GRADE
Group for the Analysis of Development

Thematic Evaluation for JBIC

"Improvement of Living Environment and livelihood in Poor Communities-in de Case of Peru"

Poverty Impact Assessment of PE-P19 and PE-P24

– Final Report –

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Introduction

This is the final report of the thematic evaluation of the impacts of Foncodes' JBIC financed interventions in water, transport and electricity projects in rural Peru during 1998-2003. The JBIC financial support for those interventions was given through two loans: (i) **PE-P19**: a total of 5,976 million yen in FY1997 for Social Sector Development Project in Amazon Area to support development of economic infrastructure, including roads and bridges, and public health infrastructure, including water, sewerage and latrine supply in the Amazon region; and (ii) **PE-P24**: a total of 7,259 million yen in FY1998 for Social Sector Development Project in Sierra Area, in four departments of the mountainous Sierra region, namely the southern and northern part of "the poverty triangle of the Andes".

Thus, the intervened (or evaluated) areas of this study are located in eight departments of Perú, four in the Amazonian or Selva region (Amazonas[1], Loreto, Ucayali and Madre de Dios) and four mainly in the highlands or sierra region (Cajamarca, Ancash, Cusco and Puno)[2].

The study seeks to measure welfare impacts and analyze bottlenecks that may have prevented the success of the evaluated subprojects and their impacts. The results from this study will be used to decide future activities of Foncodes and to provide critical inputs to the appropriate design of future programs and projects.

The evaluation was requested under some parameters. It must be focused on projects and areas of intervention of PE-19 and PE-24. The study must evaluate water supply, electrification and roads and bridges subprojects (no sewerage/latrines subprojects), with emphasis on impacts upon health condition of children and nursing mothers, poverty levels and income and consumption of households (related to Millennium Development Goals). The study must use – as much as possible – the baseline data taken in a so called “SAPI study” applied in 30 communities in the Amazon area in 1998-1999.

This Final Report is based upon the advanced in the Inception, Interim and two Draft reports. The main focus of the report is on overall impacts of Foncodes intervention on variables related to household welfare and the analysis of bottlenecks. For the evaluation of impacts we adopt a methodological approach based on matching techniques to assess program impacts under a non-experimental setting. We use impact evaluation results to build an index of project success and explore the role of contextual factors to identify potential bottlenecks affecting the projects.

This report is organized in eleven sections. The **first section** is devoted to describe and analyze Foncodes intervention in general in the area of JBIC financial support, and the specific JBIC-financed subprojects during the period 1998-2005. The **second section**

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[1] Some areas of the Amazonas departamento are considered as part of the Sierra region

[2] Some districts in these departamentos are located in the so called Higher Selva (Selva Alta) natural region.

presents the main analytical units and variables which will be measure to assess the expected impacts of the intervention. The **third section** develops the non-experimental approach that we use for assessing the impacts of the intervention on households. **Section four** describes the main measuring instruments that we use to gather data for this evaluation at the household and community levels. Final versions of the questionnaires (in Spanish) we used for the evaluation are presented in **Annexes 1 and 2**.

Section five describes the sampling design we adopted for carrying out this impact evaluation. Mainly, we combined a set of available community and district level databases to build a sample framework from which we took representative samples to intervened and non-intervened communities with some desired features. Inside these communities there is a selection of households using pre-determined criteria. In this section it is also described some features of the field work which was carried out for gathering the data for this evaluation.

Section six describes the main features of a sub-sample of communities and households which are the basis for this report. This section analyzes socio-economic features, features of their houses, access to public infrastructure and economic strategies of families in different geographical settings.

Section seven presents main results of applying evaluation methodology to communities and households with water projects from Foncodes. **Sections eight** and **nine** present the impact evaluation results for electricity and transportation projects, respectively, also at community and household levels.

S**ection ten** discuses the main bottlenecks which could be identified for each type of intervention, and, finally, **Section eleven** presents the conclusions and some recommendations of this study.

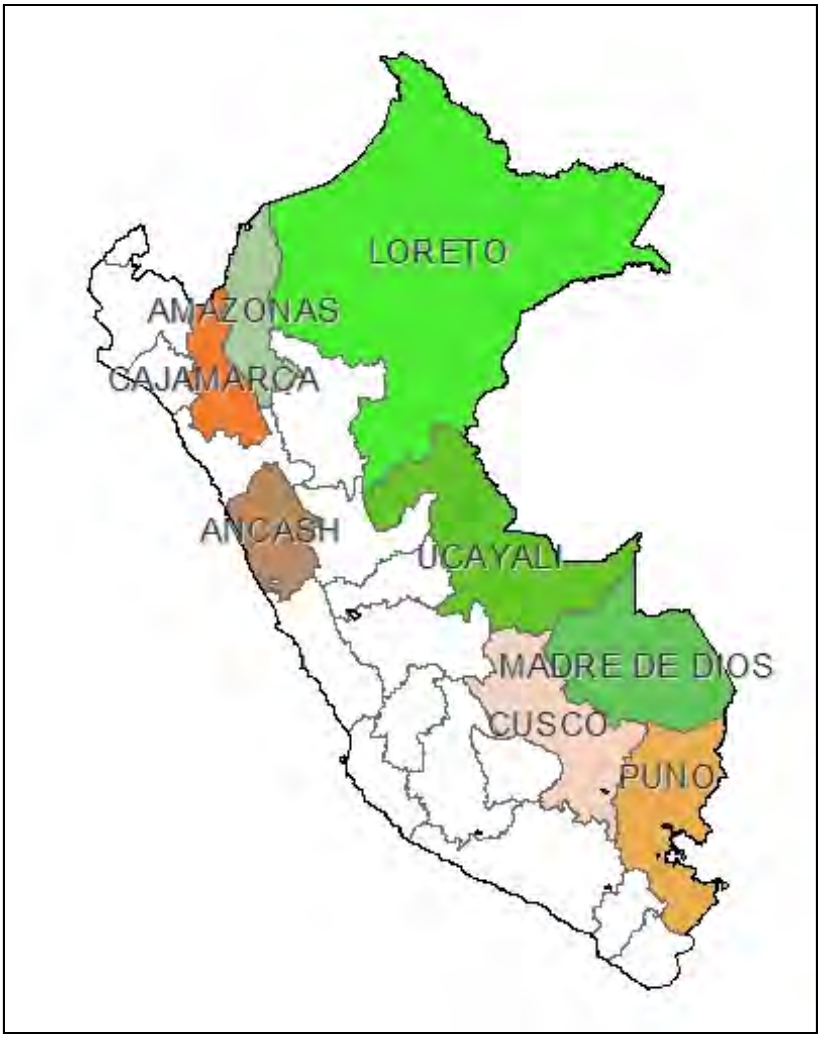
1. Foncodes intervention and JBIC

In this section we present information about the intervention that this study will evaluate.

1.1. Foncodes coverage in JBIC area and evolution since 1998

The Fondo de Compensación y Desarrollo Social (Foncodes) or Fund was created in Peru in 1991 as a social fund with the objectives of generating employment, helping alleviate poverty, and improving access to social services by poor families. Between 1991 and 2000, it is estimated that the Fund spent about US$ 1,700 million funding micro-projects throughout the country. These projects involved the construction and renovation of school facilities, health care centers, water supply facilities, drainage and latrines, rural roads and electrification.

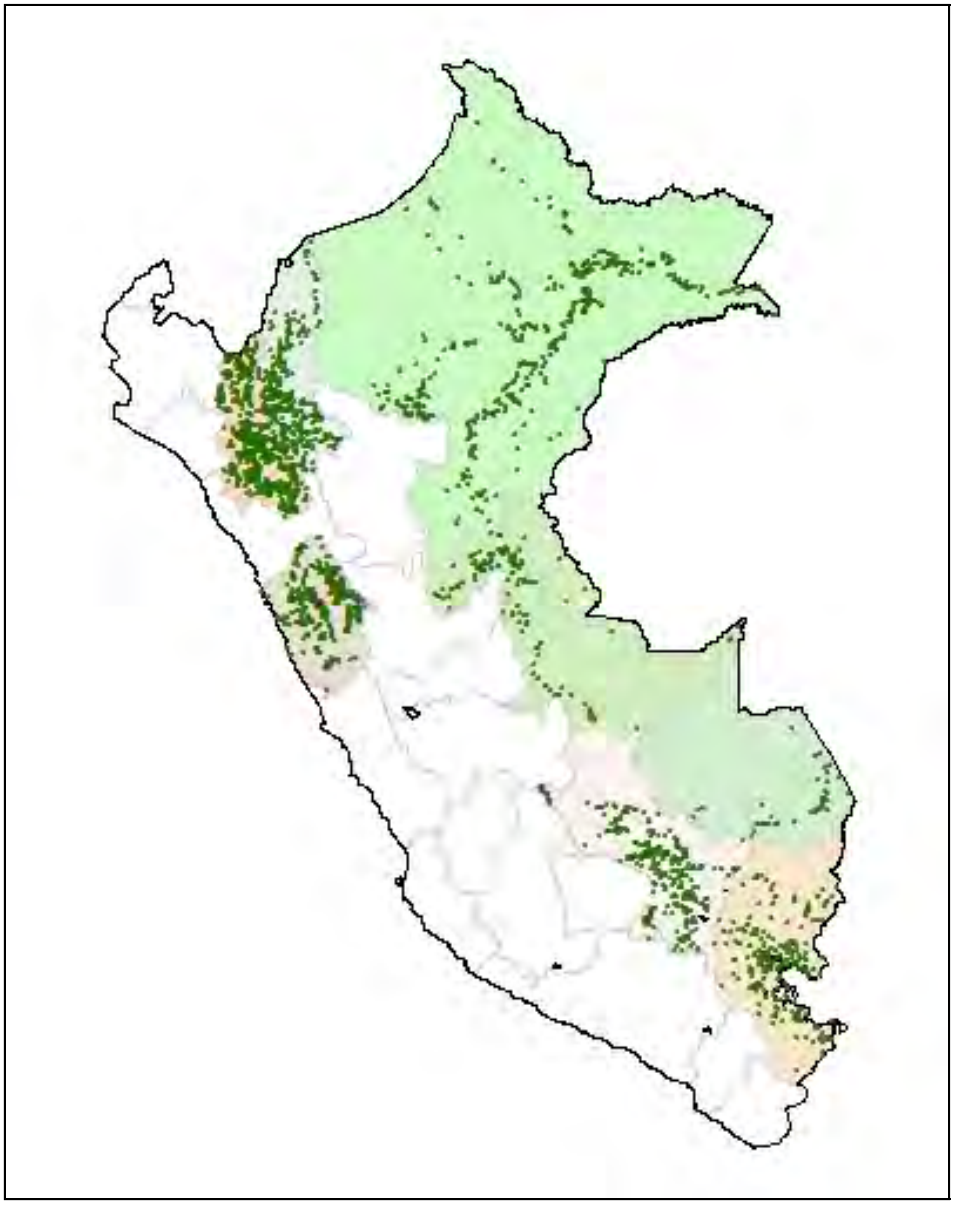
Map 1.1: Departments with JBIC financial support to Foncodes



During the second half of the 1990s the Fund increased its scale and operations to almost all rural sectors of Peru. During the more recent period 2001-2005 the Fund decreased its size and coverage but it is still the most important program for poverty alleviation in rural areas in Peru. In this section we will analyze the evolution and

coverage of Foncodes in the area in which JBIC has given financial support, which encompasses eight departments in Peru, as shown in **Map 1.1**. Departments are very large areas in Peru and Foncodes intervenes mainly in rural communities and places with rural population. All communities intervened by Foncodes in the period 1998-2005 is shown in **Map 1.2.**

Map 1.2: communities intervened by Foncodes in JBIC area



Also, below in **Table 1.1**. it is presented the total amount financed by Foncodes in those eight departments in all type of sub-projects. The Fund spent approximately S/. 1,600 millions in this period and area, with water projects (16.1%) and roads rehabilitation (10.0%) as the main lines of investment.

Table 1.1: Foncodes intervention in JBIC area

Foncodes Approved Projects 1998-2005 (structure by departamento)

	Total		water	road	school	electricity	sewarage	irrigation	bridge	others
AMAZONAS	**145,050**	**9.3%**	24.2%	12.5%	6.2%	3.6%	12.1%	0.8%	10.4%	30.2%
ANCASH	**268,323**	**17.2%**	11.9%	2.2%	12.4%	6.6%	8.2%	9.7%	4.1%	45.0%
CAJAMARCA	**308,559**	**19.8%**	21.0%	12.3%	9.5%	4.5%	11.8%	2.7%	6.2%	32.0%
CUSCO	**335,635**	**21.5%**	10.0%	6.0%	4.2%	4.6%	4.9%	8.9%	4.4%	57.0%
LORETO	**128,455**	**8.2%**	3.8%	32.7%	11.5%	7.8%	9.2%	0.0%	14.6%	0.0%
MADRE DE DIOS	**31,077**	**2.0%**	23.9%	10.0%	7.1%	13.8%	5.2%	0.0%	3.2%	36.9%
PUNO	**303,420**	**19.5%**	22.8%	7.8%	10.2%	8.5%	3.2%	2.0%	8.0%	37.5%
UCAYALI	**38,767**	**2.5%**	11.7%	11.7%	15.1%	10.0%	20.6%	0.0%	9.4%	21.4%
Total	**1,559,285**		**16.1%**	**10.0%**	**8.9%**	**6.2%**	**7.9%**	**4.6%**	**6.9%**	**37.7%**

Source: FONCODES; Elaboration: GRADE

However, PE-P19 and PE-P24 financed only a part of the projects implemented by Foncodes as shown in **Table 1.2**, where it is stated that 19% of Foncodes investment was financed by JBIC, with higher percentages in water and sewerage, and roads and bridges.

Table 1.2: Structure of JBIC financed subprojects.

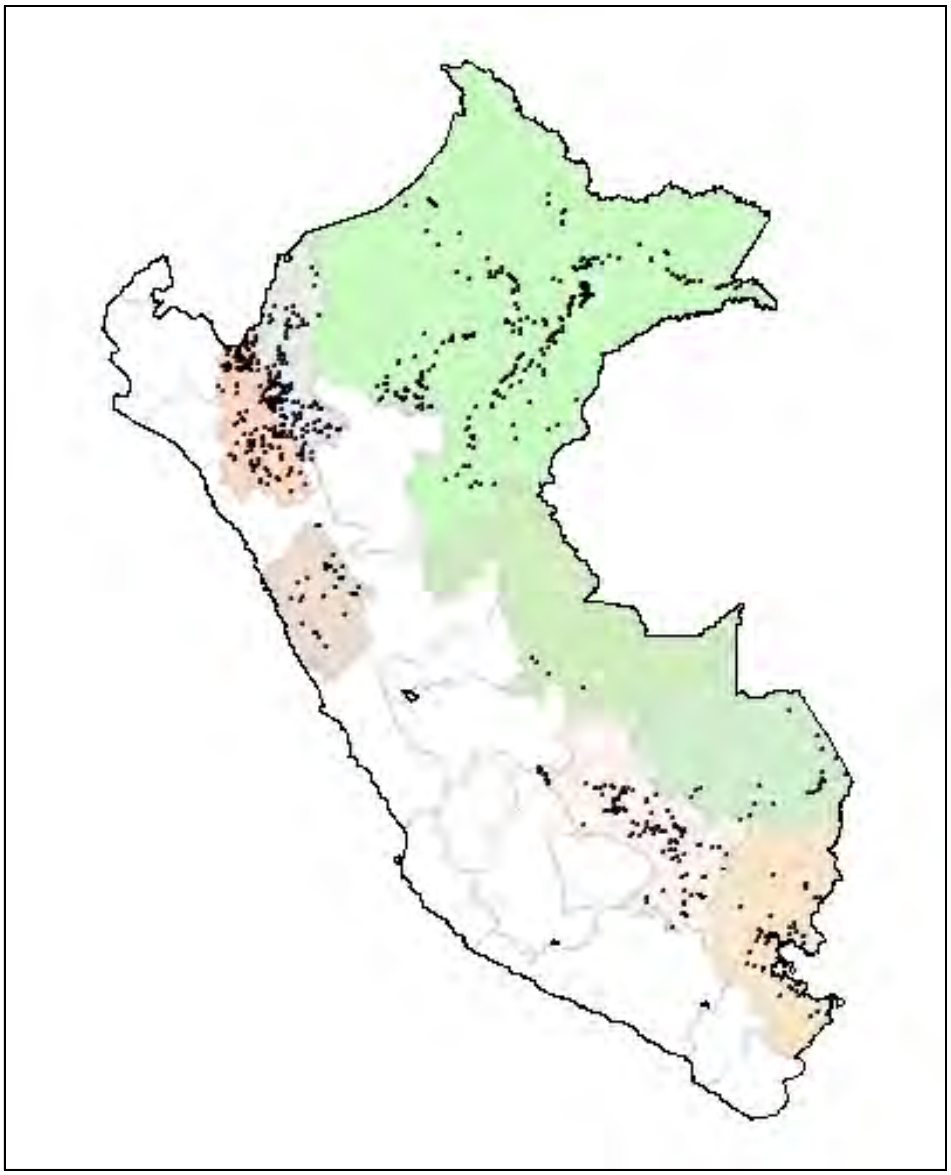
Percentage of Foncodes Projects financed by JBIC I, II

