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Sindh Province, Pakistan.
Fees from World Bank,
Pakistan.

**RURAL WATER SUPPLY AND
SANITATION**

PROPOSAL FOR COST RECOVERY

LIBRARY
INTERNATIONAL REFERENCE CENTRE
FOR WATER SUPPLY AND
SANITATION (IRC)

29 MARCH 1990

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This note is an extension of the note submitted on 17th March 1990 to the Sub-Committee on Cost Recovery in connection with the Rural Water Supply and Sanitation Project and the meeting held on the 26th of March 1990.

1. BRIEF SUMMARY OF PREVIOUS PAPER AND MEETING

1.1 The previous paper suggested two alternatives of which the one which the committee decided was feasible was to revise local cess rates so that there are uniform rates for all districts in Sindh varying by status of irrigation. The rates in the first three year period would continue to be charged on land cultivated, the broadening of this base being considered at the time of the next increase in 1993/94.

1.2 The revised rates would be as follows :

Increased Rates 1990-91	Perennial Non-Peren. Barani		
	(Rupees per acre)		
a) full recovery of O & M costs	22.50	11.25	4.50
b) recovery of Energy and Repairs	16.25	8.13	3.25
c) recovery of Energy only	10.00	5.00	2.00

1.3 The meeting expressed concern at the level of rates required for full recovery of O & M costs. It was decided that all three alternatives would be put up to the provincial cabinet. In the case of partial recovery of O & M costs via the medium of local cess the balance would need to be met via some sort of direct user charge or community based collection. The purpose of this paper is to suggest a mechanism as well as calculate the level of the tariff required in the case of alternatives (b) and (c) above.

2. TARIFFS TO BE CHARGED DIRECTLY TO BENEFICIARY COMMUNITY

2.1 The tariff rate to be levied to recover salary or salary and repair costs would vary according to the type of scheme. The calculations have been based on costs as given in Table 5.7 of the Project Preparation Document of December 1989.

New Schemes

2.2 The new schemes planned under the project being designed will provide only a basic level of service, house to house connections not being envisaged except in some of the larger villages. The most appropriate mechanism for cost recovery directly from the beneficiaries in these cases is likely to be community based collections.

2.3 The level of tariff has been calculated based on the following assumptions :

- a) the average population for larger villages will be 2000 and for medium sized ones 800.
- b) the average household size will be 6, this being the average indicated in the Housing Survey and is also the average used by PHED
- c) the recovery rate will be around 50 %. This appears to be realistic given the current recovery rates in the case of existing schemes (which ranges from 10 % to 75 %). However a second calculation has also been done assuming the recovery to be 75 %. This could be possibly achieved in the case of the medium sized villages where village based organisations are likely to be more effective.

2.4 The calculations and resulting tariff rates are given in Table 1. The required tariff per household in the case of salary recovery would therefore be in the range of Rs. 11.50 per month (to be doubled if a drainage scheme also exists) in the case of large villages and around Rs. 19 per month in the case of medium sized villages.

TABLE - 1

CALCULATION OF TARIFF REQUIRED TO MEET
SALARY PORTION OF O & M COSTS
(New Schemes)

Village Size	Scheme Type	Average Pop.	No. of H.Holds	Annual Salary Cost Constant Prices	Cost Curr. Pr. 3 Yr Avg	Recovery Rate	Tariff per HH per month	Recovery Rate	Tariff per HH per month
Large	Water-CSSP	2000	333.33	19740	22833	50.00%	11.42	75.00%	7.61
Large	Water-CSSP	2000	333.33	19740	22833	50.00%	11.42	75.00%	7.61
Large	Water-TS	2000	333.33	19740	22833	50.00%	11.42	75.00%	7.61
Large	Drain-SP	2000	333.33	19740	22833	50.00%	11.42	75.00%	7.61
Large	Drain-DP	2000	333.33	19740	22833	50.00%	11.42	75.00%	7.61
Medium	Water-CSSP	800	133.33	19740	22833	50.00%	28.54	75.00%	19.03
Medium	Water-CSSP	800	133.33	19740	22833	50.00%	28.54	75.00%	19.03
Medium	Water-TS	800	133.33	19740	22833	50.00%	28.54	75.00%	19.03

CALCULATION OF TARIFF REQUIRED TO MEET
SALARY AND REPAIRS PORTION OF O & M COSTS
(New Schemes)

Village Size	Scheme Type	Average Pop.	No. of H.Holds	Ann. Sal & Rep Cost Constant Prices	Cost Curr. Pr. 3 Yr Avg	Recovery Rate	Tariff per HH per month	Recovery Rate	Tariff per HH per month
Large	Water-CSSP	2000	333.33	46727	54048	50.00%	27.02	75.00%	18.02
Large	Water-CSSP	2000	333.33	46639	53946	50.00%	26.97	75.00%	17.98
Large	Water-TS	2000	333.33	72901	84322	50.00%	42.16	75.00%	28.11
Large	Drain-SP	2000	333.33	36651	42393	50.00%	21.20	75.00%	14.13
Large	Drain-DP	2000	333.33	38366	44377	50.00%	22.19	75.00%	14.79
Medium	Water-CSSP	800	133.33	38392	44407	50.00%	55.51	75.00%	37.01
Medium	Water-CSSP	800	133.33	37223	43055	50.00%	53.82	75.00%	35.88
Medium	Water-TS	800	133.33	51934	60070	50.00%	75.09	75.00%	50.06

2.5 The required tariff per household in the case of salary and repairs recovery are considerably higher, being in the range of Rs. 27 to 42 per month in the case of large villages (depending on the type of scheme, and with an addition of Rs. 22 per month if a drainage scheme also exists) and around Rs. 37 to 50 per month in the case of medium sized villages.

Existing Schemes

2.6 In existing rural schemes any user charge is levied on connections, the rate varying by the type of connection (domestic or commercial). The amount of the rate varies from Rs. 10 to Rs. 30 per month for domestic connections and upto Rs. 100 per month for commercial connections.

2.7 The basis of charging O & M costs in the case of existing schemes would almost certainly have to continue to be on the basis of connections. Although some form of charge for households without connections could also be conceived the recovery rates in these cases are likely to be very low.

2.8 The O & M costs for existing schemes would vary according to whether they have been rehabilitated or not. Existing schemes tend to have been implemented in larger villages than those which will be selected for new schemes under the project. To determine the population size as well as current estimated level of O & M expenditure six schemes were reviewed, the details being as given in Table 3. The indications were that the average village population was around 4,000, this also being confirmed by the PHED as seeming to be reasonable.

2.9 The same assumptions relating to house-hold size and recovery rates have been made as in the case of new schemes. The calculations and resulting tariff rates are given in Table 2.

TABLE - 2

CALCULATION OF TARIFF REQUIRED TO MEET
SALARY PORTION OF O & M COSTS

Village Size	Scheme Type	Average Pop.	No. of H.Holds	Annual Salary Constant Prices	Cost Curr. Pr. 3 Yr Avg	Recovery Rate	Tariff per HH per month	Recovery Rate	Tariff per HH per month
(Rehabilitated Schemes)									
Large	Water-CSSP	4000	666.67	19740	22833	50.00%	5.71	75.00%	3.81
Large	Water-CSSP	4000	666.67	19740	22833	50.00%	5.71	75.00%	3.81
Large	Water-TS	4000	666.67	19740	22833	50.00%	5.71	75.00%	3.81
Large	Drain-SP	4000	666.67	19740	22833	50.00%	5.71	75.00%	3.81
Large	Drain-DP	4000	666.67	19740	22833	50.00%	5.71	75.00%	3.81
(PHED Non-Rehabilitated Schemes)									
Large	Water-CSSP	4000	666.67	75240	87028	50.00%	21.76	75.00%	14.50
Large	Water-CSSP	4000	666.67	84960	98270	50.00%	24.57	75.00%	16.38
Large	Water-TS	4000	666.67	75240	87028	50.00%	21.76	75.00%	14.50
Large	Drain-SP	4000	666.67	95280	110207	50.00%	27.55	75.00%	18.37
Large	Drain-DP	4000	666.67	105720	122283	50.00%	30.57	75.00%	20.38

