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Report No. P-2337-FIJ

REPORT AND RECOMMENDATION
OF THE
PRESIDENT OF THE
INTERNATIONAL BANK FOR RECONSTRUCTION AND DEVELOPMENT
TO THE
EXECUTIVE DIRECTORS
ON A
PROPOSED LOAN TO THE
FIJI ELECTRICITY AUTHORITY
WITH THE GUARANTEE OF FIJI
FOR THE
MONASAVU-WAILOA HYDROELECTRIC PROJECT

May 22, 1978

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CURRENCY EQUIVALENTS

US\$1.00 = F\$0.91
F\$1.00 = US\$1.10

UNITS AND EQUIVALENTS

1 cubic meter (cu m)	=	35.31 cubic feet (cu ft)
1 hectare (ha)	=	2.47 acres (a)
1 meter (m)	=	3.28 feet (ft)
1 kilometer (km)	=	0.62 miles (mi)
1 square kilometer (sq km)	=	0.386 square miles (sq mi)
1 kilogram (kg)	=	2.205 pounds (lb)
1 metric ton	=	1,000 kilograms (kg)
1 litre (l)	=	1.057 US quarts
1 kilovolt (kV)	=	1,000 volts (V)
1 megavolt-ampere (MVA)	=	1,000 kilovolt-amperes (kVA)
1 kilovolt-ampere (kVA)	=	1,000 volt-amperes (VA)
1 megawatt (MW)	=	1,000 kilowatts (kW)
1 gigawatt hour (GWh)	=	1 million kilowatt hours (kWh)

ABBREVIATIONS AND ACRONYMS

AC	-	Alternating Current
ADAB	-	Australian Development Assistance Bureau
ADB	-	Asian Development Bank
CDC	-	Commonwealth Development Corporation
DC	-	Direct Current
DTI	-	Derek Technical Institute
EEC	-	European Economic Community
EGM	-	Emperor Gold Mine
EIB	-	European Investment Bank
ENEX	-	ENEX of New Zealand Incorporated; Engineering Export Association of New Zealand (erstwhile)
FEA	-	Fiji Electricity Authority
FNPF	-	Fiji National Provident Fund
FSC	-	Fiji Sugar Corporation
Gibb	-	Sir Alexander Gibb and Partners
ICB	-	International Competitive Bidding
IERR	-	Internal Economic Rate of Return
M/M	-	Merz and McLellan
PWD	-	Public Works Department
RE	-	Rural Electrification
SBC	-	Special Board of Consultants
SCC	-	Suva City Council
SCCED	-	Suva City Council Electricity Department
SPD	-	Special Project Division (of FEA)

FEA's Fiscal Year

August 1 - July 31

FIJI

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MONASAVU-WAILOA HYDROELECTRIC PROJECT

LOAN AND PROJECT SUMMARY

Borrower: The Fiji Electricity Authority (FEA)

Guarantor: Fiji

Amount: US\$15.0 million

Terms: 15 years, including 3 years of grace, with interest at 7.5% per annum.

Project Description: The project is the first stage of Fiji's hydroelectric development program and includes construction of: a 60 m high embankment dam; a water conductor system; and an overground power station with an initial capacity of 40 MW, which can be extended to 80 MW later. The project will help minimize further expansion of the diesel generating capacity, with corresponding savings in foreign exchange which would otherwise be required for importing fuel. The foreign exchange savings at current prices are expected to be about US\$180 million during the life of the project. Additional benefits would arise from an institutional reform of Fiji's power sector and a stabilization of electricity tariffs which would make electricity more affordable for rural customers. The risks associated with the project are those inherent in all hydroelectric projects, such as possible geological problems and hydrological uncertainties, but the investigations carried out indicate that they would be minimal. The Asian Development Bank (ADB) is expected to finance as a separate project the transmission facilities necessary to market the energy produced by the proposed project.

Cost Estimate:

	-----US\$ million-----		
	<u>Foreign</u>	<u>Local</u>	<u>Total</u>
Preliminaries	1.18	0.51	1.69
Reservoir	0.01	0.60	0.61
Monasavu dam and ancillary works	6.37	3.36	9.73
Water conductor system	11.99	3.71	15.70
Power station civil works	0.85	0.69	1.54
Generating plant and other electrical/mechanical equipment	6.60	0.54	7.14
Engineering	3.55	0.85	4.40
<u>Total base cost</u>	<u>30.55</u>	<u>10.26</u>	<u>40.81</u>
Contingencies:			
Physical	3.49	1.46	4.95
Price	6.30	1.95	8.25
<u>Total project cost</u>	<u>40.34</u>	<u>13.67</u>	<u>54.01</u>

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<u>Financing Plan:</u>		----US\$ million----		
A. <u>Bank/EIB Financing</u>		<u>IBRD</u>	<u>EIB</u>	<u>Total</u>
1.	Civil works contracts (diversion tunnel, low pressure tunnel, surge shaft, high pressure shaft, steel lining).	10.7	10.2	20.9
2.	Major equipment (power plant and crane, station auxiliaries, station transformers).	4.2	4.0	8.2
3.	Special Board of Consultants (SBC)	0.1	0.1	0.2
	Subtotal	<u>15.0</u>	<u>14.3</u>	<u>29.3</u>
B. <u>Other Financing</u>				
	All other items without specific allocation			
	CDC	-	-	9.1
	ADAB	-	-	11.5
	FNPF and local banks	-	-	4.9
	Government	-	-	7.3
	FEA	-	-	1.3
C. <u>Total Financing Requirement</u>				<u>63.4</u> /a

/a The financing requirement comprises the total project cost of US\$54.0 million, estimated interest during construction of US\$5.3 million, and that portion of the plant and establishment cost of the Special Projects Division (US\$4.1 million) which is not included in the project and will be charged to other projects.

Estimated Disbursements

From IBRD Loan:

<u>Fiscal year</u>	----US\$ million----	
	<u>Annual</u>	<u>Cumulative</u>
FY79	1.2	1.2
FY80	5.8	7.0
FY81	7.0	14.0
FY82	1.0	15.0

Rate of Return: 18%

Appraisal Report: No. 1857-FIJ, dated May 22, 1978

INTERNATIONAL BANK FOR RECONSTRUCTION AND DEVELOPMENT

REPORT AND RECOMMENDATION OF THE PRESIDENT
TO THE EXECUTIVE DIRECTORS
ON A PROPOSED LOAN TO
THE FIJI ELECTRICITY AUTHORITY
WITH THE GUARANTEE OF FIJI
FOR THE MONASAVU-WAILOA HYDROELECTRIC PROJECT

1. I submit the following report and recommendation on a proposed loan to the Fiji Electricity Authority (FEA) with the guarantee of Fiji for the equivalent of US\$15.0 million to help finance the Monasavu-Wailoa hydroelectric project. The loan would have standard terms of 15 years, including 3 years of grace, with interest at 7.5% per annum. The European Investment Bank (EIB) has agreed to lend to FEA US\$14.3 million, on the basis of joint financing with IBRD, for a term of 15 years including 4-1/2 years of grace, at interest of about 5.4% per annum. The Australian Development Assistance Bureau (ADAB) will provide US\$11.5 million of grant money, and the Commonwealth Development Corporation (CDC) will provide US\$9.1 million for a term of 20 years including 4 years of grace, at interest of 8.75% per annum. The Fiji National Provident Fund (FNPF) will lend to FEA US\$3.6 million for a term of 20 years including 4 years of grace, at interest of 7-1/8% per annum. The terms of the remaining local loans of US\$1.3 million are being negotiated.

PART I - THE ECONOMY

Background

2. A report entitled, "Economic Situation and Prospects of Fiji" (No. 1296-FIJ, January 17, 1977), was circulated to the Executive Directors on January 27, 1977. Basic country data are given in Annex I.

3. Fiji became independent on October 10, 1970, and is now a member of the British Commonwealth. It is composed of a group of over 300 islands in the South Pacific with a total land area of some 18,000 sq km. It has a population of about 580,000 of which about 90% live on the two main islands, Viti Levu and Vanua Levu. The gradual transfer of political power was accompanied by a program of local recruitment at all levels of Government which has helped to ensure competent leadership and a well-managed administrative system after independence. Since the first post-independence election of April 1972, the Alliance Party, based largely on the support of Fijians (44% of the population) and European and Chinese minorities (5%), retained political power. The National Federation Party, which is in the opposition, is supported mainly by the citizens of Indian descent (about 51% of the population).

Past Developments and Growth Prospects

4. Over the past decade, real gross national product has increased by about 7% a year reaching US\$1,150 per capita in 1976. Until the early

sixties, Fiji was primarily an agricultural economy which relied heavily on sugar production as the main generator of incomes, employment and export earnings. However, the last decade has witnessed a significant structural change with tourism and related activities emerging as the most important source of economic growth. During the last decade, output in agriculture, forestry and fisheries has remained stagnant and, as a result, this sector's share in GDP has fallen from about one third to one fifth. It now contributes less to GDP than wholesale and retail trade. The expansion of the services sector, which now contributes about two thirds of GNP, has been due mainly to the rapid growth in tourism which created a demand for different kinds of services, such as construction of hotels and other infrastructure, transport, hotel labor, and distributive trades. This expansion has attracted a large number of people from rural into urban areas.