	Total	water	road	school	electricity	sewarage	irrigation	bridge
AMAZONAS	48.8%	89.2%	37.7%	0.0%	65.8%	92.6%	0.0%	86.1%
ANCASH	4.8%	24.5%	0.0%	0.0%	0.0%	23.6%	0.0%	0.0%
CAJAMARCA	12.8%	42.0%	1.4%	0.0%	13.9%	21.3%	0.0%	10.4%
CUSCO	13.2%	64.1%	22.7%	0.0%	27.5%	59.2%	0.0%	28.7%
LORETO	58.5%	100.0%	81.9%	0.0%	76.7%	99.1%	0.0%	87.4%
MADRE DE DIOS	37.5%	76.9%	63.6%	0.0%	53.2%	82.9%	0.0%	33.8%
PUNO	7.3%	30.9%	0.0%	0.0%	0.0%	7.1%	0.0%	0.0%
UCAYALI	51.2%	89.6%	73.0%	0.0%	63.2%	97.5%	0.0%	61.3%
Total	**19.0%**	**49.3%**	**33.2%**	**0.0%**	**22.9%**	**49.0%**	**0.0%**	**35.5%**

Source: FONCODES; Elaboration: GRADE

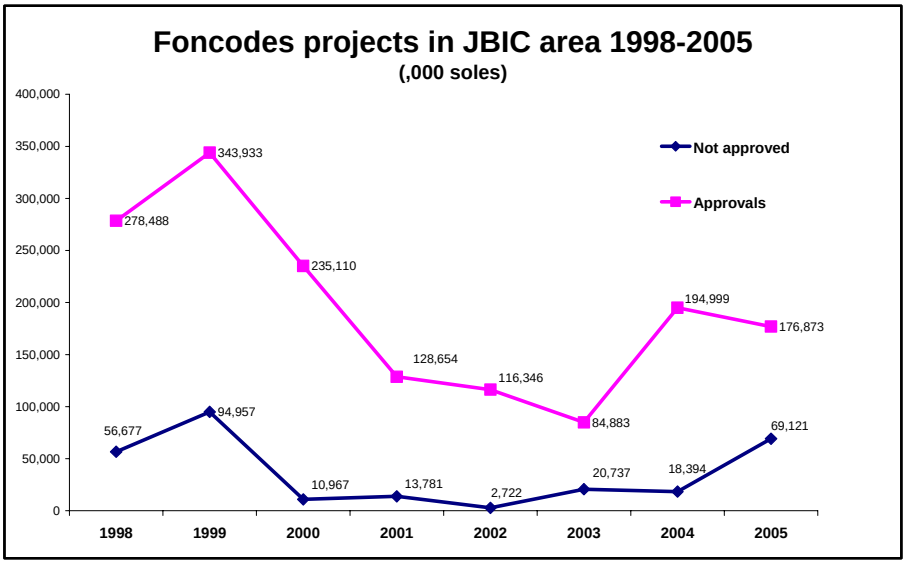
The communities which received projects financed by JBIC are also shown in **Map 1.3**.

Map 1.3 : Communities with JBIC projects



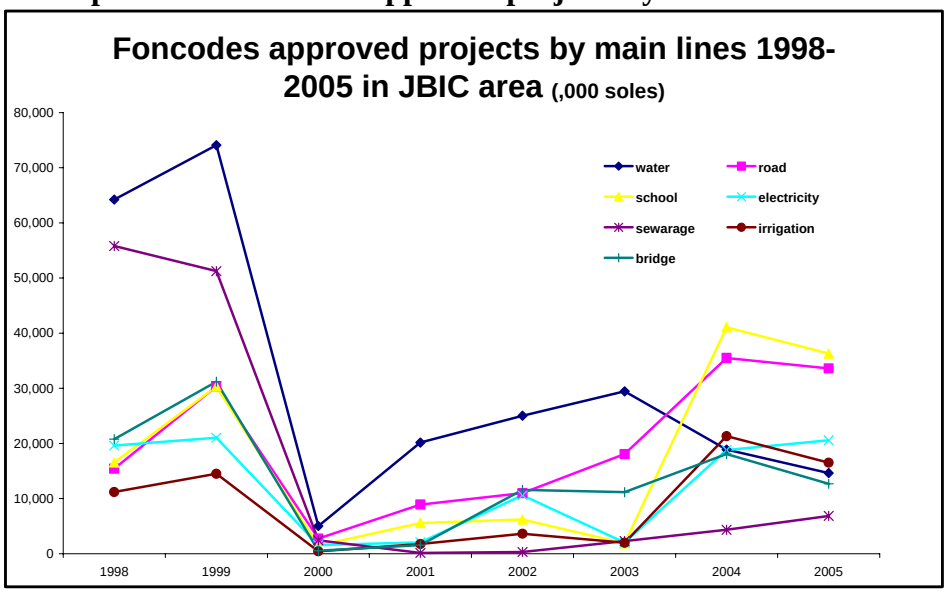
Regarding the evolution of Foncodes intervention in the JBIC area, we see in **Graph 1.1** that there was a clear drop in investments in 2000-2003, with a partial recovery in 2004-2005. However, average levels of investment seen in 1998-1999 were not attained again in 2004-2005.

Graph 1.1: Evolution of Foncodes projects in JBIC area



The graph also shows non-approved subprojects, which in general are (in amount) about 15-20% of the approved projects. **Graph 1.2** presents the evolution of subproject types in the same period (excluding sub-projects in the "other" category that have a very high peak in 2000, distorting the graph).

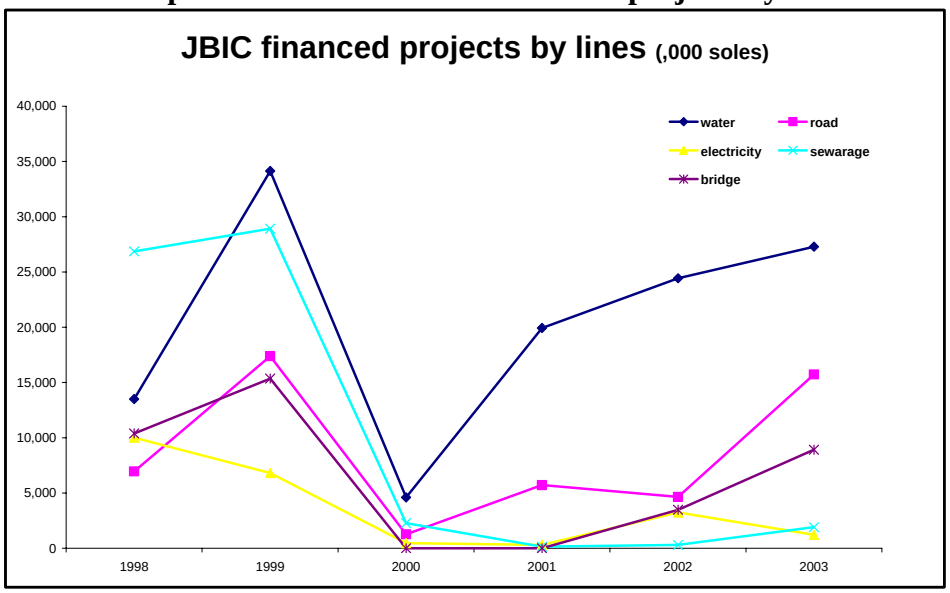
Graph 1.2: Evolution of approved projects by lines in JBIC area



The general drop of funds in year 2000 affected practically all the subprojects in social and economic infrastructure which were financed by JBIC. A specific line that had a big drop that did not recover after year 2000 was sewerage. Water, roads and electrification subprojects recovered since 2003.

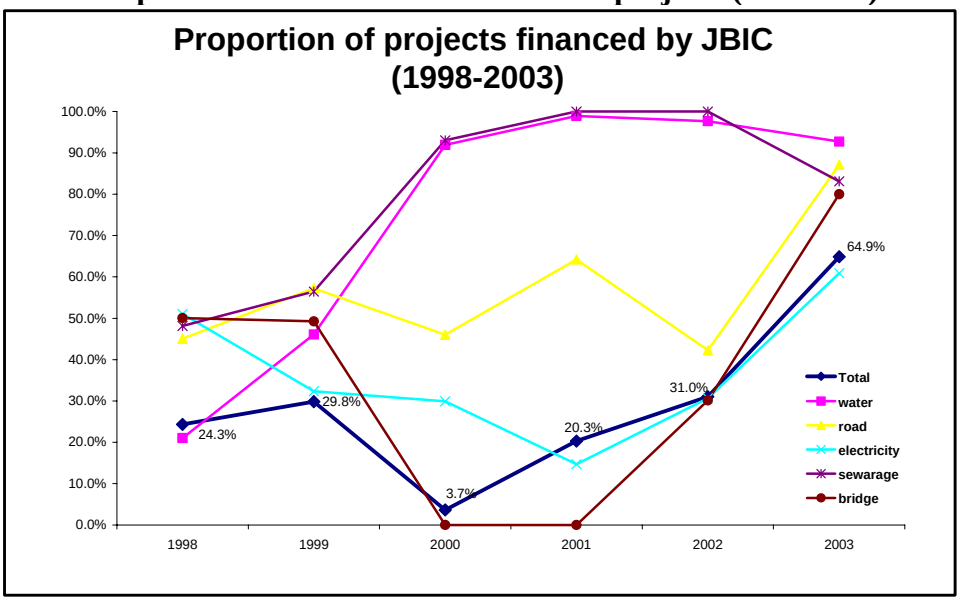
The evolution of the JBIC financed projects is shown in **Graph 1.3**.

Graph 3: Evolution of JBIC financed projects by line



The pattern is very similar to the one followed by the general intervention of Foncodes seen in **Graph 1.2**. Also, in **Graph 1.4** is displayed the proportion of total subprojects financed by JBIC in these areas.

Graph 1.4: evolution of JBIC financed projects (structure)



In years 2001-2005, JBIC financed almost all (100%) of water and sewerage sub-projects by Foncodes in these eight departments.

1.2. Foncodes method of intervention

The method of intervention of Foncodes can be described looking at the so called "project cycle", in which a community ends up received financial support from the Fund for a specific subproject. This cycle has changed along time, but we will focus on the period 1998-2003 in which JBIC intervention is evaluated. In this period Foncodes used the procedures agreed on the second loan from Interamerican Development Bank (IDB). The stages of the cycle are:

(i) Targeting;
(ii) Promotion;
(iii) Identification;
(iv) Design
(v) Approval
(vi) Implementation
(vii) Supervision
(viii) Operation
(ix) Ex-post evaluation

The **targeting** process was based on Foncodes' Poverty Map which identify the poorest communities (mostly rural). With that basis, there was a process of **promotion** of Foncodes activities among the population in those areas. In this stage it was important the role of local authorities and mayors, who induced and promoted the participation of their communities in applying for subprojects. The stage of promotion should end with an Assembly of the "núcleo ejecutor" (implementing core), in which local population democratically elected representative to this "núcleo". The minimum requirement for these assemblies was the participation of at least 33% of total potential beneficiaries of the subproject.

Regarding the **identification** stage, the "núcleo" was in charge of making a profile of the project to be presented to a **Zonal Office** (Oficina Zonal) of Foncodes. In this profile, the núcleo presents the financial requirement along other documents including proof of its constitution of the núcleo and a summary of the project. With this information, Foncodes does the initial evaluation and scoring of the profile. The scoring depends on some cut lines (like investment by beneficiary) and other criteria from a priority system called **Electra IV** with indicators for a sorting of projects. At this point Foncodes hires an evaluator, who evaluates the feasibility of the project in technical terms.

In the **design** stage, the núcleo hires a "proyectista", a projector, who makes the technical file ("expediente técnico") for the project. This projector can be selected from a list of registered professionals. This stage is considered as part of the pre-investment process. The projector presents the technical file to Foncodes and with this ends the process of application of a project. Afterwards, Foncodes gives the **evaluation** of the technical file who make a technical, social and economic evaluation of it, with field and

cabinet work. In parallel, the núcleo hires a resident-inspector also taken from a list of registered professionals.

The next stage is project **approval**. Foncodes verifies the work done by evaluators and approves projects at the Zonal Offices—in case it is within their jurisdiction—or these are approved at the central level. An agreement is sign up between Foncodes and the corresponding núcleo ejecutor.

The **implementation** stage starts up with the first disbursement, with allows for the initial tasks for the project. Foncodes hires supervisors of the project, they verify the achievement of the agreements conditions and appropriate use of resources. The second disbursement occurs within 60 days of project inception. After finishing the corresponding work, there is a "closure" of the project (liquidación) with final accountability and verification of all the project documentation.

1.3. Evidence of Foncodes impacts in previous evaluations

The impact of Foncodes in Peruvian poor population has been evaluated at different levels in the last years. Here we summarize the most salient results so far, under general topics.

Targeting

The rapid household survey applied by Foncodes en 2003 finds that the strategy of targeting followed by Foncodes has been highly effective, with a rate of leaking of benefits ("filtración") of 19%, well below the international benchmark of 30%. The sixth evaluation of Foncodes (Instituto Apoyo, 2000) found in five lines evaluated a good level of targeting, with a very low proportion of non-poor households benefited (between 1 and 6%, depending on the line). The fifth ex post evaluation found that 44% of benefited districts were poor, 42% very poor; 12% extreme poor, and only 2% at the non-poor or regular status. In general, there is consensus that the targeting of Foncodes in Peru has been good in term of reaching the poor population, especially in rural areas.

Participation

The intervention method used by Foncodes seems to have worked well in promoting certain levels of participation of the beneficiaries in the period under evaluation. Foncodes had a menu of options for projects, from which potential beneficiaries were able to choose using democratic procedures and electing representatives at the núcleo ejecutor. Using a survey to community leaders, the intermediate evaluation (IC Neet Limites, February 2005) shows that 87% of communities knew about the calling for assemblies; 89% had knowledge that the núcleo ejecutor was to be elected in an assembly; 80% participated in the meeting in which the núcleo was elected. In the rapid survey done by Foncodes in 2003, more than 85% of respondents stated that they have participated giving labor force to the projects. According to the fifth ex post evaluation, women participation in núcleos increased from 2.6% in 1996 to 37% in 1999. The rapid survey of 2003 confirmed that according to 89% of respondents, women had the same

opportunities of expression (voice and vote) that masculine representatives.

Sustainability

In this area the projects by Foncodes have shown more problems, especially the water and sewerage projects. In the fifth evaluation done by Instituto Apoyo (march, 1999), it was found that in 21% of projects the facilities were not working well or not working at all. Most acute problems were found in sewerage and water projects; and specially in Cusco, Lima, Ucayali and Ayacucho.

It is interesting to mention that in the fifth evaluation results are compared with the fourth evaluation, and it was found that the proportion of respondents who said that the facility worked well dropped in 11% between evaluations. In this fifth evaluation it was recognized that the training part of the intervention turned out to be crucial for improving these already low levels of sustainability in most projects, with particular attention to the value of the project for the population and their abilities for generating resources and organizing the process of maintenance of the projects once these were in place. The lack of technical skills for some specific tasks in maintenance seemed to have played an important role in this problem as well.

Impacts

The most comprehensive evaluation of impacts from Foncodes was carried out by Instituto Apoyo in the sixth ex post evaluation. We summarize results of impacts in the projects of water and sewerage, and electrification here (roads and bridges were only analyzed with qualitative methods in the sixth evaluation). In the case of water and sewerage projects, the evaluation considered four main indicators: (i) prevalence of diarrhea in infants; (ii) infant mortality; (iii) water quality declared by informants; (iv) time saved in gathering water. In terms of the diarrhea, the study found a mild positive impact in reducing this malaise in infants, effect that increased when families had domiciliary connection to the water network. For infant mortality, the percentage of households with a child under five dead dropped from 6% to 3% in the families treated by Foncodes projects.

For water quality, the variable combined three criteria: flavor, color and smell; using respondents perceptions (this was not a direct measure of quality). The results showed a significant increase in water quality. Finally, the study found that the water projects had a significant impact in reducing the time spent in gathering water by household members (especially women and children). The reduction was impressive, with an average savings of 53 minutes for connected households (96% of time saved); and of 47 minutes for households using public taps (86% of time saved).

