Measures

1. Environment

95. The current design of the major components of the Project calls for an initial environmental examination; a summary is attached as Appendix 11. In general, project components result in environmental improvements and better living conditions. With adoption of sound construction, design, and maintenance practices, environmental impact during implementation can be minimized and/or mitigated. A detailed environmental impact analysis is not warranted.

96. Specific environmental benefits include (i) clean up of the hospital area, (ii) improvement of sewerage collection and treatment due to rehabilitation of the power plant, and (iii) reduction of health hazards and protection of coastal and freshwater as a result of better sewerage and solid waste management. Provision of solid waste management will decrease the buildup of effluents in the lagoon. The Project involves upgrading and rehabilitating existing facilities and therefore is unlikely to lead to any additional environmental or social concern. Successful project implementation will have a beneficial impact on the people of Ebeye, particularly women and children, through provision of better health services and improved living conditions.

97. The negative impacts of the Project are mostly temporary and reversible, mainly from noise, dust, and traffic during construction. Hospital waste will be disposed of in a separate designated area. Other solid waste will be incinerated. The cost of a gas-fired incinerator is included under an item for essential work not included in the earlier estimate (Appendix 4). The improvements to be undertaken on the power plant are designed to reduce the emissions from the operation of the generating sets. Use of low-sulfur fuels will minimize pollution. All effluents will be treated before discharge. The additional wastewater flow, as a result of the additional water supply, will be collected and treated by upgrading the existing sewage system. The provision for upgrading the sewerage treatment plant will result in well-treated sewerage being discharged into the lagoon. Adequate arrangements are provided for discharge of sludge from the sewerage treatment plant; this will eventually be used for topsoil.

2. Social Measures

98. The level and type of health care service planned for the new hospital are considered appropriate and affordable for the Government and the community, and reflect the realities of Ebeye. Very little major surgery is currently done in Ebeye because there are not enough people to generate the demand to support a full-time in-patient surgical service. The Project will (i) support a full profile of primary health care services easily accessible to the whole population, inclusive of disease prevention, promotion of healthy lifestyle, family planning, inoculations, and mother and child health; and (ii) provide surgical health care capability for emergencies, minor surgeries requiring local anesthesia, and a few types of major surgeries that can be performed by a obstetrician/gynecologist doctor. More complex surgical procedures that can be scheduled (nonemergency), will be referred to Majuro or taken care of by visiting teams of specialists.

99. The operational cost of the hospital will be sustained by progressive increases in user fees, improved user fee collection, and more efficient allocation of health sector resources. All factors will be considered when establishing user fee rates to ensure that the poorest are not deprived of basic medical care.

100. The emphasis on preventing communicable and noncommunicable diseases will directly improve the quality of life of the population by reducing morbidity and mortality and the need for curative services. The availability of safe water will have a direct impact on the incidence of waterborne diseases. Community participation will be promoted through the PHC outreach program supported by the Project. The community volunteer health workers participating in this program are women from Ebeye and the nearby islands; the Project will help promote their status. Through health education and the follow-up of chronic patients (such as diabetics), PHC will help decrease hospitalization rates and length of stay, and reduce health care expenditures. The Project will provide funding and technical support to expand the youth health program and involve young volunteers; this will promote health education among the young (15 years and less) who comprise 50 percent of the population.

101. An initial social assessment was undertaken. Social indicators are provided in Appendix 12. The Project will be beneficial to the population, particularly women and children. Their overall quality of life will be improved through better health services and availability of reliable and safe water supply.

a. Resettlement Issues

102. There are no resettlement issues involved. At worst, there may be some temporary dislocation and suspension of regular work during the construction period. Appropriate

mitigation measures will be taken, and those dislocated will be given employment preference by project contractors.

b. Participatory Development and Involvement of Nongovernment Organizations

103. Participatory workshops and involvement of nongovernment organizations will be undertaken during appraisal. Initial contacts were established with Kwajalein Atoll Relief Emergency.

c. Gender Development

104. Women's volunteer groups are presently organizing some of the community outreach and youth health promotion programs in Ebeye supported by MOHE staff. The Project will further expand and support activities promoting the role and importance of women in Ebeye. It is also proposed that upon the completion of the new hospital, several peripheral services (such as food services, and janitorial services) will be outsourced from women-initiated private groups. This will provide additional employment opportunities and empowerment of women in the community.

d. Poverty Impact Assessment/Affordability

105. The Mission conducted a preliminary affordability assessment for power, water, and sewerage taking into consideration that full cost recovery and privatization may lead to increased user fees. Household income data for Ebeye indicate an average income of $15,000 per annum per household of 10 persons. In addition, a large number of Ebeye residents receive land payments either directly as landowners or indirectly, as land payments are customarily distributed among the rest of the country. Current estimates for power, water, and sewerage after allowing for a 20 percent increase in charges is estimated at $200 per month, at current consumption levels. This is within the 15 percent benchmark used in most developing countries and is considered affordable. It is anticipated that enforcing the collection of charges will lower the level of power consumption by households, while efficient operation of the utilities may result in lower tariff rates. Both these factors are likely to reduce overall household expenditure on utilities. The summary of sample survey results in Appendix 13 confirm these findings.

V. PROJECT JUSTIFICATION

A. Financial and Economic Analyses

106. The financial and economic analyses of the Project involved (i) demand analysis and estimates of the financial and economic internal rates of return (FIRR and EIRR). Separate analysis was carried out for the power and water components of the Project. Assumptions and the sensitivity analysis are given in Appendix 14.

1. Financial Analysis

107. Financial analysis was prepared only for the water/sewerage and power components because the Ebeye Hospital is not a revenue-generating entity. As shown in Appendix 14, the FIRR is estimated to be 11.0 percent for the water/sewerage component and 29.1 percent for the power component. These are considered acceptable because they comfortably exceed the assumed real opportunity cost of capital of 4.4 percent. Sensitivity analysis shows that the FIRR

for the water/sewerage component is relatively sensitive to an operational cost overrun, revenue shortfall, and delay in revenue realization. However, financial viability is still maintained against a 10 percent increase in operational costs. Financial viability of the power component appears relatively more robust. The power component maintains its financial viability in all cases except the worst case scenario. In the worst case scenario (combination of 10 percent increase in total cost and 10 percent decrease in revenue), FIRRs for both components go down below the financial opportunity cost of capital.

2. Economic Analysis

108. For the hospital component, in addition to qualitative arguments for finishing the new hospital, a simple cost-effectiveness analysis is done between the with-project and without-project options. Because the main function of the new hospital will be secondary and general care, the analysis compares the costs per hospital bed day associated with such services. The cost-effectiveness indicator is given by the present value of economic costs over the present value of hospital bed days. Following the Bank's *Handbook for Economic Analysis of Health Sector Projects*, a discount rate of 3 percent is used. Using conservative assumptions, the cost-effectiveness indicator is estimated to be $288.7/per bed day in the with-project option, while the without-project option is $529.8 per bed day. While accuracy is not guaranteed due to the limited data and less than clear level of services to be provided, it provides quantitative support to the economic justification of completing the new Ebeye Hospital.

109. For the water/sewerage component, after taking appropriate steps, the EIRR result turned out to be incalculable, primarily due to the extremely large benefits accruing to the saved cost for the nonincremental water. It is interpreted that the without-project scenario is so serious that any improvement in water supply under the Project will create a significantly high level of economic benefits. The estimates are robust even under the deliberately conservative assumptions made. Moreover, there is an unquantified major external benefit associated with rehabilitating the water/sewerage system: improvement of the health of Ebeye residents, especially by preventing waterborne and communicable diseases.

110. Similarly, the EIRR result for the power component was very high, at 75 percent, far exceeding the economic opportunity cost of capital of 12 percent. This is primarily due to a significant cost saving relative to the current poor state of the electricity supply. The sensitivity test shows the robustness of the economic viability.

3. Subsidies

111. Health care services are almost totally subsidized by the Government. Power and water/sanitation services are presently subsidized because of the failure of KAJUR to collect revenues or tariffs from consumers. Financial projections indicate that with the recommended tariffs, and assuming 90 percent collection of revenues, both power and water/sanitation services can be self-sustainable and do not need external subsidies from 2002 onward. However, depending on the effects of privatization, suggested tariffs for power and water, may need to be rationalized. In fact, it is possible that current power tariff rates, which range from $0.13 to $0.16 per kW-hour, could be reduced once operations have stabilized. The Project proposes a $1.80 per m^3 tariff for water; this is in line with what is currently being charged for barged water supplied from Kwajalein. The impact of higher but socialized water tariffs based on consumption levels was evaluated and found to be affordable.

B. Impact on Poverty

112. Majuro and Ebeye account for 75 percent of the national population; their growth is increasing at a rate higher than the national average of 3.8 percent. The residents of Ebeye are poorer than their counterparts in Majuro even with the same level of household income. The disproportionate cost of obtaining basic services significantly affects households earning less than $700 per month; the average household is large with 10 members. The poor provision of basic amenities in a densely populated area, together with the less than adequate level of health services, contributes to the overall poor quality of life. The Project provides sustainable, improved, and more accessible health services and safe water at reduced cost to the poor. It will make significant contribution to the environment by reducing pollution of the lagoon and nearby coral reefs.

113. The Project attempts to eliminate cost and quality inequities of basic social services in the two major urban centers of the country. The Project is expected to generate savings of $850 per annum for the poorest households (below $8,400 per annum/household group) who are currently spending a minimum of 22 percent of their income on water and power. Their expenditure on utilities will fall below the benchmark expenditure level of 15 percent of income for utilities. Access to safe water, and consequently, better health is also expected to improve the allocation of resources away from health expenditures. Currently, household resource allocation, particularly school-going children's time, is extensively used to obtain water for daily use. With the Project, time spent on meeting such basic needs will be reallocated to more productive use. Better trained and educated youth, who account for almost 50 percent of the population, will improve employability and business prospects and ultimately translate into upward social mobility.

C. Risks

1. Counterpart Funds

114. In view of the short project duration, timely availability of counterpart funding is crucial to the successful completion of the hospital. Slow release and shortage of counterpart funds have been major problems in the past. The Government has learned from the past experience of cost escalation due to delays arising from lack of counterpart funds. As the Project is of the highest priority, the Mission is confident that it will be given precedence over other appropriations. The Mission has repeatedly advised the Government of the fast pace of the Project and therefore the need to have counterpart funds available at the start of implementation. Therefore the Loan Agreement will require assurances that at the time of each annual budget preparation the Government will make sure that counterpart funds have been specifically appropriated for the Project. The deposit of $250,000 in a separate imprest account is a condition of loan effectivity.

2. Sustainability

115. The funding of the incremental operating cost of the new hospital over a long period is a major risk to the Project. The Government has been advised and alerted of such incremental costs for a new and larger facility and its implication for the sustainability of the Project. A detailed analysis of the sustainability of the Project and the hospital component in particular was undertaken. The specific items that contribute to incremental recurrent costs of the new hospital were determined. In spite of all capital improvements, redesign, and cost reduction measures to be introduced under the Project, the annual incremental cost of operating any new and

upgraded hospital facility on Ebeye would range from $850,000 to $1,000,000 per year depending on operating conditions and service delivery levels. A significant part of this incremental recurrent cost will be on account of (i) the regular maintenance needs that are not provided for in the current Ebeye health budget; (ii) the cost of utilities (primarily electricity), which will be in excess of $300,000 per annum based on current estimates; and (iii) improvement of the quality of medical services. All of these are substantially higher for the new facility than the current level of expenditure, which is minimal for maintenance ($5,000 per annum) and about $100,000 for utilities. Other incremental expenses include additional personnel required to operate the new hospital effectively; the cost for food services, which are to be an added service; and the additional cost for supplies, drugs, etc., appropriate to the anticipated level of health services. The estimated incremental cost for FY2000 is expected to be $945,000. Details are provided in Appendix 15.

116. The national budget, MISSA, revenues/expenditures/grant funding, and other sources of funding for health were scrutinized. Based on the analysis undertaken, it was determined that the incremental cost would have to be funded from the following sources: (i) increased allocation for on-island health care, (ii) additional savings from overseas referral costs, (iii) improved collection of health contributions, (iv) user fees, and (v) Operation and Maintenance Improvement Program grants of USDOI. Table 4 provides a matchup of incremental costs and funding sources for FY2000. To attain the required additional funding over an extended period, appropriate time-bound conditions have been included as a specific assurance; this will be covenanted in the Loan Agreement.

Table 4: Incremental Cost and Funding

Incremental Costs	$	Incremental Funding	$
Personnel	125,000	Increase on-island allocation	300,000
Maintenance	450,000	Additional savings on referrals	80,000
Cleaning supplies	5,000	User fee collection	140,000
Utilities	205,000	Improved collection rate	100,000
Drug and medical supplies	75,000	OMIP support	100,000
Food	85,000	Additional budget support	225,000
Total	**945,000**		**945,000**

OMIP = Operation and Maintenance Improvement Program.

3. Technical

117. **Hospital design.** The deficiencies and inflexibility of the original hospital design are likely to hamper efficient work flow and utilization. To the extent possible, layout changes are to be made within the overall design of the building. Air-conditioning requirements will be minimized, areas will be segregated and energy conservation measures will be included to keep energy consumption to the bare minimum.

118. **Power and water.** Without continuous access to power (and water), the hospital cannot function. In the absence of natural ventilation (due to design deficiency) air-conditioning is a must. Should the power and water problem remain unresolved, the Project is likely to be unsustainable. Therefore, the private sector involvement of KAJUR has been made an essential precondition for the Project. The execution of a management contract for 18-24 months to operate and manage the water and power utilities in Ebeye is a condition for loan effectivity.