5. Tourism growth has been the most important factor contributing to a rapid increase in investment which accounted for almost one quarter of GNP in 1973. As economic activity worldwide slowed down and tourism growth declined, investment dropped to 18% of GNP in 1976. The growth in the tourist industry has been largely responsible for increasing the dependence of this open economy on imports (at present about 60% of GNP) and a rising share of foreign capital in the financing of gross investments (at present, about one third).

6. A noteworthy feature of Fiji's development has been the significant reduction in the rate of population growth from 3.3% in the early 1960s to about 1.6% at present. The fall in the rate of growth can be explained by changing social habits, rising incomes, the Government's family planning program, reduced fertility, and an increased rate of net migration to other countries. However, the rate of growth in the labor force during the past decade has remained at about 3% a year and, despite the reasonably rapid growth of output in the nonagricultural sectors, employment growth has not kept pace with the growth of the labor force. While employment increased by about 2.5% a year during the past ten years, the level of unemployment increased from 4% to 7%.

7. The Government's fiscal effort in the past decade has been impressive. The current revenues averaged about 23% of GNP and Government savings have averaged about 3% of GDP. However, the expansion of the civil service and the significant increases in Government salaries have resulted in a slightly smaller current surplus in recent years.

8. Fiji's Seventh Development Plan for 1976-80 projects a GNP growth rate of 7% a year to be achieved mainly through increasing exports and tourism, and wider Government participation in the development process. The Plan also emphasizes development of those regions, particularly the rural areas, which have not yet benefited significantly from previous economic development. This would be accomplished through the identification of potential growth centers which would then become focal points for agricultural, industrial and other investments. The Plan also attaches high priority to providing employment for the rapidly growing labor force.

9. Taking into account Fiji's natural resources, the small size of the domestic market and limited industrialization possibilities, the Plan places a heavy reliance on increasing agricultural production. The basic objectives of the Plan are: to increase agricultural output both for export and domestic food consumption; to create rural employment opportunities; to raise farm incomes; and to improve the quality of rural life relative to that in urban areas.

10. The overall rate of growth of investment is projected at about 11% a year until 1980, which is considerably higher than the projected rate of growth of 7% for the economy as a whole. Government investment is projected to grow at 12% a year, a rate considered necessary to achieve the development targets, and private investment is projected to expand at 10% a year. A major structural change in the composition of the Government's capital investment program under the new Plan compared with the previous Plan is the increase in the share allocated to agriculture and rural development (from 16% to 23%). In addition, the allocation for power has been considerably increased, mainly for a phased development of hydroelectric schemes, which would reduce Fiji's reliance on imported oil. About a quarter of the Government's program would be financed from current savings, another quarter from domestic borrowing, and the remaining half from external grants and loans.

11. Fiji's impressive economic growth during the past decade was mainly due to exogenous factors - tourism growth and high sugar prices - the prospects of which do not appear bright at present. As the Government has not yet worked out a concrete action program to deal with the revised economic situation, the Plan targets should now be considered somewhat optimistic.

External Sector

12. The short-term outlook for the balance of payments will depend largely on the performance of sugar exports and tourism receipts. Export earnings declined in 1976 by about 15%, mainly as a result of the decline in the price of sugar. In 1977, they recovered somewhat following an increase in sugar exports and a slight recovery in tourism. An increase in both official and private capital inflows in 1977 helped Fiji to offset the overall deficit in the current account. For the rest of the decade, it may be expected that capital inflows will continue to offset the trade and services deficits, so that Fiji should not encounter serious balance of payments difficulties. Fiji's external reserves are at present equal to about three months of imports.

13. At the end of 1976, the level of external debt was about US\$130 million, of which about US\$55 million was public. By the end of the decade, the level of debt could increase to about US\$300 million with public debt accounting for about US\$140 million of the total. Debt service payments in 1976 were about 12% of export receipts. For the rest of the decade, the debt service ratio is expected to remain at a level of about 15% to 16%. At present, the Bank's share in Fiji's total debt outstanding is about 8% and in total debt service about 2%. These ratios are expected to rise only moderately in the years ahead.

PART II - BANK GROUP OPERATIONS

14. The Bank has so far made five loans totaling US\$35.2 million to Fiji, which together have helped to finance four projects. (One of the five loans provided supplemental financing for a highway project.) This lending has been distributed among sectors as follows: transportation 46%; telecommunication 20%; and agriculture 34%. Implementation of these projects has generally been satisfactory, but the highway project was subject to delays and cost overruns. Annex II contains a summary statement of Bank loans as well as notes on the execution of ongoing projects.

15. The strategy for future lending is founded essentially on three considerations: import substitution; export expansion; and assistance for Fiji's subsistence population through the creation of rural employment opportunities. In view of the severe limitations on Fiji's overall absorptive capacity and the necessary constraints on Bank activity due to Fiji's small size, Bank involvement will be limited to the agriculture and power sectors and only four projects are proposed through FY83.

16. Increasing agricultural production continues to be a major objective. The agricultural sector represents Fiji's best potential for raising rural incomes, substituting for imports, and expanding exports. Realization of this potential would call for a larger allocation of resources to the sector, diversification of crops, development of new land, and raising productivity. Programs for agricultural development must also take into account the differing characteristics of the two rural communities - the Fijians and the Indians. Fijian agriculture is largely traditional subsistence farming based on the cultivation of root crops. Indian farming, on the other hand, is more market-oriented and consists of smallholder sugarcane with subsistence rice and vegetable production.

17. Two agricultural projects are under consideration. The first would assist Fiji's pine plantation scheme. Aside from its employment-creating potential, the scheme offers considerable scope for diversifying Fiji's exports. The second, and much more difficult project in the agricultural sector, would aim at assisting smallholder development through the provision of infrastructure, extension, credit, marketing, processing, and storage facilities and would encompass both Indian and Fijian farmers in the subsistence or near-subsistence sector. For some years now, the Bank has been discussing possible forms of assistance for the subsistence sector, but thus far no project has materialized. This delay clearly reflects Government's lack of basic knowledge about the subsistence sector and the recent origin of their concern with subsistence agriculture. Bank staff will continue to work with the Government to develop a project, but it will probably be several years before project preparation can be completed.

18. Meanwhile, the power sector offers an appropriate channel for development assistance both for financing a priority project and as a basis for a dialogue on general development policy. At present Fiji is totally dependent on imported oil for its energy needs and therefore the worldwide energy crisis affected Fiji severely. Despite strong efforts at conservation,

oil imports increased from US\$10 million in 1973 to about US\$25 million in 1976, or from 5% to 11% of Fiji's total imports. The proposed project would represent the first stage of developing Fiji's considerable hydroelectric potential. A second stage project is anticipated in FY81.

PART III - THE POWER SECTOR

Sectoral Background

19. Provision of economic and reliable electricity is essential for Fiji's development. However, at present the power sector comprises small and isolated diesel power systems which do not permit further expansion on an economic basis. The hydroelectric development program, of which the proposed project forms the first stage, will help combine the existing systems into one economic and integrated system, stabilize the cost of electricity, and save large amounts of foreign exchange by sharply reducing the demand for imported fuel.

Energy Resources

20. Fiji has no known indigenous source of commercial energy other than the substantial hydroelectric potential which exists around the Nandrau Plateau of Viti Levu Island, an area of about 600 sq km at an average altitude of 1,000 m and subject to an average annual rainfall of about 3,300 mm. The available potential is estimated at about 2,000 GWh annually, of which about 80% could be economically developed by the end of the century, making it unnecessary for Fiji to resort to any further increase in its diesel generating capacity in Viti Levu until then.

Government Policy in the Power Sector

21. In 1973, the Government constituted an Alternative Fuels Technical Committee to deal with the difficult situation caused by the rapid escalation of oil prices. The Committee advised utilization of domestic rather than imported energy resources to the extent possible, rationalization of the power supply industry, and provision of electricity at the least possible cost. It also recommended an extension of rural electrification. These principles are incorporated in Fiji's energy policy.

Structure of the Power Sector

22. The power sector consists of two public undertakings, the Electricity Department of the Suva City Council (SCCED) and the Fiji Electricity Authority (FEA), and two major industries, sugar and gold mining, with captive generating plants. The public undertakings account for about 75% of Fiji's power market and the industries for the rest. SCCED has about a two-thirds share of the public supply and FEA about one-third.

23. SCCED, a department of the Suva City Council and a licensee of FEA, introduced electricity supply in Fiji in 1920. Today it operates 53 MW of generating capacity, 20 MW of which was added in 1977, and it has about

23,000 consumers. SCCED's area of supply is confined to the capital city of Suva and its environs. Lack of technical staff in SCCED has caused deterioration in the reliability of electricity supply in the Suva city area with frequent power cuts.

