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**Folder ID:** 30137551

**Dates:** 02/26/1976-09/23/1977

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**ISAD Reference Code:** WB IBRD/IDA WAT

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Water and Wastes Advisor

Work program

1976-1977

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Water and Waste - Work Program - 1976 / 1977 Correspondence

*Mr. Kalkematter*

09/23/77

ANNEX 7

WATER SUPPLY AND SEWERAGE DIVISION

PROPOSED STRATEGY AND WORK PROGRAM

Background

1. The population of Latin America is predominantly urban, with an average annual growth as high as 6%. Bank staff estimates that 25% of the urban population (46 million) were below the urban poor target income in 1975. Water supply and sewerage service levels improved considerably during the period 1960-75. In 1975, about 81% (151 million) of total urban population (186 million) were served by water services (house connections and standposts) and the percentage of the urban population connected to public sewerage systems was 35% (65 million).
2. In the 1960s, Bank activities in the sector were negligible. During the 1971-76 period, the Bank share (US\$334 million) of total sector investment made in the sector (US\$3 billion) increased to about 11%. It is estimated that the Bank projects constructed during this period will benefit an urban poor population of about 4 million.

Strategy of LCPWS

3. The current lending program for 1978-82 (Annex 1) amounts to US\$1 billion at current prices for water and sewerage in the urban and rural areas. Annex 2 shows the total incremental population served for each project inscribed in this program and, for urban projects, the incremental urban poor population estimated to benefit from these projects (about 15.5 million). Assuming that Bank activities in the sector would be maintained for the period 1983-86, at the same levels as they are for the period 1977-82, Bank participation in total sector investment in the region would reach about 2 billion, i.e., a decrease from 11% to 7.6% as compared to the period 1971-75.
4. Although Bank participation in financing urban water supply and sewerage projects is bound to decrease in quantitative terms, Bank qualitative involvement in the sector, particularly in connection with urban poor, should increase for the following reasons:
  - (i) a larger geographical area will be covered with the new countries included in the lending program;
  - (ii) a greater number of sector loans will permit us to reach more cities;
  - (iii) a better consolidation of previous institution-building achievements and an extension of distribution networks to marginal areas will be made possible through repetitive loans to existing borrowers;

- (iv) a larger involvement in fields of great concern for the next decade such as sewerage disposal, refuse collection and disposal and pollution control problems will be achieved through specific projects;
- (v) a systematic use of the affordability/replicability criteria and of experience gained with existing operations will be sought, particularly the establishment of tariff policies and structures resulting in cross-subsidies for the poor; the use of standards and design criteria more in line with the capacity of the urban poor to pay; the promotion of community education and the promotion and financing of training;
- (vi) a better coordination between national and international institutions will be sought, by the LCPWS Division in order to channel the cheapest funds to the poor.

Annex 3 is a summarized illustration of the foregoing strategy with a prototype example (Managua III project).

5. Our quantitative and qualitative efforts might very well, however, be insufficient. There are 21 cities in Latin America with more than one million inhabitants. Most of them are industrial centers, i.e., points of attraction for migrants, all are highly polluted and already have a large proportion of urban poor. To alleviate the condition of the urban poor in these cities will require enormous investments and presumably new techniques and difficult economic choices. The various issues related to these problems would alone justify a larger Bank involvement in the sector. No precise targets can be established but Bank participation in total investment in the sector for the period an attempt to maintain at 11% seems unreasonable 1/. This would require an additional input of staff of about six professionals (Annex 5). In order to increase qualitative Bank participation, these professionals would have to be qualified experts in management, pollution control and sewerage disposal. In parallel, optimization of human resources could be achieved through an improved coordination among the different departments of the Bank working directly or indirectly in the sector. Annex 6 provides, in a summarized form, additional Bank qualitative involvement that would be made possible if the present lending program was increased.

6. There are other recommendations that should be made at this stage. They are dictated by the LCPWS' experience in Latin America and concern particularly:

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1/ A tentative increased lending program for the period 1978-82 is given as Annex 4.

- (i) the problem of the urban poor's incapacity to pay for house connection costs. This could be solved with the establishment of revolving funds by our borrowers. The Bank should encourage this practice and even participate in the financing of such funds;
- (ii) the problem of uncontrolled land development which may create heavy speculation, inadequate residential development and almost always expensive distribution of waterworks. The Bank should require the governments to establish national urban priorities;
- (iii) the problem of discrepancy between the various sources of information regarding the urban sector. The Bank should pursue the idea of establishing in Central Projects a data bank, and the use of a computer program for calculation of population, investments and service level projections.

**Attachments**

cc: Messrs. Wyss (LCPDR), Zavala, Kalbermatten (EWTDR)

RCosta/clh

September 23, 1977

WATER SUPPLY AND SEWERAGE

(US\$ millions)

<u>Country/Project</u>	<u>FY78</u>	<u>FY79</u>	<u>FY80</u>	<u>FY81</u>	<u>FY82</u>
<u>BAHAMAS</u>					
Water, Sewerage II			7.0		
<u>BOLIVIA</u>					
Water Supply II					20.0
<u>BRAZIL</u>					
Water Supply & Sewerage - N.E.		50.0			
Sao Paulo II - Sewerage Treatment					150.0
Sao Paulo - Sewerage Treatment	80.0				
Water Supply & Sewerage - Center			70.0		
Water & Sewerage - Unidentified				60.0	
<u>CHILE</u>					
Water Supply		35.0			
<u>COLOMBIA</u>					
Water & Sewerage - Bogota River Reg.		10.0			
Water Supply - Cali II	15.0				
Bogota Water III			30.0		
INSFOPAL III		20.0			
INSFOPAL IV				25.0	
<u>ECUADOR</u>					
Water Supply					20.0
<u>EL SALVADOR</u>					
Water Supply I			15.0		
<u>GUYANA</u>					
Water Supply & Sewerage I			7.0		
Water Supply & Sewerage II					9.0
<u>HAITI</u>					
Water Supply I	7.0				
Water Supply & Sewerage II				15.0	

WATER SUPPLY AND SEWERAGE (Cont'd)

Country/Project	FY78	FY79	FY80	FY81	FY82
<u>MEXICO</u>					
Water Supply Mexico City II	150.0				
Water Supply Med. Cities IV (S)			70.0(S)		
<u>NICARAGUA</u>					
Water Supply III	10.4				
Rural Sanitation	3.1				
<u>PANAMA</u>					
Water Supply II (S)			25.0(S)		
<u>GUATEMALA</u>					
Water Supply & Sewerage				25.0	
<u>PARAGUAY</u>					
Rural Water Supply I	6.0				
Rural Water Supply II (S)					10.0(S)
<u>PERU</u>					
Lima Water Supply (S)		50.0(S)			
<hr/>					
No. of Projects/Total Value	(7)271.5	(5)165.0	(7)224.0	(4)125.0	(5)209.0

09/19/77

LEVELS OF SERVICE TO URBAN POOR

ANNEX 7  
Attachment 2

PRESENT LENDING PROGRAM - 78/82

WATER SUPPLY AND SEWERAGE - LAC

COUNTRY	LOAN	OBJECT	AMOUNT US\$ MILLION	POP. SERVED MILLION	URBAN POOR SERV MILLION
BAHAMAS	Sew. II	Sew.	7.0	0.320	0.070
BOLIVIA	WS II	Water	20.0	1.200	0.360
BRASIL	NE	WS/Sew	50.0	3.500	2.500
BRASIL	S. Paulo S.T.	Sew. Treat.	80.0	1.200	0.560
BRASIL	S. Paulo II	Sew	150.0	3.000	0.670
BRASIL	Center	WS/Sew	70.0	2.800	1.900
BRASIL	Unident.	Sew.	60.0	3.000	1.600
CHILE	I	WS	35.0	0.660	0.530
COLOMBIA	Bogota	River. Reg.	10.0	--	--
COLOMBIA	Calí II	Sew.	15.0	0.300	0.240
COLOMBIA	Bogota III	WS	30.0	0.380	0.240
COLOMBIA	INSFOPAL III	WS/Refuse	20.0	1.000	0.800
COLOMBIA	INSFOPAL IV	WS/Sew.	25.0	0.500	0.320
ECUADOR	Water Supp.	WS	20.0	0.300	0.200
EL SALVADOR	I	Sew.	15.0	0.290	0.180
GUYANA	I	WS/Sew.	7.0	0.140	0.090
GUYANA	II	WS/Sew.	9.0	0.200	0.120
HAITI	I	WS	7.0	0.170	0.130
HAITI	II	WS/Sew.	15.0	0.360	0.250
MEXICO CITY	II	WS	150.0	3.000	2.400
MEXICO	Med. Cities IV	Sew.	70.0	0.600	0.350
NICARAGUA	WS III	WS	10.4	0.220	0.130
NICARAGUA	Sanitation	Rural	3.1	--	--
PANAMA	WS II	Sew.	25.0	0.610	0.420
GUATEMALA	WS/Sew.	WS/Sew.	25.0	0.290	0.200
PARAGUAY	Rural WS I	Rural	6.0	--	--
PARAGUAY	Rural WS II	Rural	10.0	--	--
PERU	Lima WS	WS	50.0	1.500	1.200
<b>TOTAL</b>			<u>994.5</u>	<u>25.540</u>	<u>15.460</u>

Note: The above figures do not include the impact on urban poor due to projects of the period 1971-1976.



