Poverty Reduction

Peru

Improvement of Living Environment and Livelihoods in Poor Communities

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Outline and Objectives

The Millennium Development Goals (MDGs) set out goals to be achieved by the international community by 2015 with the objective of poverty reduction. In recent years, developing countries and donors are facing a common challenge of establishing a methodology for the evaluation of development projects in consideration of the achievement of MDGs. Furthermore, various evaluation methodologies have been tried to address this challenge. The primary objective of this thematic evaluation is to assess the impacts of ODA loan-funded projects which support the Fondo de Compensación y Desarrollo Social (Foncodes), a social fund in Peru, on their beneficiaries by employing various methodologies of impact evaluation. Specifically, with/without analysis was conducted by employing econometric technique for the water supply, road and small-scale electrification subprojects which were selected through community participation.Based on the analysis, impact estimations on MDGs-related indicators were conducted.

Projects Name	Loan Agreement	Loan Amount	Final Disbursement
Social Sector Development Project in Amazon Area	November 1997	5,976 million	February 2004
Social Sector Development Project in Sierra Area	April 1999	7,003 million	August 2003

See p. 97 for ex-post evaluation of the above projects.

Departments covered by JBIC ODA loan project: Amazonas, Ancash, Ucayali, Cahamarca, Cusco, Loreto, Madre de Dios, Puno

Evaluation Methodology

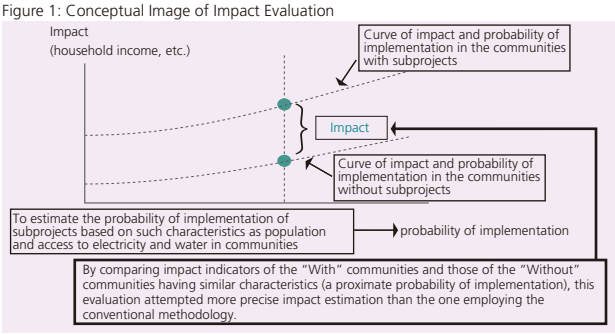
1. Development of Logic Models

Since the projects evaluated include several types of subprojects and they were expected to have diverse impacts, logic models were developed in the following manner. Initially, MDGs-related indicators were chosen as impact indicators in this evaluation. As a next step, the following impact transmission channels were set out: (1) from the construction of water supply facilities to a decline in infant mortality; (2) from the construction of rural roads to an increase in household income; and (3) from rural electrification to an increase in household income.

2. Impact Evaluation

We estimated impacts of the subprojects based on analysis of final impact indicators as well as intermediate impact indicators. Specifically, an estimation was performed by comparing impact indicators of communities where subprojects were implemented (the treatment group: 69 communities with a total of 625 households) and those where subprojects were not implemented (the control group: 82 communities with a total of 834 households). In this exercise, based on such community characteristics as population and access to electricity and water, the probabilities of implemention of subprojects were statistically estimated. Then, the treatment group and the control group that had the same probabilities were matched and compared. Thus, a matching process was conducted so that both treatment and control groups had similar characteristics. This technique is called "propensity score matching" (Figure 1). By employing this technique, we were able to conduct a more precise estimation of impact.

Figure 1: Conceptual Image of Impact Evaluation



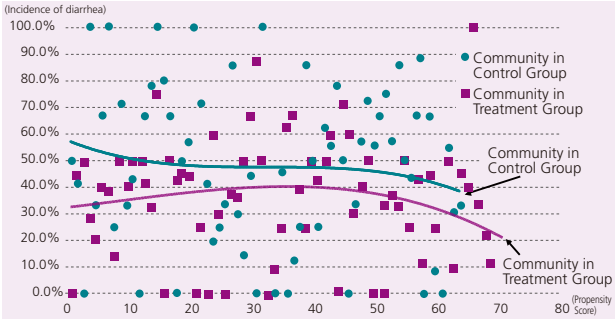
Impact indicators used in this evaluation
(1) Water supply facilities: infant mortality
(2) Village roads and bridges: enrollment in primary and secondary schools, household income
(3) Electrification: household income

Evaluation Results

The results of evaluation findings for each subproject are as follows:

Water Supply Subprojects: When the mortality among children under age 5 was compared between the treatment group (42 communities) and the control group (30 communities), there was a significant decline in this impact indicator in the treatment group (Figure 2 and 3). The incidence of diarrhea among children under 6 was also lower in the treatment group (31.6%) than in the control group (47.9%). From these findings, it is presumed that the construction of water supply facilities had a substantial positive impact on reducing water-borne diseases among infants and led to a decline in infant mortality. In addition, regression analysis of children's height found that male children in the treatment group were taller by a small margin than those in the control group, which suggests the improvement of child health.