In electricity projects, the main impact variable was house value. Foncodes intervention increased value of houses in US$ 570, indicating an important impact on rural communities. The study also found an increase in the use of domestic electric apparel. No impact on local business was detected.

2. Units of analysis and impact variables

2.1. Units of analysis

We define unit of analysis as entities from which it is important to gather information for the purposes of this study. The main units of analysis for measuring impacts in this study are: (i) households; (ii) interventions/projects/facilities; (iii) communities.

Each unit is important for assessing the type of impacts and associated variables that we want to identify. But units of analysis are also important for defining crucial aspects of the evaluation method, for instance, the type of control group that it will use, or the level at which matching procedures need to be made to generate good estimations of impacts.

2.1.1. Households

A main unit of analysis of the study is the "treated household", i.e., a household which have already received benefits from Foncodes interventions during a certain period of time. A household is composed of individual members living together and sharing food and shelter. If one or more members of a well defined household have been receiving benefits from the intervention, then the household is said to be a "treated household". Part of the goal of building a control group is to find "comparable households" (in attributes that might be related to program participation and expected impacts) which can be used as "counterfactual" units resembling what would have happened with the treated households if these did not receive the intervention.

2.1.2. Interventions/projects/facilities

In the context of this evaluation there are three type of Foncodes interventions or type of projects which will be assessed:

- Water supply projects
- Electrification projects
- Road and bridges improvement/construction projects

The "project" unit of analysis is important from different points of view. There are potentially different levels or ways in which these facilities may impact on households. In some cases, a household may have direct access to the flow of services of the facility as when connected to the water or electric network. In other cases, the household may access a water facility which is located in the community but outside the house or house perimeter, or the household may receive benefits only from public electrification whereas it does not have electricity at home. In the case of road and bridges, benefits are more of the "diffuse type", i.e., all households in a community may receive benefits, perhaps in proportion to their intensity of use of that infrastructure. In all cases, it is important to identify the type of interaction between "treated households" and these

facilities.

Another important dimension of facilities is related to its operation and maintenance. This infrastructure may have specific technical rules of operation and also may require a certain amount of resources for maintenance. Current situation and past evolution of these operation and maintenance flows can be important when assessing the potential impacts of the corresponding projects.

2.1.3. Communities

Households live in communities, sharing local public goods, identities, institutions and social capital (trust). Sometimes, these community attributes crucial factors in explaining impacts and transmission channels. The community may have been exposed to other public (or private) interventions for instance; it may have a size that produces economies of agglomeration in some services; or may have an endowment of resources which affect observed impacts besides the interventions. Some community attributes are not easily observable or measurable (local identity, moral values or certain types of natural endowments, for instance).

In any case, communities are important units of analysis for an impact evaluation as this, and the study seeks to capture information from these units too.

2.2. Expected impacts

2.2.1. Water supply subprojects

Water is a directly consumable good for household members and its impacts on well being are both direct and indirect. There are several ways in which and increased water supply may influence on the benefited households.

- **Consumption**: In the short term, the main impact on households is an improved access to a public service, namely water. As a water facility is put into operation, it is expected that more households will get or increase their access to an improved water source, which in turn will mean better water quality, and increased water availability.
- **Health**: This improved access to water service will likely imply, in the medium and long term, an impact in households human asset status, by improving the family health condition and hygiene habits, especially in the case of children. This is an important impact given the close relationship between water quality available in households, water control and incidence of parasitic diseases and diarrhea in children. Infant mortality and malnutrition indicators are likely to improve for families benefiting from water projects.
- **Time allocation**: also, a water service intervention will relax other constraints of

the household. Before the intervention, families get water from a distant source, and this will take a lot of time and effort. After the intervention, access to water requires less time and effort, and this will relax constraints in family labor time used to get water, and this labor time can now be used for other income and/or consumption generating activities.

2.2.2. Electrification subprojects

This intervention is likely to have an impact on family production possibilities and labor/leisure family time endowment.

- **Consumption**: The main direct impact of the intervention in the short term is improved access to electricity service for households who previously did not enjoy the service or received a restricted fuel-based service. This in turn will increase the consumption of goods and services that require electricity at the household and community level.
- **Household assets**: an important impact of this intervention is change of value in household assets. With electricity, family members would have more opportunities for using electrical devices that save labor time in domestic and production activities, thus increasing their human assets in terms of more time available for education, work and leisure. Their information and communications possibilities may also increase and there are potential impacts on children having better performance at school as more time can be devoted to school work at home, especially at night.
- **Income diversification**: With electricity, families would have more production options at home (e.g. processing), new small local business may be created and local trade may intensify, generating an increase in household labor opportunities in the medium term.

2.2.3. Transport subprojects

This intervention involves a public infrastructure (roads and bridges) that has complex interactions with households. In this case, the facility will tend to impact more on market and non-market relationships.

- **Prices**: A potential impact of this intervention is through prices channels. Better transport infrastructure will reduce the price of freight and production inputs, thus reducing the transaction costs for trading goods and inputs (in both ways) for their production activity. It may also reduce the price of locally consumed commodities, benefiting local households. It will be expected that family welfare increases as more trade opportunities are opened, and this may impact in different ways upon the production and consumption decisions of different type of households.

- **School enrollment and access to health services**: Another important effect of improved roads is increased school enrollment or more use of health facilities located in the vicinity of the village. As roads improve, time spent to reach local schools for children will decrease, and this makes sending children to school more attractive for rural families *vis-à-vis* using them in farm production or other family activities. These types of effects also apply for access to health services or other public services which are located outside the local village.
- **Household assets**: There is an expected indirect impact on the value of household assets, particularly house and land properties.

2.3. Impact indicators

Based on the above expected impacts, the main set of impact indicators were developed for each type of subproject.

a) Water supply subprojects

- Time spent in collecting water
- Population with sustainable access to improved water source
- Availability of water supply throughout the year
- Quality of water perceived by users
- Rate of incidence of diarrhea in children under age 6
- Rate of skin diseases in children under age 6
- Prevalence of under height children 2-10 years old
- Infant mortality rate

b) Electrification subprojects

- Number of small and micro enterprises in the community
- Number of days of wage employment of household members
- Number of working electrical appliances in household
- Students' time spent studying at home
- Self-employment income (farming and non-farming)
- Wage income (farming and non-farming)
- Household income
- Hours of study at home by children
- Value of house

c) Transport subprojects

- Number of small and micro enterprises in the community
- Household transport expenditures per capita
- Number of days of wage employment of household members
- Self-employment income (farming and non-farming)

- Wage income (farming and non-farming)
- Household income
- Enrollment rate in schools
- Regularity in student attendance to school
- Value of assets

3. Impact evaluation methodology

A comprehensive evaluation is defined in the literature as an evaluation that includes monitoring, process evaluation, cost-benefit evaluation, and impact evaluation. Yet each of these components is distinctly different. Monitoring will help to assess whether a program is being implemented as was planned. A program monitoring system enables continuous feedback on the status of program implementation, identifying specific problems as they arise. Process evaluation is concerned with how the program operates and focuses on problems in service delivery. Cost-benefit or cost-effectiveness evaluations assess program costs (monetary or non-monetary), in particular their relation to alternative uses of the same resources and to the benefits being produced by the program. And finally, impact evaluation is intended to determine more broadly whether the program or project had the desired effects on individuals, households, and institutions and whether those effects are attributable to the program intervention.

Evaluating impact is particularly critical in developing countries where resources are scarce and every dollar spent should aim to maximize its impact on poverty reduction. If programs and projects are poorly designed, do not reach their intended beneficiaries, or are wasteful, with the right information they can be redesigned, improved, or eliminated if deemed necessary. The knowledge gained from impact evaluation studies will also provide critical input to the appropriate design of future programs and projects. Impact evaluations can also explore unintended consequences, whether positive or negative, on beneficiaries.

3.1. Issues in evaluation design

Impact evaluation[3] does not only consist on measuring the outcomes of a project. There may be other factors or events that are correlated with the outcomes but are not caused by the project. To ensure methodological rigor, an impact evaluation must estimate the counterfactual, that is, what would have happened had the project never taken place.

To determine the counterfactual, it is necessary to net out the effect of the interventions from other factors. This is accomplished through the use of comparison or control groups (those who do not participate in a program or receive benefits), which are subsequently compared with the treatment group (individuals who do receive the intervention). Control groups are selected randomly from the same population as the program participants, whereas the comparison group is more simply the group that does not receive the program under investigation. Both the comparison and control groups should resemble the treatment group in every way, the only difference between groups being program participation.

Determining the counterfactual is at the core of evaluation design. This can be accomplished using several methodologies which fall into two broad categories,

[3] For a literature review on impact evaluations see References at the end of the report.

experimental designs (randomized), and quasi-experimental designs (non-randomized).

Experimental designs, also known as randomization, are generally considered the most robust of the evaluation methodologies. By randomly allocating the intervention among eligible beneficiaries, the assignment process itself creates comparable treatment and control groups that are statistically equivalent to one another, given appropriate sample sizes.

This is a very powerful result because, in theory, the control groups generated through random assignment serve as counterfactual, free from the troublesome selection bias issues that exist in all evaluations. The main benefit of this technique is the simplicity in interpreting results—the program impact on the outcome being evaluated can be measured by the difference between the behaviors of the samples taken from the treatment and control groups.

Even though experimental designs are considered the optimum approach to estimating project impact, in practice there are several problems: (i) randomization may be unethical owing to the denial of benefits or services to otherwise eligible members of the population for the purposes of the study; (ii) it can be politically difficult to provide an intervention to one group and not another; (iii) the scope of the program may mean that there are no non-treatment groups, as with a project or policy change that is broad in scope; (iv) individuals in control groups may change certain identifying characteristics during the experiment that could invalidate or contaminate the results; (v) it may be difficult to ensure that assignment is truly random; (vi) experimental designs can be expensive and time consuming in certain situations, particularly in the collection of new data.

However, with careful planning, some of these problems can be addressed in the implementation of experimental designs. One way is by random selection of beneficiaries. A second way is bringing control groups into the program at a later stage once the evaluation has been designed and initiated.

Quasi-experimental (nonrandom) methods can be used to carry out an evaluation when it is not possible to construct treatment and comparison groups through experimental design. These techniques generate comparison groups that resemble the treatment group, at least in observed characteristics, through econometric methodologies, which include matching methods, double difference methods, instrumental variables methods, and reflexive comparisons. The main benefit of quasi-experimental designs is that they can draw on existing data sources and are thus often quicker and cheaper to implement, and they can be performed after a program has been implemented, given sufficient existing data. The principal disadvantages of quasi-experimental techniques are: (i) the reliability of the results is often reduced as the methodology is less robust statistically; (ii) the methods can be statistically complex; and (iii) selection bias.

Finally, it is quite tricky to net out the program impact from the counterfactual conditions that can be affected by history, selection bias, and contamination. Because no one method is perfect, it is always desirable to triangulate.

3.2. Methodological approach

The so called “evaluation problem” is generally a problem of establishing causality. A public program generates an impact or change on people´s lives and we want to know if they improved their welfare due to that intervention. For establishing this potential causality between the intervention and people´s welfare we need to know what would have happened to these people without the intervention (a counterfactual), and after that, compare them on the welfare variable. Obviously, we cannot observe the same people in these two states. Observing people before and after intervention generally does not solve the problem either, because other socio-economic factors—besides the intervention itself—may have affected the impact variable as well.

The solution to this problem in the evaluation literature was to build a counterfactual group (which mimics the behavior of the treated group without intervention) from those who were not intervened. For these to be a reasonable approach some conditions must hold. The group that we can use as counterfactual must be similar to the treated one in some fundamental way, i.e., these people must be equally likely to have participated in the program than the actual participants, but did not participate due to some exogenous factor (i.e. not related to their characteristics). One way of assuring this condition to hold is through randomization of the program among potential beneficiaries, which assures that both the treated and counterfactuals comes from the same distribution. When randomization is not feasible or was not adopted, the other approach is to build the counterfactual from the people who did not receive the program during the period under evaluation, which is the method we use in this study.

We adopt a model for impact evaluation of a program like Foncodes that seeks to capture the specific setting in which this intervention occurs and be useful for the type of data that we have for the evaluation. The main features that we need to consider are:

- Foncodes intervention occurs at the community level, i.e., communities (not individuals) are selected for intervention, and participation decisions are based upon some community (or more aggregate like district or province) variables.
- Some impacts or outcomes expected from the intervention occur directly at the community level and others at household level. These latter ones can be aggregated at the community level if samples of households have desired statistical features with respect to the population of households in each community.
- We do not have baseline (pre-intervention) data for treated and untreated communities, however, we have taken the sample of untreated communities from a set of communities which were similar to treated ones in observable pre-intervention variables (the sampling was based on pscores with conditioning variables taken from Foncodes Poverty Map of 1996 and Pre-Census from 1999).

3.2.1 The evaluation problem

We define impact variables (for a community or families) as Y, which may take different values according to program participation (D=1 if participates, D=0 if not):

$$Y = D(Z)*Y_1 + (1-D(Z))*Y_0 \qquad (1)$$

D(Z) depends on a set of variables Z which determine program participation.

The main goal of impact evaluation is to estimate $E(Y_1-Y_0|D=1,Z)$, i.e. the expected value of the change in the impact variable conditional on participation (mean treatment effect on the treated). This requires knowledge about $E(Y_0|D=1,Z)$ which is the value that Y would have taken for a non-participating units if these did participate in the program. This is not observable as the impact variable for a non-participating unit cannot be observed if it had participated.

Thus, impact evaluation based on the type of data that we have requires finding a suitable estimator for $E(Y_0|D=1,Z)$ based on observables, which are for instance $E(Y_0|D=0,Z)$, i.e. the expected value of the impact variable for the non-participating group. If the impact variable Y has the same conditional (on Z) distribution independently of participation status we can build the counterfactual using observable information. This is a required assumption for using non-experimental data to estimate impact of treatment on the treated.

This assumption is formalized as:

$$E(Y_0|D=1,Z) = E(Y_0|D=0,Z)= E(Y_0|Z) \qquad (A.1)$$

which means that $Y_0|Z$ is independent of D, both the participating and non-participating units will have the same conditional distribution of the impact variable regardless of observed participation status. This requires that Z is not correlated to impact variable Y or to the participation variable D.

3.2.2. Matching methods

When exogenous randomization (or experimental design) on the participation status is made, condition (A.1) is automatically accomplished as far as the eligible units are randomly extracted and assigned to participation status before the intervention occurs from a known and well defined population. When randomization does not occur (non-experimental framework as the one we have), condition (A.1) must be assumed and are

the basis for using the so called matching methods.

The main point of matching methods is that the researcher or evaluator is able to observe all relevant variables Z which "explain" participation in the program and so can observe (and consistently estimate):

$$0 < Pr(D=1|Z) < 1 \qquad (A.2)$$

or the probability of participation in the program as a function of those conditioning (and observable) variables Z. Under (A.1) and the existence of probability like (A.2), then the matching estimators of impact in a non-experimental framework will identify the same parameters than the ones in an experimental design.

3.2.3. Impact equation

Let know pay attention to impact variables themselves and define a set of variables T and U which determine impact variables according to:

$$Y = g(T) + U \qquad (3)$$

where g(.) is a deterministic function of observed T variables and U are unobserved variables to the researcher. The main concern with a non-experimental impact evaluation is the potential relationship between Z and U. If there is dependence or correlation (or variables in common) between Z and U, the unobservables will affect both participation and impacts, and the cross-section matching method will not be able to eliminate the bias from "selection on unobservables". The most favorable case for the matching method to estimate unbiased impacts is when Z and U are independent or uncorrelated, so any selection on Z will not bias impact assessments. In general, the assumption we need to make to justify the use of matching methods for the data is this independence/uncorrelatedness between Z and U.

The estimate of impacts requires in (A.1´) to be able to condition on variables Z. This is very demanding in terms of data processing since differences in impact variables must be conditioned on multi-dimensional variables. However, the evaluation literature has shown that conditioning only on Pr(D(Z)) or Pr(Z) is equivalent and the matching process can be done in the one-dimensional P(Z), which is the probability of program participation. The estimation of P(Z) plays a central role in impact evaluation, since matching between treated and comparison units will be based on this function, called the pscore variable.

In practice, P(Z) makes treated and comparison communities comparable on Z, and

each treated observation is assigned a comparison (or group of comparisons) to get a measure of the difference in the impact variable values. The mean of these values over a well defined support on Z is the estimated impact or "average effect of treatment on the treated".