24. FEA was established in 1966 with the sole responsibility for electricity supply in Fiji, which it can discharge either by constructing and operating its own installations or through its licensees. FEA's autonomy is far-reaching and includes the power of borrowing, employing its staff, and setting tariffs for itself and its licensees. FEA also has the power to acquire licensees' installations. Initially, FEA had almost unlimited power to acquire any property, particularly land, but this power has been restricted after the promulgation of Fiji's 1970 Constitution. Approval by the Supreme Court is now necessary when FEA resorts to compulsory acquisition of property.

Reorganization of the Power Sector

25. Reorganization of Fiji's power sector, which is now underway, was urgently needed for the development of the country's hydroelectric resources. The scope of the proposed project is too large for the FEA or SCCED markets in isolation, but is appropriate when they are combined and an integrated system is created. The heavy financial requirements for the country's hydroelectric development program can only be met by a most efficient system operation and by pooling of all sector revenues. In addition, continued fragmented system operation will not attract a sufficient number of capable, experienced management staff needed to operate the system efficiently and to accelerate the training of Fijian staff.

26. The practical way to develop an integrated power system in Fiji is for FEA to take over SCCED and establish itself as the sole power authority in the country. Recognizing this need for sector reorganization, FEA, with the authorization of the Government, issued on January 25, 1978 a six-month notice to take over the assets of SCCED and assumed responsibility for SCCED's management, effective April 17, 1978, through an exchange of letters between FEA and the Chief Administrator of the Suva City Council (letters dated April 7 and 14, 1978).

27. Completion of the acquisition of the SCCED assets requires an approval of the Supreme Court which, under the Fiji Constitution, has, inter alia, to ensure that any compulsory acquisition of land or property is in the public interest. FEA has applied to the Supreme Court for such an approval, and expeditious action by the Supreme Court is expected. To ensure that implementation of the project is not jeopardized later by unforeseen complications in the takeover process, formal acquisition of the SCCED assets by FEA has been made a condition of effectiveness of the loan (draft Loan Agreement, Sections 4.03 and 7.01(c)).

28. The question of compensation to be paid by FEA to SCC for the SCCED assets to be acquired continues to be an issue although it does not restrain a legal merger of FEA and SCCED. Under the applicable legislation, compensation has to be agreed by the parties concerned within 30 days of the Court order approving the takeover; otherwise the Court will determine the amount of compensation. The compensation issue has been under active discussion between FEA and the Chief Administrator of SCC, and FEA expects to reach an agreement soon on terms and conditions acceptable to it. In order to protect FEA's financial viability, the Government has agreed to ensure, in particular by arranging for FEA's tariffs to be set at a sufficient level, that FEA has available at all times sufficient funds for proper functioning of its operations and for fulfilling all its financial obligations when they become due (draft Guarantee Agreement, Section 3.02).

Unification of Tariffs

29. In the past, SCCED, with the advantage of a limited supply area and a larger scale of operations than FEA, has been able to maintain its tariff levels about 30% below those of FEA. However, even if SCCED remained independent, it would not be able to maintain these low tariff levels in the future because of the need to expand its diesel generating capacity with increasing fuel cost. In fact, the tariffs in the SCCED supply area were raised by an average of 20%, effective May 1, 1978 through a notice issued by the Chief Administrator of SCC. Recognizing the need for unified tariffs which would approximate the long run marginal cost of supply and would provide necessary funds for Fiji's hydroelectric development program, FEA has issued, with Government agreement, a notice that, as of August 1, 1978, a nationwide standardized tariff will be introduced. This standardization would result in an average revenue from all future FEA service areas (including the present SCCED supply area) no lower than FEA's current yield.

The Borrower - Fiji Electricity Authority (FEA)

30. FEA's corporate powers are vested in its Board, which consists of a Chairman, a Deputy Chairman, and five members (not more than three public officers), all of whom are appointed by the Minister of Communications, Works and Tourism. The day-to-day duties are performed by FEA's staff, headed by a General Manager. The incumbent General Manager is serving a three-year term, which began in 1976. Administrative control of FEA rests with the Chairman who is authorized to delegate his powers to any person he chooses. The arrangement is working satisfactorily with the General Manager effectively in control, but he has no statutory basis for the extensive authority he actually wields. The Government has indicated its willingness to amend the FEA Act to accord statutory recognition to the position of the General Manager, making him a member of the Board. This change will be part of a more comprehensive amendment to the FEA Act which is expected in about one year. A satisfactory interim arrangement has been made by the Chairman formally delegating his powers of administrative control to the General Manager under the existing legislation.

31. By 1986, FEA would require about 130 trained technicians and 25 assistant engineers, who, together with the existing nucleus of FEA's top management, will enable FEA to develop its power system and operate it efficiently. To meet these personnel requirements, FEA has established a training center and developed a comprehensive training program.

32. FEA's organization and management are efficient and well-equipped to cope with present and future responsibilities. The organization is led by an experienced and dynamic General Manager and by a small number of dedicated professional engineers and administrators - mostly expatriates or former expatriates turned Fiji citizens.

Status of Electricity Supply

33. Except in the SCCED area, the reliability of supply is satisfactory and distribution losses are reasonable. About 50% of the population has access to electricity. The impact of the high cost of electricity is discernible everywhere; demand growth is suppressed and there is little waste.

Rural Electrification

34. Rural electrification is being undertaken by both FEA and the Public Works Department (PWD) of the Ministry of Communication, Works and Tourism. FEA provides electricity to rural areas on a commercially viable basis through the extension of its network. FEA's average annual rate of connection to rural customers has been about 350. PWD deals with Government-subsidized electrification of very remote areas through isolated diesel generating sets. Since 1974, PWD's program has slowly gained momentum and so far about 500 dwellings have been electrified. Surveys are being continuously undertaken to determine the need for additional rural electrification.

PART IV - THE PROJECT

Historical Background

35. In 1972, preliminary investigations established that practical schemes could be developed to utilize the hydroelectric potential of the Nandrau Plateau. Between 1972 and 1975, detailed site investigations and studies for a long-term power system development were carried out. On this basis, a 20-year development program was drawn up which identified the following schemes suitable for immediate development:

	<u>Installed capacity</u>	<u>Estimated year of completion</u>
(a) Monasavu-Wailoa Stage 1 (the proposed project)	40 MW	1981
(b) Monasavu-Wailoa Stage 2	- /a	1982
(c) Wainisavulevu 1	30 MW	1984
(d) Wainisavulevu 2	15 MW	1986

/a This project provides incremental energy generation only. No increase in generating capacity is needed.

Objectives of the Hydroelectric Development

36. The hydroelectric development has the following objectives:

- (a) fuel savings: recent estimates indicate that, during the period FY82-86, savings in diesel fuel of about 420,000 barrels a year can be expected. The proposed project alone would save around F\$160 million (US\$180 million) in foreign exchange at present prices during the life of the project;
- (b) institutional reform of the power sector through integration of the existing systems; and
- (c) reducing the need for tariff increases after FY84.

Items (b) and (c) in particular would facilitate rural electrification since they would make electricity service affordable to low-income rural customers who are presently beyond the reach of the urban power systems.

37. Further expansion of the diesel generating capacity would not be consistent with the objectives described above. Therefore, FEA has agreed that, before commissioning of the proposed project, no expansion of the diesel generating capacity will be undertaken in the island of Viti Levu without prior consultation with the Bank (draft Loan Agreement, Section 4.02).

FEA's Development Program and Its Costs

38. FEA's development program consists of a series of hydroelectric generating projects, a 132 kV transmission system, and an extension of the existing 33 kV subtransmission systems and the low voltage distribution network. The cost of the program during the period FY78-86 is summarized below:

	---- US\$ million ----		
	<u>Local</u>	<u>Foreign</u>	<u>Total</u>
(a) Generation /a	34.0	110.2	144.2
(b) Transmission	8.8	26.8	35.6
(c) Subtransmission	1.2	4.2	5.4
(d) Distribution and other investments	17.9	17.6	35.5
<u>Total cost</u>	<u>61.9</u>	<u>158.8</u>	<u>220.7</u>

/a Including the cost of future investigations.

Demand Trends and Forecasts

39. During the five-year period, 1967-1972, electricity consumption as a whole increased at an average annual rate of 18%. There was little growth in 1974 when steep tariff increases followed a quadrupling in the fuel costs. Since then growth has been between 8% and 12% per annum.

40. During 1972/73, consultants (ENEX) carried out a detailed survey of the power market. In 1976, the power market was reviewed again by other consultants (Gibb) and projections were made up to 1983, with trends extended to the end of the century. The average growth rates are expected to be about 8.5% per annum until 1983 and about 7.4% thereafter. The market surveys carried out were adequate and the forecasts are realistic. They indicate that additional generating capacity would be needed in the SCCED supply area by 1980, and in the FEA area by 1981.

The Project

41. The proposed project involves the construction of:

- (a) a 60 m high, 200 m long, embankment dam across the Nanuku River, upstream of the Monasavu Falls (see map), and a diversion tunnel, 5 m in diameter and 325 m long;
- (b) a concrete-lined low pressure tunnel (2.5 m in diameter and 2.4 km long) terminating in a surge shaft;
- (c) a steel-lined pressure shaft, 1.8 m in diameter, with an 850 m sloping section (40 degrees), and a horizontal length of 2 km; and

- (d) an overground power station on the right bank of the Wailoa River designed for an ultimate installation of four 20 MW generator sets of which two sets will be installed initially.