VI. ASSURANCES

A. Specific Assurances

119. The Government has given the following assurances, in addition to the standard assurances, which have been incorporated in the Loan Agreement:

(i) **Privatization of KAJUR.** The Government will enter into a management contact with a qualified private sector operator under which the power and water utilities on Ebeye will be placed under the control of the private sector operator for a period of 18 to 24 months. During the term of the management contract, a long-term concession or other form of private sector arrangement acceptable to the Bank will be formulated and tendered out according to international competitive bidding practices and such concession or other form of private sector arrangement will come into force by no later than 31 December 2001. The Government will ensure that with respect to both the management contract and the concession agreement, the utility operator will be required to comply with the following terms and conditions:

(a) **Accounts receivable.** Commencing in FY2000, the private sector operator will classify its customers as residential, commercial, and government. The private sector operator will establish clear criteria for disconnection of services to consumers with overdue accounts in line with practices established in Majuro. The private sector operator will also take all necessary measures to reduce its accounts receivable to less than three months of current billings before 30 September 2001.

(b) **Tariffs.** Commencing in FY2000, the private sector operator will review tariffs annually to ensure that operation and maintenance costs, excluding depreciation, and applicable loan financing costs are met, and if warranted, periodically adjust tariffs to meet such costs from tariff revenue.

(c) **Collection efficiency.** The private sector operator will improve on the average billing and collection efficiency prevailing in FY1999 in order to achieve the following targets: (i) more than 75 percent of current monthly billings before 30 June 2000, (ii) more than 85 percent of current monthly billings before 30 June 2001, and (iii) more than 90 percent of current monthly billings before 30 June 2002.

(d) **Unaccounted for water and power losses.** By no later than 30 June 2000, the private sector operator will furnish to the Government and the Bank a plan to: (i) improve the efficiency of its saltwater distribution system by reducing unaccounted for water to less than 20 percent of production before 31 March 2001, (ii) improve the efficiency of its freshwater distribution system by reducing unaccounted for water to less than 15 percent of production before 30 September 2002, and (iii) improve the efficiency of power generation and distribution by reducing system losses to less than 10 percent.

(e) **Environmental matters.** The private sector operator will comply with Bank environmental requirements and with the environmental laws of the Borrower, and be subject to necessary approvals with respect to environmental impact assessments.

(f) **Community participation.** The private sector operator will hold participatory public meetings to discuss water and electricity conservation, health aspects of water use, rights of access to water resources, water and power tariffs, affordability, and other Project-related issues.

(ii) **Sustainability of Ebeye Hospital.** In recognition of the fact that the new hospital will incur additional operating costs, the Government will commit to ensuring that adequate funding is provided to meet such additional recurrent costs. The funding will be provided through (a) an increase in the on-island health care allocation; (b) the allocation of referral cost savings; (c) the transfer of user fees to the hospital for maintenance costs; and (d) the provision of additional budget appropriations to cover any year-to-year shortfalls.

(iii) **User fees.** By no later than the commencement of FY2001, the Government will raise the fees for hospital services (to cover, among other things, a part of the new services provided to in-patients such as food), and institute a differentiated fee structure depending on the number of beds per room. MOHE will be responsible for collection and will be appropriately staffed. MISSA will continue to manage fees collected and will set up a separate account for Ebeye user fees to allow monitoring of user fee proceeds, by no later than 30 June 2000, which will be exclusively allocated to maintenance costs of the Ebeye Hospital.

(iv) **MISSA on-island health care allocation.** MISSA will change the current allocation for on-island health care from 40 percent to 50 percent. At least $300,000 of the additional funding generated will be specifically allocated to operating the Ebeye Hospital. This will be accomplished by 30 September 1999.

(v) **Counterpart funds.** The Government will deposit at least $250,000 in an imprest account to ensure the availability of counterpart funding at the commencement of the Project. In addition, the Government will include a budget appropriation of at least $1.0 million for the Project in FY2000.

(vi) **MISSA collection of contributions.** MISSA will take all necessary steps to improve collection of employee and employer contributions to generate an additional $300,000 for the Basic Heath Fund by FY2000. (This anticipates improved collection ranging from 5-10 percent).

(vii) **Maintenance and replacement of building and equipment**. MOHE will ensure that Ebeye Hospital has a separate and identifiable maintenance budget and a multiyear capital budget and equipment replacement plan. The yearly maintenance budget must be equivalent to 6 percent of respective building cost and 8 percent of equipment costs (medical, mechanical, and electrical).

(viii) **Long-term land lease for Ebeye Hospital.** By no later than 31 December 1999, the Government will provide the Bank with a certified copy of the land lease for the site occupied by the new Ebeye Hospital, and will assume responsibility for payment of the annual rent. The term of the land lease will be not less than the term of the Bank's loan.

(ix) **Increasing efficiency of health service delivery.** MOHE will institute measures

to promote the efficiency of health service delivery by reorganizing health personnel assigned to the Ebeye Hospital, maximizing the patient/personnel ratio in accordance with medical services standards, increasing the performance of health personnel through competency-based in-service training, upgrading maintenance, and providing timely information on the utilization and cost of health care services.

B. Conditions of Loan Effectiveness

120. The following are conditions to the effectiveness of the Loan Agreement:

(i) The project steering committee, project management unit, and project implementation committee will be established.

(ii) The Government will have entered into a management contract satisfactory to the Bank for the operation and management of the Ebeye water and power utilities.

(iii) The Government will have deposited at least $250,000 in an imprest account to ensure the availability of counterpart funding at the start of the Project.

(iv) AIC Micronesia, Inc. will have provided confirmation satisfactory to the Bank that no subsequent claims will be made by it against the Government or any other party for unpaid interest or liquidated damages or on any other grounds for work done under Phase I of the Ebeye Hospital.

(v) The Government and AIC Micronesia, Inc. will have reached an agreement on the resumption of work on Phase II. The reinstated contract and any conditions will be satisfactory to the Bank.

(vi) Arrangements satisfactory to the Bank will have been made for the USDOI grant to be fully disbursed.

VII. RECOMMENDATION

121. I am satisfied that the proposed loan would comply with the Articles of Agreement of the Bank and recommend that the Board approve the loan in various currencies equivalent to Special Drawing Rights 6,924,000 to the Republic of the Marshall Islands for the Ebeye Health and Infrastructure Project, with a term of 32 years, including a grace period of 8 years, and with an interest charge at the rate of 1 percent per annum during the grace period and 1.5 percent per annum thereafter, and such other terms and conditions as are substantially in accordance with those set forth in the draft Loan Agreement presented to the Board.

TADAO CHINO
President

19 July 1999

APPENDIXES

SUPPLEMENTARY APPENDIXES
(available upon request)

PROJECT FRAMEWORK

Design Summary	Indicators	Data Sources	Assumptions
Goal Improve the development potential, health, and well-being of the people of Ebeye.	Major indicators of health status Minimum water availability /day Total connections (water & power) Units sold (water & power) Revenues (water & power)	Health management information system (HMIS); Billing efficiency Cash flow plan of utility company	Health personnel, drugs, medical supplies, & adequate operational budget are available. Policy reforms on health cost recovery, administration of Marshall Island Social Security Administration (MISSA), and participation of private sector in utilities are implemented.
Purpose 1. Build capacity and implement policy reform for better management of public utilities.	Transparent and timely decisions about the role of MISSA, adequacy of in-country health budget and subsidies	Records of legislative decisions	There is political commitment for improved service delivery. Stakeholders are involved. Legislation is enacted on public utilities.
2. Improve the quality of health services.	Health survey scores	Ministry of Health and Environment (MOHE) reports and user surveys	There is commitment to improve services.
3. Rehabilitate and expand sewerage and sanitation systems through better management.	Uninterrupted service and household coverage Contained and clean sites	Record of service breakdown and household surveys Regular inspections	Operation & maintenance budgets are adequate. Higher performance standard of service are set.
4. Improve the quality and availability of safe water.	Regularity of supply and bacteria count	Records of interruption of supply Consumers surveys	Budget is adequate. People are willing to pay for services rendered.
5. Improve the capacity, efficiency, and reliability of power generation and distribution.	Indicators of power production, service, and consumption Financial indicators	Total generation energy losses, total system losses, total energy sales, total energy billing, total collection	Consumers are willing to pay for services rendered. Debit meters are installed.

Outputs **1. Capacity Building and Policy Reforms** Restructure the operation and management of public utilities. Promote participatory development. Build project management capability.	Milestones for corporatization of public utilities Feedback from nongovernment organizations, people's organizations and users Number of public utility staff trained	Reports of Project Implementation Committee and Project Management Unit PMU reports PMU reports	There is commitment to improved service delivery. Stakeholders are involved. There is competence and commitment to improved service delivery.
2. Improve quality of health services Complete unfinished hospital. Improve primary health care (PHC) model of services. Promote healthy lifestyles.	Infant mortality rate Under 5 mortality rate Low birth weight in hospital Award of contract for resumption of work Availability of healthy food in stores; sport activities Level of community participation	Baseline survey HMIS Annual budget of MOHE PMU quarterly progress reports Survey of healthy food available at local stores Record of sport activities Periodic reports by the PMU Baseline planed targets	Recurrent in-country health budget is adequate. Capital investment and Government appropriations are assured. Improved air transport is available Covenants for Loan 1316-RMI are fully implemented.
3. Improve Sewerage and Sanitation System Rehabilitate existing sewerage and saltwater system.	Uninterrupted service delivery Increased household coverage	Plant upkeep records Household surveys	Investment in the sector is increased. Sanitation practices are improved.
4. Improve Water Supply System Rehabilitate and expand existing fresh water supply system. Improve catchment, treatment, and distribution of water. Promote community participation for better use of water resources.	Reduced leakage and wastage; increase in population served Larger quantity of bacteria-free drinking water produced Reduced nonrevenue water and lower unit cost	Periodic PMU reports Periodic water tests; epidemiological data on waterborne diseases Consumer surveys and accounts of waterplant operator	Investment in the sector is increased. Operation and maintenance is improved. Participatory development practice are in place.

5. Improved Capacity, Efficiency and Reliability of Power Generation and Distribution Refurbish power station equipment and expand generating capacity. Rehabilitate and expand fuel storage capacity. Rehabilitate high voltage and low voltage distribution systems. Train operation and maintenance personnel.	Daily power production before and after refurbishment of the station Unit energy production cost Fuel storage capacity before and after Distribution losses before and after rehabilitation, loss of revenue due to breakdown Number of production and maintenance staff trained Reduction in power outages	Power station logbook Reports of the PMU, loan disbursements Fuel losses, new cost of fuel Accounted for energy Nonaccounted for energy Billing for all consumers Reports of the PMU	PMU staff are qualified, experienced, and have integrity. There is no political interference in the implementation of the Project and selection of utility firm. Counterpart funds are available on time. Contractors are competent and have integrity.
Activities	**Inputs**	**Monitoring**	**Assumptions/ External Factors**
1. Capacity Building and Policy Reforms **1.1 Restructure the operation and management of public utilities.** Establish a public utilities corporation. Strengthen the water and sanitation regulatory environment. Introduce tariffs and financial autonomy.	Legislative input and technical design, facilities, and plant Organizational restructuring and assignment of role Financial management skills Introduce tariff rates reflecting resource use	Legislation passed, corporation registered, and facilities provided Periodic evaluation and inspection reports Financial reports of the restructured corporation	There is commitment to autonomous and accountable service delivery, and concern for long term public interest. Resource requirements and availability are realistically assessed.
1.2 Promote participatory development. Each house will collect rainwater. Recycle waste. Provide hygiene information and education campaigns.	Provision of rainwater tanks Know-how facilities & skills Info & education campaigns, demonstration workshops	Household survey Household level survey /campaigns Activity calendar of nongovernment organizations & action	There is a need for safe and low-cost water, and demand for improved hygiene. Improved information leads to enhanced performance.

		Groups interviews with participants	
1.3 Build project management capability. Establish a project management unit.	Facilities, office equipment, and deployment of core staff	Project progress reports	There is capital investment in the sector.
2. Improve Quality of Health Services **2.1 Complete unfinished hospital.** Revise floor plan and layout to improve workflow and functionality. Complete physical facilities.	International consulting services Consultations with MOHE and interested parties Loan proceeds and counterpart funds International contractor	Consultants reports, PMU reports Periodic project review meetings Utilization of loan and counterpart funds, progress reports	Approval of credit facilities Fielding of experts Mobilization of contractor Availability of counterpart funds
2.2 Improve PHC model of services. Improve operation of family health services. Improve disease control.	Trained medical personnel, drugs, and medical supplies are available Immunization, contact screening	On-site visits, MIS Report of environmental services	The number of health personnel is adequate. Drugs and supplies are available. Epidemiological analysis is undertaken.
2.3 Promote healthy lifestyle. Develop information and awareness campaign.	Funds for training materials and training of trainers	PMU and MOHE reports Review of training materials Expenses incurred	Financial resources to support training and awareness program are available.
3. Improve Sewerage and Sanitation Systems **3.1 Rehabilitate existing sewerage and saltwater systems** Undertake restoration of sewerage pump stations. Unclog and repair sewer lines and access holes. Repair saltwater pipe	Plant, equipment, and skilled labor Plant, equipment, and skilled labor Plant, equipment, and skilled	Progress reports and verification reports Progress reports and verification reports Progress reports and	Assured capital investment Assured capital investment Assured capital investment

system. Repair house sewer connections.	labor Plant, equipment, and skilled labor and household participation	verification reports Progress reports and verification reports	Keenness for improved hygiene and sanitation
4. Improved Water Supply System **4.1 Rehabilitate and expand existing fresh water supply system.** Repair and replace distribution mains, valves, and booster pumps. Remove bacteriological film in water pipes. Provide new house connections.	Increase maintenance, replace old pipelines and booster pumps Undertake regular swabbing of main transmission pipes Provide new water meters and make new connections	Site inspection and survey Report on water quality and periodic inspections Household survey	Effective operation and maintenance Proper treatment of water Continued sector investment
4.2 Install additional capacity for production of safe water. Install additional reverse osmosis units. Refurbish existing desalinization plant utilizing cogenerated steam from the power station.	Plant, equipment, and skilled labor Spares and skilled labor	Progress reports and verification reports Progress reports and verification reports	Assured capital investment Assured capital investment
5. Improve Capacity and Reliability of Power Generation and Distribution **5.1 Refurbish power station equipment and expand generating capacity.** Complete overhaul of two Enterprise engines. Install two 800 kilowatt reconditioned generating sets. Refurbish all ancillary equipment of the power station.	Spare parts and skilled labor Plant, equipment, and skilled labor Spare parts and skilled labor	Progress reports and verification reports Progress reports and verification reports Progress reports and verification reports	Assured capital investment Assured capital investment Assured capital investment

5.2 Rehabilitate and expand fuel storage power. Install two reconditioned fuel tanks. Overhaul two existing fuel tanks. Install new surface leakage tank to collect oil leakage.	Plant, equipment, and skilled labor Plant, equipment, and skilled labor Plant, equipment, and skilled labor	Progress reports and verification reports Progress reports and verification reports Progress reports and verification reports	Assured capital investment Assured capital investment Assured capital investment
5.3 Rehabilitate and expand high voltage and low voltage distribution system. Replace entire overhead high voltage distribution system with an underground system. Rehabilitate the existing low-voltage feeders and distribution system.	New underground cable, equipment, and skilled labor Spare parts and skilled labor	Progress reports and verification reports Progress reports and verification reports	Assured capital investment Assured capital investment
5.4 Staff training for operation and maintenance. Provide overseas training for leading personnel entrusted with operation and maintenance.	Short courses overseas	Reports from training institution	Assured capital investment

Appendix 2

POLICY REFORMS

1. **Privatization of Kwajalein Atoll Joint Utility Resources.** The Borrower, will involving private sector participation (PSP) in the operation of KAJUR, enact appropriate legislation to retain control of the tariffs for power and water, and ensure that the private operator has the authority to enforce collection of power and water charges.