3.2.4. How matching handles potential biases in non-experimental data

Two sources of biases are handled with matching procedures. The first is related to the common support on Z. Only for positive and overlapping values for the treated and comparison groups on P(Z) the procedure will be estimating parameters equivalent to the ones obtained in an experimental setting with the same support. The second bias is related to the distribution of P(Z) in the common support. Comparing treated observations only with comparison observations weighted according to closeness in P(Z) allows to use a correct impact estimations, mimicking what would happen in an experimental setting.

The other bias that potentially appears in an impact evaluation is related to non-observable variables U when these, for instance, are not independent of Z. If participation is somewhat based on unobservable variables U as well, which also affect expected impacts Y, the matching method would generate biased estimates of impacts, and we will not know the shape and direction of this biases without experimental data.

On the other hand, if unobservable variables which have these features are permanent in time, this bias could be eliminated using "difference-in-difference" estimates, which can be calculated when data on pre-program and post-program variables are available. In our case, however, this option is not available as we do not have pre-program or baseline data for this evaluation.

In this case, one of the most important issues is to have a good model for estimating P(Z), which gives the probability of program participation on observables. Z values must be as close as possible in time to pre-intervention stage and also must be relevant to discriminate between participants and non-participants communities.

However, for some variables of Z we may include mean values taken from the household survey which may explain participation at the community level and that we consider were not affected by the intervention. An example could be average education level of sampled adults (in 1998 pre-intervention period). Information on household assets or community organization ability in the pre-1998 period could also be used in estimating P(Z) if available.

4. Measuring instruments

A key element of an impact evaluation is the use of appropriate instruments to gather the required information. In this section we describe the range of alternatives for measuring instruments and define the ones we are going to implement in this study.

4.1. Alternative instruments for impact evaluation

There are a whole range of instruments that can be used to get information in an impact evaluation. In the practice of quantitative impact evaluations there are three classes of instruments which are widely used: (i) individual informant surveys; (ii) direct measure of impact variables; (iii) focus groups or other similar techniques to get information from a group of selected people; (iv) community or project assessments.

4.1.1. Individual informant surveys

Is one of the main instruments of measurement for impact evaluations. Informants are individuals who have some required quality (head of household, family provider, responsible for the maintenance of a facility, community leader, etc.), who is requested information in an orderly manner and in a context of mutual trust between the surveyor and the interviewed person.

Within this class of instruments, the household survey is by far the most important, as most socio-economic impacts are measured at the household level (which includes specific measures coming from individual members of the household). Generally, this survey is applied to the head of the house, and also can be applied to some specific members in some designs (for instance, to mothers when health and nutrition data is critical).

Other type of surveys within this class are those applied to "qualified informants", individuals who are asked for information on some attributes of the intervention (the "facility") or about features of the community and its members. Both types of instruments within the class of individual informants are to be used in this study to gather information from three unit of analysis: households, projects/facilities and communities.

4.1.2. Direct measures

A second class of instruments that are sometimes used (although are expensive) are direct physical measures of specific variables of interest. Examples of these instruments are learning tests for cheeking school performance, blood tests, height-weight measures of children, water quality tests, etc. In each case, the instrument is directly applied to individual or objects by an external observer.

4.1.3. Focus groups

Focus groups are a qualitative data collection method commonly used on rapid appraisal studies to analyze stakeholder and institutional rules and behavior, as well as the relationships among them. These generally complement quantitative research data to be produced by household surveys. These techniques are used to gather information from a group of people who share some specific features or have been part of some particular experience. Through a process of interaction between a facilitator and the participants,

there is a guided discussion in which participants express their views, ideas and feelings about topics of interest. Features that are generally used for selecting participants are gender, age, ethnicity, previous experience in the program to evaluate, etc.

4.1.4. Community assessment

In this case, a qualified n observed is asked to assess some features of the community. The observer generally have a worksheet with alternatives to be filled regarding the attributes which are of interest, and mostly the variables are of qualitative evaluation (good, regular, bad; or high, medium, low, etc).

4.2. Instruments for this evaluation

This study will use the following three instruments: (i) household survey applied to all households (including SAPI households); (ii) community and subproject surveys to qualified informants; (iii) height measuring of children and mother.

These array of instruments is necessary to assess the impact of projects activities on households and also to identify transmission channels from the implementation of subprojects to the incidence of intended impacts.

A minimum requirement of the household survey is to quantify the socioeconomic impacts of specific projects activities on health conditions of infants and nursing mothers, household incomes, and member enrollment and completion of primary/secondary education. The survey will also provide data corresponding to household characteristics as assets, social capital, use of services and markets, etc. Annex 1 to this report presents the household survey to be used.

The survey on communities will be applied to various types of informants: (i) community leaders; (ii) member of the “núcleo ejecutor” of the subproject in the case of intervened communities; (iii) current person in charge of operation and maintenance when applicable (water and roads).

The final version of the community questionnaire is presented in **Annex 1** to this report, and of the household survey in **Annex 2**.

5. Sample design

The objective of the sampling design was to select an appropriate representative sample of subprojects of PE-P19 and PE-P24 to be evaluated in the context of this study, and also to build a reliable control group for measuring impacts using with/without estimators in a non-experimental setting.

5.1. Sampling framework

The primary sampling unit in this case is "intervened communities" hereafter identified with intervened dwelling centers ("centros poblados" or ccpp in what follows). The treatment universe is composed of all subprojects financed under PE-P19 and PE-P24 during the period 1998-2003 in eight departments of the country. Within these primary sampling units or conglomerates, we shall further sample households. The design is thus a two-stage sampling framework.

First we looked at all rural communities that applied and did not apply for Foncodes subprojects in the period 1998-2003 in the area under evaluation. The results are shown in **Table 5.1**.

Table 5.1: Communities that applied to Foncodes

Rural communities with application to Foncodes

	Not applied	Water	School	Road	Electricity	Bridge	Sewarage	Other	Applied	Total ccpp	% applied
AMAZONAS	1,847	212	41	43	13	259	19	87	446	2,293	19.5%
ANCASH	5,137	210	166	21	90	274	122	62	670	5,807	11.5%
CAJAMARCA	4,405	398	191	105	57	435	38	150	1,003	5,408	18.5%
CUSCO	4,550	174	57	109	68	150	149	71	529	5,079	10.4%
LORETO	1,559	117	280	346	87	214	1	210	635	2,194	28.9%
MADRE DE DIOS	145	28	17	7	18	14	0	1	59	204	28.9%
PUNO	5,764	187	65	54	49	21	28	59	373	6,137	6.1%
UCAYALI	592	39	69	21	27	61	0	20	179	771	23.2%
Total	**23,999**	**1,365**	**886**	**706**	**409**	**1428**	**357**	**660**	**3,894**	**27,893**	**14.0%**

Source: FONCODES

From a total of 27,893 rural communities in these 8 departments, 3,894 (14%) applied at least once for a Foncodes subproject in 1998-2003. For this period, amazonian departments like Loreto, Madre de Dios and Ucayali had more communities (in relative terms) applying to Foncodes than the rest of departments which probably got more support from the Fund during the 1994-1997 period.

Only a part of the communities with at least one application finally benefited from at least one Foncodes subproject in this period. The corresponding subset is shown in the **Table 5.2** below.

Table 5.2: Communities with approved projects from Foncodes

Communities with Foncodes approved subprojects

	Not approved	Water	School	Road	Electricity	Bridge	Sewarage	Other	Approved	% of appl
AMAZONAS	100	177	12	15	5	185	4	61	346	**77.6%**
ANCASH	227	157	97	3	40	154	41	23	443	**66.1%**
CAJAMARCA	277	338	92	28	37	272	11	72	726	**72.4%**
CUSCO	230	137	19	20	41	57	49	27	299	**56.5%**
LORETO	186	32	96	203	55	147	0	141	449	**70.7%**
MADRE DE DIOS	20	23	7	4	8	13	0	1	39	**66.1%**
PUNO	133	139	33	16	26	8	15	32	240	**64.3%**
UCAYALI	48	28	30	13	8	58	0	13	131	**73.2%**
Total	**1,221**	**1,031**	**386**	**302**	**220**	**894**	**120**	**370**	**2,673**	**68.6%**
	31.4%	**76%**	**44%**	**43%**	**54%**	**63%**	**34%**	**56%**		

Source: Foncodes and 1999 Pre-Census INEI; Elaboration: GRADE

As can be seen, a total of 2,673 communities received Foncodes subprojects, representing 68.6% of the communities that applied at least once. By departments, Amazonas and Ucayali had the highest rate of communities that applied and received at least one intervention; whereas Cusco and Puno appear with the lowest ratio.

Also, it is important for the purposes of this evaluation to see which communities finally benefited from subrojects financed by JBIC. Those communities are shown in **Table 5.3.**

Table 5.3: Communities with JBIC financed projects

Communities with JBIC financed subprojects

	Not approved	Water	School	Road	Electricity	Bridge	Sewarage	Other	Approved	% of ccpp with subproject
AMAZONAS	# NA	174	9	15	5	183	0	61	334	96.5%
ANCASH	# NA	44	10	0	4	47	4	2	80	18.1%
CAJAMARCA	# NA	173	8	3	14	86	1	18	237	32.6%
CUSCO	# NA	102	7	12	21	40	7	9	155	51.8%
LORETO	# NA	32	55	203	55	147	0	134	402	89.5%
MADRE DE DIOS	# NA	23	4	4	8	13	0	1	33	84.6%
PUNO	# NA	47	2	1	1	0	1	1	46	19.2%
UCAYALI	# NA	5	0	0	0	7	0	1	11	8.4%
Total	**# NA**	**600**	**95**	**238**	**108**	**523**	**13**	**227**	**1,298**	**48.6%**

Source: Foncodes and 1999 Pre-Census INEI; Elaboration: GRADE

A total of 1,298 communities received at least one Foncodes subproject financed with JBIC support, representing 48.6% of the total number of communities that received at least one Foncodes intervention in this period. In some departments like Amazonas, Loreto and Madre de Dios, communities with JBIC financed subprojects were a very high proportion of total communities benefited by Foncodes. In others like Puno and Ucayali, the participation of JBIC was very limited in terms of the total communities attended by Foncodes in 1998-2003.

Furthermore, for this evaluation we need to focus on only four subproject lines: (i) water; (ii) roads and bridges, (iii) electricity. **Table 5.4** presents that information.

Table 5.4: Communities under evaluation

Communities under evaluation

	No JBIC communities	JBIC communities	water	roads & bridges	electricity
AMAZONAS	126	**220**	170	72	5
ANCASH	399	**44**	42	2	4
CAJAMARCA	543	**183**	162	21	14
CUSCO	170	**129**	98	21	21
LORETO	121	**328**	32	323	55
MADRE DE DIOS	10	**29**	23	5	8
PUNO	195	**45**	45	2	1
UCAYALI	125	**6**	5	1	0
Total	**1,689**	**984**	**577**	**232**	**108**

Source: Foncodes and 1999 Pre-Census INEI; Elaboration: GRADE

A total number of 984 communities were attended by Foncodes and financed by JBIC in 1998-2003. Some communities received more than one.

Table 5.4. is important in defining the type of sampling framework that we can use for this evaluation. We see that in some lines and departments there is a very low number of communities and these are candidates for exclusion from the sample framework. We decided to use a minimum of 20 communities in each line by department as a minimum requirement for being part of the sample framework under evaluation. With this restriction we have the following communities/lines to be evaluated.

Table 5.5.: Subset of communities under evaluation

Communities under evaluation

	water	roads & bridges	electricity
AMAZONAS	Yes	Yes	No
ANCASH	Yes	No	No
CAJAMARCA	Yes	Yes	No
CUSCO	Yes	Yes	Yes
LORETO	Yes	Yes	Yes
MADRE DE DIOS	Yes	No	No
PUNO	Yes	No	No
UCAYALI	No	No	No

Source: Foncodes and 1999 Pre-Census INEI; Elaboration: GRADE

Under these criteria Ucayali drops totally from the evaluation (too few projects financed by JBIC). Also, we see that water projects can be evaluated in all the other 7

departments. Roads and bridges projects can be evaluated in Amazonas, Cusco, Cajamarca and Loreto. And electricity can only be evaluated in Cusco and Loreto. Now we will define optimal sample size of communities in the context of this evaluation.

5.2. Sample size

To determine the optimal sample size (of communities), we use two main criteria: (i) budget constraints, and (ii) minimum sample sizes to capture statistical differences in values among intervened and control groups in critical impact variables.

According to the budget for this project, we can carry out a household survey with a maximum goal of 2,400 households applied in 240 communities, with an average of 10 households per community. In principle, we should have 120 intervened communities and 120 control non-intervened communities.

For the second criterion, we define a set of critical variables X from which we want to get a given level of statistical precision. In our case, we are interested in measuring differences between two groups of households, intervened (denoted 1) and control (denoted 2), which are located in intervened and control communities. In random sampling, the formula for the minimum difference in the variable X among groups 1 and 2 which can be detected with known statistical precision is:

$$\mathbf{Diff = Z*[(Var(X_1)/N_1) + (Var(X_2)/N_2)]\text{^}0.5} \qquad \mathbf{(1)}$$

where Z is a critical value (depending on the desired level of statistical precision) and Var(X) indicates the variance of the relevant variable. N_1 and N_2 are sample sizes of groups. As we will not be really using random sampling for selecting households but a two-step sampling where households are chosen as part of conglomerates (communities), expression (1) needs to be adjusted by design effect parameters deff=1-(b-1)*rho, where b is the number of household in each conglomerate and rho is the correlation coefficient in the X variable inside the conglomerate. The derived expression is

$$\mathbf{Diff = Z*[(Deff_1*VAR(X_1)/N_1) + Deff_2*Var(X_2)/N_2]\text{^}0.5} \qquad \mathbf{(2)}$$

For simplicity, we will assume that $N_1=N_2=N/2$ (where N is total sample size) and $deff_1=deff_2=deff$ (same sample size for intervened and control groups, and equal intra-community correlation coefficient for both groups too). Under this sound assumption, we will have:

$$\mathbf{Diff = Z * [\ 4*deff*Var(X)/N\ ]\text{^}0.5} \qquad \mathbf{(3)}$$

Expression (3) allows us to evaluate how precisely a given sample can assess the difference between both groups for a variable with known distribution (or at least known sample means and variance). To apply (3) in our context we will use a national household survey applied by the National Institute of Statistics and Informatics (INEI), called ENAHO which is an LSMS applied to a stratified sample of households with

representativeness at rural and urban sectors, as well as by departments. We take the survey results for 2003-04 and households located in rural sectors in the 8 departments which are subject to this evaluation. Because ENAHO uses conglomerates as sampling units, and takes samples of 5 to 12 households in each conglomerate, we have a survey with similar features to the one we are designing. Thus, we can use ENAHO estimates of Var(X) and deff for the main impact variables in which we are interested in this evaluation.

In **Table 5.6.** we present mean values for the eight departments (JBIC area) and the rest of the rural area in ENAHO 2003/2004.

Table 5.6: Households features in JBIC area

Household characteristics in JBIC area (rural)

	JBIC Intervention			Rest of Peru Rural		
	Households	Mean	Std. Dev.	Households	Mean	Std. Dev.
Family features						
Family size	3021	4.603	2.398	4758	4.354	2.353
Head age	3021	47.965	15.923	4758	48.756	16.555
Head years of educ	3015	5.329	3.843	4747	5.384	3.901
Impact variables						
Percapita income	3021	2104.3	3305.1	4758	2285.0	3178.3
Total Income	3021	7698.4	6901.1	4758	7922.1	9333.7
Agric. Income	3021	4157.0	5397.3	4758	4108.6	8557.6
Prop of ag. Income	3021	52.7%	36.9%	4758	51.1%	38.2%
Agricult. Household	3021	57.5%	49.4%	4758	57.2%	49.5%
Water	3021	36.9%	48.3%	4758	38.6%	48.7%
Sewarage	3021	18.0%	38.5%	4758	18.5%	38.8%
Illness (at least one)	3021	76.0%	42.7%	4758	65.8%	47.4%
Acute illness (at least one)	3021	56.6%	49.6%	4758	57.3%	49.5%
School enrollment 6-14	1770	91.1%	24.0%	2626	91.2%	24.0%
Poor	3021	67.7%	46.8%	4758	58.7%	49.2%
Poor extreme	3021	38.3%	48.6%	4758	30.5%	46.1%

Source: ENAHO 2003-04, INEI; Elaboration: GRADE

Based on this information we estimate the sampling design effect for each of the variables of interest, and use the sample standard errors to get sample variances to be applied in expression (3) to get the minimum difference that can be measured with a given level of statistical confidence (we set critical value of Z to be the value of the t-distribution at a 95% confidence level for one-tail differences , i.e., 1.645). In **Table 5.7** we present the results of the estimation of (3) for three total alternative sample sizes (N=1000, N=700 and N=600).