42. Technical feasibility of the project has been well established, providing a sound basis for the project design, the construction program and the cost estimate. Detailed investigations have revealed that the Monasavu dam will be a simple rockfill dam, with all materials for the core, filters and rockfill available close at hand. Dam construction is further simplified by the fact that the foundation for the dam core is well defined. Only moderate grouting will be required. The investigations have also revealed that the tunnels would traverse mostly through sound rock.

Associated Transmission Facilities

43. The first phase of FEA's transmission system development (Wailoa Transmission System) consists of 140 km of single circuit 132 kV transmission lines connecting the proposed project with Suva and Vunda, and a 132 kV substation near the Wailoa Powerhouse. The Asian Development Bank (ADB) is considering financing this transmission system as a separate project. ADB's appraisal mission concluded that construction of the 132 kV transmission lines should be completed a year ahead of the Monasavu-Wailoa Power Station, to derive the benefits of an integrated system operation and to avoid further increase in the costly diesel generating capacity. Since timely completion of the transmission facilities is essential for the operation of the proposed project, satisfactory conclusion of the financing arrangements for these transmission facilities has been made a condition of effectiveness of the proposed loan (draft Loan Agreement, Section 7.01(a)).

Project Implementation

44. The Government, FEA, and its consultants have considered at length the best method of constructing the project. In particular they took into account Fiji's geographic remoteness, the need to commission the project by 1981, the need to strengthen Fiji's construction industry, and the cost overruns and delays which have often occurred in Fiji when relying only on foreign civil works contractors. On the basis of these considerations, they decided to carry out the construction of the main embankment dam, spillway, intake and powerhouse (about 25% of the project cost) by force account through a Special Projects Division (SPD) to be established within FEA. Contractors, selected after international competitive bidding, would be used for other major civil works such as tunnelling, steel lining, and for supply and erection of a generating plant and ancillary equipment. PWD and SPD would build the access roads and the construction camps.

45. SPD will be a construction division within FEA, organized as a separate and autonomous unit. It will be mainly funded through the grant (US\$11.5 million) from the Australian Development Assistance Bureau (ADAB). It will be headed by a superintending engineer who will be responsible to the

General Manager of FEA. The superintending engineer was selected by FEA in consultation with the Bank and EIB, and took over his duties in February 1978. Consultants will supervise the construction work, examine and test materials and workmanship, and advise SPD on procurement matters.

46. In consultation with the Bank, FEA has appointed a Special Board of Consultants (SBC) to review project design and construction, primarily for ensuring safety of the project works, and to review the construction by force account. Continued employment of consultants for such purposes on terms and conditions satisfactory to the Bank is a condition of the proposed loan (draft Loan Agreement, Section 3.02). As the first meeting of SBC is planned for July 1978, which may fall before the signing of the proposed loan, retroactive financing is proposed for the cost of the first meeting (estimated to be US\$11,000).

47. FEA has also agreed to the following requirements related to the establishment of SPD for force account construction of the items mentioned in para. 44 above (draft Loan Agreement, Section 3.06):

- (a) preparation of plans, drawings, specifications, and detailed cost estimates before undertaking any construction (for purposes of control);
- (b) maintenance of separate accounts by SPD;
- (c) consultation with the Bank on the organizational structure of SPD and on the appointment of its key personnel; and
- (d) consultation with the Bank before SPD undertakes any additional work other than that specifically agreed upon (to ensure that SPD develops rapidly to the status of an independent contractor).

48. The construction arrangement proposed by FEA, with the safeguards described in para. 47 above, would enable completion of construction by the target date of 1981 and would help develop local expertise and the construction industry for major civil works of the future power development program.

Engineering

49. After a review of proposals from interested firms, FEA has appointed Gibb as the main consultant for engineering and construction supervision. Agreement has been reached on the preparation and implementation of a satisfactory program of inspection and maintenance of the project works throughout the operational period (draft Loan Agreement, Section 4.04).

Land Acquisition

50. Land acquisition for the proposed project as well as procurement of the right-of-way for the associated transmission lines are on the critical path of the construction program. Consequently, EIB included in its loan documents, which were negotiated in November 1977, a covenant requiring the

Government to guarantee that FEA will have available by July 1, 1978 all land necessary for implementation of the project. In conformity with the EIB covenant, a similar condition has been incorporated in the documents of the proposed loan (draft Loan Agreement, Section 3.05). However, FEA has now acquired most of the rights to use the land necessary for the project, and no difficulties are expected in completing land use acquisition.

Cost Estimates

51. The total project cost is estimated at US\$54.0 million, of which US\$40.3 million (about 75%) would be in foreign exchange. The details of the cost estimates are given in the Project Summary at the beginning of this report. The estimates are based on late 1977 prices. The costs for the dam have been calculated on the basis of preliminary designs. The cost estimates for tunnelling are based on surveys made and on recent construction experience in Australia, and those for equipment are based on enquiries with potential manufacturers. Physical contingencies varying from 5% for steel lining to 20% for main civil works (dam and tunnels) have been allowed. Price contingencies for the foreign costs have been provided at 9% during FY78-79, and 8% during FY80-81, and for the local costs at 7.5% during FY78-79, and 7% during FY80-81. No customs duties or local taxes are being levied on imports or services.

Financing of the Project

52. The funds necessary to implement the proposed project would be raised through co-financing arrangements involving the Bank, the European Investment Bank (EIB), the Commonwealth Development Corporation (CDC), the Australian Development Assistance Bureau (ADAB), the Fiji National Provident Fund (FNPF) with other local financing institutions, and the Government of Fiji. Signing of the EIB and CDC loan agreements has been made a condition of effectiveness of the proposed loan (draft Loan Agreement, Section 7.01(b)). There are certain constraints in the financing plan due to the following preferences of the various financing agencies:

- (a) EIB prefers to enter into a joint financing arrangement with the Bank;
- (b) ADAB intends to provide grant funds to the Government for financing the cost of consultants and the cost of experts and equipment for construction, procured in Australia. However, some additional funds are expected to be made available in an untied fashion for financing other items; and
- (c) CDC and FNPF intend to provide general purpose financing;

53. Considering the above co-financing possibilities and constraints, the following financing plan is envisaged for the project:

(a) <u>Bank/EIB financing</u>	-----US\$ million-----		
	<u>IBRD</u>	<u>EIB</u>	<u>Total</u>
(i) Civil works contracts (diversion tunnel, low pressure tunnel, surge shaft, high pressure shaft, steel lining);	10.7	10.2	20.9
(ii) Major equipment (power plant and crane, station auxiliaries, station transformers); and	4.2	4.0	8.2
(iii) Special Board of Consultants (SBC).	0.1	0.1	0.2
Subtotal	<u>15.0</u>	<u>14.3</u>	<u>29.3</u>
 (b) <u>Other financing</u>			
All other items without specific allocation			
	CDC	-	-
	ADAB	-	-
	FNPF and local banks	-	-
	Government	-	-
	FEA	-	-
(c) Total financing requirement			<u>63.4</u> /a

/a The financing requirement comprises the total project cost of US\$54.0 million (para. 51), estimated interest during construction of US\$5.3 million, and that portion of the plant and establishment cost of SPD (US\$4.1 million) which is not included in the project and will be charged to other projects.

Disbursement

54. The proposed Bank loan of US\$15 million represents about 24% of the total financing requirement. Disbursements would be made for 44% of the total cost of the eligible items on the basis of certified invoices. EIB will disburse jointly with the Bank at the rate of 42% of the total cost of the same items as the Bank. This is appropriate in the context of the co-financing arrangements.

Procurement

55. Procurement of the goods and services would be handled separately for those sections of the project to be executed through contracts and those executed by force account (para. 44). For all goods and services procured by contract, and jointly financed by the Bank and EIB, international competitive bidding in accordance with the Bank's guidelines would be used. No local preference for equipment would apply since Fiji does not manufacture the equipment required for the project. The country is also ineligible for local preference for civil works contracts due to its high GNP per capita level. Contractors for Bank-financed civil works would be prequalified in consultation with the Bank. Procurement for force account work would be the responsibility of the Special Project Division and the consultants.

Financial Position

56. The Government's decision to embark on a large hydroelectric program was made to stabilize the high cost of electricity (presently about US¢ 7.8 per kWh generated, mainly due to the high cost of diesel fuel and expensive operation of small and fragmented subsystems), to save large amounts of fuel and foreign exchange, and to utilize the domestic energy resources to the extent possible. However, financing of the program will place a heavy burden on the Fijian economy and FEA, particularly during the early years of program implementation (FYs 78-81). To enable implementation of the proposed project, about 80% of the financial requirement has to be raised from sources abroad. This appears very high, but is still justified in the light of Fiji's small economy which, despite a comparatively high per capita GNP (US\$1,150 in 1976), has not developed a domestic capital market strong enough to finance a larger portion than 20% of the financing requirement.