2. **User fees for health services.** The Borrower will raise the fees for hospital services to a level appropriate to the services rendered and ensure that user fees are collected for at least 75 percent of the visits at Majuro and Ebeye hospitals, while ensuring access for the poor.

3. **MISSA budget for health.** The Borrower, in consultation with Ministry of Finance, Ministry of Health and Environment and Marshall Island Social Security Administration, willl ensure that the MISSA budget for health is managed and allocated in accordance with the requirements of MOHE and managed efficiently by MOHE. Procurement of drugs, medical supplies, and equipment are to be executed expeditiously in accordance with established procedures preferably by MOHE.

4. **Level of secondary health care to be provided at the Ebeye Hospital.** In accordance with the National Five-Year Health Plan, MOHE will determine the level of secondary health care to be provided at Ebeye Hospital. MOHE will ensure that sufficient personnel and finance resources are allocated to render the services.

5. **Maintenance and replacement of building and equipment.** The Borrower will ensure that Ebeye and Majuro hospitals have separate and identifiable maintenance budgets and multiyear capital budget and equipment replacement plan. The yearly maintenance budget must be equivalent to 6 percent of the respective building cost and 8 percent of equipment costs (medical, mechanical, and electrical).

6. **Undertaking financial reforms.** The Borrower will be responsible for the preparation and adoption of an in-country health budget policy. The policy will establish a sustainable and realistic health care budget that reflects the level of health care provided by MOHE within the country.

7. **Increasing efficiency of health service delivery.** MOHE will institute measures to promote the efficiency of health service delivery by reorganizing health personnel assigned to Ebeye hospital, maximizing the patient/personnel ratio in accordance with medical services required, increasing the performance of health personnel through competency-based in-service training, upgrading maintenance, and providing timely information on the utilization and cost health care services.

8. **Overseas referrals.** The Borrower will review the criteria for overseas referrals in the light of a decrease in Government revenues and will ensure that the budget for overseas referrals does not take priority over the in-country health budget. The Borrower will maintain annual evaluation records indicating the number, reason for referral, venue, cost, and social status of citizens (poor, middle income, and well to do) benefiting from the overseas referral system.

DETAILED COSTS OF PROJECT COMPONENTS

Table A3.1: Ebeye Hospital Capital Costs

Item	Amount $
A. Phase I	
Force 10 (building)	1,673,802
California Builders (cabinet hardware)	39,187
Rainer Pacific Building Supply (plumbing supply)	28,043
Other expenditures: labor, materials, architect	1,747,037
AIC Micronesia work completed as of 31 December 1997	1,756,981
Subtotal (A)	**5,245,050**
B. Phase II	
AIC Micronesia to complete current contract	1,448,094
Subtotal (B)	**1,448,094**
C. Phase III	
Work envisaged but not yet executed	420,035
Essential work not included in earlier estimates	232,850
Remedial work caused by poor design of building and/or inadequate specifications	868,707
Change orders caused by delays in implementation	139,329
Highly recommended additional work	239,000
Desirable works	172,000
Required equipment and furnitures	564,650
Subtotal (C)	**2,636,571**
Total Cost (Phases II & III)	4,084,665
Total Cost (Phases I, II & III)	9,329,715
Less: Funding to Date	5,030,000
Total Cost to Complete Hospital	4,300,000
Consulting Services	**300,000**
Total	**4,600,000**

Table A3.2: Summary Cost Estimates for Water Supply and Sewerage

Item	Foreign Exchange	Local Currency	Total Cost
A. Civil Works Components			
1. Freshwater Supply (Ebeye)			
Rehabilitation of catchment area	$40,000	$20,000	$60,000
500 m^3/day reverse osmosis plant	$400,000	$40,000	$440,000
New water treatment plant (chlorination)	$80,000	$20,000	$100,000
Rehabilitation of distribution network and water tanks	$150,000	$50,000	$200,000
Rehabilitation of household connections and installation of consumer meters	$120,000	$30,000	$150,000
Subtotal (1)	**$790,000**	**$160,000**	**$950,000**
2. Sewerage (Ebeye)			
Rehabilitation of sewage treatment plant	$300,000	$50,000	$350,000
Rehabitation of sewers and sewage pumping stations	$250,000	$50,000	$300,000
Subtotal (2)	**$550,000**	**$100,000**	**$650,000**
3. Seawater Supply System (Ebeye)			
Replacement of valves and fittings	$60,000	$20,000	$80,000
Rehabilitation of pumping system	$80,000	$10,000	$90,000
Subtotal (3)	**$140,000**	**$30,000**	**$170,000**
Subtotal (A)	**$1,480,000**	**$290,000**	**$1,770,000**
B. Consulting Services			
Design and procurement services, and construction supervision	$250,000		$250,000
Total	**$1,730,000**	**$290,000**	**$2,020,000**

Table A3.3: Summary Cost Estimates for Power Generation and Distribution Upgrade

Item	Foreign Exchange	Local Currency	Total Cost
A. Power Generation Upgrade			
1. Overhaul of two Enterprise units	450,000	50,000	500,000
2. Installation, overhauling, and commissioning of two 800 kW generators from USAKA including step-up transformers/electrical systems to synchronize with the existing two Enterprise units generating at 13.8 kV	150,000	50,000	200,000
3. Improvement of power plant building and related works	100,000	100,000	200,000
4. Provision of auxilliary genset for station use, tools, cooling water pumps, injector/oil testing, equipment, small machine shop for maintenance and spare parts	250,000	50,000	300,000
5. Fuel tank, installation, pipings, and accessories	50,000	50,000	100,000
Subtotal (A)	**1,000,000**	**300,000**	**1,300,000**
B. Power Distribution Upgrade			
1. Installation of underground cables for the high voltage primary lines including electrical accessories	350,000	150,000	500,000
2. Replacement of secondary feeders and household connection	75,000	25,000	100,000
3. Sectionalization of network	125,000	25,000	150,000
4. Debit metering	200,000	50,000	250,000
Subtotal (B)	**750,000**	**250,000**	**1,000,000**
C. Consulting Services	450,000	0	450,000
Total	**2,200,000**	**550,000**	**2,750,000**

USAKA = United States Army Kwajalein Atoll.

Appendix 4

SUMMARY OF PROJECT COSTS

Project Component	Foreign Exchange	Local Currency	Total Cost
A. Base Cost			
1. Completion of Hospital			
a. Civil Works	3,432,150	500,000	3,932,150
b. Mechanical & Electrical Equipment	67,850	0	67,850
c. Medical Equipment	190,000	0	190,000
d. Furniture	110,000	0	110,000
Subtotal (1)	**3,800,000**	**500,000**	**4,300,000**
2 Water Supply and Sewerage			
a. Freshwater Supply Rehabilitation	790,000	160,000	950,000
b. Sewerage System Rehabilitation	550,000	100,000	650,000
c. Seawater System Rehabilitation	140,000	30,000	170,000
Subtotal (2)	**1,480,000**	**290,000**	**1,770,000**
3. Power Generation and Distribution			
a. Power Generation Upgrade	1,000,000	300,000	1,300,000
b. Power Distribution Upgrade	750,000	250,000	1,000,000
Subtotal (3)	**1,750,000**	**550,000**	**2,300,000**
4. Taxes and Duties			
5. Capacity Building			
a. Consulting Services	650,000	350,000	1,000,000
b. PHC Support	600,000	150,000	750,000
Subtotal (4)	**1,250,000**	**500,000**	**1,750,000**
Subtotal (A)	**8,280,000**	**1,840,000**	**10,120,000**
B. Contigencies			
Physical (8%)	803,000	185,000	988,000
Price (3%)	321,000	75,000	396,000
Subtotal (B)	**1,124,000**	**260,000**	**1,384,000**
C. Interest /Service Charges			
Service Charge on Bank Loan	96,000	0	96,000
Total	**9,500,000**	**2,100,000**	**11,600,000**
Percentage	82%	18%	100%

PHC = primary health care.

Appendix 5

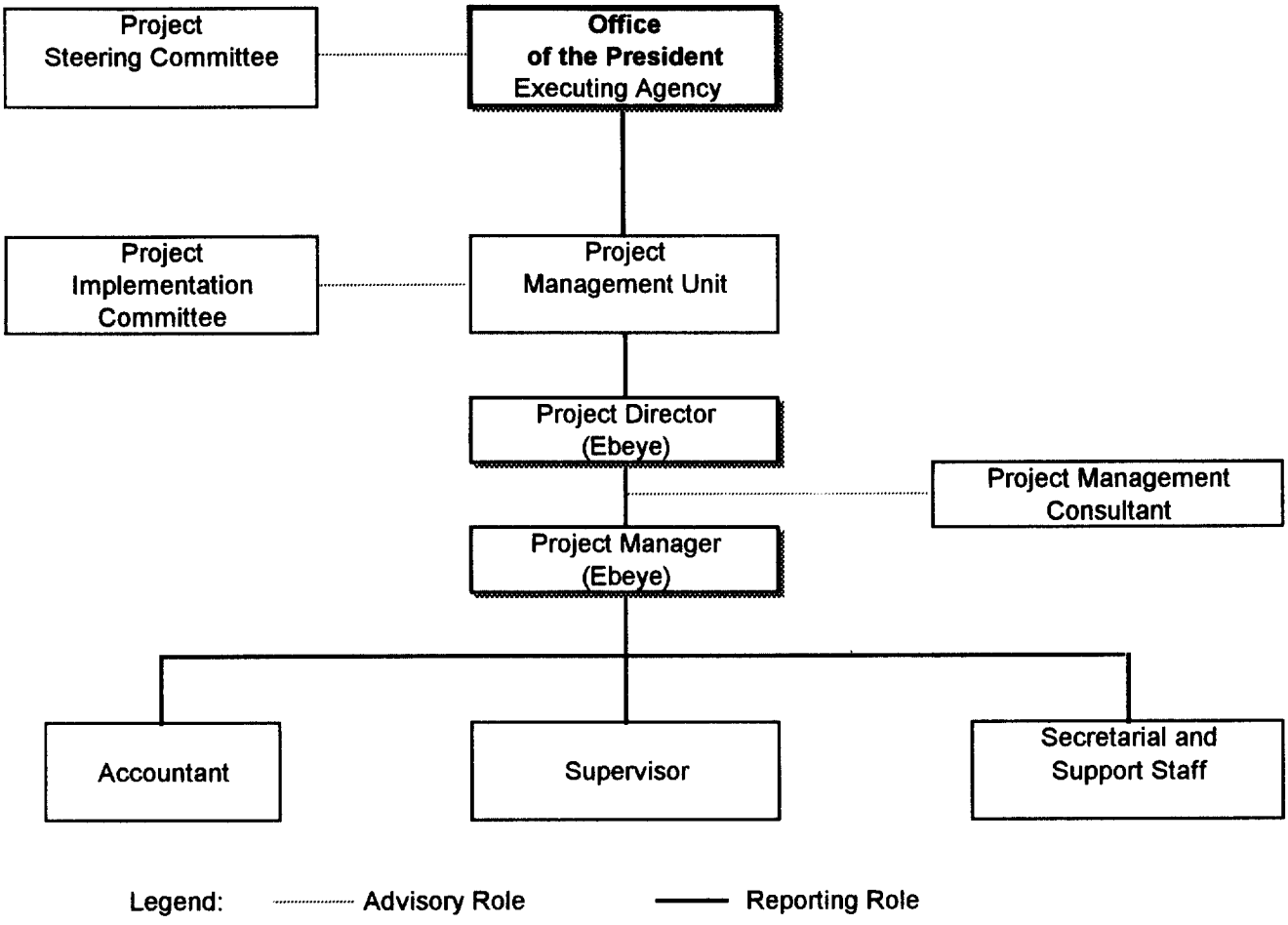
FINANCING PLAN

Civil Works	Bank	Government	USDOI		Total	Percent
	FX	LC	FX	LC		
Hospital Phase II	1,200,000		250,000		1,450,000	0.83
Hospital Phase III	1,740,000	280,000		220,000	2,240,000	0.78
Water @ Sewerage	1,080,000	290,000			1,370,000	0.79
Power Generation	300,000	300,000			600,000	0.50
Power Distribution	550,000	250,000			800,000	0.69
Subtotal (A)	**4,870,000**	**1,120,000**	**250,000**	**220,000**	**6,460,000**	
EQUIPMENT						
Hospital	610,000				610,000	
Water @ Sewerage	400,000				400,000	
Power Generation	700,000				700,000	
Power Distribution	200,000				200,000	
Subtotal (B)	**1,910,000**				**1,910,000**	
Consulting	1,250,000	500,000			1,750,000	0.71
Interest	96,000				96,000	
Unallocated	1,124,000	260,000			1,384,000	0.81
Subtotal (C)	**2,470,000**	**760,000**			**3,230,000**	
Total	**9,250,000**	**1,880,000**	**250,000**	**220,000**	**11,600,000**	

FX=foreign exchange; LC=letter of credit.