## STRATEGY OF THE SECTOR

## WATER SUPPLY AND SEWERAGE -- LAC

COUNTRY/LOAN	LARGER GEOGRAPHIC COVERAGE	MULTI-CITIES	CONSOLIDATION OF INSTITUTIONS	NETWORKS EXTENSIONS TO MARGINAL AREAS	INVOLVEMENT IN NEW FIELDS	REMARKS
BAHAMAS/WS/S II			Yes	Yes		
BOLIVIA/WS/S		Yes	Yes	Yes		
BRASIL/WS/S NE		Yes	Yes	Yes	Yes	Project to cover sewerage and pollution problems in capital cities of three states
BRASIL/S. Paulo II			Yes	Yes	Yes	Pollution control - 1st stage
BRASIL/S. Paulo S.T.			Yes	Yes	Yes	Pollution control - 2nd stage
BRASIL/Center		Yes	Yes			
BRASIL/Unident.		Yes	Yes	Yes		
CHILE/WS	Yes			Yes		
COLOMBIA/Bogota River Reg.			Yes		Yes	Regulation of Rio Bogota to control flooding and contamination
COLOMBIA/Cali II			Yes	Yes	Yes	Reduction of degree of contaminated waters entering treatment plant and flooding control
COLOMBIA/Bogota Water III			Yes	Yes		
COLOMBIA/INSFOPAL III		Yes	Yes	Yes	Multi-purpose	Includes refuse collection and disposal
COLOMBIA INSFOPAL IV		Yes	Yes	Yes		
ECUADOR/WS		Yes		Yes		
EL SALVADOR/Sewerage I	Yes		Yes	Yes		
GUYANA/WS & S I	Yes		Yes	Yes		
GUYANA/WS & S II	Yes			Yes		
HAITI/WS I	Yes	Yes	Yes	Yes		
HAITI/WS & S IV	Yes	Yes	Yes	Yes		
MEXICO/City II			Yes	Yes		
MEXICO/M. Cities IV		Yes	Yes	Yes		
NICARAGUA/WS III			Yes	Yes		
NICARAGUA/Rural San						Rural
PANAMA/Sew.				Yes		
GUATEMALA/WS & S	Yes			Yes		
PARAGUAY/Rural WS I	Yes	Yes				Rural
PARAGUAY/Rural WS II	Yes	Yes				Rural
PERU/Lima WS	Yes		Yes			

September 21, 1977

LCPWS MANAGUA WATER SUPPLY III PROJECT

AN ILLUSTRATION OF THE LCPWS DIVISION STRATEGY  
FOR URBAN POOR IN LATIN AMERICA

THE PROJECT

1. The project would be the third expansion of Managua's water supply. The first expansion financed by IDA Credit 26-NI was completed satisfactorily in 1966. The second stage financed by Loan 808-NI was successfully carried out, even considering the difficult problems created by the 1972 earthquake. The project consists of additional water wells, pumping equipment, storage and distribution facilities, house connections, data processing facilities for the borrower, and studies of new water sources for the next expansion stage. The total project cost is estimated at 13.9 million dollars and the Bank loan will amount to 10.4 million dollars (total foreign cost). The borrower would be the Empresa Aguadora de Managua (EAM).

SELECTION CRITERIA

2. The project constitutes a typical illustration of the LCPWS strategy for urban poor in Latin America. Its main objectives are:

- (i) to provide safe water to 95% of the Managua population up to 1985;
- (ii) to increase the number of urban poor served by house connections by about 220,000;
- (iii) to achieve a better consolidation of sector organization. The Government will conduct a study of the organizational arrangements for water and sewerage services in Managua which would develop recommendations for unification of service under one single company, or for otherwise satisfactory coordination;
- (iv) to consolidate the borrower's managerial and operational capabilities. The increase in personnel would be reduced in order to obtain a ratio of employment per 1,000 connections satisfactory to the Bank. Government receivables would be reduced to two-months billing. Inventories would be reduced to no more than 3% of the gross value of fixed assets. The company's financial situation would be improved thanks to the implementation of adequate tariffs and the Bank would continue to be consulted for changes happening on higher levels of the borrower's management;
- (v) to prevent the sanitation problems that could occur if appropriate sewerage disposal lags behind installation of

water connections. Bank disbursements for water transmission and distribution works for a given neighborhood will be contingent to the presentation by the borrower of a program acceptable to the Bank for sewerage disposal in that area;

- (vi) to ensure its replicability. Present average tariff is 12% higher than the marginal cost of the project;
- (vii) to ensure cross-subsidization between consumers and reflect the affordability criteria. Although the present tariff structure is progressive, tariff progressivity is low (1.25) and minimum consumption is high (5,000 to 8,000 gallons per month) which results in high tariffs for the poor consumers (about 30% of total population). With the proposed loan, the tariff structure would be modified in order to lower the minimum consumption and introduce more progressive and simplified tariff structures; the objective of such restructuration is that large consumers pay 3 times the marginal cost of the proposed project, thereby subsidize low-income users; and
- (viii) to ensure the connection of poor people to the system. A revolving fund has been set up in the borrower to finance the cost of the connection charged to this people.

MONITORING INDICATORS (See Annex 1)

3. Monitoring indicators have been designed in order to follow, by quarter, the implementation of the proposed project and, particularly, the components regarding the urban poor. The most relevant indicators cover production, population served, number of connections, consumption per capita, tariffs, operating costs, etc.

*2/10*  
RCosta/ERodriguez:z1

cc: H. Wyss  
A. Zavala  
J. Culagovski

LEVELS OF SERVICE TO URBAN POOR  
ADDITIONAL LENDING PROGRAM - 78-82  
WATER SUPPLY AND SEWERAGE -LAC

COUNTRY	LOAN	OBJECT	AMOUNT US\$ MILLION	POP. SERV. MILLION	URBAN POP. SERV. MILLION
BOLIVIA	S. Cruz	Sew/Stormwater	30.0	0.230	0.080
BRASIL	Unident.	Sew.	40.0	0.800	0.560
CHILE	Med. Cities I	WS/Sew.	20.0	0.600	0.360
CHILE	Med. Cities II	WS/Sew	20.0	0.600	0.360
COLOMBIA	INSFOPAL V	Refuse	25.0	3.900	0.975
ECUADOR	Sml. Cities I	WS	20.0	0.660	0.460
MEXICO	CITY III	WS	50.0	2.000	1.400
MEXICO	M. Cities III	WS	50.0	1.300	0.900
NICARAGUA	Rural II	WS	5.0	--	--
PERU	Mantaro	WS Prod.	30.0	--	--
JAMAICA	Kingston III	WS	20.0	0.150	0.080
TOTAL			<u>310.0</u>	<u>10.240</u>	<u>5.175</u>

Note: The above figures do not include the impact on urban poor due to projects of the period 1971-1976.

Country/Project	No.	LOAN AMOUNT (US\$ MILLION)					
		FY78	FY79	FY80	FY81	FY82	
<u>Bahamas</u> Sewerage II	1			7.0			
<u>Bolivia</u> Santa Cruz Small Towns	2		30.0*			20.0	* additional projects proposed
<u>Brazil</u> NE Sao Paulo II Sao Paulo III Center Unidentified Unidentified (sewerage)	6	80.0	50.0	70.0	60.0 40.0*	150.0	
<u>Chile</u> Santiago Medium Cities I Medium Cities II	3		35.0		20.0*	20.0*	
<u>Colombia</u> Bogota River Control Cali II Bogota Water III INSFOPAL III (Garbage) INSFOPAL IV (Water) INSFOPAL V (Garbage)	6	15.0	10.0 20.0	30.0	25.0	25.0*	
<u>Ecuador</u> Small Cities I Small Cities II	2		20.0*		20.0		
<u>El Salvador</u> Sewerage	1			15.0			
<u>Guyana</u> WS & S I WS & S II	2			7.0		9.0	
<u>Haiti</u> Provincial Towns I Provincial Towns II		7.0			15.0		
<u>Mexico</u> Mexico City II Mexico City III Medium Cities II Medium Cities III	4	150.0	50.0*	70.0		50.0*	
<u>Nicaragua</u> Managua III Rural I Rural II	3	10.4 3.1			5.0*		
<u>Guatemala</u> Water I	1				25.0		
<u>Panama</u> Sewerage	1			25.0			
<u>Paraguay</u> Rural I Rural II	2	6.0				10.0	
<u>Peru</u> Lima Mantaro	2		50.0			30.0*	
<u>Jamaica</u> Kingston III	1			20.0*			
No. of Projects	39	7	8	8	8	8	
Amount of Loans	---	271.5	265.0	244.0	210.0	314.0	1,304.5

LCPWS

ADDITIONAL STAFF REQUIRED FOR PROPOSED LENDING PROGRAM - 78/82

<u>DESCRIPTION</u>	<u>FY78</u>	<u>FY79</u>	<u>FY80</u>	<u>FY81</u>	<u>FY82</u>
Approved Staff	14	14	14	14	14
PAHO Support	-	2	2	2	2
Division Chief/ Deputy Division Chief	(1)	(1)	(1)	(1)	(1)
Technical Assistance to Other Project Activities <u>1/</u>	(-)	(1)	(1)	(2)	(2)
	—	—	—	—	—
Staff/Projects Available	13	14	14	13	13
Staff/Projects Necessary	14	16	16	16	17 <u>2/</u>
	—	—	—	—	—
Additional Staff Needed	+ 1 <u>3/</u>	+ 2	+ 2	+ 3	+ 4
	—	—	—	—	—
Number of projects in Approved Lending Program	7	5	7	5	4
Number of Projects in Proposed Lending Program	7	8	8	8	8

- 
- 1/ Urban Projects (CPS); tourism projects; agriculture projects, and integrated rural development projects.
- 2/ During the period 1983/86 two additional staff (increasing divisional staff to 18) would be necessary to maintain the Division's share of total investments in the sector at 11%.
- 3/ For FY79 projects identification and preparation.