Table 5.7: Minimum differences as a function of sample size

Minimum differences that can be detected as a function of sample size

	Sample Values			Minimum differences		
	Mean	Std. Dev	Deff	N=1000	N=700	N=600
Percapita income	2104.3	3305.1	1.251	384.6	459.7	496.5
Total Income	7698.4	6901.1	1.235	798.0	953.8	1030.2
Agric. Income	4157.0	5397.3	1.416	668.3	798.7	862.7
Prop of ag. Income	52.7%	36.9%	131.5%	4.4%	5.3%	5.7%
Agricult. Household	57.5%	49.4%	130.8%	5.9%	7.0%	7.6%
Water	36.9%	48.3%	134.7%	5.8%	7.0%	7.5%
Sewarage	18.0%	38.5%	133.0%	4.6%	5.5%	6.0%
School enrollment 6-14	91.1%	24.0%	139.2%	2.9%	3.5%	3.8%
Poor	67.7%	46.8%	136.7%	5.7%	6.8%	7.3%
Poor extreme	38.3%	48.6%	135.0%	5.9%	7.0%	7.6%

Source: ENAHO 2003-04, INEI; Elaboration: GRADE

Smaller sample sizes increase the minimum value of the difference that can be measured with 95% of confidence level for those impact variables. In order to have a notion of the potential differences that we may find in the impact evaluation, we have divided the sampled rural households in the JBIC area of ENAHO 2003/04 in two groups according to access to water services. We measure the difference of means in the impact variables to have an approximation to impacts due to water access and contrast this difference with the minimum difference in **Table 5.7.** for each total sample size. If the difference is bigger, the sample is able to capture that difference at the 95% confidence level. The results are presented in **Table 5.8** below.

Table 5.8: are differences in indicators captured with sample sizes?

Are differences among water/no water hh detected with sample sizes?

	No water	Water	Abs(Diff)	Enough sample?		
				N=1000	N=700	N=600
Percapita income	1794.9	2260.4	465.5	Yes	Yes	No
Total Income	6568.7	8232.8	1664.1	Yes	Yes	Yes
Agric. Income	4791.3	3768.3	1023.0	Yes	Yes	Yes
Prop ag. Income	61.0%	52.0%	9.0%	Yes	Yes	Yes
Agricultural hh	66.0%	58.0%	8.0%	Yes	Yes	Yes
Sewarage	11.7%	28.5%	16.8%	Yes	Yes	Yes
School enrollment 6-14	89.0%	93.6%	4.6%	Yes	Yes	No
Poor	73.5%	64.0%	9.5%	Yes	Yes	Yes
Poor extreme	43.9%	32.4%	11.5%	Yes	Yes	Yes

Source: ENAHO 2003-04, INEI; Elaboration: GRADE

It turns out that a total sample size of at least 700 households (for both groups) is

required to capture differences in all these variables at the 95% confidence level. This implies a minimum size of 70 communities for each of the subgroups that we would like to build in the sampling framework in order to measure differences in impact variables. Thus, we will be guided by the following preliminary structure for designing a sample with the three intervention lines that we want to evaluate:

Water projects:	50 intervened; 50 non-intervened, Total =	100 communities
Roads and bridges:	35 intervened; 35 non-intervened, Total =	70 communities
Electricity:	35 intervened; 35 non-intervened, Total =	70 communities
Total sample:	**120 intervened; 120 non-intervened, Total=**	**240 communities**

The survey will have a total goal of 2,400 households to be located in a total of 240 communities with an average of 8 households per Non-SAPI community and of 30 for SAPI communities, the latter not being part of the sampling procedure.

The desired distribution of samples in each department and line for the intervened communities is:

Table 5.9: sample of intervened communities

Sample of Intervened communities

	water	roads & bridges	electricity	Total
AMAZONAS	10	10		**20**
ANCASH	5			**5**
CAJAMARCA	10	5		**15**
CUSCO	10	5	15	**30**
LORETO	5	15	20	**40**
MADRE DE DIOS	5			**5**
PUNO	5			**5**
Total	**50**	**35**	**35**	**120**

Source: Foncodes and 1999 Pre-Census INEI; Elaboration: GRADE

The proportion of this sample *vis-à-vis* the sample framework is depicted in **Table 5.10** below.

Table 5.10: Sample as proportion of intervened communities

Sample as % of JBIC Intervened communities

	water	roads & bridges	electricity	Total
AMAZONAS	6%	14%		**9%**
ANCASH	12%			**11%**
CAJAMARCA	6%	24%		**8%**
CUSCO	10%	24%	71%	**23%**
LORETO	16%	5%	36%	**12%**
MADRE DE DIOS	22%			**17%**
PUNO	11%			**11%**
Total	**9%**	**15%**	**32%**	**12%**

Source: Foncodes and 1999 Pre-Census INEI; Elaboration: GRADE

This desired sample would be 12% of the total communities intervened by Foncodes with JBIC financial support in these lines. In the case of communities with water projects, the sample is 9%; for roads and bridges of 15%, and 32% for communities with electricity projects. By departments, Cusco gets the highest percentage of sample due to the minimum sample size for communities with electricity projects. A similar size sample must be built for a comparison or control group of communities. We address this issue in the next subsection.

5.3. Options for building the control group

How to build the control group for this evaluation is probably the most challenging methodological decision in the design of this study. With the exception of 30 SAPI communities in Madre de Dios and Loreto, we do not have a baseline for the intervention under evaluation. When there is no baseline data, there has been three alternative approaches to building an appropriate control groups in the existing practice of social funds evaluations[4]:

- To select randomly a set of Fund projects already in operation and their beneficiaries and to match these households with similar families taken from a national income/expenditure living standard survey like ENAHO or ENNIV in the case of Peru, building in this fashion an *ad-hoc* "comparison group" which is revisited for the purpose of the evaluation;
- To select randomly a set of projects already in operation and to build the control group of projects (and households) matching the operating projects with similar projects taken from a pipeline of the Fund approved projects which are yet to be executed at the moment of the evaluation;

[4] See "Sixth Ex Post Evaluation of FONCODES: an evaluation of sustainability and impacts". Instituto APOYO, October 2000.

- To select randomly a set of communities where the Fund has already intervened and to match non-intervened communities which have similar attributes to the intervened ones. In this set of "control communities" are applied surveys to households and other local actors, and from this information is built the household control group after filtering "non-comparable" families.

Each of these options has advantages and limitations. The first alternative is not feasible as national household surveys in Peru are not designed to represent the universe of intervened communities by social funds[5].

The second alternative is very popular and was used both in the evaluation of FHIS in Honduras and of Foncodes projects in Peru in year 2000. In both cases, decisive advantages of that option were the fact that both Funds had large project pipelines at the evaluation moment which allowed an extensive and precise matching process in relatively small geographical areas (district or province). Also, it was a key factor that the processes of selecting and approving projects did not change significantly during the time of the evaluation.

In the current case of Foncodes and JBIC projects, however, we lack both conditions. Both PE-P19 and PE-P24 are already finished, and there is no significant pipeline of projects oriented to the same area already attended. More important, procedures for selecting and approving projects have significantly changed in the last two years (2004-2005), so current in-line projects are not comparable with projects selected and approved in the evaluation period (1998-2003). So, in the case at hand this option is not recommendable.

Thus, we consider that only the third option is suitable for this evaluation. In this option, the control group must be selected from a database of non-intervened communities in specific geographical areas and we will try to get one as similar as possible to the intervened ones in observable attributes which may influence the probability of receiving Foncodes projects. We elaborate on this option in the following.

5.4. Building the control groups of communities

The possibility of building an appropriate control group of communities for the intervened ones depends crucially on the available data which contains variables correlated with the probability of demanding and receiving subprojects from Foncodes in general, and from JBIC-financed projects in particular. Thus, the first task was to assess the available information.

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[5] In the case of Nicaragua and the evaluation of FISE, the national standard of living survey design explicitly incorporated this criterion for the sampling design.

5.4.1. Available data for the control group (of communities)

Four data sources are available that may be used directly for our sampling strategy: the Foncodes Poverty Map (based on 1993 Population Census data); the pre-census 1999 database; the 2002 community cartography and preliminary results from the 2005 Population Census. Their main characteristics are depicted in **Table 5.11**, along with those of the Foncodes project database.

Table 5.11: Features of data sources

Database	*Poverty map*	*Precensus*	*Cartography*	*Census (preliminary)*	*Projects*
Year	1993	1999	2002	2005	1998-2003
Source	Foncodes/INEI	INEI	INEI	INEI/MEF	Foncodes
Observation Unit	Distrito	Centro Poblado	Centro Poblado	Centro Poblado	Project/Centro Poblado
#observations (for Peru)	1830	69951	69951	77055	7589
Id variable	1993 District Ubigeo	1999 CCPP Ubigeo	1999 CCPP Ubigeo	2005 CCPP Ubigeo	District ubigeo + CCPP name
Focus	Base deprivation indicators for poverty estimation	Main dimensions and social infrastructure characteristics	Localisation	Acces to water, lighting and sewage	

One first important source of data for building the control group is the Poverty Map used by Foncodes during the 1990s to target its intervention. This map was made using aggregate data from the Population and Housing Census of 1993 at the district level and using indicators of illiteracy, type of housing floor, infant mortality and others to classify districts into poverty categories. In particular, the Map identified Not Poor, Regular, Poor, Very Poor and Extreme Poor districts. The important point is that the Map was intensively used for deciding areas in which Foncodes intervened during most of the period corresponding to JBIC financing.

The limitation of the Poverty Map is that it is aggregated at the district level, so it does not have information at the community or village level, which is the one at which the control group is to be built. However, we can use district level variables in the process of building the control group.

The second source of information that we use is the Pre-Census of 1999, made by INEI that year because a Census was being planned by the end of that decade (it finally occurred recently, in 2005). The main advantage of this Pre-Census database is that it has information at the community or village level, which is critical for looking at observables that can be linked to the probability of demanding and receiving Foncodes support.

The pre-census work also included a cartographic update. That work was completed by 2002, and a cartographic database allows us to locate each community (centro poblado) center, which in turn provides altitude information when processed alongside the freely-available Digital Elevation Model at 3 arc-second resolution from NASA Shuttle Radar

Topography Mission.

Finally, we have preliminary results of the year 2005 Population and Housing Census. Those allow us to check whether the control group of communities presents the intervention that we want to evaluate in water and electricity (it does not have information about road and bridges interventions).

5.4.2. Steps in building the control groups

We followed these steps for building the control group:

- In each departamento and for each intervention type, we keep only centros poblados of more than ten dwellings, that do not present the public service in question according to the preliminary 2005 census data, and that have not applied for Foncodes support (coming from Foncodes database).
- The latter is rather straightforward for water and electricity, but much less so for roads and bridges. For this latter intervention we use Pre-census data and the control group is formed by keeping only those centros poblados where the main access road is by path or the main access means are by foot or beast, except in Selva, where this characterisation is meaningless.
- Furthermore, we exclude Ancash centros poblados located under 1000 meters of altitude (we are only concerned with Sierra region, which starts above that altitude) and in Loreto we exclude centros poblados that are inaccessible (i.e. more than 6 hours away by motor boat) from the main district capitals of Yurimaguas, Nauta and Iquitos provinces.
- Then within these bounded universes we perform a matching process between treatment (with approved Foncodes projects in each of the three lines) and control groups. We do the matching procedure independently in each departamento and for each intervention.

5.5. Sampling procedure

Having defined some goals for sample sizes for each couple of intervention type and departamento, we now turn to the problem of defining the samples themselves.

The general schema is the following: for each intervention type-departamento couple,

- Define treatment and control universes with centros poblados as sampling units;
- Perform propensity score 1-to-1 matching on both universes, in order to match on the probability of obtaining a JBIC-funded Foncodes project given a set of descriptive variables of the centro poblado;
- Estimate and keep the common support;

- Draw a systematic random start sample from the treated individuals within the support, systematic meaning that each unit was ordered by its propensity score value; mark the selected units as “treatment samples”;
- Get the 1-to-1 matched controls for each “treatment sampled unit” from the corresponding universe of control and mark them as “control samples”.

This procedure raises several questions that must be solved.

Can we be more specific for defining types of intervention? For instance, is it useful to consider separately one-time applicants and repeated applicants or beneficiaries of one project *vs.* beneficiaries of multiple projects?

The following table depicts the classification of interventions in terms of concurrent occurrences. Only four centros poblados did get all three project types.

	No roads nor bridges		Roads or bridges	
	No electrification	Electrification	No electrification	Electrification
No water	*25470*	**148**	**489**	29
Water	**885**	27	70	***4***

Since these occurrences are rare and multiple interventions are rather sparse in the whole universe, it will not be efficient to isolate such groups for a specific sampling procedure.

What is the exact definition for the control universes? Are the control universes for each intervention disjoint? I.e. can one centro poblado be control for two types of intervention? Must centros poblados that applied to FONCODES but did not obtain approval be included? Should we include in the universes extremely small centros poblados?

First, the control universes should nor be forcibly disjoint: on the one hand, the matching process may lose power if we restrict disjoint control groups. On the other hand, it will be useful in the analysis phase to consider treatments and controls for other interventions as controls for one intervention. Thus our control universes may or may not be considered disjoint in the analysis phase.

Very small centros poblados do exist in the universe: as small as one dwelling each, even in the treatment universe. For logistic efficiency reasons we dropped from the sampling framework those centros poblados with less than ten dwellings. This will allow for uniform sample sizes of eight dwellings in each non-SAPI centro poblado.

Is there any bias introduced by the quality of available data? In particular, is the fact that the different databases used never match one-to-one at the centro poblado level introducing bias?

The (preliminary) census database of 2005 hosts data for 76,544 unique communities. These are identified by their 2005 ubigeo code, which matches the 92,448 communities in the 1999 Pre-census in 54,047 cases. See **Table 5.12**. for the distribution of matches

with respect to the merged 2005 and 1999 base of codes.

Table 5.12. Distribution of matched communities

	Communities	*Matched*
AMAZONAS	2852	67.7%
ANCASH	7223	65.6%
CAJAMARCA	6316	78.0%
CUSCO	9110	45.3%
LORETO	2829	60.0%
MADRE DE DIOS	315	61.0%
PUNO	8609	56.4%
UCAYALI	1057	57.5%
Peru	*92448*	*58.5%*

This matching is a consequence of the census methodology where cartographic update was part of the process. The centro poblado definition is actually censual in nature, and the identification of centro poblado with community is an operational device rather than an actual definition.

There are no complementary sources that could allow for better matching between the used databases. We are hopeful that analysis matching will filter any possible bias introduced by the different sources and methodologies.

It should be noted that some Foncodes projects deal at the same time with an unspecified set of centros poblados; those projects have been left out of the sampling process.

How to match? Which variables define a good matching process? What kind of matching is best suited to the problem at hand?

The available data constrains the dimensions over which we try to define similarity between control and treatment universes. As stated before, we have several data sources at our disposal.

The sample matching was performed on these data.

Table 5.13: Variables used for matching procedure

variable	*year*	*geographic unit*	*measurement unit*	*source*
longitude	2002	ccpp	decimal degrees	INEI
latitude	2002	ccpp	decimal degrees	INEI
altitude	2002, 2000	ccpp	meters above sea level	INEI, NASA
number of inhabitants	1999	ccpp	quantity	Pre Census INEI
number of dwellings	1999	ccpp	quantity	Pre Census INEI
distance to district capital	1999	ccpp	km	Pre Census INEI
distance to district capital	1999	ccpp	hours	Pre Census INEI
existence of primary school	1999	ccpp	yes/no	Pre Census INEI
existence of medical center	1999	ccpp	yes/no	Pre Census INEI
water availability *	1993	district	% of houses	Census 1993
electricity availability **	1993	district	% of houses	Census 1993
sewage availability	1993	district	% of houses	Census 1993
infant mortality rate	1993	district	%	Census 1993
illiteracy rate	1993	district	%	Census 1993
qualifies as very poor ***	1993	district	yes/no	Census 1993
qualifies as extremely poor ***	1993	district	yes/no	Census 1993

* except for water projects
** except for electrification projects
*** except in Loreto for roads and bridges

The characteristics put forward by these data are related to geographical position, thus indicating both dwelling patterns (especially for longitude and altitude in departamentos having selva and sierra parts) and climate similarities (therefore production conditions, climate being constrained essentially by altitude and latitude); size of the centro poblado both in terms of households and dwellings; poverty conditions; public infrastructure; and accessibility status.

The matching process is performed using a propensity score based on the probit model explaining access to JBIC-Foncodes funding given the characteristics of each centro poblado.