CALCULATION OF TARIFF REQUIRED TO MEET
SALARY AND REPAIRS PORTION OF O & M COSTS

Village Size	Scheme Type	Average Pop.	No. of H.Holds	Ann. Sal & Rep Constant Prices	Cost Curr. Pr. 3 Yr Avg	Recovery Rate	Tariff per HH per month	Recovery Rate	Tariff per HH per month
(Rehabilitated Schemes)									
Large	Water-CSSP	4000	666.67	60221	69656	50.00%	17.41	75.00%	11.61
Large	Water-CSSP	4000	666.67	60088	69502	50.00%	17.38	75.00%	11.58
Large	Water-TS	4000	666.67	99482	115068	50.00%	28.77	75.00%	19.18
Large	Drain-SP	4000	666.67	47718	55194	50.00%	13.80	75.00%	9.20
Large	Drain-DP	4000	666.67	45965	53166	50.00%	13.29	75.00%	8.86
(PHED Non-Rehabilitated Schemes)									
Large	Water-CSSP	4000	666.67	130768	151255	50.00%	37.81	75.00%	25.21
Large	Water-CSSP	4000	666.67	141863	164088	50.00%	41.02	75.00%	27.35
Large	Water-TS	4000	666.67	197027	227895	50.00%	56.97	75.00%	37.98
Large	Drain-SP	4000	666.67	130446	150883	50.00%	37.72	75.00%	25.15
Large	Drain-DP	4000	666.67	145660	168480	50.00%	42.12	75.00%	28.08

TABLE - 3

DETAILS OF SIX EXISTING SCHEMES REVIEWED

Village	District	Scheme Type	Population		O&M Costs Estimated			Tariff Required		
			1981	1990	Design	Projected	Rec. Rate	Full Rec. Salary	Sal & Rep	
Makli	Thatta	CSDP	3563	5060	9708	144000	60.00%	23.72	9.49	14.23
Chachiro	Tharparkar	TSSP	2884	3749	5024	44300	40.00%	14.77	5.91	8.86
Kandiari	Sanghar	CSDP	4690	6105	8180	120000	50.00%	19.66	7.86	11.79
Gaji Khuhuwar	Larkana	CSSP	2547	3311	7500	56000	50.00%	16.91	6.77	10.15
Ghundun	Sanghar	Drainage	1618	2103	2820	57300	50.00%	27.25	10.90	16.35
Wazirabad	Shikarpur		3897	5066	6800	90200	50.00%	17.80	7.12	10.68

2.10 In the case of rehabilitated schemes the required tariff per household in the case of salary recovery would be around Rs. 6 per month, to be doubled if a drainage scheme also exists. The required tariff per household in the case of salary and repairs recovery are considerably higher, varying between Rs. 17.50 and Rs. 29 per month (depending on the type of scheme) and with an addition of Rs. 14 per month if a drainage scheme also exists.

2.11 For Non-Rehabilitated Schemes the resulting tariffs are much higher. In the case of salary recovery the rate would be around Rs. 22 to 25 per month, to be increased by Rs. 28 to 31 if a drainage scheme also exists. The required tariff per household in the case of salary and repairs recovery would vary between Rs. 38 and Rs. 57 per month (depending on the type of scheme) and with an addition of Rs. 38 to 42 per month if a drainage scheme also exists.

3. CONCLUSION

3.1 The proportion of O & M costs which could be passed onto the beneficiary community directly, whether in the form of a user charge or via community collections, would be dependent on the community's willingness to pay. As indicated on page 128 of the Project Preparation Document submitted in December 1989 there is a willingness to pay charges in the region of Rs. 20 to Rs. 30 per household per month. Given the calculations in Tables 1 and 2 this would essentially indicate that it would only be feasible to meet salary costs via such a mechanism.

3.2 We would recommend that only two alternatives be considered, being listed in order of preference :

- a) Meeting total O&M costs through the medium of local cess
- b) Meeting Energy and Repair costs through the medium of local cess passing on the burden of salary costs to the beneficiary community. The mechanism for the latter would vary, being a user charge where household connections are given (essentially the larger villages) and community collections in the case of smaller villages.

3.3 In the case of the first being selected we would still recommend that the community collection or user charge mechanism (as is appropriate) be introduced, both to supplement the recovery from local cess as well as to introduce the concept so that more significant recoveries could be made via these mechanisms in later years.

SINDH RURAL WATER SUPPLY AND SANITATION PROJECT
RECOVERY OF O & M COSTS
WORKING PAPER ON POSSIBILITY OF USING COTTON FEE
AND PADDY DEVELOPMENT FEE

1. BACKGROUND

1.1 Following the decision of the previous Chief Minister to recover only the Energy portion of O & M costs via a surcharge on local cess, a meeting was held to discuss alternative mechanisms for raising revenues to meet O & M costs. During this meeting the Chief, (PP&H) suggested looking into the possibility of increasing the rates of cotton fee, sugar cane cess and paddy fee.

1.2 This paper examines this possibility and includes calculations relating to the quantum of increase required to yield the necessary amounts.

2. HISTORY OF TAXES

Sugarcane Cess

2.1 Sugarcane cess is levied on sugarcane and sugarbeet crushing and processing activities in all provinces except Baluchistan, the liability being equally divided between the mills and the growers. The proceeds, less a collection charge, are credited to a special fund which is used for development of facilities relating to production of sugarcane/sugarbeet.

2.2 This tax was not considered in this paper for two reasons :
- the fact that the utilisation of the funds seems to be specified
- the fact that sugarcane is only grown in specific areas of the province

2.3 Collections of Sugarcane cess for the year 1986-87 was 34.7 million, per the Finance Accounts of the Government of Sindh for that year.

Cotton Fee

2.4 Cotton Fee is levied under the Cotton Control Ordinance 1966, being charged on seed cotton ginned, the fee being collected from the owners of ginning factories. The rate is set by the Agriculture department and the fee collected by the Excise and Taxation department.

2.5 The fee was initially levied in terms of rupees per maund (37.32 kgs) but this was changed to rupees per 100 kg. The prevailing rate (as per the Deputy Secretary [Technical] of the Agriculture department) is Rs. 6.00 per 100 kg.

Paddy Development Fee

2.6 Paddy Development Fee was introduced by the Finance Act 1975, originally at the rate of Rs. 25 per maund (37.32 kg) which was changed to Rs. 0.75 per 100 kg by the Finance Ordinance 1981. The fee is levied on paddy brought to rice mills.

Collection figures of Cotton and Paddy Development Fee

2.7 Collection figures in millions of rupees, as given by the Excise and Taxation department, are as follows :

Year	Paddy Fee	Cotton Fee
79-80	4.653	42.179
80-81	7.425	39.489
81-82	7.597	44.260
82-83	8.222	43.884
83-84	7.761	31.531
84-85	8.382	40.858
85-86	8.491	38.878
86-87	9.267	35.145
87-88	8.553	36.082
88-89	7.108	30.725
89-90	8.216	31.992

2.8 The above figures may need some reconciling as the Finance Accounts for 1986-87 give figures of Rs. 15,769 million and Rs. 20.993 million for Paddy Development Fee and Cotton Fee respectively. Similarly the figures given for 1985-86 are Rs. 7.5 million and Rs. 27.9 million. The figures for cotton fee in previous years, however, are fairly close to those given above.

3. CHANGE REQUIRED

3.1 A possible surcharge on Cotton and Paddy Development Fee would be expected to cover the Salary component of O & M charges for the years 1990-91 through 1992-93, the average being estimated at Rs.34.34 million. The purpose of using both fees is to spread the effect of the increase over all districts of the province, districts like Larkana, Jacobabad and Shikarpur being predominantly rice growing districts while those like Nawabshah and Sanghar are largely cotton growing, other districts having a spread of both.

3.2 Calculations relating to the increase which is required assumed that the additional amount raised would bear the same proportion to the increase in the rate as the current collections bear to the current rate.

3.3 Justification of the increase is clearly there. The tax rates are specified in money terms per unit of weight and past increases do not appear to have been in line with increases in prices of the concerned commodities.