ADDITIONAL LENDING PROGRAM - 78/82

STRATEGY OF THE SECTOR

WATER SUPPLY AND SEWERAGE -- LAC

COUNTRY/LOAN	LARGER GEOGRAPHIC AREAS	MULTI-CITIES	CONSOLIDATION OF INSTITUTIONS	NETWORKS EXTENSION TO MARGINAL AREAS	INVOLVEMENT IN NEW FIELDS	REMARKS
BOLIVIA/Santa Cruz					Multi-Purpose	Flood prevention by stormwater collection benefits the whole watershed
BRASIL/Unident.		Yes	Yes	Yes	Pollution Control	Sewerage and pollution control in large-size cities of Brasil
CHILE/M. Cities I	Yes	Yes		Yes		
CHILE/M. Cities II	Yes	Yes		Yes		
COLOMBIA/INSFOPAL V		Yes	Yes		Refuse collection Street sweeping	Emphasis in recyclable and reclaimable wastes which benefits separators
ECUADOR/Small Cities I		Yes	Yes	Yes	Rural	
MEXICO/City III			Yes	Yes	Yes	Marginal Areas
MEXICO/ Medium Cities III		Yes	Yes			
NICARAGUA/Rural I	Yes	Yes	Yes		Rural	Rural Development
PERU/Mantaro	Yes		Yes			Increase in water production will benefit the whole city of Lima
JAMAICA/Kingston III			Yes	Yes	Multi-Purpose	

ANNEX 7  
Attachment 6

## OFFICE MEMORANDUM

File in  
same file as  
incoming copy  
memo  
Berrie - Williams  
}

TO: Mr. Thomas Berrie

DATE: February 26, 1976

FROM: Eric R. Williams, Chief, ASPWS

SUBJECT: OED Public Utilities Section

1. I have no useful comments to make on the work expectations suggested in your draft, except perhaps as regards para. 3. I would not think that terms of reference for completion missions needed any particular discussion or scrutiny; the requirements are, I feel, well covered in the Supervision Handbook. Any special features requiring attention in an individual project will be well known in the division.

2. Referring to the covering note attached to your draft, I will of course be happy to collaborate with your Unit in any way possible (provided it does not involve me in any more meetings than I now have to attend!). However, I cannot offhand think of any practical suggestions, since it seems to me your work begins as ours finishes - at least under present arrangements. On the specific suggestions you make:

- (a) I see no necessity for regular meetings (certainly not quarterly) to discuss upcoming completion reports; I should think a brief telephone contact as and when needed would suffice;
- (b) Mr. Rovani does not, so far as I am aware, hold monthly meetings with Division Chiefs; but I am sure OED representatives would be welcomed at any sectorial meeting we may hold.

ERWilliams:saf  
IBRD





THE SETTING FOR WORK EXPECTATIONS TEAM OBJECTIVES OF PUBLIC UTILITIES SECTION

1. To carry out all the work of the department in so far as the public utilities sectors (power, energy, water, waste disposal, telecommunications) are concerned, except for special studies (duly designated) done by other task forces and sections, upon which the section will merely advise.
2. To deal with all work connected with Completion Reports, Project Performance Audit Memoranda and Reports in so far as the public utilities sectors are concerned; also, with respect to the latter sectors, to contribute towards the work of other task forces and sections, e.g., the Director General's Annual Report, Annual Project Performance Audit Review, Management Policy Reviews, etc.
3. To liaise with the public utilities divisions in Central Projects Staff and the Regions, as appropriate, but especially concerning drafts of terms of reference for Completion Reports and completion missions; also discussion of issues arising from post-project auditing, who should deal with the issues, and by when.
4. To carry out any special assignment given by the Director General or the Director.
5. To keep abreast of good public utility practices, not only as practiced within the Bank but also elsewhere in the world. To keep up-to-date with respect to methodologies, technologies and analytical tools, e.g., the computer and especially with respect to the general state of action in the Bank in connection with OED suggestions, or recommendations, or lessons earlier made in connection with public utility projects.
6. To encourage appropriate selective dissemination of OED reports, findings, results among those concerned with public utilities in the Bank.

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THE SETTING FOR WORK EXPECTATIONS TEAM OBJECTIVES OF PUBLIC UTILITIES SECTION

1. To carry out all the work of the department in so far as the public utilities sectors (power, energy, water, waste disposal, telecommunications) are concerned, except for special studies <sup>concerning project evaluation</sup> (duly designated) done by other task forces and sections, upon which the section will merely advise.

2. To deal with all work connected with Completion Reports, Project Performance Audit Memoranda and Reports in so far as the public utilities sectors are concerned; also, with respect to the latter sectors, to contribute towards the work of other task forces and sections, e.g., the Director General's Annual Report, Annual Project Performance Audit Review, Management Policy Reviews, etc.

3. To liaise with the public utilities divisions in Central Projects Staff and the Regions, as appropriate, but especially concerning drafts of terms of reference for Completion Reports and completion missions; also discussion of issues arising from post-project auditing, who should deal with the issues, and by when.

4. To carry out any special assignment given by the Director General or the Director.

5. To keep abreast of good public utility practices, not only as practiced within the Bank but also elsewhere in the world. To keep up-to-date with respect to methodologies, technologies and analytical tools, e.g., the computer and especially with respect to the general state of action in the Bank in connection with OED suggestions, or recommendations, or lessons earlier made in connection with public utility projects.

6. To encourage appropriate selective dissemination of OED reports, findings, results among those concerned with public utilities in the Bank.

X

May 14, 1976

Professor William Miernyk  
Regional Research Institute  
West Virginia University  
Morgantown, West Virginia 26506

Dear Bill:

This is to acknowledge that we have received your discussion draft "Employment Impacts of Public Utilities on LDCs". My initial quick look at it left me with the impression that it is quite interesting and gives us the good summary which we need.

It is currently being reproduced and will be circulated to selected staff in the department for their reactions. We'll be in touch with you when we have them.

Best regards,

Robert J. Saunders  
Senior Economist  
Energy, Water & Telecoms. Dept.

RJSaunders:mds

cc: Messrs. Wafford, Middleton  
Blue Book; Files

Mr. A. Stone

May 3, 1976

Robert J. Saunders

Employment Impacts Research Project - Professor William Miernyk

Professor Miernyk of West Virginia University is writing a paper for us in which he is summarizing the most often used techniques for measuring employment impacts of investment. This is an outgrowth of our continuing interest in benefit identification and measurement with regard to public utilities.

Attached is a preliminary outline of the paper which Professor Miernyk is writing. Our response to this outline was that we felt the final paper should address the specific problem of public utility employment linkages in LDC's in more detail, if possible.

We expect a draft of Professor Miernyk's paper by June 1.

RSaunders:mds  
attachment

cc: Messrs. Warford, Middleton ✓  
Elue Book; Files

*attachment not received*

PUBLIC UTILITIES DEPARTMENT WORK PROGRAM FY76

INTRODUCTION

1. The Public Utilities Department Work Program for FY76 should be seen in light of the longer term objectives of power, energy, telecommunications and water and wastes work. The ultimate objective is to bring about a situation in which investment decisions in the sectors are optimized in the sense that economic and social benefits of projects exceed their costs by the maximum possible amount. While this objective is no doubt unattainable - if only because of the value judgements associated with the notion of social benefits, and changing perceptions of what social goals should be - there is clearly considerable scope for improving investment decision-making in public utilities. On both the benefit and cost side of utility operations there are a number of critical issues that warrant the special attention of the department, and the solution of which should be seen as long-term goals. These include:

- clarification and expansion of the role of economic analysis in utility work, with particular attention to the role of incremental cost pricing in improving resource allocation;
- definition of policies regarding the extension of services to low income groups: tradeoffs between quality and cost of service;
- definition of policies with regard to rural electrification and water supply;
- analysis of the impact of increasing energy costs on public utility investment, finance and operations;
- analysis and definition of policies with regard to the impact of utility projects on urban, rural or regional development;
- continuation of traditional aspects of Bank work in the fields of project engineering and construction, cost estimating, procurement, institution building, training and so on.