5.6. Matching quality assessment

The quality of matching is assessed in two complementary ways:

- The matching will be deemed correct when the control and treatment supports are close in terms of distribution of the propensity score.
- The samples obtained from the matching process will be deemed correct if the obtained groups within the support resemble variable by variable the universes from which they are extracted.

In order to assess the matching, one sample is taken using the methodology outlined above and the populations are compared using mean and distribution comparison tests (namely *t*-test and Kruskal-Wallis).

The results appear exemplified in **Table 5.14**, but are general for all intervention-departamento couples (see **Annex 3** for Tables for all cases).

Table 5.14. Sample quality assessment example: water projects in Amazonas

Amazonas water projects

	Means						Tests						
Variable	*Control Universe*	*Control Support*	*Treatment Universe*	*Treatment Support*	*Control saMple*	*Treatment saMple*	*Cu<>Tu k*	*Cu<>Tu t*	*Cs<>Ts k*	*Cs<>Ts t*	*Cm<>Tm t*	*Ct<>Cs t*	*Tm<>Ts t*
Longitude	-78.08	-78.08	-78.18	-78.19	-78.18	-78.27	0.0008	0.0004	0.0009	0.0004	0.3703	0.2703	0.1806
Latitude	-5.34	-5.34	-5.62	-5.64	-5.59	-5.37	0.0003	0.0004	0.0002	0.0002	0.4189	0.2656	0.1569
Altitude	1104	1104	1404	1417	1347	1092	0.0004	0.0013	0.0003	0.0009	0.4862	0.4552	0.1102
Population pre-census	143.7	144.6	234.8	234.1	218.3	301.9	0.0001	0.0000	0.0001	0.0000	0.2619	0.1261	0.2682
Dewllings pre-census	30.55	30.6	46.74	46.66	44.23	66.39	0.0001	0.0000	0.0001	0.0000	0.2004	0.0985	0.2123
Distance to district capital (km)	52.39	52.49	27.55	27.31	30.77	25.56	0.0001	0.0000	0.0001	0.0000	0.5370 *	0.0050	0.7981 **
Tim to district capital (h)	9.65	9.81	4.37	4.36	4.2	4.07	0.0001	0.0000	0.0001	0.0000	0.9416 ***	0.0000	0.8660 **
Primary schools	0.74	0.74	0.92	0.92	0.92	0.94	0.0001	0.0000	0.0001	0.0001	0.8238 **	0.0423	0.7245 **
Health centers	0.11	0.12	0.22	0.22	0.15	0.44	0.0040	0.0062	0.0057	0.0085	0.0784	0.7336 **	0.0851
Very poor 1993	0.26	0.27	0.46	0.47	0.23	0.44	0.0001	0.0000	0.0001	0.0000	0.2224	0.7813 **	0.8624 **
Extermely poor 1993	0.5	0.5	0.26	0.25	0.38	0.33	0.0001	0.0000	0.0001	0.0000	0.7793 **	0.4371	0.5164 *
Analphabetism 1993	25.24	25.19	23.67	23.49	21.08	23.82	0.0149	0.0280	0.0101	0.0189	0.3681	0.1254	0.8522 **
Infant Mortality 1993	62.04	61.75	60.91	60.54	54.62	58.39	0.2336	0.4558	0.1938	0.4271	0.3824	0.0334	0.5257 *
Water in 1993	0.07	0.07	0.11	0.11	0.09	0.12	0.0002	0.0019	0.0001	0.0013	0.4905	0.6807 *	0.7767 **
Electricity in 1993	0.07	0.07	0.07	0.07	0.1	0.09	0.0152	0.9301 ***	0.0206	0.9849 ***	0.7797 **	0.4883	0.7086 **
Water in 1999	0	0	0.47	0.48	0	0.51	0.0001	0.0000	0.0001	0.0000	0.0000	.	0.7046 **
Electricity in 1999	0.04	0.04	0.14	0.14	0	0.13	0.0001	0.0001	0.0001	0.0001	0.0682	0.0001	0.8170 **
Sewage in 1999	0.01	0.01	0.07	0.07	0	0.04	0.0001	0.0000	0.0001	0.0000	0.1943	0.0067	0.2922
Population 1999	156.2	157.4	226.6	225.2	161.3	273.9	0.0001	0.0000	0.0001	0.0000	0.0634	0.9248 ***	0.2762
Dwellings 1999	31.45	31.71	46.54	46.33	33.54	56.59	0.0001	0.0000	0.0001	0.0000	0.0473	0.8121 **	0.2481
Amount approved	.	.	1.30E+005	1.30E+005	.	1.60E+005	.	.	.	.	.	.	0.1810
Amount requested	.	.	5030	5183	.	1667	.	.	.	.	.	.	0.1587

The Treatment Universe (Tu) is composed of those centros poblados having received JBIC-funded Foncodes water projects. The Control Universe (Cu) is composed of centros poblados that according to preliminary data of 2005 census do not have access to piped water and did not request Foncodes aid. Both are limited to centros poblados with less than ten dwellings. The corresponding supports (Treatment support Ts and Control support Cs) stem from the matching process. Given established sample sizes, the samples are selected systematically with random start according to the propensity score. The obtained samples are Tm for treatment and Cm for control.

The test results give the *p*-value of both groups being from different distributions. Therefore, the higher this value, the more likely both groups are similar in terms of distribution (for Kruskal-Wallis, denoted *k* in the table) or mean (for t-test denoted *t* in the table). Asterisks are placed for *p*-values >.5, >.8 and >.9, respectively for one, two and three asterisks.

In this example, there is a better (albeit imperfect) similarity between treatment and control supports compared to treatment and control universes: *p*-values are higher for the Cs<>Ts comparisons than for Cu<>Tu comparisons. Treatment and control samples are comparable and each sample is comparable to its respective support.

For the whole set of assessments in each of the thirteen departamento-intervention couples see **Annex 3**. Overall, the matching and sampling succeed in producing a group of similar treatment and control samples, that are much closer than their original universes, according to the available data.

5.7. Sampling results

The matching process is sometimes very demanding with respect to our available data, and it was in some cases impossible to find a good enough propensity score. Given dropped observations for perfectly predicted outcomes in our variables and the fact that we restrict sampling within the obtained support, the sample sizes are restricted by the matching process. In fine, after matching and sampling, we obtain the following final sample sizes (left is treatment, right is control):

Table 5.14: sample of communities by investment line and departamento

	Water		*Roads & bridges*		*Electricity*	
Amazonas	11	11	13	13		
Ancash	7	7				
Cajamarca	7	7	7	7		
Cusco	12	12	11	11	12	12
Loreto	3	6	5	5	7	8
Madre de Dios	5	4				
Puno	5	5				

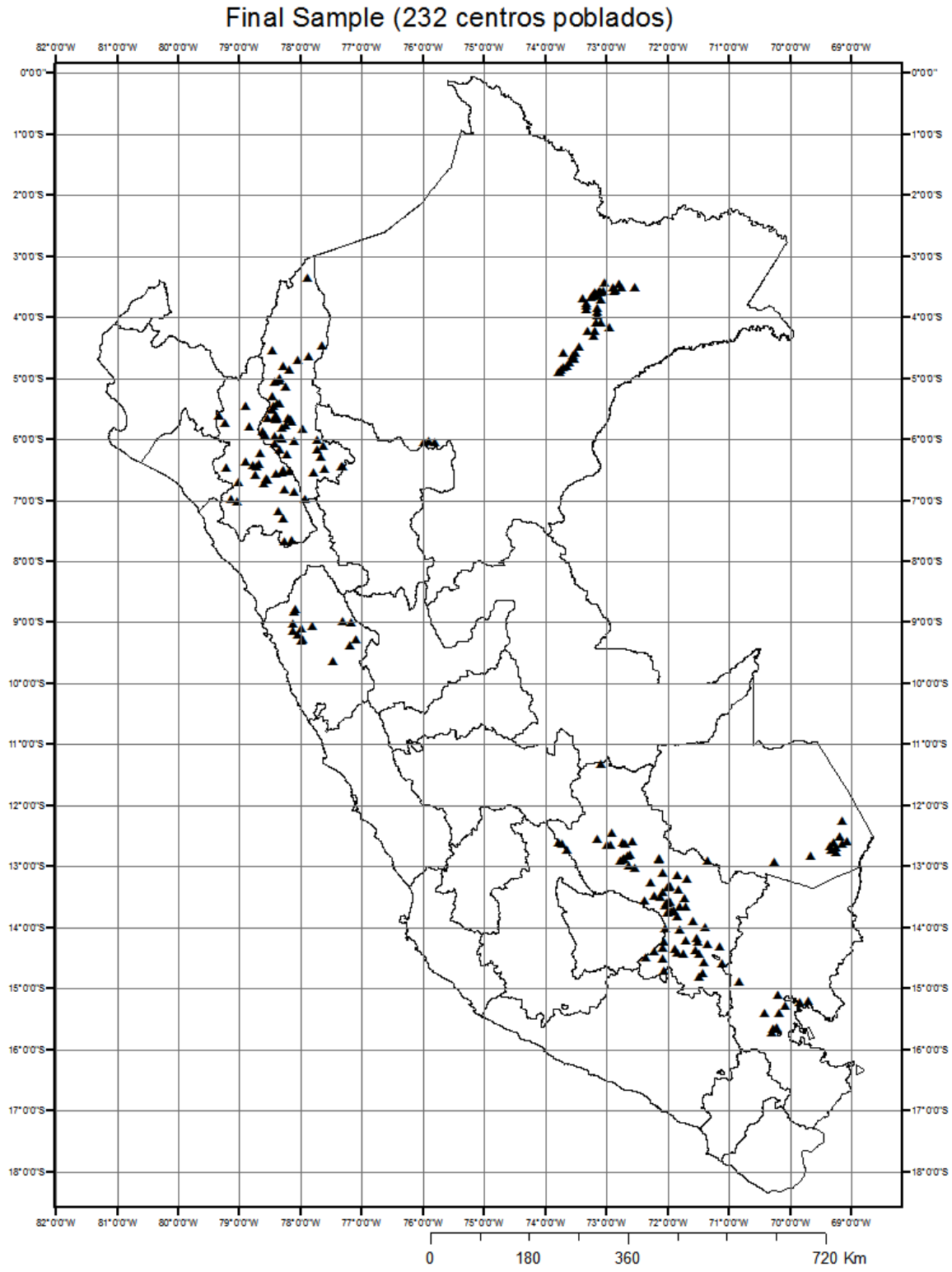
To these sampled centros poblados, we should add 19 centros poblados from the SAPI sample, for a grand total of 232 centros poblados. Within each, eight (random sample) or thirty (SAPI) households will be selected, for a grand expected total of 2,250 surveyed households. Note that three centros poblados belong to two control groups at the same time[6]. Note also that we do not know exactly to what group (treatment or control) the SAPI communities must be assigned before we get information from the survey.

It should be keep in mind that some of the line specific controls can be used as controls for other interventions too, something that will be decided at the moment of the analysis. Also, after gathering field information, it is possible that we will need to redefine the status of some of these communities in terms of control or treatment groups.

The selected centros poblados are located in **Map 5.1**.

[6] Nueva Luz in Amazonas, for both roads/bridges and water interventions; Cruz del Sur in Loreto for both roads/bridges and water; and Santa Rita de Florida in Loreto for both electricity and roads/bridges.

Map 5.1: Location of Final Sample



The field work was organized to visit all these selected communities as described in the following section.

5.8. Field work organization

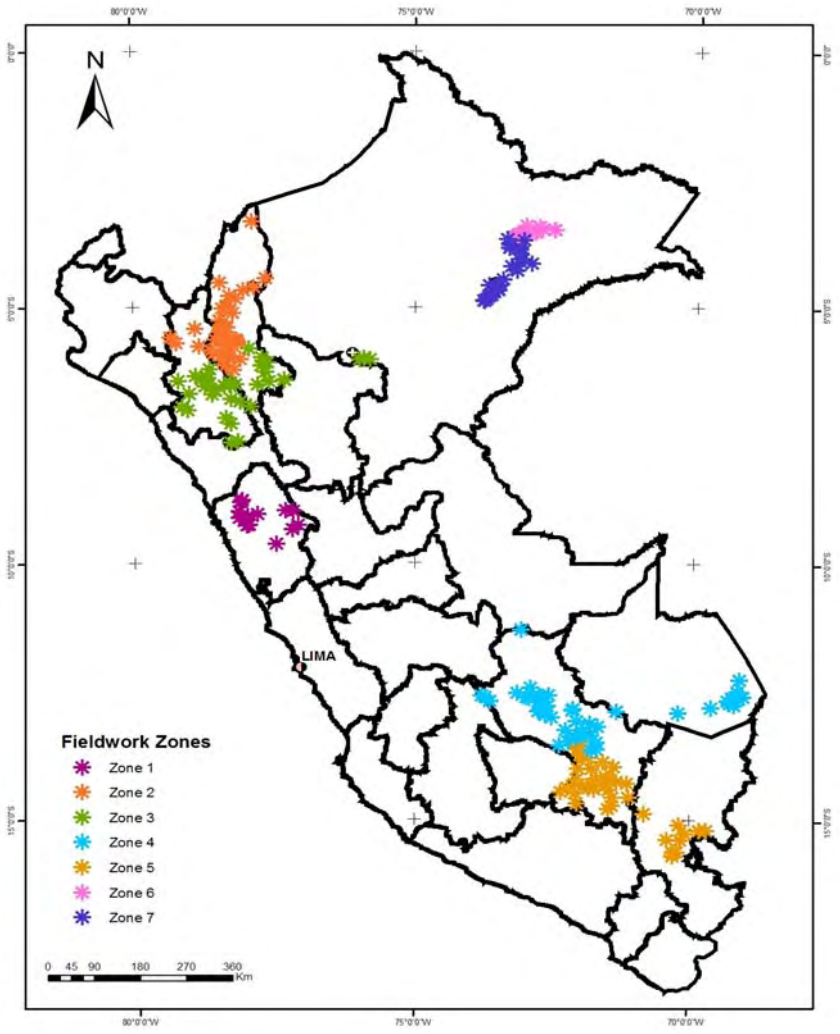
The field work for the survey was carried out between October 30 and November 3 of 2006 and included the application of household and community questionnaires.

To develop the field work we designed a structure of territorial management that let us to centralize and to control field tasks. At the same time, we sought an efficient way to access to the selected localities, and designed a supervising structure for the operation of the household and community surveys.

5.8.1. Territorial Organization

The original sample of 2250 households was located in 229 localities (3 localities of the original 232 were dropped due to extreme dispersion) and it was organized in 7 working areas, every one delimited by access criteria and logistic management (See **Map 5.2**).

Map 5.2



Within each working area, a supervisor and a variable number of surveyors were trained to carry out field work (See **Table 5.15**). In case of far away places, we allocated a temporal supervisor, an experienced surveyor, who gave account of field work to the principal supervisor in the work area. All supervisors had to coordinate with the work manager about logistic and methodological aspects that appeared during work field (see **Diagram 5.1**).

Table 5.15. Distribution of Fieldwork Zones

Distribution Zone Fieldwork

	Zones	# settlement	# settlement SAPI	# Original settlement Sample	# dropped settlement	# FINAL settlement Sample	# Original Household Sample	# dropped Household Sample	FINAL Household Sample	# Surveyors	# Supervisor
1	zone 1 (Ancash)	14	0	14	0	14	112	0	**112**	3	1
2	zona 2 (Cajamarca 1 and Amazonas)	42	0	42	2	40	336	16	**320**	7	1
3	Zone 3 (Cajamarca 2, Amazonas y Yurimaguas)	36	0	36	0	36	288	0	**288**	7	1
4	Zone 4 (Cuzco 1 and Madre de Dios)	46	2	48	3	45	428	47*	**381**	9	1
5	Zone 5 (Cuzco 2 and Puno)	43	0	43	0	43	344	0	**344**	7	1
6	Zone 6 (Loreto)	4	16	20	0	20	512	0	**512**	7	1
7	Zone 7 (Loreto)	25	1	26	0	26	230	0	**230**	4	1
	TOTALS	181	19	**229**	5	224	2250	16	**2187**	**44**	**7**

* 2 SAPI and 1 regular settlement had very small population. Because, we obtained 45 samples from 68 original samples.