3.4 The increase suggested, which was arrived at by trying various combinations required to meet the costs of Rs. 34 million, is Rs. 1.25 per 100 kg on Paddy Development Fee and Rs. 4.00 per 100 kg on Cotton Fee. Table 1 analyses the increase as a proportion of land cultivated for paddy and cotton as also as a percentage of the value of each crop grown, the attempt being to keep variations between districts to a minimum in the case of both ratios.

3.5 The increase in revenue has been demonstrated in Table 2 where the increase has been compared to the price of the two commodities, the resulting proportions being insignificant.

Analysis of Effect of Increase of Cotton Fee/Paddy Development Fee

Table 1

DISTRICT	← Acres under Cultivation (Kharif) →					Acres under Cultivation (Rabi)			Prop Adh (Rs.)		Low Avg. Yld/acre(*)		Tot. Yld. (Rs. mill.)	Yield (Rs/acre)	Percent of Value	
	PADDY	COTTON	SUGARCANE	OTHERS	TOTAL	WHEAT	OTHERS	TOTAL	TOTAL	P Fee	C Fee	Paddy				Cotton
Hyderabad	70,463	172,131	121,902	186,743	551,239	246,481	208,325	454,806	1,006,045	1.25	4.00	226	187	1.49	6.13	0.91%
Sanghar	22,162	302,455	26,971	122,959	474,547	319,983	106,147	426,130	900,677	1.25	4.00	565	200	2.57	7.93	0.64%
Tharparkar	10,107	135,468	54,507	188,280	388,362	241,183	127,229	368,412	756,774	1.25	4.00	293	182	1.02	7.02	1.41%
Badin	213,682	10,888	104,612	111,001	440,183	74,197	59,371	133,568	573,751	1.25	4.00	264	131	0.76	3.39	2.40%
Thatta	225,420	2,360	27,767	49,230	304,777	14,392	99,296	113,688	418,465	1.25	4.00	220	250	0.64	2.82	2.55%
Dadu	147,032	11,876	11,416	20,207	190,531	112,257	92,987	205,244	395,775	1.25	4.00	N.A.	N.A.	N.A.	N.A.	N.A.
Navabshah	48,160	266,721	83,816	146,349	545,046	439,213	95,699	535,912	1,080,958	1.25	4.00	579	414	4.77	15.14	0.67%
Khairpur	16,692	143,079	24,560	177,563	361,894	270,398	102,255	372,648	734,542	1.25	4.00	1000	400	2.50	15.63	1.33%
Sukkur	12,333	285,221	16,790	157,087	471,431	329,560	50,000	379,560	850,991	1.25	4.00	1287	332	3.98	13.39	0.70%
Shikarpur	217,282	-	656	7,441	225,379	58,057	143,022	201,079	426,458	1.25	4.00	729	N.A.	1.98	9.12	2.88%
Larkana	391,675	670	915	17,401	410,661	78,994	181,410	260,404	671,065	1.25	4.00	1000	N.A.	4.90	12.48	1.55%
Jacobabad	242,447	671	675	32,270	276,063	84,552	104,723	189,275	465,338	1.25	4.00	775	N.A.	2.35	9.66	2.57%
Karachi East												N.A.	N.A.	N.A.	N.A.	N.A.
Karachi West												N.A.	N.A.	N.A.	N.A.	N.A.
1,617,455 1,331,540 474,587 1,216,531 4,640,113 2,269,262 1,371,463 3,640,725 8,280,839																

Source of Acres under cultivation : BOR
Paddy Fee Cotton Fee

(*) Source : Zakat and Ushr Department Notifications
(figures weighted by number of Ders to which applicable)

Yield in Rs. million	8.216	31.992	Source : Excise and Taxation Department Figures for 198
Fee Yield/Acre (Rs.)	5.08	24.08	
Theoretical Yield (kg/acre)	677	400	
Commodity Price per 100 kg (Rs.)	200	2000	Source : Average Price (rounded) per Business Recorder

Table 2
Effect of Increase of Cotton Fee/
Paddy Development Fee

	Cotton Fee	Paddy Fee	TOTAL
Current Rate	6.00	0.75	
Increase Suggested (Rs. per 100 kg)	4.00	1.25	
Current Collections	31.992	8.216	40.208
Expected Increase	21.328	13.693	35.021
Current Commodity Prices (Rs. per 100 kg)	2000	200	
Increase as proportion of Price	0.20%	0.63%	

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FINANCING RURAL WATER SUPPLY AND SANITATION SCHEMES

Rural Water Financial Policy

1. Government of Sindh, together with all other Provincial Governments, has endorsed a policy for rural water supply and sanitation (RWSS) scheme financing whereby:

- i) provincial government will provide the capital costs of a basic level of service - standposts or other community facilities - as a grant; and
- ii) the responsibility for Operation and Maintenance Costs (O&M) will borne by the community.

2. This policy is to become effective in Sindh as part of a US\$ 92 million World Bank (IDA) supported project of which approximately US\$ 71 million will be financed on concessional IDA terms. The investment under this project includes construction or rehabilitation of RWSS mechanized schemes at 780 villages, handpump or handdug well schemes in some 2600 villages, associated drainage schemes, and construction of 6500 demonstration latrines with material for a further 27,500 units.

Operations and Maintenance Cost

3. Average O&M Costs during the first three years of the project, which arise mainly in respect of mechanized schemes, are estimated to amount to Rs.100 million per year. There are three main components of O&M Costs, such approximately equal in size:

- i) energy - principally electricity costs for pumping water;
- ii) repairs and maintenance; and
- iii) manpower - the costs of operators and maintenance personnel.

4. The costs of manpower have been calculated on the basis of a salary being paid to RWSS operations staff, but in practice this service might be provided in kind directly by the community, in which case costs would be reduced. The first two components, energy and repairs, are essentially cash expenses which can not be provided in kind by the community (details of the basis for estimating these costs are given in Appendix 1).

5. An increase in local cess is considered to be a straight forward and workable mechanism for recovering the power and repairs costs. The required increase is Rs. 12.65 per acre (perennial), Rs. 6.13 per acre (non-perennial) and Rs. 2.75 per acre (barani).

6. The World Bank has scheduled project negotiations for January 1991. The issuance of the invitation to negotiate is contingent upon the receipt by the World Bank of notification of approval and public announcement by the Government of Sindh of satisfactory cost recovery modalities and levels. The World Bank has also advised Government of Sindh that if necessary action is still awaited by mid-December 1990, then the World Bank would consider negotiating with the Governments of Azad Jammu and Kashmir, and Balochistan, both of which have satisfied the requirements for negotiations. This would avoid further delays to these Governments. It would also allow the World Bank's project processing to be complete within this financial year, which is necessary if the IDA funds are to remain allocated to Pakistan. It should be mentioned that if the Government of Sindh fails to meet the mid-December deadline there would be a danger of losing the IDA credit of (US\$ 71) million for the Sindh component of the project.

7. In discussions, the World Bank has indicated its support for increases in the local cess at least equivalent to the costs of power and repairs.

**OPERATIONS AND MAINTENANCE COSTS OF RWSS SCHEMES
DETAILS OF CALCULATIONS**

1. This note sets out details of the calculations involved in estimating the increase required in local cess rates to meet O & M costs relating to Rural Water Supply and Sanitation Schemes in Sindh.

O & M Costs per Scheme

2. The Operations and Maintenance costs which are to be recovered under the mechanism are those which relate to all rural water supply and sanitation projects, including existing ones, new schemes planned under the IDA project and new schemes planned under the Annual Development Program. During the project preparation study the consultants, along with PHED, developed a table of Estimated O & M Costs by Type of Scheme (Annexure 1), this being included on pages 139 and 140 of the final Project Preparation Document. Schemes have been grouped together in combinations of the following parameters :

- type of scheme, eg., single pumping canal sourced water supply or single pumping drainage, etc.
- Size of Scheme, i.e., whether for large or medium sized villages
- whether existing (further divided into pre and post rehabilitation) or to be built in future

3. The total O & M costs have been divided into three components, Energy and Chemical costs, Salary and Wages and Repairs and Maintenance. Calculations of each component have been made on the following bases (all values being at 1989 costs):

- a) Energy and Chemical costs have been based on the estimated utilisation of electricity and chemicals costed using the current structure of electricity costs
- b) Salary and Wages have been calculated as number of persons multiplied by the annual salary. For example the Rs. 19,740 in the case of PHED rehabilitated as well as new schemes, has been worked out as the annual equivalent of 2 persons with a total monthly salary of Rs. 1,645.
- c) Repairs and Maintenance costs have been worked out as 2 % of the cost (at 1989 prices) of civil works plus 6 % of the cost of mechanical equipment (eg., pumps).