2. In the 2-1/2 years since reorganization, effort has primarily been devoted to:

- completing research efforts in pricing and investment policies, village water supply and village electrification, and dissemination of the results: papers have included a number of theoretical and applied studies of electricity tariffs, both research and issues papers on village water supply and rural electrification; this output is reaching now the publication stage;

- continuation of research on standards of urban electricity distribution and on contribution of telecommunications to development;
- initiating work on the energy problem; disseminating its output within the Bank and drawing the implications for the Bank and the LDC's;
- issuance of guidelines covering the most important needs of the regional and WHO/IBRD cooperative program staff and including such topics as water and power sector work; WHO/IBRD cooperative program procedures; economic evaluation of public utilities projects; and a Telecommunications Handbook;
- informing staff by means of Public Utilities Notes and seminars as to the state of the art of a number of utility issues, such as generating plant reserve margins, pricing principles for power and water, solid waste disposal; subjects of current interest, including papers on desalination; petroleum, geothermal energy etc.; and illustrative methodological cases, arising from field inputs into operations such as Finland's Water Pollution Control Program, the Lahore Water Supply Tariff Study, the Singapore solid waste project etc.;
- improving selection and design of projects by in-house review of CPP's, preappraisal terms of reference etc., and by contributing to sector work - particularly in water and waste through the WHO/IBRD cooperative program;
- in-house review and advice at all other stages of the project cycle and a small amount of operational field support.

3. The amounts of staff time allocated to the various activities for FY74 and FY75 (to date) have been as follows:

	<u>FY74</u>	<u>FY75(to date)</u>
1. Research	21%	26%
2. Policy papers/guidelines	17%	27%
3. Operational Support-Advisory	60%	43%
4. Operational Support-Direct	2%	4%

4. The FY76 Work Program will be characterized by a significant increase in output, reflecting the expected full replenishment of our staff (from 529 to 673 man-weeks), no change in the sectoral distribution of our time, and a considerable change in the emphasis of our work from research to the diverse activities involved in policy implementation. Much of the increment will go to operational support in the early phases of the project cycle, particularly sector work. This shift which affects primarily economic work is apparent from Table 1. It is further discussed below, along with other highlights of this work program.
5. Our first work program explained that the gulf between known economic theory and actual practice in the public utilities field was so great that, with a few exceptions, the Bank's comparative advantage lay in the application of well established principles to actual situations. Therefore after a relatively heavy initial research effort in the last two years, particularly in the fields of village electrification and power pricing techniques, the Department is switching emphasis in economic work to operational support and advice, and particularly to field inputs designed to demonstrate and make more fully operational the results of past research.
6. Some research will however continue: there will be staff involvement in research projects on (a) rural telecommunications; (b) standards of urban electricity distribution, (c) methods of dispensing water to low income consumers, (d) the impact of improved sanitation on health, (e) evaluation of the petroleum potential of non-OPEC LDC's and (f) design of national and world energy models. Generally, however, it is felt that in the utilities sectors the most effective way to rapid advances in applied research is to rely upon our borrowers to conduct it themselves. In particular, efforts are being made to incorporate economic pricing and investment studies and socio-economic surveys of the beneficiaries of public utilities in project lending.
7. As noted, the department does not intend to devote as much time as in the past to the preparation of policy or issues papers or guidelines. It is envisaged that most of the papers produced by the department will be in the Public Utilities Notes and Guidelines Series. The former will be primarily the by-product of particularly interesting or innovative operational work, or the dissemination of new developments outside the Bank. The latter are expected to include guidelines for the gathering of basic LDC energy information, for the organization and handling energy sector studies, a utility Financial Managers Handbook, papers on utility tariffs and inflation, and a survey of the demand and supply of capital for the power sectors of LDC's.
8. On the operational side, we often observe that, at project appraisal the Bank is still imperfectly informed about basic issues of sector policy and project selection and design - requiring particular emphasis to continue being placed "upstream" on sector work. Most sector work in the water supply field is currently done by the WHO/IBRD Cooperative Program and still leaves much to



be desired by all parties concerned. The Department has now reorganized its resources in order to actively support the Program in the coming year, and to live up to the original commitment of the Bank to WHO in this regard. In addition, we may well initiate a new concept of "environmental sector study" in particular areas where important interactions are involved between policies and methods of disposing of various types of wastes.

9. More support of sector work in the power field is also envisaged. Too frequently, appraisal of bulk power projects by old as well as new borrowers completely ignores distribution systems, and in particular, retail tariff policy. We will endeavor to identify the need for, and offer to support sector studies focusing on these particular aspects. Energy sector studies will also receive increased attention during the period.

10. While the importance of relating project to sector work is increasingly recognized, we intend to go one step further. It is clearly important that the public utilities sector studies should be of use to authorities with responsibilities that transcend the operations of the utilities themselves. In reviewing and advising on sector work, this is an aspect that will command much of our attention. More generally, by liaison with other sectoral departments and DPS we will endeavor to ensure that the consequences of utility investment and policies for the welfare of low income groups; for urban and rural development; for health; for environment; and for local and national fiscal policy are taken into account as early as appropriate during the project cycle.

11. The task facing the Department in bringing about a new outlook among borrowers is particularly formidable in the economic field. Great care will therefore be exercised in the selection of the work to be undertaken by departmental economists. Aside from routine review of Bank papers, our economists will primarily be used in direct operational support on project or sector work that has particularly innovative aspects, and in requiring or otherwise persuading our borrowers to conduct economic analysis themselves. We see the latter as an ultimate goal, and intend to increase the amount of effort that has been devoted so far in helping to draw up terms of reference for tariff and other economic studies, prime examples of which include the telecommunications studies initiated with respect to Papua New Guinea and Ethiopia; Lahore water supply; Finland pollution control and several electricity tariff studies. Paralleling this effort we will try to ensure that by the end of FY76 all appraisal, sector and other reports are written with an understanding of the economic principles involved in project justification, pricing, and the rate of return. At the moment most water supply appraisals reflect this understanding, but much needs to be done in telecommunications and power; in the latter case, the Department has a specially important role to play in ensuring that operational work benefits from the considerable research effort that has been made.

12. For over a year, the Department has been actively aware of the need for more effective sector policy implementation tools, but has lacked the time

and the wider support needed to develop them. Both aspects having improved, the Department is now working with the new Policy Implementation Adviser in PAS on a policy implementation system for power operations which will subsequently be expanded to water and telecoms. The system will include improved sector briefs, project briefs stating the contents, development objectives and preparation schedules of individual projects, and will be susceptible of aggregation by Regions and by sector to allow periodic review by the managers concerned of the qualitative contents of this lending programs, and to relate such qualitative contents with the manpower at hand when budgets are being formulated. This particular task though expected to be well advanced by FY76, will undoubtedly still require significant work for some time.

13. Communications with the Regions will continue to receive particular attention, with a view to helping utility staff keep up to date with innovations in the sectors, whether stemming from work inside or outside the Bank. Training and development of new regional and cooperative program staff will continue to be an important function, and will be supplemented with occasional participation in missions by our most experienced staff. We will also continue assisting in recruitment, organizing secondments and transfers of staff between Regions, and in career development. The communicating effort will be stepped up in power, neglected temporarily due to our heavy staff rotations in that sector in FY74 and 75, and will now be extended to the Country Program side of the Bank where, we feel, the knowledge and understanding of utilities policies and development potential has been on the decline. In parallel with the policy implementation system mentioned above, a paper will be prepared summarizing the main features to be kept in mind in selecting and designing power, water and telecoms projects that are fully responsive to Bank policy.

14. New developments need also be taken to utilities outside. We will continue to support the EDI water projects course and intend to devote a special effort to helping EDI develop a new power course. In the same field, we intend to try out two types of seminars for utility managers, one dealing with power and energy issues of one region (say Central America), the other with village electrification and/or pricing.

15. The Department will continue to build up a close and effective relationship with other agencies in the field via intensified support of the IBRD/WHO Cooperative Program for sector work; participation in the international panel for rural water supply; adaptation of IAEA's power system planning model for use in countries with Bank operations and a proposed joint study of sources and requirements of funds for power development in LDC's.

16. The following presentation is divided into five sections: (a) water supply and wastes (b) power (c) energy (d) telecommunications and (e) cross-sectoral. The amount of staff time devoted to the various activities are summarized in Table I.