Appendix 6

PROJECT ORGANIZATION CHART



Appendix 7

PROCUREMENT PACKAGES

Description	Mode of Procurement	Base Cost $
A. Civil Works		
1. Hospital		
a. Suspended contract (phase ii)	Direct	1,450,000
b. Work envisaged but not yet executed	IS/ICB	420,035
Essential work not Included in earlier estimates	IS/ICB	187,850
Change orders caused by delays in implementation	IS/ICB	139,329
Highly recommended additional work	IS/ICB	239,000
Subtotal (b)		986,214
c. Remedial work caused by poor design of building and/or inadequate specifications	IS/ICB	868,707
2. Water Supply and Sewerage		
a. Freshwater supply rehabilitation	IS/ICB	540,000
b. Sewerage and seawater system rehabilitation	IS/ICB	820,000
3. Power Generation and Distribution		
a. Power generation upgrade		600,000
b. Power distribution upgrade		8,000,000
B. Equipment		
1. Hospital		
Supply of gas-fired incinerator	Direct	45,000
a. Supply and install 500 kW direct generator	IS/ICB	265,000
b. Supply medical equipment and furniture	IS/ICB	300,000
2.Water Supply and Sewerage		
a. Supply 500 m^3/ day reverse osmosis plant	IS/ICB	44,000
3. Power Generation and Distribution		
a. Overhaul of two Enterprise units	IS/ICB	450,000
b. Supply auxiliary genset and generator related tools	IS/ICB	250,000
c. Supply debit meters and complete IS/ICB system	IS/ICB	200,000

ICB=international competitive bidding; IS=international shopping.

TERMS OF REFERENCE FOR CONSULTING SERVICES

A. Project Manager (18 person-months)

1. The Project Manager will have the following responsibilities:

(i) Complete detailed implementation plan.
(ii) Integrate all project participants, consultants, suppliers, and construction/installation contractors into a cohesive working group.
(iii) Coordinate the roles of the Project Implementation Committee and Public Service Commission, and provides necessary advice on project implementation.
(iv) Recruit personnel and consultants necessary to staff the project organization in a timely way.
(v) Prepare quarterly reports on work undertaken.
(vi) Submit monthly written reports to the PIC and the Bank.
(vii) Manage the various project implementation activities.
(viii) Implement costs, schedule, technical performance control systems, and reporting procedures.
(ix) Establish procedures for interacting and cooperating with other agencies, local governments, etc., as necessary.
(x) Interface with Ministry of Health and Environment, Kwajalein Atoll Development Authority, Kwajalein Atoll Joint Utility Resources, Kwajalein Atoll Government, United States Army Kwalajlein Atoll.
(xi) Resolve conflicts between project participants.
(xii) Control project changes and functions as the contact point for change requests.
(xiii) Arrange the timely provision of funds, control costs, and maintain an effective accounting system.
(xiv) Confirm completion of work and authorize payment. Assist in preparing withdrawal applications, request for direct payment, and monitor use of the imprest accounts.
(xv) Ensure compliance with all requirements and covenants in the loan agreement.
(xvi) Prepare the procedures and resources for turnover of the project components when completed.
(xvii) Perform other duties as they relate to the Project and as assigned by the PIC.
(xviii) Engage in appropriate and active counterpart training of the assistant project manager.
(xix) Supervise project management unit (PMU) staff.
(xx) Act as the link between officials in Majuro, MOHE and the local authorities.

B. Civil Works /Construction Supervisor (12 person-months)

2. Reporting to the Project Manager, the Supervisor will have the following responsibilities:

(i) Review the Bank's Report and Recommendation to the President, Memorandum of Understanding, and documentation on regulations and requirements for the execution of civil works under Bank loan projects.
(ii) Develop specifications for all civil works projects under the Project.
(iii) In consultation with the project manager and taking into account the Bank's and the Government's requirements for execution of civil works, prepare a detailed program and implementation schedule of activities required to complete the civil works to be undertaken under the Project.
(iv) In consultation with the project manager implement the prequalification of contractors. Prepare correspondence with the Bank on matters concerned with the process of prequalification of contractors and the selection of prequalified contractors.
(v) Coordinate on behalf of the Executing Agency, matters concerned with the tendering process and selection of contractors. Prepare PMU correspondence with the Bank on matters concerned with the calling of tenders, the evaluation of bids, and selection and Bank approval of contractors to undertake civil works.
(vi) Assess the progress of civil works, adequacy and quality of work, and progress payments. Prepare PMU correspondence with the Bank on these matters.
(vii) Prepare monthly reports, detailing activities undertaken and highlighting problem areas and remedial measures. Include in the monthly reports, the detailed program and schedule of civil works, revised as necessary to be consistent with current and anticipated progress.
(viii) One month before completion of the assignment, prepare a detailed program and schedule of civil works activities through to their completion.
(ix) Instruct and advise the country counterpart on all activities and procedures required to complete the civil works program, including procedures required to comply with Bank requirements.
(x) Coordinate civil works activities by United States Army Kwajalein Atill (USAKA) for components working supply of equipment.

C. Project Management System and Performance Monitoring and Evaluation Specialist (6 person-months)

3. The specialist will have the following responsibilities:

(i) Review, update, and improve the project framework, in accordance with Bank procedures, as prepared initially by Bank staff.
(ii) Develop a project management system including organizational and planning process requirements.
(iii) Provide a diagrammatic illustration of the causal factors that could prevent the achievement of the objectives of the Ebeye Health and Infrastructure Project and how components of the Project will address these problems.

(iv) Identify and define performance indicators to be used to monitor project results such as health and water, utility operation benchmark, etc.

(v) Quantify baseline values for each of these selected indicators and for each indicator, and develop achievable target values after completion of rehabilitation of the hospital, power, and water facilities.

(vi) The consultant will identify management information systems (MIS) developed for Majuro that can be used for Ebeye and if necessary modify the system. The consultant will identify what actions and resources are required to address the MIS for both the hospital and utility components.

D. Primary Health Care Support Consultant (12 person-months)

4. The objectives of this component are to assist the Government to strengthen primary health care (PHC) services, and develop MOHE's (Ebeye's) institutional capacity. To ensure better coordination between the various consultants, a consulting firm will be contracted. Individual and domestic consultants will also be considered. Consultants will be engaged to provide the following services:

(i) implementation of PHC and community outreach program (3 person-months),
(ii) family health promotion (3 person-months),
(iii) training coordination (2 person-months),
(iv) youth health promotion and program design (2 person-months),
(v) management and administration (3 person-months), and
(vi) establish small gardening project (4 person-months).

The consultant for PHC will assist the assistant secretary for PHC in developing the PHC activities under the Project, and will have the following duties:

(i) Review and assess MOHE's organizational structure in support of PHC, and in consultation with MOHE senior staff, make the appropriate suggestions to reinforce MOHE's organizational framework.

(ii) Prepare and organize a seminar on PHC to raise political and public awareness and commitment to PHC (in collaboration with the consultant for family health promotion).

(iii) Assist the family health coordinator and the consultant in family health promotion to identify strengths and weaknesses in the existing health education program.

(iv) In coordination with the secretary of health, the family health coordinator, MOHE senior staff, and the project manager, discuss and coordinate with the consultant in family health promotion on the nature and objectives of the PHC program.

(v) Collaborate with the family health coordinator on the implementation of the health education campaign designed by the family health coordinator;

(vi) Prepare and organize training of 4-6 health workers, PHC trainers who will be responsible for the community workshops.

(vii) Prepare guidelines and implementation schedule for the workshops in the community. There will be two kinds of community workshops to mobilize the communities on PHC and community outreach program.

(viii) Participate in the community workshops and support the PHC trainers.

(ix) Assist residents of Ebeye to start small gardening projects to result in healthier diets.

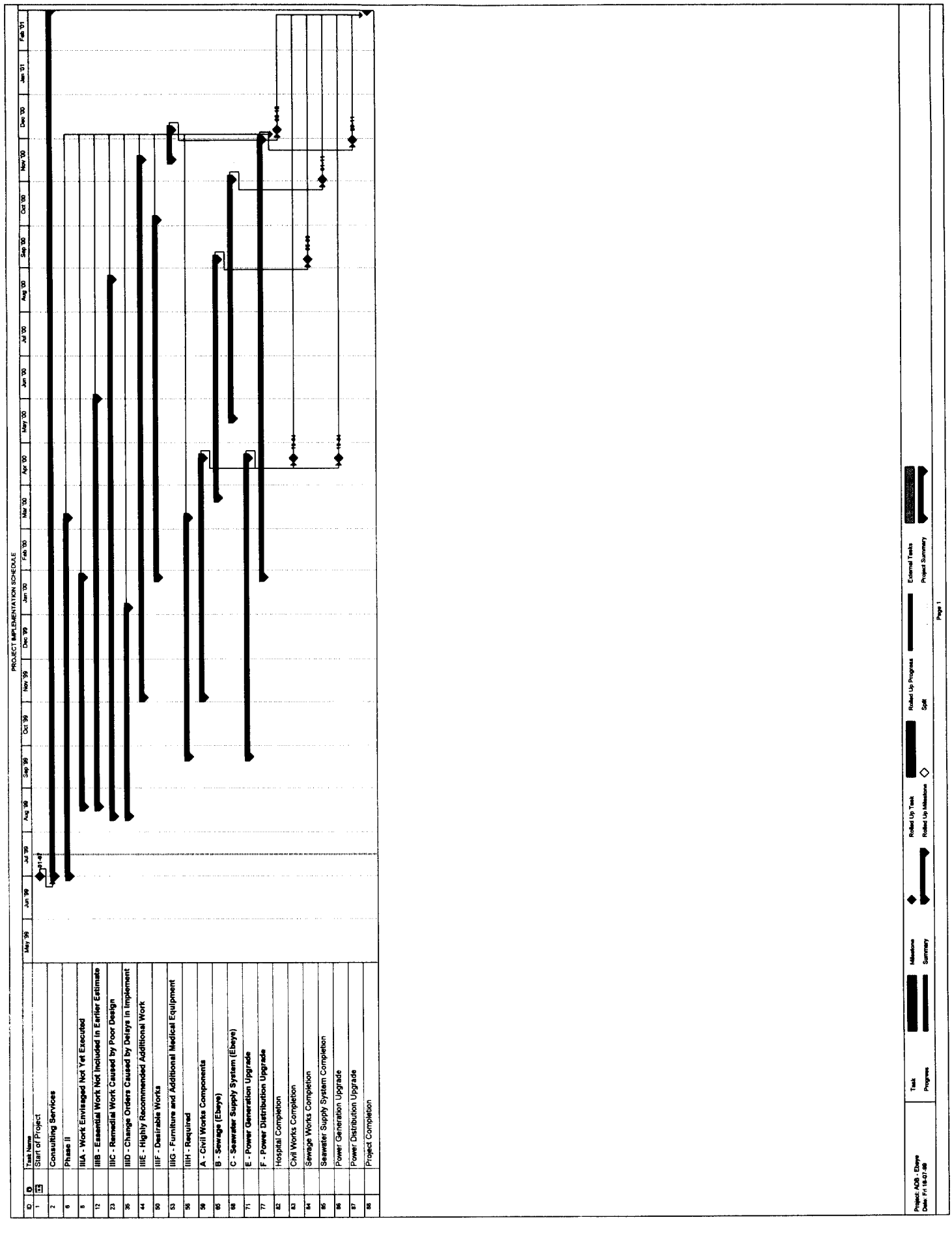
(x) Collaborate with the other consultants and MOHE in developing and establishing health management information system and the benefit monitoring and evaluation system, and participate in the training of MOHE's personnel in the use of BME and HMIS.

(xi) Prepare the following reports for MOHE and the Bank:

(a) After 2 person-months of services, an inception report explaining the program for community mobilization activities and MOHE institutional strengthening in PHC; and

(b) after nine person-months of services, an interim report highlighting achievements and difficulties and making recommendations to improve community involvement and MOHE's support to PHC.

Appendix 9


PROJECT IMPLEMENTATION SCHEDULE
ID
Task Name
May '99
Jun '99
Jul '99
Aug '99
Sep '99
Oct '99
Nov '99
Dec '99
Jan '00
Feb '00
Mar '00
Apr '00
May '00
Jun '00
Jul '00
Aug '00
Sep '00
Oct '00
Nov '00
Dec '00
Jan '01
Feb '01
1 Start of Project
2 Consulting Services
6 Phase II
8 IIIA - Work Envisaged Not Yet Executed
12 IIIB - Essential Work Not Included in Earlier Estimate
23 IIIC - Remedial Work Caused by Poor Design
35 IIID - Change Orders Caused by Delays in Implement
44 IIIE - Highly Recommended Additional Work
50 IIIF - Desirable Works
53 IIIG - Furniture and Additional Medical Equipment
56 IIIH - Required
58 A - Civil Works Components
65 B - Sewage (Ebeye)
68 C - Seawater Supply System (Ebeye)
71 E - Power Generation Upgrade
77 F - Power Distribution Upgrade
82 Hospital Completion
83 Civil Works Completion
84 Sewage Works Completion
85 Seawater Supply System Completion
86 Power Generation Upgrade
87 Power Distribution Upgrade
88 Project Completion
Project: ADB - Ebeye
Date: Fri 18-07-99
Task
Progress
Milestone
Summary
Rolled Up Task
Rolled Up Milestone
Rolled Up Progress
Split
External Tasks
Project Summary
Page 1

TERMS OF REFERENCE FOR THE MIDTERM REVIEW

A. Objectives

1. The midterm review will (i) comprehensively evaluate project progress, implementation arrangements, procurement, consultants' performance, contractors' performance, environmental impacts and environmental monitoring, community participation, benefit monitoring and evaluation activities, and the implementation of legislative changes and institutional improvements in the utility company; and (ii) formulate measures to remedy any identified weaknesses.