57. Although FEA's tariff levels would be set approximately at the level of the long-run marginal cost of supply, there would still be a need for large amounts of Government capital contributions, because FEA's own contribution to investment as well as debt service coverage would be relatively low. After adjustment of tariffs in the SCCED supply area to the national level (para. 29), FEA plans to raise tariffs in step with the increases which would be required if, instead of the hydro development, the equivalent diesel development were undertaken, to avoid placing a heavier financial burden on its customers than the alternative thermal development would have required.

58. At present, FEA and SCCED are recording their assets at historic costs. A large part of their assets are outdated and, in the case of SCCED, the remaining useful life of the assets may be shorter than the date of purchase suggests due to inadequate maintenance in the past. Fiji does not compile indices monitoring price trends in the construction industry on which a reasonable asset revaluation could be based. However, FEA officials have agreed to undertake a proper asset valuation after physical takeover of the SCCED assets and to design a practicable revaluation mechanism. The initial valuation would be made on the basis of engineering appraisals with the assistance of experts. Consequently, the following tariff covenants have been incorporated (draft Loan Agreement, Section 5.05 (b), (c)):

- (a) that FEA would revalue its assets, based on a method acceptable to the Bank, from FY79 and continuously thereafter at the end of each fiscal year; and
- (b) that FEA, in agreement with the Bank, would establish an appropriate rate of return on revalued average net fixed assets in operation (which will be sufficient to cover its operating expenses, interest and repayment of debt, annual compensation payments to SCC, and a reasonable portion of its investment program) and would maintain its tariffs at levels necessary to produce such annual rate of return.

59. Despite the high level of its tariffs, FEA will go through a period of tight finances during the project construction period. For instance, no

significant internal cash generation can be expected between FY78 and FY81. Consequently, an agreement has been reached that FEA would consult with the Bank prior to finalizing its annual financing plans during the project construction period (draft Loan Agreement, Section 5.04). Furthermore, an agreement was reached on Government capital contributions of not less than F\$23.76 million ^{/1} in accordance with FEA's financial requirements (draft Guarantee Agreement, Section 2.02). To ensure a reasonable capitalization, agreement was also reached that FEA would maintain a maximum debt/equity ratio of 70/30 (draft Loan Agreement, Section 5.05(a)).

Project Justification

60. On the basis of the demand forecast (para. 40), additional generating capacity will be required by 1981. In the studies which compared the least-cost hydroelectric development program with the most economic alternative of thermal/diesel expansion, it was established that the hydroelectric program represents the most economical solution for meeting the expected demand for discount rates up to 13%. It was also established that, within the range of the discount rates chosen (9%-13%), the sequence of projects with the proposed Monasavu-Wailoa project as the initial stage has the lowest cost. The internal economic rate of return of the project is 18%; this is high and reflects the policy that the tariffs would be set at a level at least equal to the long-run marginal cost of supply. The proposed project is expected to bring about foreign exchange savings of US\$180 million during its life through conservation of diesel fuel (para. 36). The project would also improve Fiji's power supply industry through the proposed integration of FEA and SCCED.

Environment

61. No significant environmental problems will result from the project as it would only create a relatively small reservoir in the remote forests of the Nandrau Plateau. There is no habitation in the waterspread of the proposed reservoir, or fish in the Nanuku River, nor are there any artifacts of any significance which will be affected. According to the Department of Health, there are no diseases existing in the rest of Fiji which do not exist in the area adjacent to the dam site. The environmental effects of the project are therefore likely to be minimal and within the capacity of the Fiji authorities to cope with.

Risks

62. The risks associated with the proposed project are the uncertainties inherent in all hydroelectric projects, such as possible geological problems, hydrological complexities, and similar matters. However, the thorough and competent preparatory work undertaken by FEA and the consultants, as well as the precautions taken in organizing and supervising the construction work (such as the establishment of the Special Board of Consultants), are expected to keep the risks to a minimum.

^{/1} This includes the ADAB grant of F\$10.5 million (US\$11.5 million equivalent).

PART V - LEGAL INSTRUMENTS AND AUTHORITY

63. The draft Loan Agreement between the Bank and the Fiji Electricity Authority, the draft Guarantee Agreement between Fiji and the Bank, and the Report of the Committee provided for in Article III, Section 4(iii) of the Articles of Agreement of the Bank are being distributed separately to the Executive Directors.

64. Special conditions of the project are listed in Section III of Annex III. Formal acquisition of the SCCED assets by FEA, signing of EIB and CDC loan agreements, and conclusion of satisfactory financing arrangements for the Wailoa Transmission System have been made additional conditions of effectiveness of the proposed loan (draft Loan Agreement, Section 7.01).

65. I am satisfied that the proposed loan would comply with the Articles of Agreement of the Bank.

PART VI - RECOMMENDATION

66. I recommend that the Executive Directors approve the proposed loan.

Robert S. McNamara
President

Attachments

May 22, 1978
Washington, D.C.

TABLE 3A
- SOCIAL INDICATORS DATA SHEET

LAND AREA (THOU KM2)	FIJI			REFERENCE COUNTRIES (1970)		
	1960	1970	MOST RECENT ESTIMATE	COSTA RICA	JAMAICA	TRINIDAD AND TOBAGO***
TOTAL	18.3					
AGRIC.	3.0					
GNP PER CAPITA (US\$)	380.0*	620.0*	1,150.0/a*	580.0*	670.0*	1260.0*
POPULATION AND VITAL STATISTICS						
POPULATION (MID-YR, MILLION)	0.4	0.5	0.58/a	1.7	1.9	1.0
POPULATION DENSITY PER SQUARE KM.	21.0	28.0	32.0/a	34.0	170.0	200.0
PER SQ. KM. AGRICULTURAL LAND	136.0	179.0	193.0/a	93.0	384.0	708.0
VITAL STATISTICS						
CRUDE BIRTH RATE (/THOU, AV)	44.5	35.7	25.0	41.8	38.5	32.5
CRUDE DEATH RATE (/THOU, AV)	13.5	6.0	4.3	8.1	8.6	7.1
INFANT MORTALITY RATE (/THOU)	29.5	21.6	18.8	62.0	32.2	34.4
LIFE EXPECTANCY AT BIRTH (YRS)	63.0	68.1	70.0	66.8	67.8	66.1
GROSS REPRODUCTION RATE	2.4	2.4	2.2	2.8	2.7	2.0
POPULATION GROWTH RATE (%)						
TOTAL	3.1	3.0	1.6**	3.4	1.4**	2.1**
URBAN	..	9.7/a	3.6/b	5.2/a	6.2	3.1
URBAN POPULATION (% OF TOTAL)	18.3/a	33.4/b	38.5	36.5	37.1	24.1
AGE STRUCTURE (PERCENT)						
0 TO 14 YEARS	46.0	46.7/b	40.2	47.4	45.9	41.2
15 TO 64 YEARS	51.7	50.9/b	57.2	49.3	50.4	55.1
65 YEARS AND OVER	2.3	2.4/b	2.6	3.3	3.7	3.7
AGE DEPENDENCY RATIO						
ECONOMIC DEPENDENCY RATIO	0.9	1.0	0.7	1.0	1.0	0.8
	1.8/a	1.9/b	1.5	..	1.7	1.3
FAMILY PLANNING						
ACCEPTORS (CUMULATIVE, THOU)	..	..	..	40.2	49.8	25.4
USERS (% OF MARRIED WOMEN)	..	..	..	..	..	..
EMPLOYMENT						
TOTAL LABOR FORCE (THOUSAND)	93.0/a	126.0/b	160.0	..	600.0/a	350.0/a
LABOR FORCE IN AGRICULTURE (%)	57.8/a,b	56.5/b,c	43.3/d	..	33.0	22.0
UNEMPLOYED (% OF LABOR FORCE)	1.3/a	4.1/b	6.6	..	17.5/a	12.5
INCOME DISTRIBUTION						
% OF PRIVATE INCOME REC'D BY-						
HIGHEST 5% OF HOUSEHOLDS	..	18.3/d	19.0/e	..	..	..
HIGHEST 20% OF HOUSEHOLDS	..	48.2/d	47.7/e	..	..	..
LOWEST 20% OF HOUSEHOLDS	..	4.9/d	5.1/e	..	..	..
LOWEST 40% OF HOUSEHOLDS	..	14.3/d	14.8/e	..	..	..
DISTRIBUTION OF LAND OWNERSHIP						
% OWNED BY TOP 10% OF OWNERS	..	..	..	..	..	..
% OWNED BY SMALLEST 10% OWNERS	..	..	..	..	..	..
HEALTH AND NUTRITION						
POPULATION PER PHYSICIAN	2100.0/c	2420.0	2300.0	1630.0	2630.0	2330.0
POPULATION PER NURSING PERSON	800.0/c,d	640.0/e	630.0/f,g	1690.0	1710.0	400.0/b
POPULATION PER HOSPITAL BED	270.0/c	340.0	340.0	250.0	240.0	230.0
PER CAPITA SUPPLY OF -						
CALORIES (% OF REQUIREMENTS)	..	..	..	110.0	103.0	97.0
PROTEIN (GRAMS PER DAY)	..	..	..	63.0	56.0	64.0
-OF WHICH ANIMAL AND PULSE	..	..	..	35.0	29.0/b	34.0/c
DEATH RATE (/THOU) AGES 1-4	..	..	3.6/g	4.6	4.2	1.8
EDUCATION						
ADJUSTED ENROLLMENT RATIO						
PRIMARY SCHOOL	85.0	99.0	110.0	110.0	106.0	112.0
SECONDARY SCHOOL	15.0	34.0	48.0	28.0	30.0	40.0
YEARS OF SCHOOLING PROVIDED (FIRST AND SECOND LEVEL)	14.0	14.0	14.0	11.0	12.0	15.0
VOCATIONAL ENROLLMENT (% OF SECONDARY)	10.0	6.0	6.3	10.0	5.0	6.0/d
ADULT LITERACY RATE (%)	..	73.0	75.0	..	82.0	88.0
HOUSING						
PERSONS PER ROOM (URBAN)	..	..	..	..	..	1.7/e
OCCUPIED DWELLINGS WITHOUT PIPED WATER (%)	..	..	..	..	78.0/c	64.0/f,g
ACCESS TO ELECTRICITY (% OF ALL DWELLINGS)	..	..	..	..	27.0	66.0/g
RURAL DWELLINGS CONNECTED TO ELECTRICITY (%)	..	..	..	..	..	..
CONSUMPTION						
RADIO RECEIVERS (PER THOU POP)	61.0	..	532.0	72.0	376.0	276.0
PASSENGER CARS (PER THOU POP)	10.0	23.0	38.0	23.0	39.0	73.0
ELECTRICITY (KWH/YR PER CAP)	140.0	304.0	421.0	594.0	825.0	1172.0
NEWSPRINT (KG/YR PER CAP)	0.3	1.5	1.9	6.4	4.6	5.9