Total Annual O & M Costs

4. Having arrived at the cost per scheme the next step was to expand this to arrive at the total O & M costs. For this purpose the number of existing schemes was taken along with the planned numbers of schemes to be rehabilitated, along with planned schedules (in terms of number of schemes by type) for :

- completion of on-going schemes
- new schemes under the proposed project
- new schemes under ADP (called "SIP Remainder")

5. The numbers have been given in Annexure 2, being derived from PHED sources as well as the Strategic Investment Plan report prepared by the consultants.

6. The number of schemes in place in each year (by type of scheme) was then multiplied by the annual estimated O & M costs by scheme to arrive at the O & M costs for each year (at 1989 constant prices) by type of scheme, which was then totalled to give the total costs. This calculation is illustrated in Annexure 3.

7. Having calculated costs at 1989 constant prices the next step was to inflate these using assumed inflation rates (the rates used being 8% for the first year, 7% for the second and 6.5% p.a. from the third year onwards). Energy costs were also inflated by a further 4% per annum, this being a World Bank estimate of the real increase in Energy costs (it is worth stating that in light of the Gulf crisis the estimates of Energy costs are likely to be substantially understated).

Calculation of Increase Required in Local Cess Rates

8. The World Bank had set a condition that cess rates would be reviewed and revised at the end of every three year period. With this in view the initial calculations focussed on the first three years, i.e., 1990-91 through 1992-93. The annual estimated O & M costs for these three years were averaged (by component) and calculations done to estimate the increase required in local cess rates to meet each component.

9. The calculations were based on the area under cultivation in each district for each crop, this being provided by the BOR, Using this as a base the following parameters were also allowed for :

- the rates for perennial, non-perennial and barani land should be in the ratio 5 : 2.5 : 1, this being recommended by the committee formed to review the cost recovery mechanism

- a 15% allowance for non-recovery, this being based on the average for the last three years per figures provided by BOR (see Annexure 4)
- a 6 % loss on raising the demand, this again being based on the average difference for the last three years between the actual and theoretical demands
- a 5 % allowance for recovery costs of the BOR

10. The resulting figures were rounded off, the resulting "increases" in rates (Rs./acre) required being as follows :

	Perennial	Non-Perennial	Barani
Full Recovery	18.90	9.25	4.00
Recovery of Energy and Repairs and Maint. only	12.65	6.13	2.75
Recovery of Energy only	6.40	3.00	1.50

11. Calculations were also carried out to standardise the current rates relating accross districts, these being as follows :

Perennial	Rs. 3.60 per acre
Non-Perennial	Rs. 2.00 per acre
Barani	RS. 0.50 per acre

ADM/PA/NAO

NO. SO. III-3(92)/87
GOVERNMENT OF SINDH
LOCAL GOVERNMENT

PUBLIC HEALTH ENGINEERING AND RURAL
DEVELOPMENT DEPARTMENT

Karachi dated the 24th January, 1991

To,

✓ Mr. Navaid Qureshi,
Projects Advisor,
The Resident Mission,
World Bank, 20-A Shahrah Jamhuriat,
Sector Ramra 5m1.
ISLAMABAD.

Perhaps this should be placed
in the HQ, if it has not
been done already.

ASD Y24

SUBJECT: SINDH RURAL WATER SUPPLY AND SANITATION
PROJECT (IDA ASSISTED).

In continuation of this Department's letter of even number, dated 7.1.1991 on the subject noted above, the Government of Sindh has agreed to adopt the following mechanism to meet the repairs and salaries portion of Operation & Maintenance costs of Rural Water Supply & Drainage Schemes completed by Public Health Engineering Department under normal ADP & IDA assisted programmes:-

- I) A Public Health Surcharge be added on the following three existing taxes, being recovered with these but being credited to a separate account to meet O&M costs of Rural Water Supply & Sanitation Schemes:-
 - (a) Cotton Fee, the amount of surcharge being Rs.2.50 per 100 kg this being in addition to the existing rate of Rs.0.50 per 100 kg.
 - (b) Paddy Development Fee, the amount of surcharge being Rs.0.50 per 100 kg this being in addition to the existing rate of Rs.0.75 per 100 kg.
 - (c) Sugarcane Development Cess, the amount of surcharge being Rs.0.15 per maund, this being in addition to the existing rate of Rs.0.50 per maund.
- II) The benefitting community would be asked to take on the responsibility of providing manpower for operating and maintaining the schemes.

The notification in this regard is under process which would be available in time for the negotiations (as per time table communicated in World Bank's telex dated 4.1.91).

In view of the above, it is requested that draft legal documents be issued to the Govt. as per paragraph GGG of the aforementioned telex.

A. Usman Shujrah
MURHAMMED USMAN SHUJRAH)

SECTION OFFICER-III

**GOVERNMENT OF SINDH
LOCAL GOVERNMENT
PUBLIC HEALTH ENGINEERING AND RURAL
DEVELOPMENT DEPARTMENT**

:- 2 :-

NO. SO, III-3(92)/87

Karachi dated the Jan. 1991

A copy is forwarded alongwith a copy of summary for Chief Minister, Sindh vide No. SO, III-3(92)/87, dated 15-1-1991 for information to:-

- 1/- The Additional Chief Secretary (Dev.), Planning and Development Department, Government of Sindh, Karachi.
- 2/- P.S. to Chief Secretary Sindh, Karachi.
- 3/- The Chief Engineer, Public Health Engineering Department, Government of Sindh, Hyderabad.
- 4/- Mr. Umer Murshad Consultants.

(MUHAMMED USMAN SHUJRAH)
SECTION OFFICER-III

Jamil/*

ESTIMATED NUMBER OF RURAL WATER SUPPLY AND DRAINAGE SCHEMES

Technology Type	Settlement Size	90-91	91-92	92-93	93-94	94-95	95-96	96-97	97-98	Remarks
A) RURAL WATER SUPPLY SCHEMES										
1) Existing Schemes										
Canal Source Single Pumping	Large	143								Includes 16 schemes break-up not known prorated between type Source : PHED Tabs
Double Pumping	Large	16								
Tubewell Source	Large	65								
2) Rehabilitation										
Canal Source Single Pumping	0.64	18	31	33	16	15	15	15		Source : Report Proportioned on basis of existing schemes
Double Pumping	0.07	2	4	4	2	2	2	2		
Tubewell Source	0.29	8	14	15	8	7	7	7		
3) Completions of on-going Schemes										
Source : PHED Tabs										
Canal Source Single Pumping	Large	25	34	49	73	79	44	29	12	345
Double Pumping	Medium	6	8	12	18	20	11	7	3	86
	Large	3	4	6	9	10	6	4	2	44
	Medium	1	1	2	2	3	1	1	0	11
Tubewell Source	Large	4	5	7	11	12	7	4	2	52
	Medium	1	1	2	3	3	2	1	0	13
Prorated for large/med villages 80/20 basis										
4) Completions IDA Project										
Source : Report										
Canal Source Single Pumping	Large	0	4	11	11	12	6	2	2	
	Medium	0	6	20	27	28	28	18	14	
Double Pumping	Large	0	1	2	3	3	1	0	0	
	Medium	0	2	5	6	7	6	5	3	
Tubewell Source	Large	0	0	6	7	4	4	2	0	
	Medium	0	0	9	10	8	8	6	1	
5) SIP Remainder										
Source : SIP										
Canal Source Single Pumping	Large	5	5	1	6	5	11	14	14	
	Medium	9	25	42	79	122	165	216	261	
Double Pumping	Large	1	1	1	1	1	3	4	4	
	Medium	2	6	10	20	30	42	54	66	
Tubewell Source	Large	2	6	4	9	12	12	13	13	
	Medium	1	7	2	10	13	14	15	11	
B) DRAINAGE SCHEMES										
1) Completed Schemes										
		167								
2) Rehabilitations										
		21	37	38	19	17	17	17		Source : PHED Tabs 167
3) On-Going Completions										
Source : PHED Tabs										
Single Pumping		37	56	72	79	64	32	4	0	343
Double Pumping		7	11	27	24	16	6	1	0	92
4) IDA Project Completions										
Source : Report										
Single Pumping		0	5	16	20	16	11	6	6	74
Double Pumping		0	1	6	6	4	2	1	1	20
5) SIP Remainder Completions										
Source : SIP										
Single Pumping		4	3	9	71	86	106	112	112	392
Double Pumping		1	1	4	21	22	19	19	19	86

Inflation 8.2 - 6.5% p.a.
 + Real Increase in Energy Costs : 4% p.a.