B. Timing

2. The Government and the Bank will carry out the review about 12 months after loan effectiveness. The exact timing will be determined during the course of periodic reviews and consultation with the Government. The timing will be such that corrective measures can be implemented in a timely manner during the project implementation period.

3. Based on the project implementation schedule, the review is expected to be carried out in the second half of 2000. By that time, the majority of important project activities should be in progress. The construction component of the hospital, the new underground power distribution system, water and sewerage lines, and other works should have commenced, and delivery of materials and equipment should be well advanced. The timing of the midterm review will be such as to enable evaluation of sectoral and institutional improvements before the commencement of budget preparation for FY2000.

C. Methodology

4. The Government, through the project implementation committee, and the Bank will jointly carry out the midterm review and formulate necessary actions to ensure the achievement of Project objectives. The midterm review will be carried out in addition to periodic reviews to be undertaken during project implementation..

5. The findings of the midterm review will be incorporated into the midterm review mission report, and recommendations will be made for any necessary actions to be undertaken to improve the implementation of the institutional, operational, and financial action plan, and any necessary modifications to the scope and phasing of the Project. The following list of tasks should be undertaken, subject to review by the Government and the Bank.

D. Tasks

1. Institutional, Operational, and Financial Action Plan

6. Assess the progress of the institutional, operational, and financial action plan, including actions to streamline the legislative, institutional, and management framework of the utility company, improve the system operation and maintenance procedures, and improve collection efficiency and cost recovery.

2. Review of Project Concept and Implementation Performance

7. Assess the overall project concept to ascertain whether the scope and phasing are succeeding in meeting project objectives. Review the actual implementation performance, as compared with the implementation schedule. Identify constraints to project performance, and recommend any necessary modifications to the scope and phasing of the Project.

3. Implementation Arrangements

a. Project Implementation Committee Performance

8. Assess the adequacy of coordination of all project activities. Determine whether concerned agencies are adequately represented and coordinated, and whether the results of the discussions and reviews are adequately reflected in project implementation. Review the number of meetings held and their effectiveness in resolving project implementation issues.

b. Project Management Unit Performance

9. Review the performance of the project management unit to determine its effectiveness in supervising the Project. Review the responsibilities of the Project Management Unit (PMU) and assess whether there are any gaps or overlaps of responsibility with other project participants. Evaluate project coordination, monitoring, control, and reporting procedures and their effectiveness in meeting implementation program targets. Make recommendations on any necessary changes to the role and responsibilities of the PMU, to enhance project coordination and management.

c. Performance of Project Consultants

10. Assess the adequacy and effectiveness of the consulting services. Evaluate the adequacy of coordination between the consultants and the PMU, the consultants' output in terms of adherence to the program, and compliance with agreed upon terms of reference. Recommend any modifications required to ensure successful project implementation.

d. Procurement

11. Assess the adequacy and performance of the procurement arrangements for civil works and equipment procurement, including contractor performance. Assess the need for any modifications necessary to achieve the project objectives, and recommend appropriate actions.

4. Sustainability of Project Benefits

a. Institutional Framework and Management

12. Review the effectiveness of changes to the institutional framework of Majuro Water Sewerage Company (MWSC), adoption of enabling legislation, improved management information systems, improved financial arrangements and procedures, and improved billing and collection procedures.

b. Cost Recovery

13. Assess the effectiveness of cost recovery measures taken up by the Government, including actual performance as compared with the action plan. Monitor the performance of these actions and assess the effects on the affordability and sustainability of the Project. Update the action plan as appropriate, and recommend any further actions to be taken.

c. Benefit Monitoring and Evaluation (BME)

14. Review BME data compiled to date. Assess the application of the project BME system. Assess whether the monitoring system appropriately covers all key socioeconomic and performance issues, whether the system has been incorporated into the health information system and the utility company's ongoing management information systems, and whether the system allows prompt feedback on project implementation arrangements.

d. Social Dimensions

15. Assess the social dimensions of the Project, and identify its positive and negative effects on the population. Assess the effect of the public relations program in increasing awareness on matters related to domestic water usage, health, sanitation, payment of water accounts, and the environmental impacts of the Project. Identify any constraints that may hamper equitable distribution of Project benefits and recommend any appropriate corrective measures.

e. Environmental Impacts

16. Assess the environmental impacts of project works and operations, and identify any measures that need to be implemented to mitigate negative impacts. Assess the effectiveness of environmental monitoring procedures and identify any necessary measures that may need to be taken to improve environmental monitoring.

f. Operation and Maintenance

17. Assess the effectiveness of the utility company's operation and maintenance work plans and programs in terms of their adequacy and sustainability.

SUMMARY INITIAL ENVIRONMENTAL EXAMINATION

A. Introduction

1. An initial environmental examination (IEE) was conducted for the Project, for which the environmental classification is category B. The purpose of the IEE is to provide a preliminary assessment of the likely impact of the proposed Project on the environment and to determine if environmental considerations have been adequately incorporated into Project design.

2. The IEE is based on an analysis of the impact of the proposed works and a visual assessment of most of the areas that would be affected by the Project.

B. Description of the Project

3. The Project comprises three major components.

(i) **Ebeye Hospital**. Involves the completion of the unfinished Ebeye Hospital including rectification and remedial works and provision of additional furniture and medical equipment.

(ii) **Water Supply and Sanitation**. Includes the (a) rehabilitation of water distribution system, (b) procurement of reverse osmosis unit with 500 m^3/day, (c) refurbishment of the water desalination plant, and (d) rehabilitation and upgrading of sewerage and effluent disposal system.

(iii) **Power**. Comprises the replacement and upgrade of the distribution system including refurbishment of the power station, engines and generators, procurement and installation of auxialiary geenrator units, and installation of debit meters to improve collection.

C. Description of the Environment

1. Physical Resources

4. The Republic of the Marshall Islands comprises 29 atolls and 5 five low-lying islands, located in the Pacific Ocean about 3,500 kilometers (km) west of Hawaii. The atolls and islands have a total land area of about 200,000 square km (km^2), with an average height above sea level of a little over 2 meters (m). The atolls and islands have a fairly uniform temperature of about 28°C year round; rainfall however varies from 4,000 millimeters (mm) per year at Jaluit Atoll in the south to about 1,500 mm per year at Enewetok in the north of the island group. The wind regime is characterized by fairly strong northeast trade winds that blow from December to April, and light variable winds during the remainder of the year. Major cyclonic storms do not affect the Marshall Islands, but can cause severe damage when they do.

5. Ebeye is one of the islets (0.36 km^2 land area) on the eastern side of the north atoll located about 6.5 km north of a much larger land area on the southeastern tip presently leased by the United States (US) Army as part of US Defense missile testing system. Known officially as the US Army Kwajalein Atoll (USAKA), the military base is commonly referred as Kwajalein.

6. The nearshore environment of the atoll environment has an important impact on the population, which must rely on it to provide food and frequently uses it for bathing. Coral death along the coastlines of Majuro and Ebeye is responsible for eutrophication of lagoon waters especially evident near those homes lacking toilet facilities.

2. Ecology

7. There are no known endangered species of plants or animals in the areas of development. Land areas to be utilized for water supply and sanitation development are barren, and have no unusual vegetation cover.

3. Human and Economic Development

8. Ebeye is the second largest urban center of the Marshall Islands, after the capital Majuro. According to the last (1988) national census, the local population of Kwajalein atoll in that year was 9,311 of which 8,324 or 89 percent lived in Ebeye. With a population growth rate of about 3.8 percent per year, it is estimated that Ebeye's 1998 population is close to 13,500. Like other rapidly growing populations throughout the developing world, Ebeye's population is young. Over 50 percent of people are under the age of 15.

9. Ebeye is a highly urbanized community with a relatively high proportion of immigrants from outer islands attracted by the prospect of finding employment at Kwajalein. Since 1947, Kwajalein has provided employment for between 300 to 1,000 Marshallese who have received wages equivalent to those paid in the US. Statistical data released by the Marshall Islands Social Security Administration in March 1998 pertaining to employment in Ebeye in 1997 indicated that 74.6 percent of wage earnings are derived from Kwajalein employment.

10. Another substantial source of income to land-owning residents of Ebeye is the rental paid by USAKA for the use of the military base and part of the lagoon commonly known as the midcorridor. Apart from the military-related economic activity on Kwajalein, the economy of Ebeye has not done well in recent years, partly due to poor economic performance of the Marshall Islands as a whole. Following strong growth through the early and mid-1980s, real gross domestic product per capita has declined reflecting strong population growth and reduction in Government spending. This pattern is to continue as the economy adjusts to tighter budgetary conditions in the face of phasing out US Compact payments in 2001.

D. Sector Issues

1. Health

11. Appropriate operation and maintenance of the hospital facilities will lead to a cleaner environment and improved health of the population.

2. Water Supply

12. Improved and expanded water distribution systems will have significant positive environmental impacts. Water losses will be reduced, clean piped water to households will improve public health, and the use of polluted groundwater from shallow wells will be reduced.

3. Sewerage

13. Rehabilitation and improvement of the sewerage system will have positive environmental effects. Improved service and maintenance of septic tanks should result in fewer releases of septic tank effluent into groundwater, soil, lagoon, and storm drains.

4. Solid Waste Disposal

14. The engineering and operational improvements to the solid waste disposal sites will result in positive environmental effects. Appropriate environmental controls will be incorporated in the existing hospital site to facilitate improved operation and maintenance.

5. Power

15. The rehabilitation and improvement works on the power distribution system will decrease air pollution and reduce fire hazards.

E. Screening of Potential Environmental Impacts and Mitigation Measures

16. There may be some temporary and limited environmental disbenefits during construction arising from noise, dust, and pipeline construction. These will be minimized by incorporating appropriate clauses in construction contracts requiring contractors to mitigate these adverse effects through careful construction supervision.

17. The major impact during operation will be the disposal of hospital wastes (and sludge from the sewage treatment plant). The following environmental mitigation measures will be taken:

(i) installation of incinerator for solid waste management for the island;

(ii) installation of special incinerator for the hospital waste;

(iii) rehabilitation of the sewerage treatment plant;

(iv) waste disposal at separate identified locations;

(v) change of water supply pumping system to remove all corroded pipes, which causes pollution; and

(vi) rehabilitation of water storage tanks, roofing, and pumping system to improve quality of water supply.

F. Institutional Requirements and Environmental Monitoring Program

18. Environmental monitoring of the following aspects will be required during project implementation:

(i) pollution or contamination of the groundwater,

(ii) monitoring water quality being delivered to customers,

(iii) monitoring the effluent of sewage treatment plant, and

(iv) monitoring the disposal of the hospital waste.

19. Consultants engaged under the Project will monitor construction activities to ensure that environmental intrusions are minimized. Ongoing monitoring of the impacts of project facilities will be carried out after the conclusion of project implementation under the Ministry of Public Works inspection procedures. and through water quality and other monitoring carried out by the Marshall Islands Environment Protection Authority. Participatory meetings will continue during project implementation.

G. Findings and Recommendations

20. The Project consists of activities designed to improve human or environmental conditions in Ebeye. The success of the Project will require its diligent implementation and improved institutional performance in the performance of bylaws. Minor or temporary impacts during construction will be minimized by the use of appropriate construction techniques and technology.

H. Conclusion

21. The implementation of the Project will not result in any significant environmental impacts. A stand-alone environment impact assessment is not warranted.

Appendix 12

SOCIAL INDICATORS

Indicators	1990	1995		Latest Year	
A. POPULATION INDICATORS					
Total Population ('000)	46.2	55.6		57.4	(1996)
Annual Population Growth Rate (% change)	3.9	3.8		3.2	(1996)
B. SOCIAL INDICATORS					
Total Fertility Rate (births per woman)	-	-		5.6	(1996)
Maternal Mortality Rate (per 100,000 live births)	-	-		-	
Infant Mortality Rate (below 1 year; per '000 live births)	-	-	-	26.7	(1996)
Life Expectancy at Birth (years)	-	67.0	(1990/91)	-	
Female	-	-		63.9	(1994/95)
Male	-	-		61	(1994/95)
Adult Literacy (%)	-	88.0	(1990/91)	-	
Population with Access to Safe Water (%)	-	99.0	(1990/91)	-	
Population with Access to Sanitation (%)	-	96.0	(1990/91)	-	
Public Education Expenditure as % of GNP	-	7.2	(1990)	-	
Public Health Expenditure as % of GDP	-	6.2	(1990)	-	
Human Development Index	-	-		-	
Human Development Ranking	-	-		-	

Source: Country Assistance Plan (to be updated during appraisal)

HOUSEHOLD SURVEY

1. The Appraisal Mission conducted a rapid household survey and interviewed eight households selected from different areas in Ebeye. In particular the households were selected where their primary source of income was not from work at the United States Base in Kwajalein. These represent the poorer section of the community. Household size ranged from 6 to 14, with most households at 6 or 7 and one at 14. It may be noted that each household comprised two adults (husband and wife), children, and retired grandparents. In cases where there are higher numbers, this is mostly accounted for by nephews/nieces who are staying with the families to attend schools in Ebeye. In essence, there are only two potential earning members in a household. In 7 out of the 8 households, women stay at home.