SEE NOTES AND DEFINITIONS ON REVERSE

NOTES

Unless otherwise noted, data for 1960 refer to any year between 1959 and 1961, for 1970 between 1968 and 1970, and for Most Recent Estimate between 1973 and 1975.

* GNP per capita data are based on the World Bank Atlas methodology (1974-76 basis).

** Due to emigration population growth rate is lower than the rate of natural increase.

*** Trinidad and Tobago has been selected as an objective country for Fiji as it is a small island economy with a per capita income double that of Fiji in 1970. In addition, sugar and tourism are important sectors in both countries.

Country	Year	Code	Description
FIJI	1960	/a	1956; /b Excluding unemployed; /c 1962; /d Including assistant nurses.
	1970	/a	1956-66; /b 1966; /c Excluding unemployed; /d Urban only; /e Including widwives
	MOST RECENT ESTIMATE:	/a	1976; /b 1966-75; /c Ratio of population under 15 and 65 and over to total labor force;
		/d	Excluding unemployed; /e Urban only; /f Including personnel in government services;
		/g	1971.
COSTA RICA	1970	/a	1963-70.
JAMAICA	1970	/a	Data based on official definition which includes those willing to work, but not actively seeking employment;
		/b	1964-66; /c Inside only.
TRINIDAD AND TOBAGO	1970	/a	15-64 years; /b Including midwives; /c 1964-66; /d Government maintained and aided schools only;
		/e	Total, urban and rural; /f Inside only; /g 1966.

R4, February 6, 1978

DEFINITIONS OF SOCIAL INDICATORS

Land Area (thou km²)

Total - Total surface area comprising land area and inland waters.
Agric. - Most recent estimate of agricultural area used temporarily or permanently for crops, pastures, market & kitchen gardens or to lia follow.

GNP per capita (US\$) - GNP per capita estimates at current market prices, calculated by same conversion method as World Bank Atlas (1973-75 basis); 1960; 1970 and 1975 data.

Population and vital statistics

Population (mid-year million) - As of July first; if not available, average of two end-year estimates; 1960, 1970 and 1975 data.

Population density - per square km - Mid-year population per square kilometer (100 hectares) of total area.

Population density - per square km of agric. land - Computed as above for agricultural land only.

Vital statistics

Crude birth rate per thousand, average - Annual live births per thousand of mid-year population; ten-year arithmetic averages ending in 1960 and 1970, and five-year average ending in 1975 for most recent estimate.

Crude death rate per thousand, average - Annual deaths per thousand of mid-year population; ten-year arithmetic averages ending in 1960 and 1970 and five-year average ending in 1975 for most recent estimate.

Infant mortality rate (/thou) - Annual deaths of infants under one year of age per thousand live births.

Life expectancy at birth (yrs) - Average number of years of life remaining at birth; usually five-year averages ending in 1960, 1970 and 1975 for developing countries.

Gross reproduction rate - average number of live daughters a woman will bear in her normal reproductive period if she experiences present age-specific fertility rates; usually five-year averages ending in 1960, 1970 and 1975 for developing countries.

Population growth rate (%) - total - Compound annual growth rates of mid-year population for 1950-60, 1960-70 and 1970-75.

Population growth rate (%) - urban - Computed like growth rate of total population; different definitions of urban areas may affect comparability of data among countries.

Urban population (% of total) - Ratio of urban to total population; different definitions of urban areas may affect comparability of data among countries.

Age structure (percent) - Children (0-14 years), working-age (15-64 years), and retired (65 years and over) as percentages of mid-year population.

Age dependency ratio - Ratio of population under 15 and 65 and over to those of ages 15 through 64.

Economic dependency ratio - Ratio of population under 15 and 65 and over to the labor force in age group of 15-64 years.

Family planning - acceptors (cumulative, thou) - Cumulative number of acceptors of birth-control devices under auspices of national family planning program since inception.

Family planning - users (% of married women) - Percentages of married women of child-bearing age (15-44 years) who use birth-control devices to all married women in same age group.

Employment

Total labor force (thousand) - Economically active persons, including armed forces and unemployed but excluding housewives, students, etc.; definitions in various countries are not comparable.

Labor force in agriculture (%) - Agricultural labor force (in farming, forestry, hunting and fishing) as percentage of total labor force.

Unemployed (% of labor force) - Unemployed are usually defined as persons who are able and willing to take a job, out of a job on a given day, remained out of a job, and seeking work for a specified minimum period not exceeding one week; may not be comparable between countries due to different definitions of unemployed and source of data, e.g., employment office statistics, sample surveys, compulsory unemployment insurance.

Income distribution - Percentage of private income (both in cash and kind) received by richest 5%, richest 20%, poorest 20%, and poorest 40% of households.

Distribution of land ownership - Percentages of land owned by wealthiest 10% and poorest 10% of land owners.

Health and Nutrition

Population per physician - Population divided by number of practicing physicians qualified from a medical school at university level.

Population per nursing person - Population divided by number of practicing male and female graduate nurses, "trained" or "certified" nurses, and auxiliary personnel with training or experience.

Population per hospital bed - Population divided by number of hospital beds available in public and private general and specialized hospital and rehabilitation centers; excludes nursing homes and establishments for custodial and preventive care.

Per capita supply of calories (% of requirements) - Computed from energy equivalent of net food supplies available in country per capita per day; available supplies comprise domestic production, imports less exports, and changes in stock; net supplies exclude animal feed, seeds, quantities used in food processing and losses in distribution; requirements were estimated by FAO based on physiological needs for normal activity and health considering environmental temperature, body weights, age and sex distributions of population, and allowing 10% for waste at household level.

Per capita supply of protein (grams per day) - Protein content of per capita net supply of food per day; net supply of food is defined as above; requirements for all countries established by USDA Economic Research Services provide for a minimum allowance of 60 grams of total protein per day, and 20 grams of animal and pulse protein, of which 10 grams should be animal protein; these standards are lower than those of 75 grams of total protein and 23 grams of animal protein as an average for the world, proposed by FAO in the Third World Food Survey.

Per capita protein supply from animal and pulse - Protein supply of food derived from animals and pulses in grams per day.

Death rate (/thou) ages 1-4 - Annual deaths per thousand in age group 1-4 years, to children in this age group; suggested as an indicator of malnutrition.

Education

Adjusted enrollment ratio - primary school - Enrollment of all ages as percentage of primary school-age population; includes children aged 6-11 years but adjusted for different lengths of primary education; for countries with universal education, enrollment may exceed 100% since some pupils are below or above the official school age.

Adjusted enrollment ratio - secondary school - Computed as above; secondary education requires at least four years of approved primary instruction; provides general, vocational or teacher training instructions for pupils of 12 to 17 years of age; correspondence courses are generally excluded.

Years of schooling provided (first and second levels) - Total years of schooling; at secondary level, vocational instruction may be partially or completely excluded.

Vocational enrollment (% of secondary) - Vocational institutions include technical, industrial or other programs which operate independently or as departments of secondary institutions.

Adult literacy rate (%) - Literate adults (able to read and write) as percentage of total adult population aged 15 years and over.

Housing

Persons per room (urban) - Average number of persons per room in occupied conventional dwellings in urban areas; dwellings exclude non-permanent structures and unoccupied parts.