TABLE 1

PUBLIC UTILITIES DEPARTMENT

ADVISORY UNIT

Work Program Summary  
(Man-weeks)

	<u>FY75</u>						<u>FY76</u>					
	<u>Summary</u>	<u>Re- search</u>	<u>Policy</u>	<u>Guide- lines &amp; DMS</u>	<u>Opera- tional Support</u>	<u>%</u>	<u>Summary</u>	<u>Re- search</u>	<u>Policy</u>	<u>Guide- lines &amp; DMS</u>	<u>Opera- tional Support</u>	<u>%</u>
Water	176	31	18	9	118	33.3	215	20	-	36	159	32.0
Power	135	45	2	4	84	25.5	189	33	8	-	148	28.1
Energy	91	40	3	17	31	17.2	111	24	3	3	81	16.5
Multi-Sector/Finance	103	8	-	45	50	19.5	116	-	5	46	65	17.2
Telecommunications	<u>24</u>	<u>4</u>	<u>-</u>	<u>10</u>	<u>10</u>	<u>4.5</u>	<u>42</u>	<u>10</u>	<u>5</u>	<u>17</u>	<u>10</u>	<u>6.2</u>
Total	<u>529</u>	<u>128</u>	<u>23</u>	<u>85</u>	<u>293</u>	<u>100.0</u>	<u>673</u>	<u>87</u>	<u>21</u>	<u>102</u>	<u>463</u>	<u>100.0</u>
%	100	24.2	4.3	16.1	55.4		100	13.0	3.1	15.2	68.8	

JHJennings:j  
February 24, 1975

WATER SUPPLY AND WASTES SECTOR

A. Background and Objectives

Our program in this sector is based in large part on these central facts: Bank operations are expanding beyond the core activity (urban water supply) into other and more difficult components of the sector; these activities are taking place in several parts of the Bank, and are raising issues of policy, methodology, and particularly quality control coordination at a pace which is challenging our ability to deal with them. The Bank is becoming increasingly active in sector loans for urban water supply/urban development, rural water supply/rural development, urban and rural sewerage and sanitation, solid waste disposal, and water pollution control. The institutional problems to be overcome are usually more extensive and complex under this approach. These activities also extend the attention required from us in the broad fields of water resource allocation and public health. The complexities of these matters dwarf those arising from simple urban water projects - which themselves are difficult enough. The Bank now faces a choice - shall we allow these activities to expand at a pace and in directions dictated by extra-sector objectives (e.g., rural development) hoping that at best the results will be innovative and at worst they will not be too harmful; or shall we make the resource investment required to ensure project quality. We, of course, believe that the latter is the wise course, and that the mechanism is through strengthened Regional divisions and strengthened leadership from us.

Given the above facts, what - more specifically - needs to be done? There are six major issues confronting the sector:

- (a) quality control including improved coordination of all water/waste activities in the Bank;
- (b) manpower development in the countries and increased attention to training activities;
- (c) economic analysis and pricing, including further efforts to assess health benefits;
- (d) development of methodologies and evaluation of village water supply programs, and services;
- (e) approaches to environmental pollution control projects; and
- (f) technical, financial and institutional issues, particularly regarding services for low income groups.

Most of these issues, and several others, are related to sector work. For this reason, also because sector work in water is critical to project identifications as well as policy and institutional development, and because we have the responsibility for improving the cost effectiveness of sector work by the IBRD/WHO Cooperative Program, we believe that the quality of sector work is one of the pressing problems needing emphasis.

B. Specific Items of Work

Water supply sector work is carried out almost entirely under the IBRD/WHO Cooperative Program. This Program was established more than two years ago to bring together WHO's wide experience in the public health aspects of water supply and sewerage, the knowledge of countries and sectors arising from its network of Regional offices and resident engineers, and its work with UNDP financed preinvestment studies, with the Bank's experience in the institutional, financial, and economic aspects of development programs in the sector. Although the planned scope of the Cooperative Program work was considerably broader, its activities have been limited so far to sector work. The main beneficiaries of this work in the Bank, i.e., the Regional water supply divisions, are not satisfied with the quality of work coming out of the Program, nor are we. WHO is also not satisfied with the Bank's demands and support. Taking steps to improve the quality of this work has been high on the list of priorities in the Department since reorganization, when original plans for training of the Cooperative Program staff had to be abandoned and interim measures adopted, some of which have been adequate. We have helped with recruiting and selection of staff, prepared guidelines for sector work, encouraged participation of Regional staff in sector missions when possible, and have instituted systematic debriefing procedures, and preparation of "Issues Papers" as a preliminary to preparation of reports. We have also reviewed and commented on draft reports, and conducted a series of seminars with WHO staff. These efforts have produced some results, but more is needed. Future plans, which aim at visible improvements and an evaluation of the Program by the end of FY76 include:

- (a) improved procedures - we are now in the process of developing new procedures for handling sector work within the Bank from briefing to follow up; a critical aspect of this this will be to establish an effective two-way link between sector work and economic work done in the Bank. One objective will be to improve the selection criteria for sector studies, another will be to provide more uniform guidance to Program staff, a third will be to speed up the entire review process; and lastly an attempt will be made to assist the Regional divisions by reducing the details which they now confront in processing the reports;

- (b) direct support - we will arrange for every one of the next few missions to be supported by highly experienced staff or consultants, in order to develop case examples of concise, action-oriented documents which managers in countries and the Bank will want to read and make decisions from;
- (c) staffing - we will continue our efforts towards staff transfers or exchanges between IBRD and WHO; three such attempts have failed in the last year; a current fourth seems more promising;
- (d) how-to-papers - the Cooperative Program is currently preparing a paper commenting on their use of our guidelines for sector work first issues in 1973, which we will use for revising such guidelines; we have been in touch with the new Training Advisor in Education (CPS) to cooperate with us in dealing with this important recurring issue in sector and other work; and
- (e) training of Cooperative Program staff - in addition to on-the-job training as in (b) above, we will continue inviting Program staff to the EDI Water Course, inter-agency seminars such as that we held here in January. We will also repeat the sessions held in Geneva by the financial and economic advisors in January, and by Mr. Ralph Turvey in February.

Of the substantive issues to be dealt with in all stages of the project cycle, the one that will probably involve the greatest manpower commitment will be the continuing emphasis on economic analysis, along the lines suggested in our recent papers on the economic evaluation of projects, and urban water supply and sewerage pricing policy. Analysis of incremental costs and the tradeoffs between the various objectives of tariff policy is becoming an accepted practice in some Regions, and we expect this to expand. Tariff studies that call for recognition of incremental costs are increasingly being incorporated in project work; drawing up of Terms of Reference for consultants is one approach; another is to take a more active role, by case studies carried out by staff members; the Lahore Tariff Study is one such example. Such efforts will continue to be a significant part of our work program. The justification of urban water supply projects is placing increasing importance on pricing policies, and as a result, appraisal reports are now taking a rather more critical attitude toward the interpretation of the IER calculation.

Although we do not see too much scope for independent quantification of the benefits of water and sewerage projects, identification and quantification of health benefits will be studied more systematically. A paper on the health impact of improved water supply has been completed by

a consultant: it will now be evaluated by an expert panel, after which we hope to be able to take a position on the role of the Bank in the conduct or feasibility of further work in this field. The outcome will be considered when the Work Program is finalized after the current budget exercise.

The design, organization and execution of sound village water supply projects is an art still in its infancy. The Village Water Supply Paper represents the beginning in our attempts to develop this art. The Bank is supporting an international effort initiated by UNDP, WHO and IDRC to find ways by which the international community can assist countries to better overcome the problems of supplying more rural people with water. The Bank is represented on the Executive Committee of this group with the technical support coming from our Department. We intend to communicate the information and recommendations coming out of the efforts to the Regions for their guidance in planning Bank financed projects whether they are administered by the Public Utilities Divisions, Rural Development, or others. Field missions by PBP staff associated with Regional missions is also proposed as our most important tools.

As noted above, the sector studies of the recent past confirm that manpower development and training is one of the most important and difficult issues in sector development. Training needs are measured on a broad scale ranging from semi-skilled workers to fully qualified sanitary engineers, accountants and analysts. This means that many kinds of institutions within and outside the sector need to be involved; manpower studies need to be made; training programs developed; courses designed; trainers need to be trained; trainees recruited; funds arranged, and evaluations made. Few sector organizations are capable of coping with this complex and difficult task, and they need help from the Bank and from training specialists. We plan to encourage and coordinate use of Bank training specialists to help the Regions work with borrowers in putting together manpower development programs, and to make the experience thus acquired available to the other divisions and the WHO-PIP Unit.

Department staff have played an important role in developing a methodology to be employed in the appraisal of a national water pollution control program, the Finland project being the occasion for this effort. We are also heavily involved in developing the economic methodology to be used in the Sarajevo Air Pollution and Singapore Solid Waste Projects. A State of the Art Paper on solid waste is under preparation, as is a public utility note on the role of the Bank and the economic evaluation of solid waste projects. Special sector studies are likely to be required where questions of waste water re-use, energy recovery, and other economic factors need to be answered in developing policies and establishing the means of disposal of various types of waste material in a particular locality.

The general question of extension of service to low income groups will be addressed in the pricing and village water supply work. However, there are technical issues still to be resolved: the scope for cost savings in rural and urban water and sewerage systems has been dealt with by a consultant, and a summary will be issued. We are currently participating in an International Reference Center (WHO) study on low cost methods of dispensing water by communal facilities and means for reducing waste.

The foregoing issues will be addressed - along with the more routine aspects of sector work - in the course of our normal operational support and advice, which will comprise both field work and in-house review. In addition, we will continue to sponsor various kinds of seminars ranging from the water supply and sewerage courses, to periodic meetings with Division Chiefs and their staff on items of current interest. We will also continue to devote time to assisting the Regions in recruitment and selection of new staff, training of new staff, dissemination of professional information, and of course, review of operational papers. We will support the EDI Water Supply Course as in the past.