Technology Type

Annual

Cost

90-91 91-92 92-93 93-94 94-95 95-96 96-97 97-98 98-99 99-2000

COST OF OPERATIONS AND MAINTENANCE RURAL WATER SUPPLY SCHEMES (Source : O&M Table)

A) FHEd NON-REHABILITATED SCHEMES

Canal Sourced Single Pumping Large

Energy	57500	8.2	7.2	5.4	3.5	2.6	1.7	0.9	0.0	0.0	0.0
Salary	75240	10.8	9.4	7.1	4.6	3.4	2.2	1.1	0.0	0.0	0.0
Repairs	55528	8.0	7.0	5.2	3.4	2.5	1.7	0.8	0.0	0.0	0.0
Total	188268	27.0	23.6	17.7	11.5	8.4	5.6	2.8	0.0	0.0	0.0

Canal Sourced Double Pumping Large

Energy	79100	1.3	1.1	0.8	0.5	0.4	0.3	0.1	0.0	0.0	0.0
Salary	84960	1.4	1.2	0.9	0.6	0.4	0.3	0.1	0.0	0.0	0.0
Repairs	56908	0.9	0.8	0.6	0.4	0.3	0.2	0.1	0.0	0.0	0.0
Total	220963	3.6	3.1	2.3	1.5	1.1	0.7	0.4	0.0	0.0	0.0

Tubewell Sourced Large

Energy	57500	3.8	3.3	2.5	1.6	1.2	0.8	0.4	0.0	0.0	0.0
Salary	75240	4.9	4.3	3.2	2.1	1.5	1.0	0.5	0.0	0.0	0.0
Repairs	121787	8.0	7.0	5.2	3.4	2.5	1.7	0.8	0.0	0.0	0.0
Total	254527	16.7	14.6	10.9	7.1	5.2	3.5	1.7	0.0	0.0	0.0

B) FHEd REHABILITATED SCHEMES

Canal Sourced Single Pumping Large

Energy	25220	0.0	0.5	1.2	2.1	2.5	2.9	3.2	3.6	3.2	3.2
Salary	19740	0.0	0.4	1.0	1.6	1.9	2.2	2.5	2.8	2.5	2.5
Repairs	40481	0.0	0.7	2.0	3.3	4.0	4.6	5.2	5.8	5.1	5.1
Total	85441	0.0	1.5	4.2	7.0	8.4	9.7	11.0	12.2	10.7	10.7

Canal Sourced Double Pumping Large

Energy	44840	0.0	0.1	0.2	0.4	0.5	0.6	0.6	0.6	0.6	0.6
Salary	19740	0.0	0.0	0.1	0.2	0.2	0.3	0.3	0.3	0.3	0.3
Repairs	40348	0.0	0.1	0.2	0.4	0.4	0.5	0.6	0.6	0.6	0.6
Total	104928	0.0	0.2	0.6	1.0	1.2	1.3	1.5	1.5	1.5	1.5

Tubewell Sourced Large

Energy	39240	0.0	0.3	0.9	1.5	1.8	2.0	2.3	2.6	2.2	2.2
Salary	19740	0.0	0.2	0.4	0.7	0.9	1.0	1.2	1.3	1.1	1.1
Repairs	79742	0.0	0.7	1.8	3.0	3.6	4.1	4.7	5.2	4.6	4.6
Total	138722	0.0	1.1	3.1	5.2	6.2	7.2	8.1	9.1	7.9	7.9

Technology Type	Annual Cost	90-91	91-92	92-93	93-94	94-95	95-96	96-97	97-98	98-99	99-2000
C) PHED ON-GOING SCHEMES											
Canal Sourced Single Pumping Large											
Energy	25220	0.0	0.6	1.5	2.7	4.6	6.6	7.7	8.4	8.7	8.7
Salary	19740	0.0	0.5	1.2	2.1	3.6	5.1	6.0	6.6	6.8	6.8
Repairs	40481	0.0	1.0	2.4	4.4	7.3	10.5	12.3	13.5	14.0	14.0
Total	85441	0.0	2.1	5.0	9.2	15.4	22.2	26.0	28.5	29.5	29.5
Canal Sourced Double Pumping Large											
Energy	44840	0.0	0.1	0.3	0.6	1.0	1.5	1.8	1.9	2.0	2.0
Salary	19740	0.0	0.1	0.1	0.3	0.5	0.7	0.8	0.8	0.9	0.9
Repairs	40348	0.0	0.1	0.3	0.6	0.9	1.4	1.6	1.7	1.8	1.8
Total	104928	0.0	0.3	0.8	1.5	2.4	3.5	4.1	4.5	4.7	4.7
Tubewell Sourced Large											
Energy	39240	0.0	0.1	0.3	0.6	1.1	1.5	1.8	2.0	2.0	2.0
Salary	19740	0.0	0.1	0.2	0.3	0.5	0.8	0.9	1.0	1.0	1.0
Repairs	79742	0.0	0.3	0.7	1.3	2.2	3.1	3.6	4.0	4.1	4.1
Total	138722	0.0	0.5	1.2	2.3	3.8	5.4	6.3	6.9	7.2	7.2
Canal Sourced Single Pumping Medium											
Energy	10100	0.0	0.1	0.1	0.3	0.5	0.7	0.8	0.8	0.9	0.9
Salary	19740	0.0	0.1	0.3	0.5	0.9	1.3	1.5	1.6	1.7	1.7
Repairs	27978	0.0	0.2	0.4	0.8	1.3	1.8	2.1	2.3	2.4	2.4
Total	57818	0.0	0.4	0.8	1.6	2.6	3.8	4.4	4.8	5.0	5.0
Canal Sourced Double Pumping Medium											
Energy	21820	0.0	0.0	0.0	0.1	0.1	0.2	0.2	0.2	0.2	0.2
Salary	19740	0.0	0.0	0.0	0.1	0.1	0.2	0.2	0.2	0.2	0.2
Repairs	26225	0.0	0.0	0.0	0.1	0.2	0.2	0.3	0.3	0.3	0.3
Total	67785	0.0	0.1	0.1	0.2	0.4	0.6	0.7	0.7	0.8	0.8
Tubewell Sourced Medium											
Energy	19620	0.0	0.0	0.0	0.1	0.1	0.2	0.2	0.2	0.3	0.3
Salary	19740	0.0	0.0	0.0	0.1	0.1	0.2	0.2	0.2	0.3	0.3
Repairs	48291	0.0	0.0	0.1	0.2	0.3	0.5	0.6	0.6	0.6	0.6
Total	87651	0.0	0.1	0.2	0.4	0.6	0.9	1.0	1.1	1.1	1.1
D) IDA PROJECT COMPLETIONS											
Canal Sourced Single Pumping Large											
Energy	25220	0.0	0.0	0.1	0.4	0.7	1.0	1.1	1.2	1.2	1.2
Salary	19740	0.0	0.0	0.1	0.3	0.5	0.8	0.9	0.9	0.9	0.9
Repairs	26987	0.0	0.0	0.1	0.4	0.7	1.0	1.2	1.2	1.3	1.3
Total	71947	0.0	0.0	0.3	1.1	1.9	2.7	3.2	3.3	3.5	3.5
Canal Sourced Double Pumping Large											
Energy	44840	0.0	0.0	0.0	0.1	0.3	0.4	0.4	0.4	0.4	0.4
Salary	19740	0.0	0.0	0.0	0.1	0.1	0.2	0.2	0.2	0.2	0.2
Repairs	26899	0.0	0.0	0.0	0.1	0.2	0.2	0.3	0.3	0.3	0.3
Total	91479	0.0	0.0	0.1	0.3	0.5	0.8	0.9	0.9	0.9	0.9
Tubewell Sourced Large											
Energy	39240	0.0	0.0	0.0	0.2	0.5	0.7	0.8	0.9	0.9	0.9
Salary	19740	0.0	0.0	0.0	0.1	0.3	0.3	0.4	0.5	0.5	0.5
Repairs	53161	0.0	0.0	0.0	0.3	0.7	0.9	1.1	1.2	1.2	1.2
Total	112141	0.0	0.0	0.0	0.7	1.5	1.9	2.4	2.6	2.6	2.6
Canal Sourced Single Pumping Medium											
Energy	10100	0.0	0.0	0.1	0.3	0.5	0.8	1.1	1.3	1.4	1.4
Salary	19740	0.0	0.0	0.1	0.5	1.0	1.6	2.2	2.5	2.8	2.8
Repairs	18652	0.0	0.0	0.1	0.5	1.0	1.5	2.0	2.4	2.6	2.6
Total	48492	0.0	0.0	0.3	1.3	2.6	3.9	5.3	6.2	6.8	6.8
Canal Sourced Double Pumping Medium											
Energy	21820	0.0	0.0	0.0	0.2	0.3	0.4	0.6	0.7	0.7	0.7
Salary	19740	0.0	0.0	0.0	0.1	0.3	0.4	0.5	0.6	0.7	0.7
Repairs	17483	0.0	0.0	0.0	0.1	0.2	0.3	0.5	0.5	0.6	0.6
Total	59043	0.0	0.0	0.1	0.4	0.8	1.2	1.5	1.8	2.0	2.0
Tubewell Sourced Medium											