Occupied dwellings without piped water (%) - Occupied conventional dwellings in urban and rural areas without inside or outside piped water facilities as percentage of all occupied dwellings.

Access to electricity (% of all dwellings) - Conventional dwellings with electricity in living quarters as percent of total dwellings in urban and rural areas.

Rural dwellings connected to electricity (%) - Computed as above for rural dwellings only.

Consumption

Radio receivers (per thou pop) - All types of receivers for radio broadcasts to general public per thousand of population; excludes unlicensed receivers in countries and in years when registration of radio sets was in effect; data for recent years may not be comparable since most countries abolished licensing.

Passenger cars (per thou pop) - Passenger cars comprise motor cars seating less than eight persons; excludes ambulances, hearses and military vehicles.

Electricity (kwh/yr per cap) - Annual consumption of industrial, commercial, public and private electricity in kilowatt hours per capita, generally based on production data, without allowance for losses in grids but allowing for imports and exports of electricity.

Newspaper (kg/yr per cap) - Per capita annual consumption in kilograms estimated from domestic production plus net imports of newspaper.

FIJI

ECONOMIC INDICATORS

<u>GROSS NATIONAL PRODUCT IN 1976</u>	US\$ Mln	%	<u>ANNUAL RATE OF GROWTH (% Constant Prices)</u>		
			<u>1965-70</u>	<u>1970-75</u>	<u>1976</u>
GNP at market prices	655.9	100.0	7.2	5.8	2.6
Gross domestic investment	120.9	18.4	9.6	5.7	7.6
Gross national saving	71.3	10.9	18.5	-	-
Current account balance	49.6	7.6	-	-	-
Exports of goods, NFS	253.2	38.6	9.0	3.1	-5.0
Imports of goods, NFS	293.7	44.8	7.0	8.2	2.4

<u>OUTPUT, LABOR FORCE AND PRODUCTIVITY IN 1973</u>	<u>Value Added</u>		<u>Labor Force</u>		<u>V.A. Per Worker</u>	
	<u>US\$ Mln</u>	<u>%</u>	<u>'000</u>	<u>%</u>	<u>US\$</u>	<u>%</u>
Agriculture	92.0	25.2	64.7	45.9	1,422	54.9
Industry	75.3	20.6	26.5	18.8	2,841	109.7
Services	197.9	54.2	49.7	35.3	3,982	153.7
Total/Average	365.2	100.0	140.9	100.0	2,591	100.0

GOVERNMENT FINANCE

	<u>Central Government</u>		
	<u>F\$ Mln</u>	<u>% of GDP</u>	
	<u>1976</u>	<u>1976</u>	<u>1971-75</u>
Current receipts	128.8	21.6	18.9
Current expenditures	129.7	21.7	16.0
Current surplus	-0.9	-	2.9
Capital expenditures	38.2	6.4	5.0
External assistance (net)	6.9	1.2	1.2

MONEY, CREDIT AND PRICES

	<u>1965</u>	<u>1970</u>	<u>1973</u>	<u>1974</u>	<u>1975</u>	<u>1976</u>
	<u>(F\$ Million Outstanding End Period)</u>					
Money and quasi money	35.1	62.2	103.8	149.0	193.0	195.6
Bank credit to public sector	} 9.5	20.9	51.9	82.9	82.6	116.6
Bank credit to private sector						

(Percentages or Index Numbers)

Money and quasi money as % of GDP	30.1	32.4	34.8	33.1	36.0	32.9
Consumer price index (1968 = 100)	95.5	108.2	139.8	160.0	180.8	201.4
Annual percentage changes in:						
Consumer price index	7.9	4.1	11.2	14.4	13.0	11.4
Bank credit to public sector	} 17.3	17.1	50.4	59.7	-0.4	41.2
Bank credit to private sector						

Note: All conversions to dollars in this table are at the average exchange rate prevailing during the period covered.

TRADE PAYMENTS AND CAPITAL FLOWS

BALANCE OF PAYMENTS

	<u>1974</u>	<u>1975</u>	<u>1976</u>
	(US\$ Million)		
Exports of goods, NFS	274.1	300.3	253.2
Imports of goods, NFS	<u>303.3</u>	<u>297.5</u>	<u>293.7</u>
Resource gap (deficit = -)	-29.2	+2.8	-40.5
Interest payments (net) }			
Workers' remittances }	-2.3	-8.6	-11.1
Other factor payments (net) }			
Net transfers	<u>1.6</u>	<u>-0.5</u>	<u>2.0</u>
Balance on current account	-29.9	-6.3	-49.6
Direct foreign investment }			
Net MLT borrowing }			
Disbursements }	46.6	25.3	12.8
Amortization }			
Subtotal }			
Capital grants /a			
Other capital (net) }	<u>12.7</u>	<u>28.8</u>	<u>10.1</u>
Other items n.e.i.			
Increase in reserves (+)	29.4	47.8	-26.7
Net reserves (end year)	83.6	131.4	104.7
Petroleum products imports	42.8	47.0	42.4

RATE OF EXCHANGE

<u>1970-73 (average)</u>	<u>1974</u>
US\$1.00 = F\$0.84	US\$1.00 = F\$0.80
F\$1.00 = US\$1.19	F\$1.00 = US\$1.24
<u>1975</u>	<u>1976</u>
US\$1.00 = F\$0.82	US\$1.00 = F\$0.90
F\$1.00 = US\$1.22	F\$1.00 = US\$1.11

MERCHANDISE EXPORTS (AVERAGE 1973-76)

	<u>US\$ Mln</u>	<u>%</u>
Sugar	79.2	74.0
Coconut oil	8.3	7.7
Gold	9.1	8.5
All other commodities	<u>10.4</u>	<u>9.8</u>
Total	107.0	100.0

EXTERNAL DEBT, DECEMBER 31, 1976

	<u>US\$ Mln</u>
Public debt, incl. guaranteed	55.0
Nonguaranteed private debt	<u>75.0</u>
Total outstanding and disbursed	130.0

DEBT SERVICE RATIO FOR 1976 /b

	<u>%</u>
Public debt, incl. guaranteed	2.0
Nonguaranteed private debt	<u>10.0</u>
Total outstanding and disbursed	12.0

IBRD/IDA LENDING, MARCH 31, 1978 (US\$ Million)

	<u>IBRD</u>	<u>IDA</u>
Outstanding and disbursed	23.7	-
Undisbursed	<u>10.7</u>	-
Outstanding incl. undisbursed	34.4	-

/a Included in net transfers above.

/b Ratio of debt service to exports of goods and nonfactor services.

May 22, 1978

STATUS OF BANK GROUP OPERATIONS IN FIJIA. STATEMENT OF BANK LOANS AND IDA CREDITS (as of March 31, 1978)

Loan Numbers	Year	Borrower	Purpose	Amount in US\$ million (less cancellations)	
				<u>Bank</u>	<u>Undisbursed</u>
771-1-FIJ	1971	Fiji	Highways	11.8	0.0
771-2-FIJ	1973	Fiji	Highways (Supplementary)	4.2	0.0
833-FIJ	1971	Fiji	Telecommunications I	2.2	0.2
1140-FIJ	1975	Fiji	Telecommunications II	5.0	3.1
1226-FIJ	1976	Fiji	Sugar Development	12.0	7.5
			Total	35.2	
			of which has been repaid	0.8	
			Total now outstanding	<u>34.4</u>	
			Amount sold	0.1	
			of which has been repaid	0.1	-
			Total effective loan now held by Bank	<u>34.4</u>	
			Total undisbursed		<u>10.7</u>

B. STATEMENT OF IFC INVESTMENTS (as of March 31, 1978)

None

C. PROJECTS IN EXECUTION

Loan No. 771-FIJ

First Highway Project: US\$11.8 Million Loan of June 30, 1971 and US\$4.2 Million Supplementary Loan of February 1, 1973; Effectiveness Dates: September 24, 1971 and March 5, 1973; Closing Dates: December 31, 1977 and March 31, 1978.

The first Bank project in Fiji provided financing for: detailed engineering of the 110 mile Nandi-Suva road in three sections, (1) Nandi-Korotongo (41 mi), (2) Korotongo-Deumba (43 mi), and (3) Deumba-Suva (26 mi); construction of Sections (1) and (3); and supervision of construction by consultants. The construction of section (1) was completed in August 1976, and that of section (3) is nearing completion. Sharp price increases in fuel, materials and labor since the contract was awarded in May 1972 have substantially increased the project cost. The supplementary Bank loan covered part of this cost overrun. The Government is providing the rest of the required funds.

Loan No. 833-FIJ

First Telecommunications Project: US\$2.2 Million Loan of June 23, 1972; Effectiveness Date: September 28, 1972; Closing Date: June 30, 1978.

The project financed part of the 1971-75 development program of the Department of Posts and Telecommunications (P&T). The project works are virtually completed and the loan will be closed in mid-1978, one year behind the original schedule. P&T's financial position is sound and will be improved following the Government's recent approval of tariff increases.