POWER

A. Background and Objectives

The bulk of the work in the power sector to date has been comprised of two distinct elements. First we have performed our advisory function, which has consisted primarily of review of and comments on papers originating from Regional power staff, placing particular emphasis on the early stages of the project cycle; and occasionally participating in the analysis of particularly important or complex projects. The advisory function has also included the preparation of papers on nuclear power; generating plant reserve margins; and guidelines for sector work. While innovative elements have been contained in these publications, the advisory role so far has largely been restricted to traditional approaches to Bank lending policies due particularly to severe staff constraints. In sharp contrast, however, a considerable effort has been devoted to research (and energy issues, as dealt with separately). Thus the El Salvador village electrification research study is nearing completion, as is the general study of pricing and investment policies in electric power. An issues paper and public utility note have already stemmed from the first of these studies, and a number of public utility notes and research papers have resulted from the latter, which in its entirety will be published as a book.

Since our efforts have emphasized, on the one hand, advice on traditional areas and on the other, the conduct of research, there is now an obvious gap that needs to be filled, namely the application of the results of the research effort in a way that is operationally useful. Particularly on the economics side, therefore, we should make every effort to improve investment decision-making in the power sector by educating Bank staff and our borrowers as to the merits and problems of application of marginal cost pricing, and, in general, try to improve the approach to project justification now taken during the appraisal process. Particular attention will be paid to the problems of extending service to the rural and urban poor by adaptation of the theoretically optimal pricing and investment rules as well as continuation of the remaining research effort on standards of urban electricity distribution.

A specific task that will occupy much of our attention will be - as a result of the present fuel crisis - to assist the Regions in helping borrowers shift from generation with imported petroleum to generation by hydro resources or with indigenous sources of fuel.

More generally, other objectives of our work will include assistance in the training of new regional staff; as part of the continuing education process of present staff we hope to raise the level of skills through participation of advisers in field missions, the preparation of guidelines, and the presentation of seminars. We also plan to coordinate

the rotation of staff among Regions and between the Regions and PBP, and to interview new candidates for appointment. We shall continue to act as a clearing house within the Bank for the exchange of experience in the power field.

The cross-sectoral section deals with the development of management tools to improve the selection and design of projects in the sector.

## B. Specific Items of Work

### 1. Standards of Urban Electricity Distribution

The planned research in the power sector would draw to a close with the completion during the year of the study on the Standards of Urban Distribution. We expect to hold a concluding seminar on the kinds of reductions which can be achieved in the cost of distribution without reducing the benefits to the economy and the savings which may be achieved if the standards of supply are lowered.

### 2. Power System Planning

We plan to send one of our economists to the IAEA in Vienna in FY75 to carry out an in-depth study of the Wien Automatic System Planning Model (WASP) to adapt it for future use in the Bank and/or by the Bank's borrowers and consultants. During FY76 this staff member would spend a large part of his time taking part in appraisal missions which require a review of system planning. As part of our work in this field, we would expect to issue guidelines in the use of the WASP Model and would hold one or more seminars on its application.

### 3. Rural Electrification

Our research in rural electrification will have been essentially completed by the end of FY75. During FY76 we intend to provide field assistance to the Regions in the preparation and appraisal of rural electrification projects and shall continue to monitor results of the El Salvador and Ecuador Projects.

### 4. Electricity Distribution

In addition to the research on Urban Standards we plan to have our distribution engineer prepare a handbook on the appraisal of distribution projects to assist the Regions in handling the problems peculiar to

this type of operation. The engineer would also assist the Regions in carrying out preparation and/or appraisal missions for projects with a significant distribution component.

#### 5. Field Support

In addition to the direct field support to the Regions in system planning and distribution mentioned above, we also plan to provide the services of advisers to help with the training of new staff on first missions, to review particular problems of performance of consultants, to assist with sector reorganizations, and to help with particularly difficult pricing problems. Our staff input would provide qualitative input to complement, rather than take the place of, Regional Staff.

#### 6. Office Support

As in the past we shall continue to review all operational papers - terms of reference, back-to-office reports, issues and decision memos, sector reports, appraisal reports, supervision reports, etc. We intend to carry out cross-sectional analyses of appraisal and supervision work to identify recurring problems and to suggest possible solutions. Some of the matters to be investigated include: cost estimating, training, working capital position, etc.

#### 7. Procurement

Procurement has grown into a complex and time-consuming issue due in particular to new recent uncertainties concerning exchange rates, costs and supplies. Functional support is particularly needed in this area to bring about improvements in policy implementation by staff and compliance by borrowers; to help release some of the time spent by procurement officers and supervisors in handling recurring issues and incorrect practices by borrowers; and limit delays in project implementation due to borrowers' indecisions, lack of organization and planning as well as mistakes in procurement matters. An outline will be prepared for a practical guide to staff which would complement the procurement guidelines and supersede the existing power procurement check-list, and would be designed to help understand and resolve the most common and recurring difficulties; in parallel, a program for seminars and for trading new experiences will be developed and tested. The procurement process will also be reviewed to identify effective means of helping borrowers and their consultants carry out procurement more effectively and with minimum deviations from the Bank's guidelines; the role of procurement officers in briefing borrowers during negotiations, the cost and benefit of procurement advisory missions at an early stage of project appraisal or implementation, of seminars for procurement officers

of borrowers, of procurement instruction at EDI etc... would all be investigated and recommendations be made in consultation with the Bank's procurement adviser.

8. Survey of the Demand and Supply of Capital  
for Developing Country Power Sectors

The energy crisis has brought into sharper focus the need for better knowledge of the amounts of capital that will be required in coming years to allow LDC power systems to keep pace with economic growth. We know that higher fossil fuel prices will have the effect of bringing more hydro, and probably more nuclear, generating plants into system plans, and that these plants have much higher investment costs. The effects of these changes will be examined in due course for each of our borrowers, but even these relatively known requirements are not being aggregated, and there is a large additional demand from other utilities. Similarly, there is no comprehensive knowledge of the sources of foreign and local capital presently available for this purpose, or the potential for expansion of these sources. The IAEA is proposing to make a study of the demand and supply of capital for construction of nuclear plants. We have approached them to see if there is a possibility of expanding this into a broader study, in cooperation with the Bank. If this approach fails, we will try to devise some reasonable alternative.

9. EDI Course; Utility Seminars

We plan to assist the EDI in preparing a course for electricity utility managers which would at the same time improve the Bank's relationship with its borrowers. The course would emphasize power system planning, electricity pricing, and financial planning. We are considering arranging seminars of two types for utility managers, one type to consider the issues of a particular region, the other to trade experiences in village electrification, electricity pricing etc.

10. Operations Evaluation Follow-Up

We shall continue to review and comment on the project performance audits as prepared by the Operations Evaluation Department and will follow up on the recommendations made in the Closing Report on Electric Power Evaluations. In particular we shall look into the new connection policies in marginal areas which may be economically justified even though financially unattractive.

ENERGY

A. Background and Objectives

1. Recent developments have brought energy matters to the center of the world economic and political scene and require a substantial expansion of Bank activities in this area.
2. Our pre-October 1973 energy work program aimed at keeping abreast of changing price trends (Petroleum Notes) and technological developments (nuclear power, geothermal energy), in support of power appraisal work; and at gradually building up towards the preparation of guidelines for energy sector surveys and the development of an energy data base. After October 1973 an intensive period of work, related to the Energy Task Force (ETF) efforts, followed; it included a comprehensive review of the energy supply options and the demand changes expected for the period up to 1985 as a result of four-fold increase in oil prices; and preliminary estimates of their impact in the power industry. The results were summarized in Background Papers No. II and V of the ETF Report No. 477 "Prospects for the Developing Countries" (July 1974).
3. The Work Program outlined here is a response to the requirements of a new period - lasting several years at least - during which energy will not only be a key factor in global and national economic problems but will also evolve very dynamically, requiring more detailed and continuous monitoring.
4. The various items of the work program are designed to serve two major areas of need. One is to maintain Bank management and staff adequately informed regarding the world energy situation to support general economic and project work. The second is to increase our capability to advise and assist developing member countries in adjusting energy related policies and programs in the direction required by the new situation.
5. The first area involves following developments in exploration and discovery of new energy resources (oil, gas, coal, uranium, geothermal, etc.); maintaining up to date statistics on resources, production, consumption, imports, exports, prices (by region, country, sectors); costs of production, transportation and distribution; technological progress, current and foreseen (shales, tar sands, coal gasification and liquefaction, nuclear fission and fusion, solar, etc.). Most of the above requires reviewing, collating and evaluating masses of material published by a variety of international and national institutions.
6. A major gap, from the point of view of the Bank, is the lack of information of LDCs energy resources potential and also on the manner in which energy is used. For these latter aspects, we believe that specific efforts of the Bank are required, at least for an interim period, till other institutions (possibly the UN) follow up on this work on a comprehensive and regular basis.
7. The second area of need involves supporting LDCs in the evaluation and development of their domestic energy resources; in planning sector policies

in a manner responsive to the new relative prices of energy (and its various forms) in such areas as fuel production and transportation, power generation and transmission, urban and transport strategies, industrial development, etc.; in generating projects in accordance with the required strategies and in helping to finance them; in particular, the Bank should be able to advise, specially the most adversely affected countries, to formulate national energy policies and create institutions for their design and implementation. At the present time most of them, if not all, lack the data base, the analytical methodologies and the institutions needed to tackle this new and most urgent task.