From the original simple five communities could not be evaluated for the following reasons (See **Table 5.16**):

Table 5.16: Communities which could not be interviewed

Dropped Settlement

IDCCPP	DEPARTAMENT	PROVINCE	DISTRICT	SETTLEMENT	# Original Household Sample	drop motive
0104020040	AMAZONAS	CONDORCANQUI	EL CENEPA	PAMPA ENTSA	8	insecure zone
0104030008	AMAZONAS	CONDORCANQUI	RIO SANTIAGO	CUCUASA	8	insecure zone
0809020007	CUSCO	LA CONVENCION	ECHARATE	PUERTO RICO	8	insecure zone
0809070014	CUSCO	LA CONVENCION	KIMBIRI	VISTA ALEGRE ALTA	8	insecure zone
1701030046	MADRE DE DIOS	TAMBOPATA	LAS PIEDRAS	SAN FRANCISCO MADRE DE DIOS	8	deserted sttlement

The unsafe localities are located in areas where principal social problems are related to drugs, terrorism and ethnic conflict. In one of these localities, our field equipment were expelled from the community, and in other the policy warned them about insecurity in the place. In the case of San Francisco, our surveyors did not found more than two permanently occupied residences, for that reason obtained a document from the local authority certifying the temporary occupation of these dwellings. Finally, in three localities within Madre de Dios and Cusco, the surveyors could not complete the work due to reason exposed lines above (See **Table 5.17**).

Table 5.17: communities in which it was no possible to have total sample of households

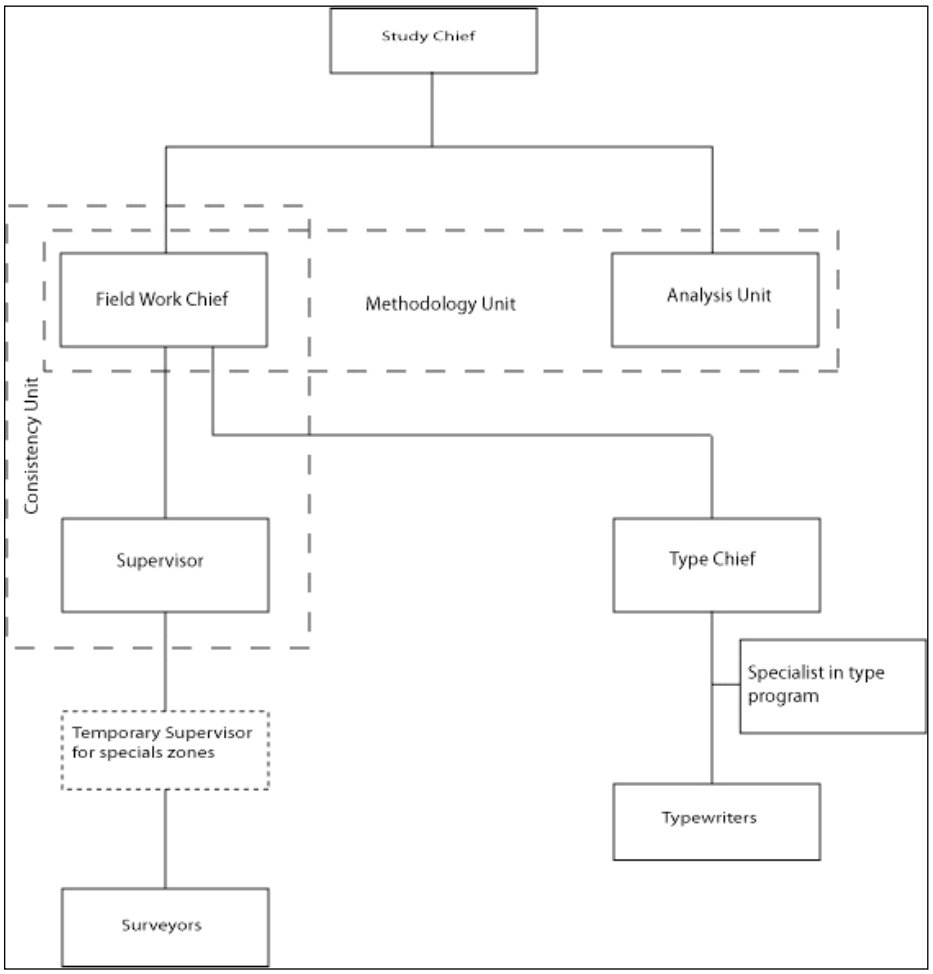
Dropped Samples

IDCCPP	DEPARTAMENT	PROVINCE	DISTRICT	SETTLEMENT	# Drooped Household Sample	drop motive
0811060002	CUSCO	PAUCARTAMBO	KOSÑIPATA	PELAYO	1	small population
1701030025	MADRE DE DIOS	TAMBOPATA	LAS PIEDRAS	1RO DE MAYO	16	small population
1701040023	MADRE DE DIOS	TAMBOPATA	LABERINTO	VIRGENES DEL SOL	6	small population

5.8.2. Organic Structure

To be able to do the tasks related to the survey which where to be performed out in the field, an organizational structure was formed establishing a hierarchical structure. At each level various functions and their respective responsibilities have to be completed. See **Diagram 5.1** below:

Diagram 5.1



5.8.3. Selection of households at the community level

One of the goals of the field work was to select a sample of households which is representative of the people living in each selected locality. Selection of houses was performed so as to best cover the whole community area. The methodology for house

selection was as follows:

partition the community in two to four homogeneous parts

allocate the required sample among the parts according to their size

select apart houses within each part.

Given the diversity of situations, no formal protocol was established for partitioning.

Practically, a team of one supervisor and two surveyors visited each community. The first task of the supervisor was to draw a map of the community (based on information given by local informants and direct observation), pointing out important sites like the local school, municipio office (if one), water and electricity facilities, main roads, river, soccer field, etc. See three examples of these drawings (which are available upon request for all communities) in Annex 5.

The main purpose of the drawings was giving the team a good idea of the shape and main parts of the community. After this, the supervisor will divide the community in two to four parts, and assign surveyors to two or four selected houses per part for interview. Surveyors will try to interview the given number of houses within the part, and avoid visiting neighboring houses.

Parts may be loosely defined as contiguous sets of houses which share an apparent settlement rationale. The idealized cases of a linear settlement pattern alongside the river (for Selva) and a circular settlement pattern around the market place (for Sierra) define natural part candidates: segments of the linear pattern and concentric rings respectively. These reference patterns are hardly found in their ideal shape. For instance, when a community is divided by some geographic (natural or man-made) feature such as a hill, pond or bridge, both sides of this feature are part candidates. Also, settlement patterns around more than one center (such as sports fields, squares, port, church) are likely to be considered different parts. Annex-like settlements also constitute part candidates.

In some cases, the survey was applied to the head of the household in the field, as they were working in agricultural activities. For some questions, the housewife was preferred. In general, the selection of households in each community sought for a good representation of the location of people in the town, avoiding concentrating all samples in some specific site.

5.8.4. Quality of selected sample of communities

An important methodological point in this evaluation is the question about the right unit for measuring Foncodes impacts. We already pointed out that the decision to intervene is basically taken at the community level, i.e., Foncodes will decide on financing a project with information about the communities, not about individual households. Moreover, people inside the communities will decide upon the type of project they want (within a given menu) and after getting approval, they will elect a “núcleo ejecutor” for monitoring the implementation of the project. It is assumed that if a project is selected by a community, it is because it is needed and it will benefit a significant proportion of the households living in

that community.

Thus, it is natural to try to measure impacts from Foncodes intervention at the community level. This will require that the community survey generated good data about community aggregates, and more important, that our samples of households (between 8 and 12 per community) have enough statistical power to represent what happens with all people at the community level.

We attempted assessing the quality of the final sample using mainly the Census 2005 as comparison tool. For the (few) common variables in both census and survey, the main findings are:

housing characteristics and rough demographics (age, sex, household size) are well represented by our household sample for most communities – the corresponding distributions are indistinguishable at $p<0.05$ for 95% confidence in more than 80% of communities;

our sample is better educated than what the census data reports, although literacy rates are comparable; in particular, the census reports a much higher proportion of non-educated persons whereas we hardly found households were members above school age never attended school;

all the aforementioned population characteristics are comparable between control and treatment communities, both for survey and census data, meaning the matching methodology did in fact yield two comparable groups.

See **Annex 6** for details and other results.

6. Descriptive analysis of sampled households and communities

In this section we analyze the main features of the data taken from households and communities after processing the household and community surveys. We break the data mainly in geographical areas in order to detect differences among regions which may need to be considered when analyzing impacts in the following sections.

6.1. Analyzing household characteristics

The distribution of all the sampled households by departamento and three natural regions (North Sierra, South Sierra and Amazon) is presented in **Table 6.1**.

Table 6.1: Sample of households by natural regions

	Total sample			
	Amazon	**North Sierra**	**South Sierra**	**Total**
Amazonas	112	248	0	360
Ancash	0	112	0	112
Cajamarca	0	224	0	224
Cusco	55	0	488	543
Loreto	762	0	0	762
Madre de Dios	102	0	0	102
Puno	0	0	80	80
Total	1,031	584	568	2,183

Source: Household Survey of Impact Evaluation of Foncodes (JBIC PE-19, PE-24), 2006.

A total of 2,183 households are to be analyzed, 1,301 in the Amazon[7] , 584 in the North Sierra and 568 in the South Sierra. We focus analysis of the household survey results looking at four dimensions:

(i) Basic socio-economic features of households
(ii) Features of houses (dwelling)
(iii) Presence of public infrastructure
(iv) Economic activities

6.1.1. Household socio-economic features

The first variable to analyze is the average time that households have been living in the

[7] It includes households in the 21 SAPI communities which were not part of the sample design.

community at the moment of the survey. As can be seen in **Table 6.2**, the average time for the sample is 19 years per household. The Amazonian region (Amazonas, Madre de Dios and Loreto) have a lower average time living in the community than households in sierra regions. In the South Sierra, households in Puno appear with the highest average time living in the community (24.5 years).

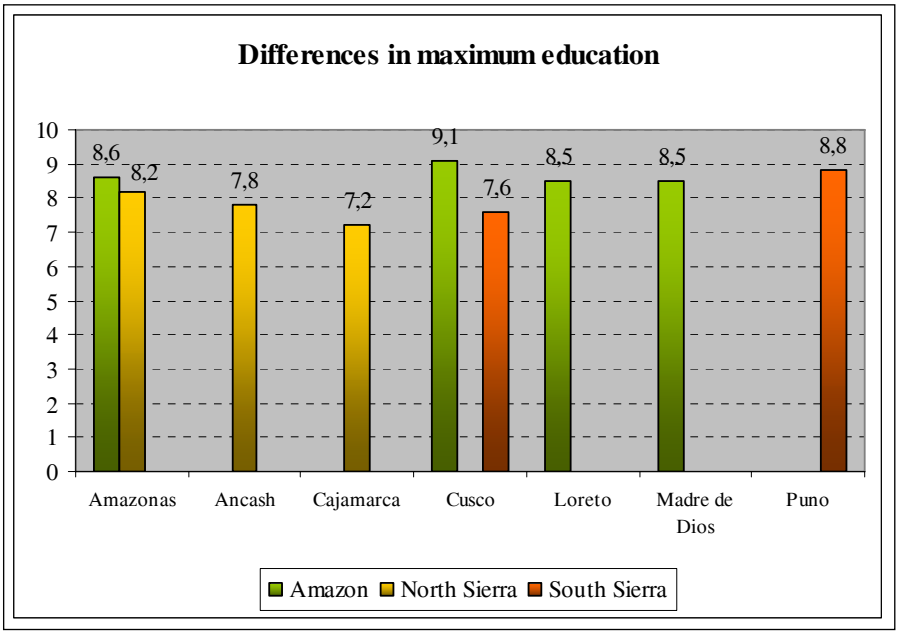
Table 6.2: Household socio-economic features

	Yeras in community				Highest education				Sapnish mother`s tonge			
	Amazon	North Sierra	South Sierra	Total	Amazon	North Sierra	South Sierra	Total	Amazon	North Sierra	South Sierra	Total
Amazonas	16,6	16,1		16,3	8,6	8,2		8,3	29%	98%		76%
Ancash		23,1		23,1		7,8		7,8		31%		31%
Cajamarca		20		20		7,2		7,2		99%		99%
Cusco	15,7		21,9	21,3	9,1		7,6	7,8	40%		15%	18%
Loreto	17,5			17,5	8,5			8,5	96%			96%
Madre de Dios	16,5			16,5	8,5			8,5	70%			70%
Puno			24,5	24,5			8,8	8,8			5%	5%
Total	17,2	18,9	22,3	19	8,5	7,7	7,8	8,1	83%	85%	14%	66%

Source: Household Survey of Impact Evaluation of Foncodes (JBIC PE-19, PE-24), 2006.

Another important feature of households is the stock of human capital that these have. A proxy for this variable may be the highest level of education attained by any member of the household, which is presented also in **Table 6.2**. The same data is shown in **Graph 6.1.**

Graph 6.1



As can be seen, the highest level of education (years of schooling) attained by any member in the households is bigger for departamentos in the Amazonian (Amazonas, Cusco, Loreto and Madre de Dios). In the North Sierra and the South Sierra, there is no important differences

among departamentos.

Table 6.2. also presents the percentage of household members who declare Spanish as their mother tongue. We have a 66% of all surveyed members in this category, but with high variation among regions and departamentos. For Cajamarca and Loreto most members have Spanish as mother tongue (99 and 96%, respectively). Ancash, Cusco and Puno show a relatively low percentage due to the importance of Quechua as main tongue in these sierra departamentos (31%, 15% and 5%, respectively)

In **Table 6.3.** we present additional features of households. The average size of a surveyed household is 5.1 members. There are no significant differences among regions. Cajamarca shows the largest family size (5.7) whereas Madre de Dios has the smaller (4.3).

Table 6.3: Additional socio-economic features of households

	Household size				Percentage of males			
	Amazon	North Sierra	South Sierra	Total	Amazon	North Sierra	South Sierra	Total
Amazonas	5,4	5,1		5,2	49,7%	49,9%		49,8%
Ancash		5,3		5,3		52,1%		52,1%
Cajamarca		5,7		5,7		50,1%		50,1%
Cusco	5,1		4,8	4,9	53,9%		51,2%	51,4%
Loreto	5,2			5,2	52,7%			52,7%
Madre de Dios	4,3			4,3	53,6%			53,6%
Puno			5,5				47,4%	47,4%
Total	5,1	5,4	4,9	5,1	52,5%	54,3%	50,6%	51,5%

	0-5 years old in hh				>40 years old in hh			
	Amazon	North Sierra	South Sierra	Total	Amazon	North Sierra	South Sierra	Total
Amazonas	18%	15%		16%	15%	19%		18%
Ancash		13%		13%		28%		28%
Cajamarca		16%		16%		17%		17%
Cusco	18%		16%	16%	17%		23%	22%
Loreto	15%			15%	25%			25%
Madre de Dios	13%			13%	34%			34%
Puno			12%	12%			29%	29%
Total	15%	15%	16%	15%	24%	20%	24%	23%

Source: Household Survey of Impact Evaluation of Foncodes (JBIC PE-19, PE-24), 2006.

The Table also shows the presence of males in households is of 51, 5% in average. Puno has the lowest percentage in the sample (47.4% of presence of males). In terms of the age structure of families, the Table presents two categories: children with 5 years or less, and people with more than 40 years old. Puno, Ancash and Madre de Dios appear with the lowest presence of children under five (12%, 13% and 13%, respectively) and highest with people with more than 40 years (29%, 28% and 34%, respectively). Amazonas shows the

lowest prevalence of people with more than 40 years (15%).

In **Table 6.4**. there are some statistics for the Head of households. The average age of heads is 44.3 years old. Amazonas and Cusco show an average age below the rest, and Puno, Ancash and Madre de Dios have an older set of household heads than the rest. The percentage of heads who are males is extremely high for all households (92%) with no important differences among regions except for Puno again in which there is only 81% of household with a male as head.

Table 6.4: Features of heads of households and spouses

	H-Head education				Spouse education			
	Amazon	North Sierra	South Sierra	Total	Amazon	North Sierra	South Sierra	Total
Amazonas	6,8	5,3		5,77	4,9	4,7		4,8
Ancash		4,5		4,46		2,9		2,9
Cajamarca		4,1		4,13		3,3		3,3
Cusco	6,6		5,3	5,42	5,7		3,8	4,0
Loreto	6,1			6,1	5,2			5,2
Madre de Dios	6,2			6,18	5,1			5,1
Puno			5,6	5,6			4,8	4,8
Total	6,2	4,7	5,3	5,6	5,2	3,8	3,9	4,5

Source: Household Survey of Impact Evaluation of Foncodes (JBIC PE-19, PE-24), 2006.