Technology Type	Annual Cost	90-91	91-92	92-93	93-94	94-95	95-96	96-97	97-98	98-99	99-2000
Tubewell Sourced Medium											
Energy	19620	0.0	0.0	0.0	0.2	0.4	0.5	0.7	0.8	0.8	0.8
Salary	19740	0.0	0.0	0.0	0.2	0.4	0.5	0.7	0.8	0.8	0.8
Repairs	32194	0.0	0.0	0.0	0.3	0.6	0.9	1.1	1.3	1.4	1.4
Total	71554	0.0	0.0	0.0	0.6	1.4	1.9	2.5	2.9	3.0	3.0
E) SIP REMAINDER COMPLETIONS											
Canal Sourced Single Pumping Large											
Energy	25220	0.0	0.1	0.2	0.3	0.4	0.6	0.8	1.2	1.5	1.5
Salary	19740	0.0	0.1	0.2	0.2	0.3	0.4	0.7	0.9	1.2	1.2
Repairs	26987	0.0	0.1	0.3	0.3	0.5	0.6	0.9	1.3	1.6	1.6
Total	71947	0.0	0.3	0.7	0.8	1.2	1.6	2.4	3.4	4.4	4.4
Canal Sourced Double Pumping Large											
Energy	44840	0.0	0.1	0.1	0.2	0.2	0.3	0.4	0.6	0.8	0.8
Salary	19740	0.0	0.0	0.0	0.1	0.1	0.1	0.2	0.3	0.3	0.3
Repairs	26899	0.0	0.0	0.1	0.1	0.1	0.2	0.2	0.4	0.5	0.5
Total	91479	0.0	0.1	0.2	0.3	0.4	0.5	0.8	1.2	1.6	1.6
Tubewell Sourced Large											
Energy	39240	0.0	0.1	0.3	0.5	0.8	1.3	1.8	2.3	2.8	2.8
Salary	19740	0.0	0.0	0.2	0.2	0.4	0.7	0.9	1.2	1.4	1.4
Repairs	53161	0.0	0.1	0.4	0.6	1.1	1.8	2.4	3.1	3.8	3.8
Total	112141	0.0	0.2	0.9	1.4	2.4	3.8	5.2	6.6	8.1	8.1
Canal Sourced Single Pumping Medium											
Energy	10100	0.0	0.1	0.3	0.8	1.6	2.8	4.5	6.6	9.3	9.3
Salary	19740	0.0	0.2	0.7	1.5	3.1	5.5	8.7	13.0	18.1	18.1
Repairs	18652	0.0	0.2	0.6	1.4	2.9	5.2	8.2	12.3	17.1	17.1
Total	48492	0.0	0.4	1.7	3.7	7.5	13.4	21.4	31.9	44.6	44.6
Canal Sourced Double Pumping Medium											
Energy	21820	0.0	0.0	0.2	0.4	0.8	1.5	2.4	3.6	5.0	5.0
Salary	19740	0.0	0.0	0.2	0.4	0.8	1.4	2.2	3.3	4.6	4.6
Repairs	17483	0.0	0.0	0.1	0.3	0.7	1.2	2.0	2.9	4.0	4.0
Total	59043	0.0	0.1	0.5	1.1	2.3	4.1	6.6	9.8	13.6	13.6
Tubewell Sourced Medium											
Energy	19620	0.0	0.0	0.2	0.2	0.4	0.7	0.9	1.2	1.4	1.4
Salary	19740	0.0	0.0	0.2	0.2	0.4	0.7	0.9	1.2	1.4	1.4
Repairs	32194	0.0	0.0	0.3	0.3	0.6	1.1	1.5	2.0	2.3	2.3
Total	71554	0.0	0.1	0.6	0.7	1.4	2.4	3.4	4.4	5.2	5.2

Technology Type Annual
 Cost 90-91 91-92 92-93 93-94 94-95 95-96 96-97 97-98 98-99 99-2000
COST OF OPERATIONS AND MAINTENANCE RURAL WATER SUPPLY SCHEMES (Source : O&M Table)

Technology Type	Annual Cost	90-91	91-92	92-93	93-94	94-95	95-96	96-97	97-98	98-99	99-2000
A) EXISTING SCHEMES											
Energy	79100	11.6	8.7	5.6	4.1	2.8	1.4	0.0	0.0	0.0	0.0
Salary	105720	15.4	11.6	7.5	5.5	3.7	1.8	0.0	0.0	0.0	0.0
Repairs	39940	5.8	4.4	2.8	2.1	1.4	0.7	0.0	0.0	0.0	0.0
Total	224760	32.8	24.6	16.0	11.7	7.8	3.9	0.0	0.0	0.0	0.0
B) REHABILITATED SCHEMES											
Energy	44280	0.0	0.9	2.5	4.2	5.1	5.9	6.6	7.4	7.4	7.4
Salary	19740	0.0	0.4	1.1	1.9	2.3	2.6	3.0	3.3	3.3	3.3
Repairs	48291	0.0	1.0	2.8	4.6	5.5	6.4	7.2	8.1	8.1	8.1
Total	112311	0.0	2.3	6.4	10.7	12.9	14.8	16.8	18.8	18.8	18.8
C) ON-GOING SCHEME COMPLETIONS											
1) Single Pumping											
Energy	22140	0.0	0.8	2.0	3.6	5.4	6.8	7.5	7.6	7.6	7.6
Salary	19740	0.0	0.7	1.8	3.3	4.8	6.1	6.7	6.8	6.8	6.8
Repairs	25366	0.0	0.9	2.3	4.2	6.2	7.8	8.6	8.7	8.7	8.7
Total	67246	0.0	2.5	6.2	11.1	16.4	20.7	22.8	23.1	23.1	23.1
1) Double Pumping											
Energy	44280	0.0	0.3	0.8	2.0	3.1	3.8	4.0	4.1	4.1	4.1
Salary	19740	0.0	0.1	0.4	0.9	1.4	1.7	1.8	1.8	1.8	1.8
Repairs	48291	0.0	0.4	0.9	2.2	3.3	4.1	4.4	4.4	4.4	4.4
Total	112311	0.0	0.8	2.1	5.1	7.8	9.6	10.2	10.3	10.3	10.3
D) IDA PROJECT COMPLETIONS											
1) Single Pumping											
Energy	22140	0.0	0.0	0.1	0.5	0.9	1.3	1.5	1.6	1.8	1.8
Salary	19740	0.0	0.0	0.1	0.4	0.8	1.1	1.3	1.5	1.6	1.6
Repairs	16911	0.0	0.0	0.1	0.4	0.7	1.0	1.1	1.3	1.4	1.4
Total	58791	0.0	0.0	0.3	1.2	2.4	3.4	4.0	4.4	4.7	4.7
1) Double Pumping											
Energy	44280	0.0	0.0	0.0	0.3	0.6	0.8	0.8	0.9	0.9	0.9
Salary	19740	0.0	0.0	0.0	0.1	0.3	0.3	0.4	0.4	0.4	0.4
Repairs	18626	0.0	0.0	0.0	0.1	0.2	0.3	0.4	0.4	0.4	0.4
Total	82646	0.0	0.0	0.1	0.6	1.1	1.4	1.6	1.7	1.7	1.7
E) SIP REMAINDER COMPLETIONS											
1) Single Pumping											
Energy	22140	0.0	0.1	0.2	0.4	1.9	3.9	6.2	8.7	11.2	11.2
Salary	19740	0.0	0.1	0.1	0.3	1.7	3.4	5.5	7.7	10.0	10.0
Repairs	16911	0.0	0.1	0.1	0.3	1.5	2.9	4.7	6.6	8.5	8.5
Total	58791	0.0	0.2	0.4	1.0	5.1	10.2	16.4	23.0	29.6	29.6
1) Double Pumping											
Energy	44280	0.0	0.0	0.1	0.2	1.2	2.1	3.0	3.8	4.6	8.4
Salary	19740	0.0	0.0	0.0	0.1	0.5	0.9	1.3	1.7	2.1	3.8
Repairs	18626	0.0	0.0	0.0	0.1	0.5	0.9	1.3	1.6	2.0	3.6
Total	82646	0.0	0.1	0.1	0.4	2.2	4.0	5.6	7.1	8.7	15.8