8. Within the LDCs economies, and in the spirit of the Nairobi speech, we want to focus part of our efforts on the energy needs of the rural areas, where special problems arise requiring improved technologies peculiar to such areas (use of agricultural waste, wood - "the energy plantation concept" - wind, etc.).

#### B. Specific Items of Work

9. In collaboration with DPS a comprehensive system of statistics covering resources, production, consumption, imports, exports and prices; by countries, primary and secondary energy forms, sectors, etc. will be set up. Initially this system may cover adequately only the industrial countries which already report this information in a satisfactory manner (e.g. OECD and UN-ECE statistical series). As for LDCs, present coverage is inadequate and will remain so for some time. We plan to improve on it by using all possible sources of data (e.g. UN, U.S. Bureau of Mines, French CNRS, various LDCs statistical publications). Comprehensive and regular coverage should eventually become the responsibility of the UN Secretariat and our role in this area should be to assist in its definition and encourage its implementation.

10. In the interim period we cannot, however, stand idle and should collect as much LDC energy data as can be obtained. For this we give first priority in the work program to issuing a Guideline for the gathering of basic LDC energy information. We expect much of this data to be collected by Bank staff in economic and sector work and the Guidelines will be designed in a manner that will not impose an unduly heavy burden on their work. Straightforward, basic energy data, is to be gathered; the processing of this data, using uniform units and formats, will be left to headquarters. We have agreed in principle with DPS that we will produce these Guidelines and that they will take over the actual operation and maintenance of the system. We expect through this device to achieve great and meaningful progress within about a year from now. This will be a great advance over our present situation which will thereon continuously improve.

11. An area unlikely to be covered adequately by the above data collection efforts and of great importance is the evaluation of the petroleum potential of non-OPEC LDCs. A preliminary study made in FY74 shows that this is a subject which worth pursuing in much greater detail. Many countries are unaware of this potential, which in some cases may become a major contributor to their development, nor have they adopted always adequate policies to evaluate and develop it. In order to be better equipped to assist them we propose to commission:

- (i) a more detailed country by country study,
- (ii) a discussion of the specific problems impeding their development (training, financing, lack of institutions, policies, etc.), and
- (iii) a critical review of the variety of associations between Host Governments and oil exploration and/or production companies which currently exist or are envisaged, indicating their pros and cons under various circumstances.

12. As in the past we intend to keep current with all relevant technological developments. This has now become a rapidly evolving field and we should remain alert to its implications particularly for Bank project work. We intend to focus on those which might be important in the near and medium term (following last year's reports on e.g. Nuclear and Geothermal) and particularly some which may be important in rural and isolated small systems.

14. Forecasting of oil prices poses a particularly difficult problem. To do this work in a more analytical way it would be advisable to have a World Energy Model predicting Demand, Supply and particularly Imports from OPEC countries under a variety of economic and technological assumptions. We intend to collaborate with DPS in the conceptual design of the model and in providing inputs (particularly technological) for its regular use as an analytical tool in price projections.

14. On the basis of all the complex of developments taking place and the work outlined above we expect to produce a semi-annual or more often, if required, a report on significant events occurred in the period covering, in a much more condensed manner, the range of subjects included in the ETF paper on Energy Supply and Demand Outlook.

15. In order to advise member countries and help them to formulate adequate energy policies we need a better understanding of the role of energy in the economy and its various components. To do this it is necessary to develop a general methodology for studying the energy sector, select relevant data, identify critical issues, forecast the implications of different strategies and events. One step we propose to take is to prepare Guidelines for Energy Sector Studies which would help Bank staff in carrying them out and producing action and policy oriented recommendations. These recommendations would help LDCs Governments and also Bank country economic and sector/project work. Another step, to take place earlier, is to draft a set of suggestions (preliminary Guidelines) to Bank's Operational Staff regarding issues which may require immediate attention. These include: review of the need for support to exploratory activities (hydro, geothermal, coal, perhaps oil); feasibility studies of mines, power plants, training of staff (energy and power planners, geologists, mining engineers); reinforcing or creating new institutions (Central Energy Planning Office; Geological Survey Office, etc.); fuel pricing changes;

conservation and efficient use of fuels in industry and other areas. And further to this, to indicate ways in which the Bank might lend for these purposes: technical assistance, preinvestment, sector (emergency) loans, etc.

16. Energy Sector Surveys will be needed in several member countries facing particularly complex options. We propose to assist Operational staff in the organization, staffing, planning, field work and report drafting. One such survey may take place in FY75 and two or three in FY76 (one of them in Yugoslavia is already scheduled for late 1975). In addition support will be given to country economic missions and project appraisal in the review of energy sector or sub-sectors (e.g. petroleum). The experience we acquire in this work will be useful for subsequent improvements of the Guidelines mentioned in paragraph 15 and for training (through seminars) other Bank staff.
17. Modelling a National Energy Sector would be a very useful tool in exploring various policies regarding development of alternative (domestic or imported) supplies; power, transportation and industrial policies; price effects, etc. We propose to assist DPS (DRC) in developing such a model in a way which may be useful for Bank economic and project work. (A sub-component dealing with Power System Planning only is included in the Power Sector Work Program.)
18. In connection with some of the less conventional sources of energy we want to identify a couple of countries where it would be justified to carry out actual project feasibility studies. Tentatively we are proposing one using urban wastes and others employing agricultural wastes, natural forests or "energy plantations."
19. Finally, we will continue to give close attention to the review of important Bank documents such as economic reports, CPPs, sector studies, project preparation, identification and appraisals, with special responsibility for encouraging and proposing Bank operations consistent and responsive to energy developments.



TELECOMMUNICATIONS

I. Advisory Staff

A. Background and Objectives

1. The major issue with regard to telecommunications projects within the Bank is their decline in popularity. Telecommunications projects are suffering from competition from the newer areas of Bank activity, this being shown up in the lending program. It is believed that this situation results from intuitive and poorly founded beliefs about the benefits of telecommunications projects. A paper is being currently prepared on this question. The advisory staff's work program in this sector on the other hand will be geared almost entirely to dealing with two major problems that frequently arise in the economic evaluation of telecommunications projects, namely:

(a) The nature and distribution of project benefits. There is growing awareness that the benefits of many development projects fail to reach the poorest segments of society. Telecommunication projects are not now evaluated by weighing benefits accruing to the poorer section of the population and it is not known at this time how the current rates of return on projects will be altered by using such weights in this sector. Similarly, while rural development is currently a priority objective, it is often felt that telecommunications investments have been biased in favor of the urban populations. At present existing information about what telephones are used for, or who benefits from their use, is fragmented and incomplete. For comprehensive decision making, systematic and complete information is necessary.

(b) The project and the program. There is a further problem of evaluating the costs and benefits of the various individual components of an overall investment program. Such an evaluation becomes more important as telephone authorities extend their networks beyond the often highly profitable inter- and intra-urban systems, which tend to pass most reasonable tests of project justification even when allowance is made for income distribution. When service is expanded into sparsely populated regions, in which initial unit costs for introducing service are relatively high and incomes (and therefore ability to pay, a proxy for economic benefits) are relatively low, project evaluation becomes more complex. It then becomes even more important to evaluate the nature of telephone usage, for even financially unprofitable services may be justified, and therefore worth subsidizing, if external benefits, or social or political factors, so indicate. When such information is not available the problem is usually handled simply by treating all individual elements of an investment program as a unit for evaluative purposes. Program evaluation then becomes a comparison of incremental costs and revenues from the project as a whole accruing to the telephone authority, with no attempt being made to ascertain whether the program would be better off if certain components were expanded or left out altogether. Similar shortcomings exist in disentangling costs and benefits of local versus long-distance, peak versus off peak calls, etc.

2. Thus far, efforts made to improve the Bank's capability in dealing with (a) and (b) have consisted of an attempt to quantify benefits of telecommunications activities in general (an attempt that will not be repeated); a case study analysis of telephone cost and tariff structure; and a continuing project, a research committee-financed study of rural telecommunications in Costa Rica. On the basis of the knowledge acquired to date, the emphasis of economic work in the telecommunications sector will be to incorporate within lending operations the pursuance of pricing and investment studies in which attention is paid to both quantitative and qualitative aspects of project outputs.

B. Specific Items of Work

3. Initiatives with regard to pricing and investment studies have been taken with respect to telecommunications projects in Ivory Coast, Ethiopia, Thailand, Papua New Guinea, and India, some of which have been by means of discussions unrelated to lending arrangements, and others by financing the studies from the loan. Following up these studies and initiating others will comprise the major effort of the advisory staff in the telecommunications field in the next few years.

