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Rural water supply RPO 673-93P

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Rural Water Supply - RPO 673-93

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JUL 28 1987

FORM NO. 1889
(10-85)WORLD BANK RESEARCH PROGRAM
COMPLETION REPORT

I. PROJECT IDENTIFICATION

PROJECT'S CLOSING DATE

12/30/86

DATE OF SUBMISSION OF

COMPLETION REPORT 7/1/87

1. TITLE

Rural Water Supply

PREPARED BY

Robert Roche

2. PROJECT NUMBER:

673-93P

3. DEPARTMENT:

Infrastructure

4. DIVISION:

Water and Urban Technologies
and Assessment

5. STAFF PARTICIPATION:

(a) Principal Supervisors: * Robert Roche

(b) Others Responsible:

(c) Administrative/Budgeting Officer: Ingrid Saunders

6. DEPARTMENTAL APPROVAL

DIVISION CHIEF'S NAME (Please type):

Curt Carnemark

SIGNATURE:

DATE:

7/24/87

DEPARTMENT DIRECTOR'S NAME (Please type):

Louis Pouliquen

SIGNATURE:

DATE:

7/24/87

II. OUTPUT AND DISSEMINATION

1. REPORTS - Publications and reports from project (specify author(s), title, date): **

A Study of Water Vending in Ukunda, Kenya: Whittington, Nyamwaya,
Momanyi, Makanda, Mutinda, MuCalculating the Value of Time Spent Collecting Water:
Whittington, Mu, Roche

(copies attached)

2. DISSEMINATION - Seminars, Conferences, Training Sessions (topic, date, location and participation):

* If changed indicate dates.

** Indicate with asterisk the report(s) to be circulated to the Evaluation Panel and provide this office (S-9135) with 5 copies.

III. FUNDING ('000)

FISCAL YEAR	ORIGINAL REQUEST (1)	REPAC AUTHORIZATIONS			BANK		OUTSIDE AMOUNT (7)	TOTAL (4)+(6)+(7)
		Initial (2)	Supplementary (3)	Total (4)=(2)+(3)	Department (5)	Amount (6)		
FY	10,000	10,000	0	10,000			18,000	28,000
FY								
FY								
FY								
FY								
FY								
FY								
FY								
TOTAL								

IV. FINANCIAL EXPENDITURES ('000) AND STAFF TIME

FISCAL YEAR	ACTUAL EXPENDITURES			STAFF TIME						TOTAL COSTS (3+5+7+9)**
	RPO (1)	Other (2)	Total (3)	Professional		Consultant*		Assistant		
				Years** (4)	Costs*** (5)	Years** (6)	Costs*** (7)	Years** (8)	Costs*** (9)	
FY	8,000	18,000	26,000	0.10		0.08				
FY										
FY										
FY										
FY										
FY										
FY										
TOTAL										

APPROVED BY RESEARCH ADMINISTRATOR (print name):

Dennis de Tray

SIGNATURE:

D de Tray

DATE:

8/9/87

approved 8/7/87/4m

*Consultants paid for by departmental budgets ONLY.

**Staff years (staff weeks ÷ 52) should be entered here.

***For REPAC use ONLY.

Narratives in the following sections summarize the results of the project in relation to its objectives and describe the design, organization, and dissemination strategy adopted. The categories and topics are intended to correspond closely to those of the "Guidelines for Evaluation of Completed Research Projects." Using additional space as necessary, the principal supervisor should give particular attention to the points listed.

V. OBJECTIVES, STRATEGY, AND RESULTS

1. What general questions did the study seek to answer? What answers did it find? How significant are these answers for a) Development policy in general? b) Bank operations?
2. To what extent did the study fulfill its objectives? Did the objectives change as the study was undertaken? If yes, why?
3. Who are the intended beneficiaries? (Bank staff; planning authorities and decision makers in developing countries; other researchers; general development community).
4. Has the project assisted in developing research or other analytical capacity in the countries under study?
5. Were efforts made to coordinate work with other studies underway in the Bank or outside, to enhance the comparability of results or avoid duplication?

1. The study sought to:

a. Develop a simple method that can be used to assess water demand by analyzing the relationship between the price a family pays for water (both cash outlays and time spend on water collection) and the amount it uses through multinomial analysis.

b. Estimate the monetary value that people place on the time they spend collecting water in several communities.

c. Evaluate the factors that affect source selection through a multinomial logit model.

d. Assess the sustainability of the South Coast Handpumps Project.

2. The study was quite successful in showing the usefulness of a multinomial logit model in predicting source selection as a function of the characteristics of the household and the alternative sources. Of particular importance was the effect that distance had on source selection because this can be simply used in project design. The study also showed that people do put value on the time they spend collecting water and that it can approach the local unskilled wage rate in cash-based communities.

In addition, the extensive study of communities that were in the South Coast Handpumps Project showed that users valued handpumps above traditional sources and demonstrated this by making cash payments that covered the maintenance costs and most of the capital cost.

