

U.S. AGENCY FOR INTERNATIONAL DEVELOPMENT
Manila, Philippines
PROJECT IMPLEMENTATION REPORT
As of 9/30/84

- A. PROJECT NO. AND TITLE: 492-0333 Barangay Water Project
- B. LAST EVALUATION: - C. NEXT EVALUATION: 01/85
- D. COMMITMENTS: Grants 2021 Loans 6170
- E. IMPLEMENTING AGENCY: Ministry of Local Government & Provincial/City Government
- F. PROJECT DESCRIPTION: To expand and refined the process of domestic water delivery and institutionalize the program in up to 100 local government units and to make way for larger funding by other donors.
- G. PRINCIPAL AID INPUTS: USAID will provide \$2.5 M for technical assistance, commodities and training on a grant basis and \$19.6 M for subproject construction on a loan basis and FARA methodology of disbursement.
- H. EXPECTED OUTPUT: 2,800 water systems constructed and operational in 10 local government units.
- I. CONTRACTOR/CONSULTANTS: Techniks, Inc. (Local Consultant) GOP Funded
Sheladia Associates, Inc. (U.S. Consultants) \$1,400,000
- J. PROJECT STATUS: Approximately 29% of the project outputs have been met. The institution building component (T.A., training) however, have exceeded projected levels. Implementation has slowed down due to budgetary constraints at all levels of the GOP. Mission and GOP are aware of possible large deobligation due to slow implementation and recent local currency devaluations. PACD extension will be determined after project evaluation is conducted in January 1985. As of Sept. 30, 1984, approximately 560 systems are under construction and 241 systems have been completed.
- K. MAJOR ACTIONS OVER NEXT 6 MONTHS: Respond to IG/A audit report. Contract IQC and conduct project evaluation. Decide on PACD extension. Continue to monitor budget and disbursement constraints through meetings with the GOP to discuss alternative methodologies for resolving current constraints.
- L. PROJECT OFFICER: Carlos E. Crowe
- M. MISSION DIRECTOR'S ASSESSMENT: Project's implementation and disbursements need to be accelerated. Financial schemes will be discussed with the GOP to resolve these problems. PACD of this loan should be extended.

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492-0333

MEMORANDUM

TO : See Distribution
FROM : ASIA/DP, Maureen Norton
SUBJECT : Philippines Provincial Water Project

Attached is the Executive Summary of the Philippines Provincial Water Project Evaluation prepared by the staff of the Bureau of the Census. A presentation of the findings of this evaluation will be held in Room 1406 NS on September 6 at 10:00 a.m.

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2

EVALUATION OF THE PROVINCIAL WATER PROJECT
IN THE PHILIPPINES

By

Robert Magnani
International Mathematical Statistical Staff

Steven Tourkin
Evaluative Studies Branch

Michael Hartz
Chief, Evaluative Studies Branch

International Statistical Programs Center
Bureau of the Census
U.S. Department of Commerce

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Executive Summary

A Brief Description of the Study

The Provincial Water Project was designed by AID to expand and improve the existing water systems in five provincial cities in the Philippines and to foster the institutional development of the Philippines' Local Water Utilities Administration (LWUA). Through improvement of the city water systems, it was envisioned that the project would achieve its goals of improved water quality and availability to residents of the urban communities and positive health and economic impacts. The first phase project was active between 1977 and 1983.

This evaluation was highly quantitative and fairly broad in scope, and fully involved evaluators from the LWUA. It was designed to measure actual project output delivery as well as project purpose and goal achievement. The cities chosen for the study were Bacolod and Cagayan de Oro, which were selected for the project along with the Davao, San Pablo, and Tacloban cities. In the two study cities, key health and economic status indicators as well as numerous water/sanitation indicators, were measured via three rounds of household surveys. These surveys were conducted before the project-sponsored water system enhancements were made, again shortly after system improvements were completed, and still later approximately 5 years after completion of water system improvements.

In both cities, the surveys were conducted in areas served by the water systems (experimental areas) as well as in areas where water system improvements were not scheduled for the first phase of the project (control areas).

The key indicators of health status used in the study were incidence of diarrhea in young children and childhood nutritional status. The key economic impact indicators used were household-based, water-related economic activities and water-fetching practices. Selected intermediate variables linking water to health such as household water use and hygienic practices, and access to sanitary facilities were also measured.

For a full description of the study methodology, see appendix B.