Loan No. 1140-FIJ

Second Telecommunications Project: US\$5.0 Million Loan of July 16, 1975; Effectiveness Date: October 23, 1975; Closing Date: March 31, 1980.

Execution of the project is proceeding satisfactorily with delivery and installation of equipment in progress, but the completion is expected to be delayed by about one year.

Loan No. 1226-FIJ

Sugar Development Project: US\$12.0 Million Loan of April 23, 1976; Effectiveness Date: July 13, 1976; Closing Date: December 31, 1981.

The project includes land clearance, farm development and settlement of 400 families for growing sugarcane; construction and upgrading of main and feeder roads; a sugar tramline extension; sites and services for a township; construction of seawalls, tidal gates and drainage systems; and procurement of tractors, transport vehicles and equipment for road construction. The

project is progressing satisfactorily. Settlement is progressing generally in line with appraisal estimates, while drainage improvement has fallen about one year behind schedule due to staffing problems which are slowly being overcome. Disbursements to date are about 30% behind schedule. Higher land clearing, production, harvesting and transport costs, and a slower buildup of project benefits have reduced the estimated economic rate of return for the settlement part of the project from 20% to about 15%. There have been some departures from the agreed guidelines for settler selection, but the project management is taking firm steps to ensure that the guidelines are strictly followed in the future.

FIJI

MONASAVU-WAILOA HYDROELECTRIC PROJECT

Supplementary Data Sheet

Section I: Timetable of Key Events

- (a) The project was prepared over a period of approximately four years (early 1972-October 1975).
- (b) The project was prepared by the Fiji Electricity Authority with the assistance of consultants.
- (c) The project was first proposed to the Bank in March 1975; the first Bank mission to consider the project was in December 1975.
- (d) Appraisal: September 1977.
- (e) Negotiations: April 1978.
- (f) Planned date of effectiveness: August 1978.

Section II: Special Bank Implementation Action

None

Section III: Special Conditions

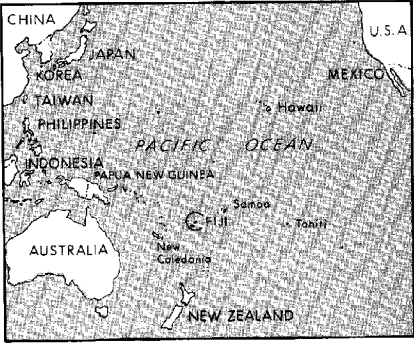
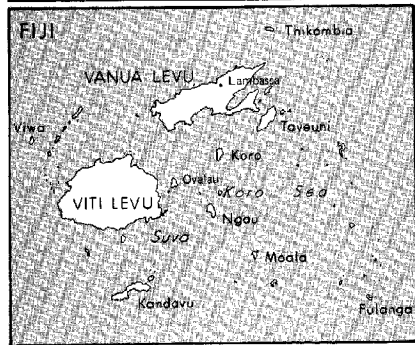
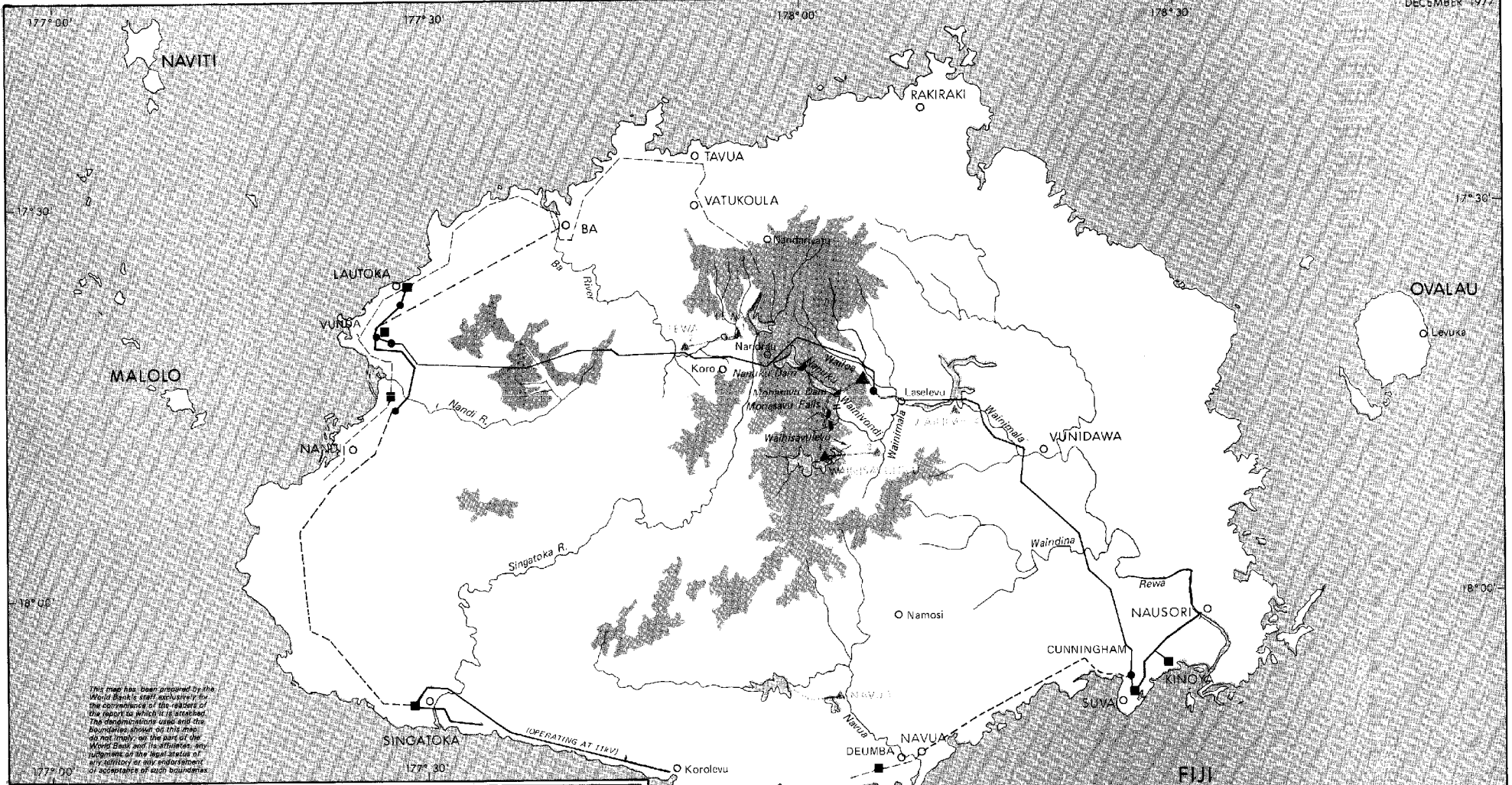
A. Conditions of Effectiveness

- (a) Formal acquisition of the SCCED assets by FEA (para. 27);
- (b) Conclusion of satisfactory financing arrangements for the transmission facilities (para. 43); and
- (c) Signing of EIB and CDC loan agreements (para. 52).

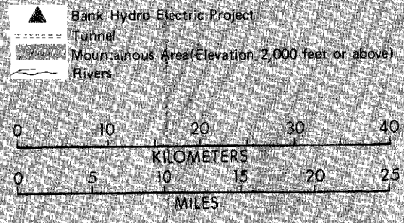
B. Other Assurances

- (a) The Government's guarantee of FEA's sound financial operations (para. 28);
- (b) Assurance that FEA will not undertake any expansion of the diesel or thermal capacity in Viti Levu before commissioning of the proposed project without prior consultation with the Bank (para. 37);

- (c) Employment of consultants satisfactory to the Bank (para. 46);
- (d) Preparation of plans, drawings, specifications, and detailed cost estimates for work to be undertaken by SPD, maintenance of separate accounts by SPD, and consultation with the Bank on SPD's organizational structure, on appointment of SPD's key personnel, and before SPD undertakes any additional work (para. 47);
- (e) Preparation and implementation of a satisfactory program of periodical inspection and maintenance of the project works (para. 49);
- (f) Assurance that FEA will acquire the rights to use all land necessary for the project and the associated transmission facilities by July 1, 1978 (para. 50);
- (g) Achievement of the following financial targets:
 - (i) an acceptable rate of return on currently valued net fixed assets in operation (para. 58); and
 - (ii) maximum debt/equity ratio of 70/30 (para. 59);
- (h) Annual Bank concurrence for FEA's financing plan during the project construction period, and agreement with the Bank on the Government's capital contributions (para. 59).



FIJI
VITI LEVU ELECTRICITY SYSTEM
 EXISTING SYSTEMS, MONASAVU-WAIOLOA HYDRO-ELECTRIC SCHEME
 AND ASSOCIATED 132 kV TRANSMISSION LINES



Existing and Under construction	Proposed up to 1981	Future
■		▲
●	●	
- - - - -	- - - - -	- - - - -
- - - - -	- - - - -	- - - - -
- - - - -	- - - - -	- - - - -

Diesel Power Stations
 Hydro Power Stations
 33 kV Substations
 11 kV Transmission Lines
 33 kV Transmission Lines
 132 kV Transmission Lines