The objectives of the study did not change, although contingent valuation methods were applied in only a limited fashion because of the complexity of doing them for the first time. While complex in proving their utility these techniques can potentially be simple to apply in practice.

3. The intended beneficiaries are decision makers at the policy level and professionals responsible for implementing water supply projects. These include World Bank and other lending institutions, donors and most importantly, governments.

4. The study has introduced the subject of willingness to pay and cost recovery to a group of researchers in Kenya. The principal investigator has now assumed an important position in AMREF (the African Medical Research Federation) and will undoubtedly consider such issues in his future work, as will the other persons involved in the study. The sensitivity of the Government of Kenya to economic issues makes it unlikely that such analytical techniques will officially be applied in the near future.

5. Mr. Briscoe, now heading the large scale water demand study in PPR, and Mr. Whittington, the principal consultant for this study from the University of North Carolina, both contributed to the formulation of this study after extensive review of the literature and collaboration with others who had done related work. Mr. Whittington has also been doing similar work funded by USAID, focusing on contingent valuation techniques. His work with the Handpumps Project and AID have contributed significantly to the Department's Water Demand Study.

VI. DESIGN

1. Was a specific methodology essential for the success of this project? If so, were theoretical approaches and the methodology employed in the study appropriate to its stated purposes? Were difficulties encountered in applying the methodology? If so, how were they overcome?
2. Did the project make the best and careful use of available data? Did it involve collecting primary data e.g. through surveys. If so, were such surveys properly designed and carried out, and their results adequately incorporated in the research?

1. The two villages that were initially selected proved to be poor choices because of limited vending activities and few real choices between handpump, kiosks and traditional sources. Therefore, a third village was very carefully selected and subsequently produced good results. One of the objectives of the study was to develop a simplified questionnaire that could elicit the data needed for the water demand and source selection models. By surveying a third village a simplified questionnaire was able to be field tested. The major simplifications were to eliminate water source observations since questioning proved as accurate, and to focus questions on productive assets such as a number of coconut trees rather than questions about income.

Use of a multinomial logit model to predict water source selection proved quite successful. However, a functional relationship between the price of water (cash and/or time) and the quantity used proved inconclusive as very little of the variability could be accounted for by the household and source characteristics that could be measured. Greater success would likely be obtained where water is piped to individual homes in which case there would be a greater variation in water use.

2. Little demographic or economic data was available for the study area and none at the household level needed for the study. Consequently, the bulk of the study involved household surveying.

VII. ORGANIZATION

1. Did the research tasks follow a logical sequence? Were there opportunities to review progress at intermediate stages?
2. How effective were the consultants or consulting firms employed? How open were the channels of communication between Bank staff and consultants?
3. Was the extent of Bank staff involvement in design, implementation, and supervision adequate to meet the study's objectives?
4. What was the nature and extent of awareness, support, or participation among:
 - Bank operating departments, including regional departments?
 - Local research institutes?
 - Government agencies?
5. Main reasons for overruns or savings in cost and time.

1. After water use at the source and household surveys in the first two villages were completed, the inadequacy of the data sets (as noted in section VI-1) became apparent. Using contingency funds, the third village was surveyed.

2. The study would not have been possible without the guidance and input from our principal consultant Mr. Whittington and the advice of Mr. Briscoe. Much of the success of the study also hinged on the dedicated effort of the local consultants in Kenya that carried out the field work. The only real shortcoming was with the principal investigator in Kenya, who is very talented but over-committed. If he had been able to put more time in the study, the depth of understanding of the demand for water would have been much greater.

3. The amount of Bank Staff involvement was adequate to meet the study's objectives but was not adequate to make up for the over-committment of the principal investigator. This was handed over to Mr. Whittington.

4. The Bank's operations departments were aware of the research work and were supportive. The sensitivity of the Government of Kenya to the type of economic analysis considered in the study limited government participation to the local level and will also limit the degree to which the results can be publicized.

5. The project has remained within the original budget. However, the time period has had to be extended because of the need to survey and analyze the results from a third village. A substantial delay also resulted from the principal investigator taking a new position towards the end of the study, forcing him to devote only spare time to analysis and report writing. A memo requesting use of the \$2000 of REPAC funds remaining in the budget was sent to Mr. Lal on May 7, 1987 but no response has been received. Some of the details of the study could be better documented if these funds were made available for consultant services.

VIII. DISSEMINATION

1. Did the research project yield any publishable output for the World Bank Economic Review, World Bank Research Observer, or a Bank monograph?
2. By what other means have findings been communicated to the intended beneficiaries?

There are publishable results, but because of the sensitivity of the Government of Kenya to such issues, care must be taken. A generalized discussion of the methodology might be best suited for publication. The most important use of the work is to provide input to the larger water demand study that is now underway. Output from the larger water demand study will likely be incorporated into World Bank policy and will certainly be disseminated on a widespread basis.