Major Findings in the Study Areas

IT WOULD APPEAR THAT THE PROJECT WAS FULLY SUCCESSFUL IN TERMS OF OUTPUT DELIVERY BUT WAS UNSUCCESSFUL IN ATTAINING ITS ULTIMATE GOAL.

WATER SYSTEM COVERAGE INCREASED DRAMATICALLY during the project period. The number of active system connections increased from approximately 4,000 to 19,000 in Cagayan de Oro and from 4,000 to 13,000 in Bacolod. Survey estimates indicate an increase from 52 to 89 percent in Cagayan de Oro and from 37 to 54 percent in Bacolod in the proportion of households using the water systems as their major water source. An additional 4 percent of households in Cagayan de Oro and 19 percent in Bacolod were using the water systems as a secondary water source by the end of the evaluation period.

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WATER FROM THE PROJECT WATER SYSTEMS WAS BEING USED by primary users of the water systems for all household purposes, and by secondary users and sharers for drinking and gardening purposes.

GENERALLY, HOUSEHOLDS WHICH USE THE PROJECT WATER SYSTEMS ARE OF HIGHER SOCIO-ECONOMIC STATUS THAN NONUSERS. Followup survey data reveal median monthly household incomes of 1,000 pesos for water system users in Cagayan de Oro as compared to 799 pesos for nonusers. The corresponding figures for Bacolod were 954 pesos per month for system users and 749 for nonusers. The magnitude of socioeconomic differences between system users and nonusers appears to have increased somewhat during the evaluation period. A significant differential in terms of socioeconomic status indicators was also observed when comparing user households which have their own connection with households which share another household's connection. NEVERTHELESS, A SIGNIFICANT NUMBER OF LOWER INCOME HOUSEHOLDS WERE PROVIDED ACCESS TO A RELIABLE SUPPLY OF WATER AS A RESULT OF THE PROJECT.

THE WATER DISTRICTS AND THE LWUA PERFORMED QUITE WELL TECHNICALLY during the evaluation period. Reliability of service and customer satisfaction improved significantly in both cities. In terms of convenience, fewer system user households were fetching, storing, and filtering water at the end of the evaluation period than at the beginning. Both water districts achieved substantial (i.e., greater than 50 percent) reductions in the volume of water lost through system leakages, illegal connections, etc.

THE QUALITY OF WATER AT THE SOURCE WAS CONSISTENTLY HIGH in both cities after the project system enhancements. The quality of water at the point of use, although significantly improved in one city (Bacolod), remained less than satisfactory in both cities due largely to improper water-handling practices by household members.

THE FINANCIAL PERFORMANCE OF THE WATER DISTRICTS WAS LESS POSITIVE. A substantial operating surplus was achieved in Cagayan de Oro only in the last full year of the evaluation period. The financial viability of the Bacolod water district remained tenuous despite two rate increases during this period.

THERE IS NO EVIDENCE OF A PROJECT IMPACT ON THE NUMBER OF HOUSEHOLD BUSINESSES. However, significant increases were observed in the proportion of system user households engaged in gardening for home consumption. Many households apparently also spent less time fetching water as a result of the project. The data do not, however, permit the economic value of these impacts to be calculated.

THE STUDY REVEALED NO CLEAR EVIDENCE OF A SUBSTANTIAL POSITIVE HEALTH IMPACT DUE TO WATER SUPPLY IMPROVEMENTS ALONE. The observed changes in levels of childhood nutrition, the primary health indicator used in the study, for system user households were not significantly different from those for nonuser households in either city when changes in other factors were statistically controlled. There were, however, indications of favorable trends for user households in both cities. There is also the very real possibility that the project's health impacts were dampened somewhat by generally deteriorating economic conditions during the evaluation period.