4. The Costa Rica research project will also be completed during FY76, and we will be conducting a preliminary inquiry into the merits of new technology viz digital systems, new types of radio equipment, satellite communication etc. for sparsely populated and remote communities. The approach to economic issues in telecommunications will be detailed in Part III of the Telecommunications Handbook which will be completed this year, and the continuing dialogue between the advisory staff and telecommunications and country program staff will continue.

5. The foregoing will be assisted by participation in GAS 5 meetings of ITU. ITU has been looking into economic issues in the telecommunication sector and the work is being handled by a commission of CCITT (a committee within the ITU group). As with other similar commissions the work is handled by volunteer contributions from staff of various telecommunication administrations of member countries. Bank staff members have attended some previous meetings and it is felt that Bank contribution to the work of the commission could usefully be increased.

6. Aside from Part III of the Telecommunications Handbook, there are no plans to issue guidelines or policy papers, but it is expected that the Public Utilities Notes series will be the vehicle for disseminating - on a case study basis - progress made in the economic evaluation of telecommunications projects.

## II. Operational Staff

### Preappraisal, technical assistance and identification missions

In FY76, the work program includes preappraisal work in Syria, Papua New Guinea and Sudan. Of these Syria is to go to the Board in FY76, Papua New Guinea in FY76 or FY77 and Sudan is not yet scheduled though cleared for work through preappraisal. Bank's technical assistance commitment to Saudi Arabia will require two visits. In addition, going by previous experience, the program includes two identification missions and this is required particularly because of the current lack of projects in FY77. Each of these missions will require on an average two persons seven mission days excluding travel time.

### Loan operations

The work program includes Thailand from decision memorandum to board presentation; East Africa, India and Syria complete from appraisal to board presentations, and Papua New Guinea, a FY77 project, as a possibility. Each appraisal work requires two persons for 24 mission days plus travel time.

### Supervision and completion reports

At present there are current operations in 17 countries with 30 projects requiring to be supervised. The work program includes a conservative provision of one visit per country in FY76 for supervision work. In addition, completion reports have to be prepared in respect of seven projects in six countries. The timing of the completion report is difficult to predict and depends on when the loan will be disbursed. Since the reports have to be given to the program evaluation department within six months, experience shows that these have to be specially programmed. Thus a total of 23 missions (17 for supervision and 6 completion reports) are included each requiring two persons ten mission days plus travel time.

### Sector briefs

It is intended to develop a series of sector briefs on telecommunications, which pay particular attention to the economic issues regarding the sector, as described in the background and objectives section of the Advisory Staff work program.

CROSS-SECTORAL WORK

A. Background and Objectives

The bulk of operational support and advice to be provided by the Department will, by definition, be specifically related to the sector concerned. On policy issues, guidelines and research the technical and engineering work is almost entirely sector-specific, and, now that general guidelines for the economic evaluation of public utilities projects have been issued, so is most of the economic work. There remain however a number of economic, financial, institution building and Bank operational issues that span the various sectors and which will form part of the Department's work program.

B. Specific Items of Work

(a) Analysis of the relationships between utility tariffs and general inflation

Almost all of our utility borrowers are being hampered in their attempts to deal with inflation by government agencies who refuse to allow adequate tariff increases on the grounds that higher tariffs would add to inflationary pressures. Even where the financial health of the utility is clearly at stake, requested increases are often reduced or denied completely.

The effects of this government policy are similar to the effects of the "political" arguments for subsidized utility tariffs that so widely prevailed in the early days of Bank utility lending: increasing dependence on government finance, poorer management, artificial stimulation of consumption, and eventually reduced investment programs and deteriorating service. We have labored for twenty years or more to change these policies; but these gains can be lost in only a couple of years unless we can devise persuasive arguments for maintaining tariffs at the required levels.

Clearly, country economic issues are important in determining the merits of tariff increases in any particular case: there are however significant countervailing arguments to the commonly stated position that such increases contribute to inflation. We will therefore prepare a short note for the benefit of regional staff, making them aware of both sides of the issue, stressing the importance of financial autonomy and cash generation; the inefficiencies that result from setting prices at less than the current marginal cost; and the deflationary effect of reducing disposable incomes and therefore effective demand.

(b) System to aid review of operational work programs

The Department policy implementation functions require a thorough understanding of the qualitative content of regional sector, lending and

supervision programs; and more effective means than now exist of signalling opportunities for improving the selection and development impact of projects. Managers in the Regions have similar needs to improve the quality of their decisions and the planning and implementation of their projects; as well as for budgeting manpower resources commensurate with requirements for qualitative improvements in projects. In association with Mr. Carmignani, we propose to devise such a system for these purposes - starting with the power sector. The project currently being outlined will make more systematic use of Sector Briefs and supplement these with a Project Brief (inspired from the Jennings' model of '73 and that used for Rural Development projects) which will be designed to make more explicit the intended development impact of each operation and plans to realize it. It is also intended that Utility Project Briefs would provide a means for early attention to - and coordination of - health, urban, fiscal and other aspects. Both would contribute to improving the sector and projects content of CPPs and their discussions and provide an initial handle on intersectoral choices. Aggregation of key features of sector and project briefs by operational unit and sector should begin to allow the desirable perspective of policy implementation prospects under alternative budget situations.

(c) Monitoring and assisting major public utility institution building efforts

There are perhaps 50 or more major institution building efforts underway in the three sectors. These activities should produce the most important long-term benefits of Bank involvement with the borrowers, and therefore deserve systematic attention in this Department. This has been given during the appraisal stage, but might be increased with useful results in the preparation and supervision stages.

As a first step we should make a survey to determine how many and what kinds of major institution building efforts are underway and planned. A closer examination of those which have problems should be made. This analysis should lead to identification of patterns of problems by region or sector, and will hopefully suggest ways of overcoming and avoiding them. This may lead to one or more Department papers (e.g., Guidelines for Selection and Use of Management Consultants), a reallocation or increase of our "direct support" activities, suggestion for creation of a separate Bank wide unit to assist these efforts in all sectors, or other actions.

(d) Utility Financial Managers Handbook

Able financial managers are very rare in developing countries, and they are found more often in private companies than in public utilities. Development of financial managers is a slow process even under favorable conditions. There would be a large return in finding ways to help these managers to be more effective while they are developing their skills.

Most professions have handbooks which provide a brief but accurate statement of the basic principles of the profession, selected data that is likely to be needed on a recurring basis, a discussion of the issues that are not yet fully resolved, and other forms of frequently used information, in a quick reference format. There is no such aid for utility managers in developing countries and we should take the lead in preparing one.

The contents would need to be carefully considered, but some of the chapter headings might be as follows:

- Principles of Public Utility Finance
- Public Utility Finance in Inflation
- International Sources of Public Utility Financing  
(Policies, terms and conditions, procedures, etc.)
- How and When to Use Suppliers Credit
- Selection and Use of Accounting and Management Consultants
- Selection and Use of Auditors
- Financial Instruments
- Design and Operation of Information Systems
- Reports to Management
- Design and Administration of Tariffs
- Short, Medium and Long-term Financial Planning
- How to Manage Computer Systems
- Principles of Accounting and System Design,
- etc.

This would obviously be an undertaking far beyond the capacity of the Department, but there are various ways it might be managed. Some or most of the chapters could be prepared by the best of our financial managers of our borrowers; we could hire consultants to prepare the whole thing or select parts, we might enlist the aid--financial or otherwise--of other institutions who would benefit, e.g., IDB, WHO, UNDP, AID, E.I.B., etc., conceivably, we could persuade an international publisher to commission such a book as a straightforward business proposition; some aid-oriented foundation might support the project (e.g., the Harvard Advisory Group (?), American Management Association (?)).

This would be a long-term project -- if feasible at all. In the coming months, an informal "market survey" will be made. If the response is encouraging, a "feasibility study" will be started.

(e) General Methodology and Staff Development

A family of activities underway and planned is intended to provide more systematic and explicit guidance to new staff, to increase the consistency of financial work between regions and sectors, to reduce the time spent in preparation and modification of projections and to gradually raise the professional capabilities of the 40 or so Public Utilities analysts. The major components are:

- Preparation of a Public Utility Financial Analysts Manual
- Complete the Form and Use of Financial Covenant Papers
- Initiate the Project Finance Brief System
- Continue development of the FINPRO models and explore the advantages of more elaborate "in-house" financial planning model
- Update the Checklist for Appraisal
- Continue the regular Financial Analysts Seminars, and plan another intensive short-course to be given around the end of the year
- Development of practical application of marginal cost pricing techniques
- Survey of existing power and water tariff levels.

Supervision

Most of the above tasks, as well as those in the sector programs, are designed to improve project implementation, and therefore serve our "supervision" interests. We see our "functional control" role in terms of identifying patterns of problems by region and sector, helping to devise means of dealing with them, and providing ad hoc assistance of our senior staff in field supervision (trouble-shooting). We expect the "Institution Building" and "Operational Review" activities described above to be especially productive for these purposes. The latter will produce a clearly stated set of sector, enterprise, and project objectives by which the progress of project (in its broadest sense) implementation can be measured. We see many potential benefits in this process.