Figure 2: Incidence of Diarrhea among Children under 6 and Propensity Score



Rural Roads and Bridges Subprojects: Comparison between the treatment group (34 communities) and the control group (28 communities) found that the former had slightly higher school enrollment than the latter (Figure 4). On the other hand, the students' school absences in the past 3 months were slightly higher in the treatment group (3.23 days) than in the control group (2.00 days). In both indicators, however, differences were very marginal. Therefore, the construction of rural roads and bridges seems to have small impact on school education. Furthermore, no positive impact was found on household incomes (Figure 5).

Electrification Subprojects: The treatment group (11 communities) had higher household income than the control group (7 communities), which indicated a positive impact of rural electrification on household income (Figure 6). The control group had more electrical appliances (2.2 per household) than the treatment group (1.6 per household). In particular, TVs are more prevalent in the control group. There is one caveat, though. As the sample size (the number of communities compared) is small, there might be bias in the above impact estimatation.

The above results were derived from comparison between the treatment and control groups in terms of community average of impact indicators. Thus, characteristics of households and the number of communities used for comparison may affect the results. Nonetheless, it is presumed that the impact of water supply facilities on infant mortality was significant, and electrification may also have contributed to an increase in household income in the treatment group. On the other hand, since no major improvement in impact indicators was found in road and bridge subprojects, there is a need for further research to find bottlnecks in the transmission channel where the impact remained held up.

Figure 3: Under-five Mortality Rate per 1,000 in the Past 5 Years

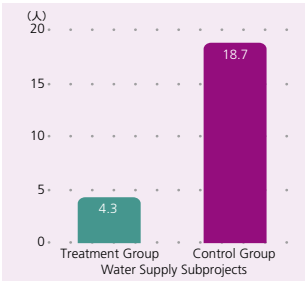


Figure 4: School Enrollment (Children age 6 to16)

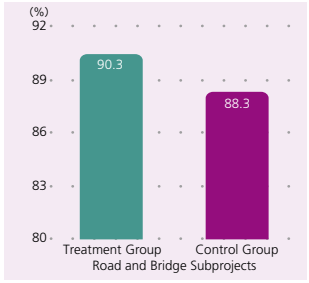


Figure 5: Household Income (Nuevo Sol*/household)

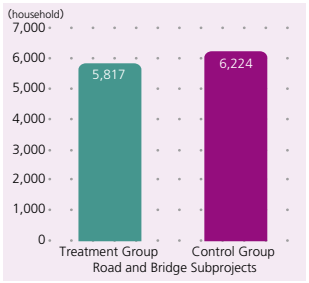
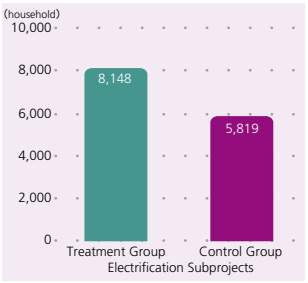


Figure 6: Household Income (Nuevo Sol*/household)



* Peruvian currency

Methodological Issues

1. Objective Measurement of Impacts

In this evaluation, the data to measure impacts were obtained from household surveys. However, since household survey data are prone to be biased through the misperception of respondents of the survey, direct measurement should be used as much as possible. Specifically, because the respondents did not have objective information on safe water in the water supply subprojects, assessing the quality of water, such as the presence of bacteria, might be a means to obtain objective data.

2. Importance of Baseline Study

In this evaluation, there was no baseline data on most of the households surveyed. Thus the before/after comparison of both treatment and control groups could not be made. Therefore, communities with the equal probability of implementation were assumed to have the same baseline data for various indicators. The single difference of impact indicators between the treatment and control groups was employed. By comparing before/after data of each household, however, if there is baseline data with household identificayion, more precise impact estimation could be conducted.

Household survey in Amazonas region

Household survey in Andean region