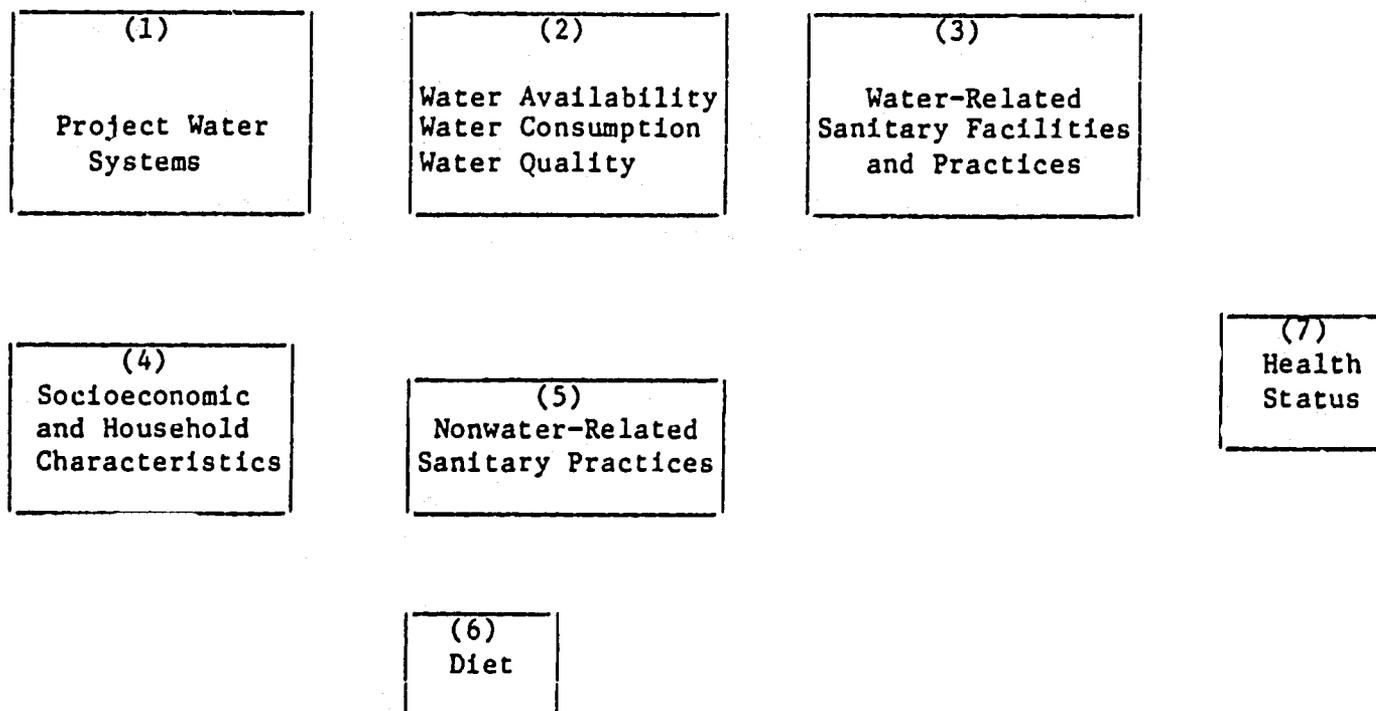
5

Exploring the Water Supply-Health Model

Multivariate analyses of the relationships between water and health variables were conducted as part of this study. For a detailed account of methodology and findings, see chapter 6.

These analyses were based upon the following analytic model outlining hypothesized causal relationships among water, sanitation, socioeconomic, and health variables:

Water-Related Variables



Nonwater-Related Variables

The following observations may be made on the basis of our empirical testing of this model:

- The variables having the strongest impact on childhood health (7) were the nonwater-related variables, income (4) and diet (6).
- Of the water-related variables studied, there was no significant direct association between the source of water (1) and health (7) when socioeconomic variables were controlled. Installation of an improved water source alone was not found to be sufficient to result in improved health.
- Water quality (2) had a positive, direct impact on health (7) in one of the cities, but only among higher income households (i.e., households in the upper 25 percent of the income distribution). Poor water quality represented a major constraint to adequate nutritional status among

children in the more affluent households but was only one of several factors contributing to substandard levels of childhood nutrition in lower income households.

- The "use of water" variables (2), including total consumption and frequency of water use for hygienic practices, had no significant direct effect on the nutritional levels of the children studied when socioeconomic factors were controlled. They were, however, found to be related to the incidence of diarrhea, an indicator used to measure short-term, water-related maladies. Since prolonged diarrhea contributes to malnutrition (the association between diarrhea and nutrition was, as in many other studies, found to be significant in this study), the water-use variables (2) can be said to indirectly influence nutrition levels.
- The "types of sanitary facilities used by households" variables (5), particularly the type of toilet and bathroom facilities, were found to affect nutrition and health directly. In fact, of the water-related variables, the "type of sanitary facilities" variables had the strongest net influence on health status.