4. IDA Project S...

5. SIP...

ESTIMATED O&M EXPENDITURES IN CONSTANT 1989 PRICES (Rupees in Million)

Technology Type		90-91	91-92	92-93	93-94	94-95	95-96	96-97	97-98	98-99	99-2000
COST OF OPERATIONS AND MAINTENANCE RURAL WATER SUPPLY SCHEMES											
1. Completed Schemes	Energy	13.3	11.6	8.7	5.7	4.1	2.8	1.4	0.0	0.0	0.0
	Salary	17.1	14.9	11.2	7.3	5.3	3.6	1.8	0.0	0.0	0.0
	Repairs	16.8	14.7	11.1	7.2	5.3	3.5	1.8	0.0	0.0	0.0
	Total	47.2	41.3	31.0	20.2	14.7	9.8	4.9	0.0	0.0	0.0
2. Rehabilitated Schemes	Energy	0.0	0.9	2.4	4.0	4.7	5.5	6.2	6.8	5.0	6.0
	Salary	0.0	0.6	1.5	2.5	3.1	3.5	4.0	4.4	3.9	3.9
	Repairs	0.0	1.5	4.0	6.7	8.0	9.2	10.5	11.6	10.2	10.2
	Total	0.0	2.9	7.9	13.2	15.8	18.2	20.6	22.8	20.1	20.1
3. On-going Schemes	Energy	0.0	1.0	2.4	4.4	7.4	10.6	12.4	13.6	14.1	14.1
	Salary	0.0	0.8	1.9	3.4	5.7	8.2	9.6	10.5	10.9	10.9
	Repairs	0.0	1.7	4.0	7.3	12.2	17.5	20.5	22.4	23.2	23.2
	Total	0.0	3.5	8.2	15.1	25.3	36.4	42.5	46.6	48.2	48.2
4. IDA Project Schemes	Energy	0.0	0.0	0.2	1.3	2.6	3.8	4.7	5.3	5.6	5.6
	Salary	0.0	0.0	0.3	1.3	2.6	3.8	4.8	5.5	5.9	5.9
	Repairs	0.0	0.0	0.3	1.7	3.4	4.9	6.2	7.0	7.4	7.4
	Total	0.0	0.0	0.8	4.3	8.6	12.5	15.8	17.7	18.8	18.8
5. SIP Project Schemes	Energy	0.0	0.4	1.3	2.3	4.3	7.1	10.9	15.5	20.9	20.9
	Salary	0.0	0.4	1.4	2.6	5.1	8.7	13.6	19.8	27.1	27.1
	Repairs	0.0	0.5	1.8	3.1	5.9	10.0	15.3	21.9	29.5	29.5
	Total	0.0	1.3	4.5	7.9	15.3	25.8	39.7	57.3	77.4	77.4
Sub-Total Water Supply	Energy	13.3	13.9	15.1	17.7	23.2	29.8	35.6	41.3	46.6	46.6
	Salary	17.1	16.7	16.2	17.1	21.7	27.8	33.8	40.2	47.8	47.8
	Repairs	16.8	18.4	21.1	26.0	34.8	45.1	54.1	62.9	70.3	70.3
	Total	47.2	49.0	52.4	60.7	79.7	102.7	123.5	144.4	164.6	164.6
COST OF OPERATIONS AND MAINTENANCE DRAINAGE SCHEMES											
1. Completed Schemes	Energy	11.6	8.7	5.6	4.1	2.8	1.4	0.0	0.0	0.0	0.0
	Salary	15.4	11.6	7.5	5.5	3.7	1.8	0.0	0.0	0.0	0.0
	Repairs	5.8	4.4	2.8	2.1	1.4	0.7	0.0	0.0	0.0	0.0
	Total	32.8	24.6	16.0	11.7	7.8	3.9	0.0	0.0	0.0	0.0
2. Rehabilitated Schemes	Energy	0.0	0.9	2.5	4.2	5.1	5.9	6.6	7.4	7.4	7.4
	Salary	0.0	0.4	1.1	1.9	2.3	2.6	3.0	3.3	3.3	3.3
	Repairs	0.0	1.0	2.8	4.6	5.5	6.4	7.2	8.1	8.1	8.1
	Total	0.0	2.3	6.4	10.7	12.9	14.8	16.8	18.8	18.8	18.8
3. On-going Schemes	Energy	0.0	1.1	2.9	5.7	8.5	10.6	11.6	11.7	11.7	11.7
	Salary	0.0	0.9	2.2	4.2	6.2	7.8	8.5	8.6	8.6	8.6
	Repairs	0.0	1.3	3.2	6.4	9.5	11.9	13.0	13.1	13.1	13.1
	Total	0.0	3.3	8.3	16.2	24.2	30.3	33.1	33.4	33.4	33.4
4. IDA Project Schemes	Energy	0.0	0.0	0.2	0.8	1.5	2.0	2.3	2.5	2.7	2.7
	Salary	0.0	0.0	0.1	0.6	1.1	1.5	1.7	1.9	2.0	2.0
	Repairs	0.0	0.0	0.1	0.5	0.9	1.3	1.5	1.6	1.7	1.7
	Total	0.0	0.0	0.4	1.8	3.5	4.8	5.6	6.0	6.4	6.4
5. SIP Project Schemes	Energy	0.0	0.1	0.2	0.6	3.1	6.0	9.2	12.5	15.8	19.6

Salary	0.0	0.1	0.2	0.4	2.3	4.4	6.8	9.4	12.0	13.7
Repairs	0.0	0.1	0.2	0.4	2.0	3.8	6.0	8.2	10.5	12.1
Total	0.0	0.3	0.6	1.4	7.3	14.2	22.0	30.2	38.3	45.4

Sub-Total Drainage

Energy	11.6	10.9	11.4	15.4	20.9	25.8	29.7	34.1	37.6	41.4
Salary	15.4	13.0	11.2	12.5	15.4	18.1	20.0	23.2	25.9	27.6
Repairs	5.8	6.8	9.1	13.9	19.4	24.1	27.7	31.1	33.4	35.0
Total	32.8	30.6	31.7	41.9	55.7	68.0	77.4	88.3	96.9	104.0

TOTAL MECHANISED SCHEMES

Energy	24.8	24.8	26.5	33.1	44.1	55.6	65.3	75.3	84.1	87.9
Salary	32.5	29.7	27.4	29.7	37.2	45.8	53.8	63.4	73.7	75.4
Repairs	22.7	25.2	30.2	39.9	54.1	69.3	81.9	93.9	103.7	105.3
Total	80.0	79.6	84.1	102.6	135.4	170.7	201.0	232.7	261.5	268.6