2. Household income ranges from $700 to $1,600 per month. Most have at least one person working at the US Base earning salaries ranging from $1,000 to $1,600 per month. In fact, the Mission was hard pressed to find households with no employment at Kwajalein. A handful of Ebeye residents earn a large sum of revenue from land rent.

3. **Source and cost of water.** Most interviewed had no recollection of when Ebeye had piped water to households although the piped system connects 80 percent of the households in Ebeye. They pay a combined utility charge of $22 per month for fresh water and saltwater (for sewerage). However, most are reluctant to pay this charge because fresh water is seldom available in the system. When funds are available at Kwajalein Atoll Joint Utility Resources (KAJUR), a tanker is barged from the US Base and sold to Ebeye residents. KAJUR charges $1.30 per m^3 to residential users and $1.82 per m^3 for commercial users. However, interviewees explained that this water was made available only to the more important people in the community. KAJUR pays $1,000 to the US Base for 100,000 gallons of barged water, which is not a reliable source for the general public. Currently the main sources of water for cooking, drinking and personal use are as follows.

(i) Bottled water is purchased at $2.5 to $3 per gallon, mostly for drinking, particularly by families with small children. Usage ranges from 2 gallons per week to 1 gallon per day depending on household income and ability to go to Kwajalein. This translates into an expenditure of about $20 to $75 per month. The average is about $40 per month.

(ii) Water from Kwajalein was obtained by all households interviewed. The children (if old enough) are sent to Kwajalein for water. Each household makes 2 to 4 trips per week bringing back 20-25 gallons per trip. Children often miss school to bring water and are exhausted by the trip. Each trip costs $10 to $15 that involves $5 for the water taxi and $5 to $10 for the incentive payment to the children. Even the poorest household provides snack money to the children who fetch water. The total expense for water from Kwajalein ranges from $80 to $180 per month depending on the needs of the family and the availability of barged water. The Kwajalein water is used for drinking but in some cases needs to be boiled for drinking purposes.

4. When the reverse osmosis (RO) units (Federal Emergency Management Administration-provided) were producing 300 m^3 per day, most people did not have to go to Kwajalein. The RO water was good for drinking although many families boiled it

before use. The RO water used to be available at differents points on Ebeye island. In general most interviewers were tired of the need to go to Kwajalein and the additional physical and financial burden it was placing on the community. In conclusion, each household is currently paying $100 to $250 for water per month. This excludes the cost of laundry, etc. for which women also must go to Kwajalein.

5. **Source and cost of electricity.** Availability of electricity in Ebeye remains extremely erratic. Sometimes there are days of power outages until KAJUR is able to put together funding for fuel to run the diesel power plants. Those interviewed were very unhappy about the situation and blamed KAJUR management for all the problems of Ebeye. Electricity tariff rates were increased in early 1998 to 16 cents and 18 cents per kilowatt hour (KWh) for residential and commercial users, respectively. Because of the complaints of the poor service, these rates were subsequently rolled back to 13 cents and 16 cents per KWh, respectively.

6. Those interviewed expressed willingness to pay the higher rates if they were assured of reliable and properly metered power supply. Most felt that their electricity bills were arbitrary and almost everyone was paying a minimum of $75 per month irrespective of usage. They were not sure whether they were consuming that amount of electricity. Five out of the eight households used at least one air-conditioner and they paid bills as high as $160 to $200 per month. They also complained of the amount of the bills when power was hardly available for 10 days per month. It is estimated that households without air-conditioners would consume 300 to 400 KWh per month, while those with air-conditioners would consume 600 to 700 KWh per month.

7. Most were willing to pay electricity bills in excess of $100 per month if reliable and adequate service was provided and billings were properly metered. In conclusion, the electricity bill per household ranges from $75 to $200 with the average around $120 per month. Even the poorest family was willing and capable of paying more than $60 per month.

8. Data obtained from this household survey are utilized in the financial and economic analyses where appropriate, and the most conservative assumptions are applied.

FINANCIAL AND ECONOMIC ANALYSES

1. Since the Ebeye Hospital is not a revenue-generating entity, financial projection and financial analysis for the Project are prepared only for the water/sewerage and power components, while economic analysis is prepared for all three components.

A. Financial Projection

2. Since 1995 Kwajalein Atoll Joint Utility Resources (KAJUR) has incurred significant net losses and depended on Kwajalein Atoll Development Authority (KADA) and the Republic of Marshall Islands (RMI) Government for cash and grants to continue its operation. The 45 percent increase in electricity tariff rate in 1996 was not enough to cover the costs of operation, maintenance, and capital replacement needed to provide reliable service to the population. The largest consumers and commercial establishments owned by wealthy landowners are delinquent in their payment of utility charges. The inability of KAJUR to collect user fees caused dissipation of working capital and undue delay in settling recurring obligations. While KAJUR receives grants from KADA and the Government, no formal agreement exists to provide funds in the future, and for long-term sustainability KAJUR must improve its operation.

3. The Appraisal Mission (May 1999) was unable to find any additional data on KAJUR's past financial performance beyond those obtained by the Fact-Finding Mission (May 1998) and the technical assistance (TA) consultants (August 1997). The result of the household survey confirmed the Ebeye residents' willingness and affordability to pay a reasonable amount out of their income ranging from $700 to $1,600 per month. The affordability is greatly helped by the fact that KADA provides housing for free. The fundamental problems are on the supply side including the maintenance of distribution systems and the will to collect user fees. The example of Marshalls Energy Company in Majuro, which successfully phased out Government subsidy, provides a model for replication. Private sector involvement in KAJUR management can make operations commercially viable. There is significant scope to enhance physical efficiency of the diesel power generators and the water desalinization plants, as well as improve revenue by instituting a culture-neutral payment practice through the debit metering.

4. With the envisaged overhaul of KAJUR management under the new private sector-led approach, it would not be accurate to project future financial flows based on past performance. Therefore, the projection is based on the data collected at fact-finding, wherever appropriate, and the Appraisal Mission's judgement of how the new management is likely to operate in 10 year time. Financial projections have been prepared for the water/sewerage and the power components, as shown in Tables A14.1 and A14.2 of this Appendix. They are based on the following assumptions.

(i) The projected financial statements are based on constant 1999 prices on an incremental basis at the assumed inflation rate of 3 percent per annum over the entire forecast period.

(ii) It is assumed that, consumers will be willing to pay for the improved water and electricity services. Bad debts will be reduced to 5 percent by 2003 and onwards.

(iii) For the power systems, losses will be reduced to 12.5 percent after installation of new power debit meters. Nonrevenue water will be reduced to 10 percent by 2001.

(iv) The water charge is assumed to increase gradually from \$1.80/cubic meter (m^3) in 1999 to \$1.95/m^3 in 2009. This compares with \$1.84/m^3 (\$7 per 1,000 gallons) currently being paid by the consumers in Majuro.

(v) The sewerage charge will start at \$13.5 per month per connection and will be increased gradually to \$20 by 2009. This will be below the marginal supply cost (approximated by average incremental financial cost [AIFC]), which is estimated to be \$29.2 per connection) but is justified by the external sanitary benefits. This will be effectively cross-subsidized from water charges. (AIFC for the water supply is estimated to be \$1.13/m^3)

(vi) The electricity charge is assumed to be \$0.16/kilowatt hour (KWh) throughout. (This is based on the TA 2757-RMI: Establishment of a Private Sector Unit, which studied the comparative supply cost estimate under different management arrangements.)

(vii) Labor and fuel costs are assumed to increase annually by the local inflation rate.

(viii) Expenditures on materials and supplies, including chemicals, are assumed to increase in direct proportion to charges in water production and power.

5. As shown in Tables 1 and 2, the financial performance is expected to progressively improve over the forecast period as the financial management capacity and service levels improve. Positive operating income is projected to be realized by 2002 for the water component, and by 2003 for the power component.

6. The combined average utility bill per month per household is roughly projected to be about \$120 in 1999 (17 percent of the poorest household income and 8 percent of the better-off household income) and \$140 in 2009. This compares favorably with the internationally recognized threshold of 15 percent of income as the affordability level. Besides this, the survey result in Appendix 13 shows a much higher willingness to pay than this amount, provided that the services are reliable.

B. Financial Analysis

7. The water supply system on Ebeye is in a serious state of decline. It has never been able to fully meet the demand of the inhabitants in the island. Up to 1996, water was available 4 to 6 hours per day and then only for one hour at a time. In July 1997, the desalinization plant stopped operation due to lack of maintenance and breakdown at the power station. Water supply to the island was partially restored in May 1998 with the installation of 3 reverse osmosis units producing about 300 m^3 of water/day, provided by FEMA. This is supplemented by rainwater collected in storage tanks. At that time, it was estimated that only 11 percent of the consumer demand for fresh water was satisfied. The situation appears to have worsened since. The Project will increase the fresh water supply by replacing/upgrading the distribution system, rehabilitating the existing desalinization plant, and increasing the capacity of the reverse osmosis plant. Also, households will be encouraged to install rainwater catchments within their premises.

8. Similarly, the power system in Ebeye has deteriorated over the years due to lack of routine maintenance. With only one of the three diesel generators in working condition, the system is seriously short of meeting the demand. Envisaged under the Project are the refurbishing of a 2.6 megawatt (MW) unit, the installation of two

reconditioned 800 KW units, the refurbishing of ancillary equipment within the power station, the replacement/upgrade of the distribution system, and improvements in safety and environmental protection.

9. Basic assumptions used in calculating financial internal rates of return (FIRR) are as follows.

(i) All revenues and costs are expressed at constant 1999 financial prices on incremental basis. The economic life of the proposed Project is 15 years inclusive of the project implementation period. All equipment will have a salvage value of zero at the end of the project life.
(ii) The financial opportunity cost of capital is approximated by the weighted average cost of capital (WACC), which is estimated at 4.4 percent in real terms, based on the following hypothesis: Bank Special Funds at 1.5 percent cost for the investment capital equally matched by a commercial loan of 12 percent to be availed for the concessionaire's various financing needs, and inflation rate of 3 percent.
(iii) Capital costs exclude price contingencies and service charges.
(iv) The costs of regular maintenance of equipment and civil works are incorporated into the operating costs. The maintenance cost for the piped water supply and sewerage system, and for the power system is estimated at 5 percent and 8 percent per annum of the original component cost, respectively.
(v) Additional capital outlay for major overhaul of power plant and other equipment has been provided at the end of 5-year periods.
(vi) Incremental revenues for water, sewerage, and power are calculated on the basis of the incremental volume sold. The assumed average tariff for each service is shown in the tables.

10. The FIRR of the water/sewerage and power components are 11.0 percent and 29.1 percent, respectively (Tables A14.3 and A14.4). These are considered acceptable because they exceed the assumed real opportunity cost of capital of 4.4 percent.

11. Sensitivity analysis (Tables A14.7 and A14.8) shows that FIRR for the water/sewerage component is relatively sensitive to an operational cost overrun, revenue shortfall, and delay in revenue realization. However, financial viability is still maintained against a 10 percent increase in operational cost. Financial viability of the power component appears relatively more robust than the water/sewerage component. The power component maintains its financial viability in all cases except the worst case scenario. In the worst case scenario (Case 4), FIRRs for both components become negative. Finally, it should be noted that because financial benefits and costs are based on the best guess offuture KAJUR operations, the quantitative implications given here are indicative at best.

C. Economic Analysis

12. The assumptions used in the economic analysis are the same as those used in the financial analysis except for the following.

(i) All benefits and costs are expressed at constant 1999 economic prices on incremental basis. All costs are net of duties and taxes.

(ii) The real economic opportunity cost of capital used in the analysis is 12 percent, as is done in normal Bank practice.

(iii) World price numeraire is used. In March 1999 the Government announced its intention to reduce the general import duty to 5 percent. Allowing some room for commodity-specific import duties and elements of nontariff barriers, a standard conversion factor of 0.9 is applied to nontradable inputs and outputs of the Project.

(iv) Based on the employment data for Ebeye/Kwajalein, a shadow wage rate factor for unskilled labor at 0.7 is used. It is assumed that skilled laborers are fully employed and no distortions exist in their market.

1. Hospital

13. Conceptually, three alternatives to the hospital situation in Ebeye can be considered: (i) the Project, (ii) do-nothing (continuation of the old hospital), and (iii) relocation of the old hospital to an alternative site. However, the Appraisal Mission found that the third option is an obvious loser because, in addition to higher costs entailed, there is no alternative space to accommodate a hospital in the already overcrowded island, and the relocation would take another two to three years. Therefore, the economic analysis simply compares with- and without-project scenarios.

14. Several qualitative arguments for finishing the new hospital can be made. (i) Rehabilitating the old hospital would cost more than finishing the new one. (ii) The outpatient section of the old hospital is too small to provide care for an increasing population, and to offer more preventive and primary health care services. (iii) More space is required to guarantee a sufficient degree of confidentiality, for matters such as sexually transmitted diseases (STDs) and family planning. (iv) The new hospital could provide space for one doctor and one nurse who currently reside on Kwajalein and are paid by the US Department of Energy to provide care for nuclear victims. (v) More space is required to isolate patients with communicable diseases, particularly tuberculosis. (vi) The new hospital will be furnished with a kitchen and be able to provide healthy and controlled food.

15. A simple quantitative analysis is done to compare cost-effectiveness of the Project and the do-nothing option. Due to the lack of data and existing empirical research, no attempt was made to develop sophisticated health benefits, but instead, simply hospital bed days are taken as a health benefits indicator. Since the main function of the new hospital will be secondary and general care, the analysis compares the costs per hospital bed-day associated with such services. A cost-effectiveness indicator (CEI) is given by the present value of economic costs over the present value of hospital bed days. Following the Bank's *Handbook for Economic Analysis of Health Sector Projects*, a discount rate of 3 percent is used.