The results of these cross-sectional analyses provide some insight into the factors underlying the observed changes in health indicators in the two cities. It was found that after controlling for the effects of income (4) and diet (6), some of the important sanitary facility (3) and water use (2) variables (i.e., the "intermediate" variables) improved for water system users in comparison with nonusers in Bacolod, while they did not improve to the same extent in Cagayan de Oro (see table 6.22). Given this information, our model would predict no significant positive change in health in Cagayan de Oro, but the possibility of an impact in Bacolod. The empirical evidence was consistent with these expectations--although the improvement in health indicators for city water user households in Bacolod was not significantly different from that observed for nonuser households. Thus, the observed improvements in health cannot be directly attributed to the project intervention.

Conclusions and Implications

1. PROVIDING IMPROVED WATER SERVICE TO HOUSEHOLDS WHICH ALREADY ENJOY A REASONABLE STANDARD OF LIVING AS WELL AS ACCESS TO ADEQUATE SANITARY FACILITIES AND SOUND HYGIENIC PRACTICES SHOULD RESULT IN IMPROVED HEALTH. On the other hand, providing improved service to households where those preconditions are not present is not likely to bring about significant health impacts in the short term. A reliable source of potable water can therefore be thought of as a necessary but not sufficient condition for improved health.
2. SAFE WATER IN THE WATER SYSTEM PIPES MAY NOT REMAIN SAFE AFTER IT IS HANDLED AND STORED BY HOUSEHOLD MEMBERS. Education in proper water-handling and storage practices along with provision of improved sanitary facilities may also be necessary before health impacts can be realized.

LINKAGES BETWEEN WATER SUPPLY IMPROVEMENTS AND WATER-RELATED ECONOMIC ACTIVITIES WHICH RAISE THE STANDARD OF LIVING IN THE TARGET POPULATION SHOULD BE INCORPORATED INTO PROJECTS DESIGNED PRIMARILY FOR HEALTH-SECTOR IMPACTS. Residents of project areas should be encouraged to use water in ways which can improve their diet and, hence, potentially contribute to improved health. These ways include gardening and raising of pigs and chickens.

THE SANITARY ENVIRONMENT IN AND AROUND THE HOUSEHOLD HAS AN IMPORTANT EFFECT ON HEALTH. Realizing this, and the fact that these conditions vary greatly across project settings, it is critical that an assessment of local conditions be made at the beginning of future water-supply improvement projects in order to prescribe an appropriate mix of project outputs.

Methodological Considerations

In addition to monitoring project implementation and measuring project health impacts, this evaluation was designed to contribute to the development of a methodology for future evaluations of similar projects. Several lessons regarding appropriate study methodologies were learned or reinforced during the evaluation:

- This study has shown that an examination of short-term intermediate variables alone could have been misleading. If a study is designed to measure achievement of long-term health impacts, there may be no quick or inexpensive alternatives to a large-scale, long-term study of this type.
- In a prospective study lasting more than a relatively short time, quasi-experimental design studies are likely to deteriorate over the life of the experiment due to migration into and out of the study population and other external factors. Under such conditions, it is very difficult to attribute observed changes unequivocally to the project intervention.
- The use of a geographically distinct "control" group in an experiment of this type tends to introduce exogenous influences ("noise") into the data. It may be more efficient to study the "treatment" population intensively and assess the impact of the project intervention through the comparison of changes for subgroups which vary in terms of duration and intensity of exposure to the project intervention.
- The 5 years allowed in this study for health impacts to appear may not have been sufficient for those impacts to mature, if only because the requisite behavioral changes in the study population (e.g., improved water-handling and sanitary practices) do not occur that quickly. This may be true even when all elements of the population are exposed to the project for the entire study period. In this study, many of the "user" households had been using the water systems for only a short time prior to the followup survey.

- Consistent data collection and processing procedures, close supervision by one party involved throughout the entire life of the experiment, and a carefully thought out study design are critical requirements for the success of this type of study. Many of the important health and economic impact indicators are difficult to measure accurately and are quite sensitive to even minor changes in field and processing procedures. In this project evaluation, some potentially useful morbidity data were lost because of poor quality control procedures during portions of the baseline survey.
- Future studies using nutritional anthropometry to measure health impacts should also measure, in greater detail, dietary intake and related variables which have a significant impact on health. Given the large effect of these variables on nutritional status, it is important that variations in these variables be taken into account when attempting to assess the influences of water on health.