NON-MECHANISED SCHEMES

	0.2	0.6	1.2	2.0	3.0	4.2	5.4	6.7	6.7	6.7
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TOTAL WATER SUPPLY AND DRAINAGE

Energy	24.8	24.8	26.5	33.1	44.1	55.6	65.3	75.3	84.1	87.9
Salary	32.5	29.7	27.4	29.7	37.2	45.8	53.8	63.4	73.7	75.4
Repairs	22.9	25.8	31.4	41.9	57.1	73.5	87.3	100.6	110.4	112.0
Total	80.2	80.2	85.3	104.6	138.4	174.9	206.4	239.4	268.2	275.3

1. Completed

2. In Progress

3. On Hold

4. IDA Project Schemes

5. SIP Project Schemes

6. IDA Project Schemes

7. SIP Project Schemes

ESTIMATED O&M EXPENDITURES IN CURRENT PRICES (Rupees in Million)

Technology Type		90-91	91-92	92-93	93-94	94-95	95-96	96-97	97-98	98-99	99-2000
COST OF OPERATIONS AND MAINTENANCE RURAL WATER SUPPLY SCHEMES											
1. Completed Schemes	Energy	14.9	14.5	12.1	8.7	7.0	5.2	2.9	0.0	0.0	0.0
	Salary	18.4	17.3	13.8	9.6	7.4	5.3	2.8	0.0	0.0	0.0
	Repairs	18.2	17.0	13.6	9.4	7.3	5.2	2.8	0.0	0.0	0.0
	Total	51.5	48.8	39.5	27.7	21.8	15.7	8.5	0.0	0.0	0.0
2. Rehabilitated Schemes	Energy	0.0	1.1	3.3	6.1	8.1	10.3	12.9	15.7	15.4	17.1
	Salary	0.0	0.6	1.9	3.3	4.3	5.2	6.3	7.4	7.0	7.4
	Repairs	0.0	1.7	4.9	8.8	11.2	13.7	16.6	19.5	18.3	19.5
	Total	0.0	3.4	10.1	18.2	23.5	29.2	35.7	42.7	40.8	44.1
3. On-going Schemes	Energy	0.0	1.3	3.3	6.8	12.5	20.0	25.9	31.4	36.1	39.9
	Salary	0.0	0.9	2.3	4.5	8.0	12.2	15.2	17.7	19.6	20.8
	Repairs	0.0	1.9	4.9	9.5	17.0	26.0	32.4	37.8	41.7	44.4
	Total	0.0	4.1	10.5	20.8	37.5	58.2	73.5	87.0	97.4	105.2
4. IDA Project Schemes	Energy	0.0	0.0	0.3	2.1	4.5	7.2	9.9	12.2	14.2	15.7
	Salary	0.0	0.0	0.3	1.7	3.6	5.6	7.7	9.3	10.6	11.3
	Repairs	0.0	0.0	0.3	2.2	4.7	7.3	9.8	11.7	13.2	14.1
	Total	0.0	0.0	1.0	6.0	12.8	20.1	27.3	33.2	38.0	41.0
5. SIP Project Schemes	Energy	0.0	0.5	1.9	3.5	7.3	13.4	22.6	35.9	53.4	59.1
	Salary	0.0	0.5	1.7	3.4	7.1	12.9	21.5	33.4	48.7	51.8
	Repairs	0.0	0.6	2.2	4.1	8.3	14.8	24.2	35.9	52.9	56.3
	Total	0.0	1.6	5.8	10.9	22.6	41.1	68.4	106.2	154.9	167.2
Sub-Total Water Supply	Energy	14.9	17.4	20.9	27.1	39.4	56.0	74.2	95.2	119.0	131.9
	Salary	18.4	19.3	20.0	22.5	30.3	41.3	53.5	67.8	85.8	91.3
	Repairs	18.2	21.2	26.0	34.0	48.5	67.1	85.7	106.0	126.2	134.4
	Total	51.5	57.9	66.8	83.6	118.2	164.4	213.4	269.1	331.0	367.6
COST OF OPERATIONS AND MAINTENANCE DRAINAGE SCHEMES											
1. Completed Schemes	Energy	13.0	10.8	7.8	6.3	4.7	2.6	0.0	0.0	0.0	0.0
	Salary	16.7	13.4	9.3	7.2	5.1	2.7	0.0	0.0	0.0	0.0
	Repairs	6.3	5.1	3.5	2.7	1.9	1.0	0.0	0.0	0.0	0.0
	Total	36.0	29.3	20.6	16.3	11.7	6.4	0.0	0.0	0.0	0.0
2. Rehabilitated Schemes	Energy	0.0	1.2	3.5	6.5	8.6	11.0	13.8	17.1	18.9	20.9
	Salary	0.0	0.5	1.4	2.5	3.2	3.9	4.7	5.6	5.9	6.3
	Repairs	0.0	1.2	3.4	6.1	7.7	9.5	11.4	13.6	14.5	15.4
	Total	0.0	2.8	8.3	15.0	19.5	24.4	29.9	36.2	39.3	42.7
3. On-going Schemes	Energy	0.0	1.4	4.0	8.7	14.4	19.9	24.1	26.9	29.8	33.0
	Salary	0.0	1.0	2.7	5.4	8.6	11.5	13.5	14.5	15.4	16.4
	Repairs	0.0	1.5	4.0	8.4	13.3	17.7	20.6	22.1	23.6	25.1
	Total	0.0	3.9	10.7	22.5	36.3	49.2	58.1	63.5	68.8	74.6
4. IDA Project Schemes	Energy	0.0	0.0	0.2	1.2	2.5	3.8	4.9	5.8	6.9	7.6
	Salary	0.0	0.0	0.1	0.7	1.5	2.2	2.7	3.1	3.6	3.8
	Repairs	0.0	0.0	0.1	0.6	1.3	1.9	2.4	2.7	3.1	3.3
	Total	0.0	0.0	0.5	2.5	5.3	7.9	10.0	11.7	13.6	14.8
5. SIP Project Schemes	Energy	0.0	0.2	0.3	0.9	5.3	11.2	19.1	28.8	40.4	55.5

Salary	0.0	0.1	0.2	0.6	3.1	6.5	10.8	15.9	21.6	26.2
Repairs	0.0	0.1	0.2	0.5	2.8	5.7	9.5	13.9	18.8	23.1
Total	0.0	0.4	0.7	2.0	11.2	23.5	39.4	58.6	80.8	104.9

Sub-Total Drainage

Energy	13.0	13.6	15.8	23.6	35.5	48.6	61.9	78.6	96.0	117.1
Salary	16.7	15.0	13.7	16.4	21.5	26.8	31.7	39.1	46.5	52.8
Repairs	6.3	7.8	11.2	18.3	27.0	35.9	43.9	52.4	60.0	67.0
Total	36.0	36.4	40.8	58.3	84.0	111.3	137.5	170.1	202.5	236.9

TOTAL MECHANISED SCHEMES

Energy	27.9	31.0	36.7	50.7	74.9	104.6	136.0	173.8	215.0	249.0
Salary	35.1	34.3	33.7	38.9	51.9	68.1	85.2	106.9	132.3	144.1
Repairs	24.5	29.1	37.2	52.3	75.6	103.0	129.6	158.4	186.2	201.4
Total	87.5	94.3	107.6	141.9	202.3	275.7	360.8	439.1	533.5	594.4

NON-MECHANISED SCHEMES

	0.2	0.7	1.5	2.6	4.2	6.2	8.5	11.3	12.0	12.8
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TOTAL WATER SUPPLY AND DRAINAGE

Energy	27.9	31.0	36.7	50.7	74.9	104.6	136.0	173.8	215.0	249.0
Salary	35.1	34.3	33.7	38.9	51.9	68.1	85.2	106.9	132.3	144.1
Repairs	24.7	29.8	38.7	54.9	79.8	109.2	138.2	169.7	198.2	214.2
Total	87.7	95.0	109.1	144.5	206.5	281.9	359.4	450.4	545.5	607.3

In Pocket Completion
 Single Pumping
 Double Pumping
 In Pocket Completion
 Single Pumping
 Double Pumping