16. Economic costs for the with-project option are based on the project investment costs during 1999-2000 and the financial projection for the operation after 2001. Skilled and unskilled labor and traded and nontraded cost components are distinguished and valued using the above conversion factors. The land area for the hospital is 1.5 acre and its rent being paid to landowners is $2,900 per acre annually. Due to no land markets (all land developments are administered by KADA), this cost is simply taken as the economic opportunity cost for the hospital land. Incremental bed days due to the new hospital is very conservatively assumed to be 10 beds per day, even given the poor

state of functional beds in the old hospital. Table A14.5 shows that the with-project option gives a CEI at $288.7 per bed day.

17. Currently, only critical and urgent cases and diagnosis (CT scan, ultrasounds) and samples sent for pathology and laboratory tests not available in Ebeye are supposed to be referred elsewhere. However, due to lack of water, power, equipment, and proper space, a substantial amount of secondary and general care are also referred elsewhere. This represents about 10 to 20 percent of annual referrals from the Ebeye old hospital. As indicated in Appendix 15, a conservative estimate of referral saving attributable to Ebeye will be about $80,000 annually. This is taken to be the economic opportunity cost of the do-nothing option. According to the latest data obtained from Marshall Island Social Security Administration (MISSA), hospital days associated with RMI-wide referrals amount to 453 days. Taking onethird of this, 151 days are assumed to be attributable to Ebeye. Although only secondary and general care of these referred hospital days are relevant, a very conservative treatment is chosen: all 151 days are taken to have served the secondary and general care (since no detailed descriptions for the referred cases were obtained). Based on these, the CEI for the do-nothing option is calculated to be $529.8 per bed day.

18. Based on this, even under the conservative assumptions in favor of the do-nothing option, the project option is more cost effective. Although accuracy is not guaranteed due to the limited data and less than perfectly clear variety of services to be provided, this gives quantitative support to the economic justification of completing the new Ebeye Hospital.

2. Water Supply and Sewerage

19. Economic costs for the water/sewerage component are based on the project investment costs during 1999-2000 and the financial projection for the envisaged reformed operation immediately after the management contract takes place. Skilled and unskilled labor and traded and nontraded cost components are distinguished and valued using the above conversion factors.

20. Economic benefits are divided into nonincremental and incremental water. Nonincremental water is valued at weighted average supply cost between the following two sources.

(i) Bottled water purchased from vendors: It is conservatively assumed (from the household survey) that an average household spends $20 to purchase 8 gallons of bottled water per month. The latest census indicates there are 846 households in Ebeye and the neighbor islands connected by the causeway. Based on these, current total bottled water consumed amounts to 309 m^3 for the cost of $203,040 annually. It is assumed that this consumption will increase at the population growth rate every year under the without-project scenario.

(ii) Fetching water from Kwajalein: Similarly, it is conservatively assumed that an average household spends $80 to fetch 200 gallons of water from Kwajalein. Based on this, current total Kwajalein-fetched water amounts to 7,716 cubic meter for the cost of $812,160 annually. Again, it is assumed that this consumption will increase at the population growth rate under the without-project scenario.

21. Volume of incremental water consumed is obtained from the projected total consumption level in each year minus the nonincremental water estimated (para. 20). Incremental water (regardless of piped water or rainwater) should ideally be valued at average demand price between the without- and with-project prices. However, since true willingness-to-pay for water without and with the Project are both unobservable, tariff rates that will be actually paid are used as a conservative substitute.

22. Economic benefits of sewerage services should in principle be valued at the willingness-to-pay level. But this is also conservatively substituted by incremental connection valued at the tariff rate.

23. After taking these steps, the result for the EIRR turned out to be incalculable, primarily due to the extremely large benefits accruing to the saved cost for the nonincremental water. It follows from this that in the current situation, economic analysis does not offer any relevant quantifiable result, except that the without-project scenario is so serious that any improvement in water supply under the Project will create a significant level of economic benefits. This implication is robust even under the deliberately conservative assumptions.

24. Moreover, there is an unquantified major external benefit associated with the rehabilitation of the water/sewerage system: improvement of health conditions of Ebeye residents, especially prevention of communicable diseases. This could conceptually be computed as reduction in health care expenditure due to lesser incidence of waterborne disease, but such attempt was not made due to the lack of data and empirical research.

3. Power

25. Economic costs for the power component are based on the project investment costs during 1999-2001 and the financial projection for the envisaged reformed operation immediately after the management contract takes place. Skilled and unskilled labor and traded and nontraded cost components are distinguished and valued using the above conversion factors.

26. Economic benefits are divided into nonincremental and incremental electricity. Nonincremental electricity should in principle be valued at weighted average supply cost. However, in the current case, nonincremental electricity is taken to be the current erratic supply and its associated bill faced by Ebeye residents. Based on the household survey, it is conservatively assumed that an average household spends $75 for the consumption of 300 KWh per month. This amounts to $720,000 for the consumption of 2,880 KWh annually. It is assumed that this consumption will increase at the population growth rate under the without-roject scenario.

27. The volume of incremental water consumed is obtained from the projected total consumption level in each year minus the estimated nonincremental electricity. Similarly to the treatment of incremental water, incremental electricity is conservatively valued at actual tariff rates that will be paid by users.

28. The net economic present value for the power component is very large, with its EIRR far exceeding 12 percent, primarily as there will be a significant cost saving due to the present poor state of electricity supply. The sensitivity test (Table A14.8) shows the

robustness of its economic viability. Only in the worst case scenario, which is very unlikely, the EIRR is below the cutoff rate.

Table A14.1: Income Statement for Water component

Item	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009
Water Supplied (m3)	374,490.00	388,721.00	403,492.00	418,825.00	434,740.00	451,260.00	468,408.00	486,208.00	504,683.00	523,861.00	543,768.00
% Non-evenue Water	0.20	0.20	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10
Volume Sold per m^3	299,592.00	310,976.80	363,142.80	376,942.50	391,266.00	406,134.00	421,567.20	437,587.20	454,214.70	471,474.90	489,391.20
Average Tariff per m^3	1.80	1.80	1.80	1.85	1.85	1.85	1.90	1.90	1.90	1.95	1.95
Sewerage Service Connections	846.00	878.15	911.52	946.16	982.11	1,019.43	1,058.17	1,098.38	1,140.12	1,183.44	1,228.41
Average Tariff per Connection/Month	13.50	15.00	15.00	17.50	17.50	17.50	20.00	20.00	20.00	20.00	20.00
Allowance for Bad Debts	0.20	0.20	0.15	0.10	0.05	0.05	0.05	0.05	0.05	0.05	0.05
Operating Revenues											
Water	539,265.60	559,758.24	653,657.04	697,343.63	723,842.10	751,347.90	800,977.68	831,415.68	863,007.93	919,376.06	954,312.84
Sewerage	137,052.00	158,066.64	164,073.17	198,692.61	206,242.93	214,080.16	253,960.24	263,610.73	273,627.93	284,025.80	294,818.78
Total Tariff Revenues	676,317.60	717,824.88	817,730.21	896,036.24	930,085.03	965,428.06	1,054,937.92	1,095,026.41	1,136,635.86	1,203,401.85	1,249,131.62
Less: Allowance for Bad Debts	(135,263.52)	(143,564.98)	(122,659.53)	(89,603.62)	(46,504.25)	(48,271.40)	(52,746.90)	(54,751.32)	(56,831.79)	(60,170.09)	(62,456.58)
	541,054.08	574,259.90	695,070.68	806,432.61	883,580.78	917,156.66	1,002,191.02	1,040,275.09	1,079,804.07	1,143,231.76	1,186,675.04
Operating Costs											
Fuel and Lubricants	20,000.00	20,800.00	21,632.00	22,497.28	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Salaries and Wages	192,000.00	197,760.00	210,000.00	216,300.00	222,789.00	229,472.67	236,356.85	243,447.56	250,750.98	258,273.51	266,021.72
Power	225,485.00	232,104.00	238,941.00	240,001.00	253,294.00	260,828.00	268,612.00	276,653.00	284,963.00	293,549.00	302,423.00
Chemicals	13,471.00	13,983.00	14,515.00	15,066.00	15,639.00	16,233.00	16,850.00	17,490.00	18,155.00	18,845.00	19,561.00
Materials and Supplies	20,000.00	20,600.00	21,218.00	21,854.54	22,510.18	23,185.48	23,881.05	24,597.48	25,335.40	26,095.46	26,878.33
Repairs and Maintenance	106,720.00	110,489.00	114,393.00	118,439.00	122,630.00	126,972.00	131,472.00	136,133.00	140,964.00	145,969.00	151,155.00
Loan Interests	30,300.00	30,300.00	30,300.00	30,300.00	30,300.00	30,300.00	30,300.00	30,300.00	30,300.00	30,300.00	30,300.00
Administrative and General Expenditure	53,000.00	55,950.00	59,066.00	62,356.00	65,831.00	69,501.00	73,378.00	77,472.00	81,797.00	86,365.00	91,190.00
Total Operating Cost	660,976.00	681,986.00	710,065.00	726,813.82	732,993.18	756,492.15	780,849.90	806,093.03	832,265.38	859,396.98	887,529.04
Income (loss) Before Depreciation	(19,921.92)	(107,726.10)	(14,994.32)	79,618.79	150,587.60	160,664.51	221,341.13	234,182.05	247,538.69	283,834.78	299,145.99
Depreciation	(50,000.00)	(50,000.00)	(50,000.00)	(50,000.00)	(50,000.00)	(50,000.00)	(50,000.00)	(50,000.00)	(50,000.00)	(50,000.00)	(50,000.00)
Operating Income	(169,921.92)	(157,726.10)	(64,994.32)	29,618.79	100,587.60	110,664.51	171,341.13	184,182.05	197,538.69	233,834.78	249,145.99
Comparators Ratio											
Average Expense $/$m^3$ sold	2.21	2.19	1.96	1.93	1.87	1.86	1.85	1.84	1.83	1.82	1.81
Increase in Operating Revenues		0.06	0.21	0.16	0.10	0.04	0.09	0.04	0.04	0.06	0.04
Increase in Water Sold		0.04	0.14	0.04	0.04	0.04	0.04	0.04	0.04	0.04	0.04
Break even Indicator	0.82	0.84	0.98	1.11	1.21	1.21	1.28	1.29	1.30	1.33	1.34
Operating Ratio	1.13	1.10	0.95	0.84	0.77	0.77	0.73	0.73	0.72	0.71	0.71

Table A14.2: Income Statement for Power Component

Item	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009
Gross Generation (MWh)	17,906.00	20,830.00	21,206.00	21,591.00	21,711.00	22,383.00	23,081.00	23,796.51	24,534.20	25,294.76	26,078.90
Energy Losses	0.15	0.13	0.13	0.13	0.13	0.13	0.13	0.13	0.13	0.13	0.13
Energy sold (MWh)	15,309.63	18,226.25	18,555.25	18,892.13	18,997.13	19,585.13	20,195.88	20,821.95	21,467.43	22,132.92	22,819.04
Average Rate per kWh	0.16	0.16	0.16	0.16	0.16	0.16	0.16	0.16	0.16	0.16	0.16
Materials and Supplies $/day	390.00	402.00	414.00	426.00	439.00	452.00	466.00	480.00	494.00	509.00	524.00
Allowance for Bad Debts	0.20	0.20	0.15	0.10	0.05	0.05	0.05	0.05	0.05	0.05	0.05
Operating Revenues											
Electric and Service Billings	2,449,540.80	2,916,200.00	2,968,840.00	3,022,740.00	3,039,540.00	3,133,620.00	3,231,340.00	3,331,511.54	3,434,788.40	3,541,266.84	3,651,046.11
Less: Allowance for Bad Debts	(489,908.16)	(583,240.00)	(445,326.00)	(302,274.00)	(151,977.00)	(156,681.00)	(161,567.00)	(166,575.58)	(171,739.42)	(177,063.34)	(182,552.31)
	1,959,632.64	2,332,960.00	2,523,514.00	2,720,466.00	2,887,563.00	2,976,939.00	3,069,773.00	3,164,935.96	3,263,048.98	3,364,203.50	3,468,493.80
Operating Costs											
Fuel and Lubricants	837,330.94	974,064.75	991,647.48	1,009,651.08	1,015,262.59	1,046,687.05	1,079,327.34	1,112,786.49	1,147,282.87	1,182,848.64	1,219,516.94
Salaries and Wages	638,964.00	658,132.92	677,876.91	698,213.21	719,159.61	740,734.40	762,956.43	785,845.12	809,420.48	833,703.09	858,714.19
Repairs and Maintenance	142,350.00	146,730.00	151,110.00	155,490.00	160,235.00	164,980.00	170,090.00	175,200.00	180,310.00	185,785.00	191,260.00
Loan Interests	41,250.00	41,250.00	41,250.00	41,250.00	41,250.00	41,250.00	41,250.00	41,250.00	41,250.00	41,250.00	41,250.00
Overhead Expense	565,270.00	582,228.00	599,695.00	617,685.85	636,216.43	655,302.92	674,962.01	695,210.87	716,067.19	737,549.21	759,675.68
Total Operating Cost	2,225,164.94	2,402,405.67	2,461,579.39	2,522,290.14	2,572,123.63	2,648,954.37	2,728,585.78	2,810,292.48	2,894,330.54	2,981,135.94	3,070,416.81
Income (loss) before depreciation	(265,532.30)	(69,445.67)	61,934.61	198,175.86	315,439.37	327,984.63	341,187.22	354,643.49	368,718.44	383,067.56	398,076.99
Depreciation	(275,000.00)	(275,000.00)	(275,000.00)	(275,000.00)	(275,000.00)	(275,000.00)	(275,000.00)	(275,000.00)	(275,000.00)	(275,000.00)	(275,000.00)
Operating Income	(540,532.30)	(344,445.67)	(213,065.39)	(76,824.14)	40,439.37	52,984.63	66,187.22	79,643.49	93,718.44	108,067.56	123,076.99
Comparators Ratio											
Average expense $/$m^3$ sold	145.34	131.81	132.66	133.51	135.40	135.25	135.11	134.97	134.82	134.69	134.56
Increase in Operating Revenues		0.19	0.08	0.08	0.06	0.03	0.03	0.03	0.03	0.03	0.03
Increase in Water Sold		0.16	0.02	0.02	0.01	0.03	0.03	0.03	0.03	0.03	0.03
Breakeven Indicator	0.88	0.97	1.03	1.08	1.12	1.12	1.13	1.13	1.13	1.13	1.13
Operating Ratio	1.00	0.91	0.87	0.83	0.80	0.80	0.80	0.80	0.80	0.80	0.81

kWh=kilowatt hour; MWh=megawatt hour; m^3.

Table A14.3: FIRR for Water/Sewerage

FIRR Base Case

Year	Capital Cost	Operating Cost for Water	Operating Cost for Sewerage	Revenue from Water Supply	Revenue from Sewerage	Net Cash Flow
1999	635,000.00	286,676.34	344,000.00	539,265.60	137,052.00	(589,358.74)
2000	1,385,000.00	295,826.45	350,100.00	559,757.69	158,066.64	(1,313,102.12)
2001		323,341.04	356,423.00	653,657.05	164,073.17	137,966.17
2002		333,234.99	362,978.73	697,343.12	198,692.61	199,822.02
2003		331,825.20	358,078.82	723,842.16	206,242.93	240,181.07
2004		342,057.04	364,663.22	751,348.17	214,080.16	258,708.06
2005	200,000.00	352,697.95	371,493.85	800,977.76	253,960.24	130,746.00
2006		363,764.70	378,581.79	831,414.91	263,610.73	352,679.16
2007		393,274.72	385,938.69	863,008.68	273,627.93	357,423.20
2008		405,246.22	393,576.82	919,376.77	284,025.80	404,579.52
2009		417,698.13	401,509.08	954,313.09	294,818.78	429,924.66
2010	200,000.00	430,650.19	409,749.02	990,576.99	306,021.89	256,200.00
2011		444,122.94	418,310.92	1,054,583.50	317,650.72	509,800.37
2012		458,137.81	427,209.80	1,094,657.67	329,721.45	539,031.51
2013		472,717.10	436,461.49	1,136,254.67	342,250.86	569,326.94
					NPV@4.4%	**1,071,130.00**
					FIRR=	0.11

FIRR=financial internal rate of return; NPV=net present value.

Table A14.4: FIRR for Power

Base Case FIRR

Year	Capital Costs ('$)	Operation Costs ($)	Energy Sale (MWh)	Sales Revenue ($)	Net Cash Flow ($)
1999	600,000.00	2,183,915.00	15,310.00	2,449,600.00	(334,315.00)
2000	2,100,000.00	2,341,987.00	18,226.00	2,916,160.00	(1,525,827.00)
2001	50,000.00	2,381,416.00	18,555.00	2,968,800.00	537,384.00
2002		2,421,791.00	18,893.00	3,022,880.00	601,089.00
2003		2,450,678.00	18,997.00	3,039,520.00	588,842.00
2004		2,505,934.00	19,585.00	3,133,600.00	627,666.00
2005	500,000.00	2,563,343.00	20,196.00	3,231,360.00	168,017.00
2006		2,622,161.00	20,822.00	3,331,520.00	709,359.00
2007		2,682,624.00	21,467.00	3,434,720.00	752,096.00
2008		2,745,147.00	22,133.00	3,541,280.00	796,133.00
2009		2,809,417.00	22,819.00	3,651,040.00	841,623.00
2010	500,000.00	2,875,852.00	23,526.00	3,764,160.00	388,308.00
2011		2,944,216.00	24,231.78	3,877,084.80	932,868.80
2012		3,014,670.00	24,958.73	3,993,397.34	978,727.34
2013		3,087,277.00	25,707.50	4,113,199.26	1,025,922.26
				NPV@4.4%	**4,234,731.00**
				FIRR=	0.29

FIRR=financial internal rate of return; MWh=megawatt hour; NPV=net present value.

Table A14.5: Cost-Effectiveness Analysis for the Ebeye Hospital

Year	Total Economic Costs	Additional Bed Days 10 per day	Total Economic Costs	Bed days Outside Ebeye 151
1999	1,194,945.00	3,650.00	80,000.00	151
2000	2,682,540.00	3,650.00	80,000.00	151
2001	886,891.00	3,650.00	80,000.00	151
2002	886,891.00	3,650.00	80,000.00	151
2003	886,891.00	3,650.00	80,000.00	151
2004	886,891.00	3,650.00	80,000.00	151
2005	886,891.00	3,650.00	80,000.00	151
2006	886,891.00	3,650.00	80,000.00	151
2007	886,891.00	3,650.00	80,000.00	151
2008	886,891.00	3,650.00	80,000.00	151
2009	886,891.00	3,650.00	80,000.00	151
2010	886,891.00	3,650.00	80,000.00	151
2011	886,891.00	3,650.00	80,000.00	151
2012	886,891.00	3,650.00	80,000.00	151
2013	886,891.00	3,650.00	80,000.00	151
PV@3%	**12,579,300.14**	**43,573.46**	**955,034.81**	**1802.628198**
CE Indicator ($/bed-day)		288.69		529.8013245

PV=present value; CE=cost effectiveness.

Table 6: EIRR - Power

Base Case EIRR

Year	Economic Costs	Economic Benefits	Net Economic Beneifits
1999	2,502,341	2,514,872	12,531
2000	3,974,840	2,937,552	(1,037,288)
2001	2,246,418	2,996,821	750,403
2002	2,257,389	3,057,676	800,287
2003	2,300,996	3,085,616	784,620
2004	2,370,912	3,183,583	812,671
2005	2,877,915	3,285,337	407,422
2006	2,517,783	3,389,884	872,101
2007	2,594,261	3,497,621	903,360
2008	2,673,780	3,608,948	935,168
2009	2,754,539	3,723,760	969,221
2010	3,272,973	3,842,205	569,232
2011	2,924,860	3,998,208	1,073,348
2012	3,013,877	4,139,760	1,125,883
2013	3,105,603	4,297,071	1,191,468
		ENPV@12%	$3,366,084
		EIRR=	**75.3%**

EIRR=economic internal rate of return; ENPV= .

Table A14.7 : FIRR for Water/Sewerage

Item	Sensitivity Test	FIRR	Switching Value	EIRR
Base Case		**11.0%**		
1. Capital Cost	+10%	9.4%	50%	
2. O&M Costs	+10%	6.1%	14%	
3. Revenue	(10)%	4.0%	(10)%	
4. Combination 1-3		(2.5)%		
5. Delay of revenue	1 year	3.7%		

EIRR=economic internal rate of return; FIRR=financial internal rate of return; O&M=operations and maintenance.

Table A14.8 : FIRR and EIRR for Power

Item	Sensitivity Test	FIRR	Switching Value	EIRR	Switching Value
Base Case		**29.1%**		**75.3%**	
1. Capital Cost	+10%	25.1%	132%	- (total costs up)	
2. O & M Costs	+10%	12.1%	16%	29.8%	19%
3. Revenue/Benefit	(10)%	8.2%	(12)%	27.0%	16%
4. Combination 1-3		n.a.		4.4%	
5. Delay of revenue	1 year	6.3%		13.6%	

EIRR=economic internal rate of return; FIRR=financial internal rate of return; O&M=operations and maintenance.

HOSPITAL SUSTAINABILITY

A. Hospital Component

1. Funds for the national health care budget come from various sources (Nitijela, United States (US) Compact Fund, Marshall Islands Social Security Administration (MISSA), US section 177, and US federal grants). User fees, although included in the Ministry of Health and Environment (MOHE) five-year plan as a source of revenue, are turned over to MISSA for inclusion in the general revenue collection. Approximately 27 percent of the national health budget has been allotted to Ebeye. The health budget for Ebeye was $3.71m in FY1998, $2.7 million for FY1999.

2. Maintenance for the old hospital building has been budgeted at less than 1 percent of the current annual operating budget: $3,000-5,000 per year. This extremely low level of expenditure has been a major factor in the current deterioration of the old hospital. The old hospital has 31 beds but only a part of them are functional. Moreover, due to the limited operational budget, patients must bring their own daily supplies such as linens and food. When the new Ebeye Hospital is completed, the old hospital may be converted into a health center.

3. The new Ebeye Hospital will be furnished with 35 beds for curative secondary care on the second floor and facilities for preventive care and health education on the first floor. Moreover, the new hospital will provide in-house food service. All those interviewed during the appraisal's rapid household survey expressed preference for food provided to in-patients. When questioned about their willingness to pay for the food, most would be willing to pay $5 per day and a maximum of $10. It is proposed that a $5 per day charge for food be implemented to be gradually raised in small increments but built into the charge for in-patients.

4. For the new hospital is to be sustainable, various incremental revenues must be secured from various sources including user fees to finance the required incremental operational costs. Incremental costs relative to the without-project situation (continuation of the existing old hospital) are as follows:

(i) Additional costs due to the new building: additional personnel to maintain the building and equipment properly; spare parts and tools for maintenance net of labor costs; cleaning supplies; and utilities, as more power and water will be needed on a reliable basis;

(ii) Additional costs due to new activities and services: additional personnel for food services; cost of food to be served in the hospital; additional personnel to run a laboratory; drugs and medical supplies for both primary and secondary health care, including contraceptives and reagents for the laboratory; and a cost of the land lease for the hospital site (this will be the responsibility of the Government and will not be included in the financial cost of the hospital but will be included in the economic analysis).

5. To finance these incremental costs for the new hospital, six sources of revenue are identified: (i) user fees, (ii) additional savings in referrals, (iii) increased allocation for on-island health from MOHE, (iv) improved collection of health contributions from

MISSA, (v) United States Department of Interior's (USDOI) support from its Operations and Maintenance Improvement Program (OMIP), and (vi) additional budgetary support from the General Fund (Nitijela).

6. **User fees.** In 1998 the Government increased user fees for in-patients, outpatients, emergency, etc. However, the new rates fall substantially short of cost recovery for the services provided. The $5 charged for both in-patient and outpatient services seems somewhat inconsistent. Also charging $5 per night for in-patients regardless of whether they occupy private rooms or shared rooms needs to be reconsidered. Based on the increased and differentiated user fees and also improved collection by MOHE, it is expected that user fees collected could generate up to $140,000 additional revenue annually. MISSA has agreed to allocate user fee collections for maintenance of the hospital facilities.

7. **Savings in referrals.** Since 1996 the Government has taken substantial steps to better control the expenditures on overseas referrals. Now only critical and urgent cases are supposed to be referred overseas. Added to this are the cases for diagnosis (CT scan, ultrasounds, etc) and samples sent for pathology and laboratory tests that are not available in Ebeye. A local referral committee in Ebeye meets each Monday and makes the decision on referral, with the minutes of the meeting sent to MISSA office. In addition, screening is done nationally. As a result, national expenditures on referrals have dropped from $3.7 million in 1996 to $2.4 million in 1998. For FY1999, $2.02 million is budgeted for overseas referrals. Tertiary care and sophisticated tests will continue to be referred elsewhere. The saving in referrals for Ebeye (including referrals to Kwajalein and Majuro) will be in the secondary care that has not been available in Ebeye due to lack of water, power, equipment and space. This represents 10 to 20 percent of annual referrals of $2.4 million in 1998. Therefore, conservative estimate of referral saving attributable to Ebeye will be about $80,000 assuming 10 percent savings in referral costs with Ebeye's share based population equivalent to one-third of this amount (10 percent of one-third, ratio of Ebeye population, of the referral costs in 1998), which should be transferred as an additional funding for the new Ebeye Hospital.

8. **Increased allocation for on-island health.** As a result of the reduction of overseas referral costs, MISSA can now provide additional resources to on-island health care, these can be allocated for the new hospital. Moreover, MISSA will change current allocation for on-island health care from 40 percent to 50 percent. This will be accomplished by 30 September 1999. This is expected to provide $300,000 toward incremental costs at the new facility. Depending on the trend in overseas referral costs and the improvements in on-island care and facilities, MISSA administration will progressively increase the on-island care allocation share to 60 percent.

9. Improved collection of health contributions: MISSA administration intends, through improved enforcement, to augment collection contributions by 5-10 percent and this is expected to increase revenues by about $300,000. One third of this is proposed to be allocated to Ebeye health costs.

10. **OMIP grants**. USDOI's OMIP has committed a grant of $50,000 subject to a matching amount from the RMI Government to develop a maintenance plan and provide a qualified maintenance engineer for the Ebeye Hospital. Cabinet has approved the appropriation for the matching funds.

11. **Additional budgetary support.** In case of a shortfall in the oprational budget of the Ebeye Hospital, a separate and additional Nitijela appropriation will be provided in the Government's annual budget. This assurance is included in the memorandum of understanding signed at the time of the appraisal mission.

12. The incremental costs and the corresponding sources of funding are presented in Table A15. This indicative financing plan will be followed for the initial years and an improvement in efficiency of the hospital operation will lead to less dependence on external finance.

Table A15: Incremental Costs and Funding

Incremental costs	**$**	**Incremental Funding**	**$**
Personnel	125,000	User fee collection	140,000
Maintenance	450,000	Additional savings on referrals	80,000
Cleaning supplies	5,000	Increase in on-island allocation	300,000
Utilities	205,000	Improved collection of health contribution	100,000
Drug and medical supplies	75,000	OMIP support	100,000
Food	85,000	Additional budget	225,000
Total	**945,000**	**Total**	**945,000**