	H-Head age				H-Head is male			
	Amazon	North Sierra	South Sierra	Total	Amazon	North Sierra	South Sierra	Total
Amazonas	40,4	42,2		41,61	94%	92%		92%
Ancash		47,1		47,13		92%		92%
Cajamarca		44,2		44,17		92%		92%
Cusco	43,4		42,9	42,95	96%		91%	92%
Loreto	45,3			45,32	93%			93%
Madre de Dios	46,8			46,77	93%			93%
Puno			49,1	49,09			81%	81%
Total	44,8	43,9	43,8	44,3	93%	92%	90%	92%

Table 6.4. also shows the average years of education attained both by the head and his/her spouse. It is clear that heads (predominantly male) have attained higher levels of education than their spouses (5.6 versus 4.5). Also, in average, the Amazonian households have a higher level of education, with Amazonas in the lower end of this group. The pattern for spouses is almost identical in terms of these inter-group differences by regions and departamentos.

Finally, **Table 6.5.** displays the average number of pregnancies that happened in these households during the last five years

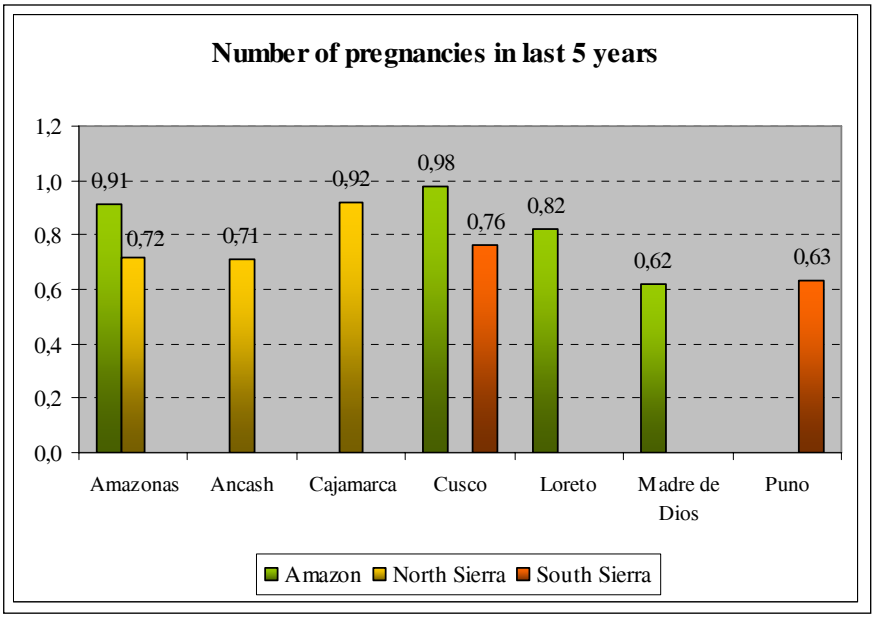
Table 6.5: Pregnancies in last 5 years

	Region			
	Amazon	**North Sierra**	**South Sierra**	**Total**
Amazonas	0,91	0,72		0,78
Ancash		0,71		0,71
Cajamarca		0,92		0,92
Cusco	0,98		0,76	0,78
Loreto	0,82			0,82
Madre de Dios	0,62			0,62
Puno			0,63	0,63
Total	0,82	0,80	0,74	0,79

Source: Household Survey of Impact Evaluation of Foncodes (JBIC PE-19, PE-24), 2006.

As we can seen, departamentos located in the South Sierra region have in average a lower number of pregnancies, while Amazonian departamentos (Amazonas and Cusco) have a higher results (0.91 and 0.98, respectively) [See **Graph 6.2**].

Graph 6.2.



6.1.2. Features of households dwellings

The questionnaire gathered information about some basic features of the dwellings in which household live. **Table 6.6.** presents two of such variables, if the family totally owns the house and the average number of rooms in the house. For the first variable, 78% of households consider themselves total owners. In the case of Amazonian departamentos

(Amazonas and Cusco) this figure is smaller (65% and 55%, respectively) than in the rest of regions.

Table 6.6. Features of dwellings

	Own house				Number of rooms			
	Amazon	North Sierra	South Sierra	Total	Amazon	North Sierra	South Sierra	Total
Amazonas	65%	85%		79%	1,6	2,0		1,86
Ancash		83%		83%		2,8		2,76
Cajamarca		85%		85%		2,0		2,01
Cusco	55%		76%	74%	1,9		2,2	2,14
Loreto	77%			77%	1,9			1,94
Madre de Dios	83%			83%	1,5			1,5
Puno			93%	93%			2,9	2,85
Total	75%	85%	79%	78%	1,9	2,2	2,3	2,0

Source: Household Survey of Impact Evaluation of Foncodes (JBIC PE-19, PE-24), 2006.

For the number of rooms, the average dwelling has 2 rooms, with observable differences among the natural regions. It is clear that Amazonian departamentos have fewer rooms per house, which should be attributed to different living practices. In this natural region family sizes are not smaller than in departamentos from Sierra region.

We also have other features of the houses, like the material of the front, ceiling and floors. Responses for the main category are presented in **Table 6.7**.

Table 6.7: Materials used for houses

	Front is adobe				Ceiling calamina				Floor dust/ sand			
	Amazon	North Sierra	South Sierra	Total	Amazon	North Sierra	South Sierra	Total	Amazon	North Sierra	South Sierra	Total
Amazonas	21%	63%		50%	42%	85%		72%	92%	86%		88%
Ancash		96%		96%		60%		60%		89%		89%
Cajamarca		84%		84%		49%		49%		94%		94%
Cusco	49%		93%	88%	93%		38%	43%	67%		92%	89%
Loreto	0%			0%	18%			18%	14%			14%
Madre de Dios	0%			0%	40%			40%	17%			17%
Puno			100%	100%			86%	86%			89%	89%
Total	5%	77%	94%	47%	27%	66%	45%	42%	25%	90%	91%	60%

Source: Household Survey of Impact Evaluation of Foncodes (JBIC PE-19, PE-24), 2006.

Adobe (dried mud) is the main material used for building houses in Sierra communities. In the Amazonian region the predominant materials are wood (not shown). Calamina is the preferred material for ceilings in Sierra region, whereas palm leaves are the preferred material in the Amazonian regions (not shown). Finally, houses in the sierra tend to have floors of dust/sand, whereas wood is prevalent in the Amazonian regions. All of this reflects

important differences in materials and ways of living among sierra and amazonian inhabitants.

Regarding the type of "bathroom" families use, **Table 6.8.** shows that the main options are using the open field (40%) and latrines (57%). There is no possibility of having in-house bathrooms for these communities.

Table 6.8 Type of bathroom used by families

	Open field as bathroom				Letrine as bathrrom			
	Amazon	North Sierra	South Sierra	Total	Amazon	North Sierra	South Sierra	Total
Amazonas	42%	21%		28%	54%	77%		70%
Ancash		42%		42%		55%		55%
Cajamarca		30%		30%		67%		67%
Cusco	44%		50%	49%	49%		46%	46%
Loreto	43%			43%	57%			57%
Madre de Dios	14%			14%	86%			86%
Puno	.		74%	74%			26%	26%
Total	40%	29%	54%	40%	59%	69%	43%	57%

Source: Household Survey of Impact Evaluation of Foncodes (JBIC PE-19, PE-24), 2006.

It is seen in the Table that the North Sierra group has a higher rate of use of latrines (69%), which also reflects in the differential use of open field.

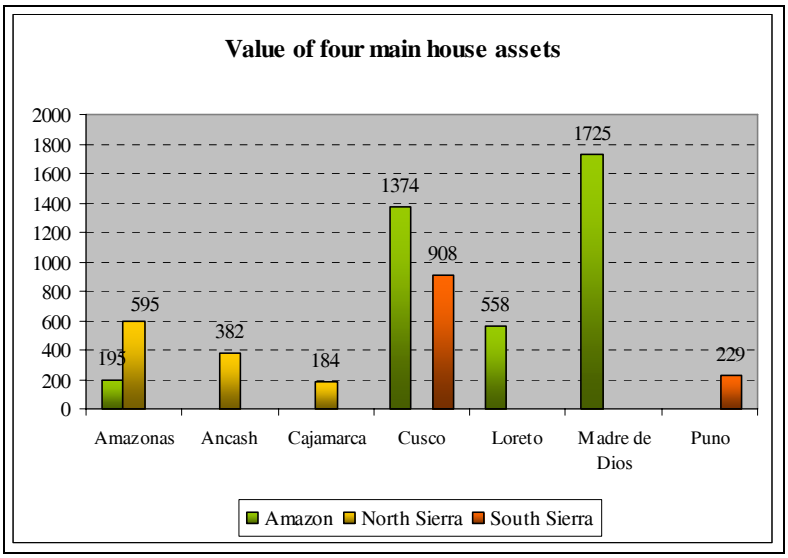
The survey also gathered data on values of main house assets and self-reported rent and selling prices. Results for these variables are presented in **Table 6.9.**

Table 6.9. Main assets and house self-valuation

	Value of four assets				Renting value (median)				Selling value (median)			
	Amazon	North Sierra	South Sierra	Total	Amazon	North Sierra	South Sierra	Total	Amazon	North Sierra	South Sierra	Total
Amazonas	195	595		470	20	20		20	2000	2000		2000
Ancash		382		382		30		30		3000		3000
Cajamarca		184		184		20		20		2000		2000
Cusco	1374		908	955	25		20	20	2100		1500	1500
Loreto	558			558	50			50	500			500
Madre de Dios	1725			1725	50			50	1000			1000
Puno			229	229			20	20			500	500
Total	678	397	812	638	50	20	20	30	500	2000	1500	1000

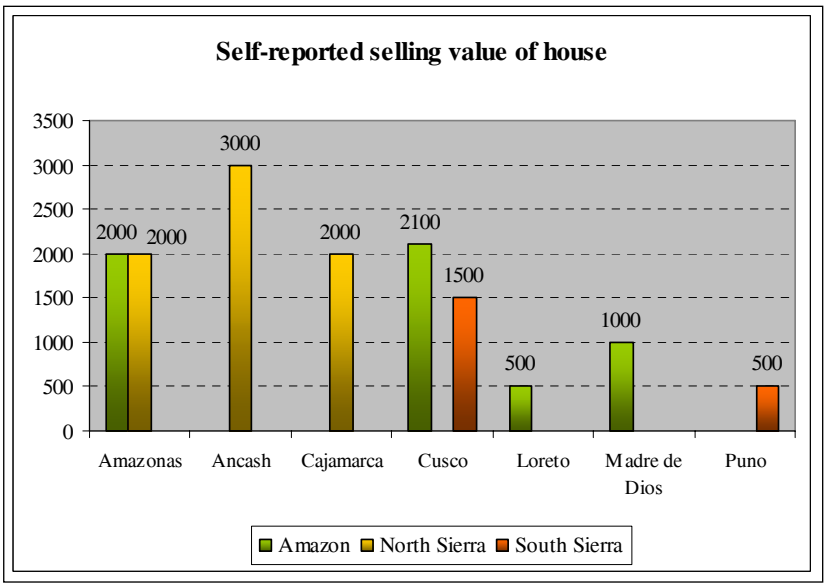
Source: Household Survey of Impact Evaluation of Foncodes (JBIC PE-19, PE-24), 2006.

Graph 6.3.



Cusco and Madre de Dios have more valuable assets than the rest of departamentos, while Cajamarca has poorer households in terms of asset values. The self-reported selling value of houses is displayed in **Graph 6.4.** In this case, it appears that houses have a very low value in Loreto and Puno, with the highest prices in Ancash.

Graph 6.4.



In this case, the self-reported values for Ancash are clearly higher than in the rest of departamentos,a figure that may not be very reliable. The graph reflects the low value for house in the amazonian regions of Loreto and Madre de Dios, and also in the sierra region of Puno.

6.1.3. Presence of public infrastructure

In **Table 6.10.** we present households that declare having water connection to a public water network. We check responses both for the whole sample and for the communities included in redefined water projects stratum.

Table 6.10. Percentage of households connected to water network

	Connected to water network				Use of public pipe outside home				Electricity at home			
	Amazon	North Sierra	South Sierra	Total	Amazon	North Sierra	South Sierra	Total	Amazon	North Sierra	South Sierra	Total
Amazonas	20%	42%		35%	8%	8%		8%	3%	20%		15%
Ancash		55%		55%		4%		4%		54%		54%
Cajamarca		19%		19%		10%		10%		7%		7%
Cusco	11%		22%	21%	20%		14%	14%	35%		37%	37%
Loreto	1%			1%	13%			13%	37%			37%
Madre de Dios	0%			0%	8%			8%	10%			10%
Puno			0%	0%			22%	22%			49%	49%
Total	3%	36%	19%	16%	12%	8%	15%	12%	30%	21%	39%	30%

Source: Household Survey of Impact Evaluation of Foncodes (JBIC PE-19, PE-24), 2006.

In the whole sample, only 16% of household have in-house connection to a water network in their communities. The North Sierra region has the highest access to in-house water connection, with 36%, whereas the Amazonian region only shows 3% for this service. On the other hand, regarding the use of water network outside the house (public pipes) Puno has the higher percentage of household (22%) which access water in this way, which is also important in the amazonian area of Cusco (20%).

Regarding home connections to electricity, 30% of the total sample has access to this service. The South Sierra region has 39% with access, whereas the North Sierra region only 21%. The amazonian areas are at the mean value for home access to electricity.

The survey also inquired about the presence of some other public infrastructure at the community level (recall that all this information come from asking individual households), as shown in **Table 6.11.** For 32% of respondents there is a "posta médica" (small health center) in the community, and for 88% there is an elementary school. Also, 30% declared that a high school exists in their community.

By natural regions, there are important differences in the presence of posta médica, in this case in favor of Amazonian region (41%). Most of this difference come from Amazonas, Madre de Dios and Loreto. This may not reflect a better access to health services, since it is likely that the presence of "posta médica" in the Amazonian departamentos really reflects a relatively more isolated communities, whereas the other regions may be better located and having more access to bigger "centros de salud" which are located in larger localities nearby.

Table 6.11: Public facilities in communities

	Posta medica				Elementary school				High school			
	Amazon	North Sierra	South Sierra	Total	Amazon	North Sierra	South Sierra	Total	Amazon	North Sierra	South Sierra	Total
Amazonas	46%	35%		39%	100%	96%		98%	5%	22%		17%
Ancash		9%		9%		76%		76%		8%		8%
Cajamarca		33%		33%		89%		89%		21%		21%
Cusco	15%		12%	12%	58%		70%	69%	15%		9%	9%
Loreto	42%			42%	99%			99%	62%			62%
Madre de Dios	48%			48%	96%			96%	9%			9%
Puno			47%	47%			59%	59%			10%	10%
Total	41%	29%	17%	32%	97%	90%	69%	88%	48%	19%	9%	30%

Source: Household Survey of Impact Evaluation of Foncodes (JBIC PE-19, PE-24), 2006.

Other important public asset at the community level are local markets both for selling agricultural products and for buying consumption goods. In **Table 6.12.** the presence of these two types of markets at the community level is displayed. In general, these communities are not big enough to have permanent markets of these type.

Table 6.12: Presence of local markets

	Market for selling agric.				Market for buying goods			
	Amazon	North Sierra	South Sierra	Total	Amazon	North Sierra	South Sierra	Total
Amazonas	5%	6%		6%	4%	6%		6%
Ancash		22%		22%		3%		3%
Cajamarca		10%		10%		7%		7%
Cusco	7%		6%	6%	11%		6%	6%
Loreto	4%			4%	3%			3%
Madre de Dios	0%			0%	1%			1%
Puno			0%	0%			0%	0%
Total	4%	11%	5%	6%	4%	6%	5%	5%

Source: Household Survey of Impact Evaluation of Foncodes (JBIC PE-19, PE-24), 2006.

Only 6% of respondents say there is a local market for selling agricultural products, and only 5% declare that there is a local market for buying consumption goods. In both cases, the North Sierra region shows a better endowment, especially in Cajamarca and Ancash.

6.1.4. Economic activities, strategies and assets

Households may have different economic activities, assets and strategies given local markets and institutions. Part of those variables can be observed when looking at the structure of incomes and assets as we do in this part. For instance, in **Table 6.13**. there are three non-agricultural sources of income which are used by rural households.

Table 6.13: Use of sources of income by families

	Receives remittance				Off-farm salary				Non-agric. Business			
	Amazon	North Sierra	South Sierra	Total	Amazon	North Sierra	South Sierra	Total	Amazon	North Sierra	South Sierra	Total
Amazonas	5%	10%		9%	51%	64%		60%	32%	15%		20%
Ancash		34%		34%		68%		68%		28%		28%
Cajamarca		12%		12%		67%		67%		23%		23%
Cusco	20%		15%	16%	65%		55%	56%	33%		25%	25%
Loreto	10%			10%	35%			35%	58%			58%
Madre de Dios	4%			4%	52%			52%	25%			25%
Puno			21%	21%			70%	70%			35%	35%
Total	9%	15%	16%	13%	40%	66%	57%	51%	51%	21%	26%	36%

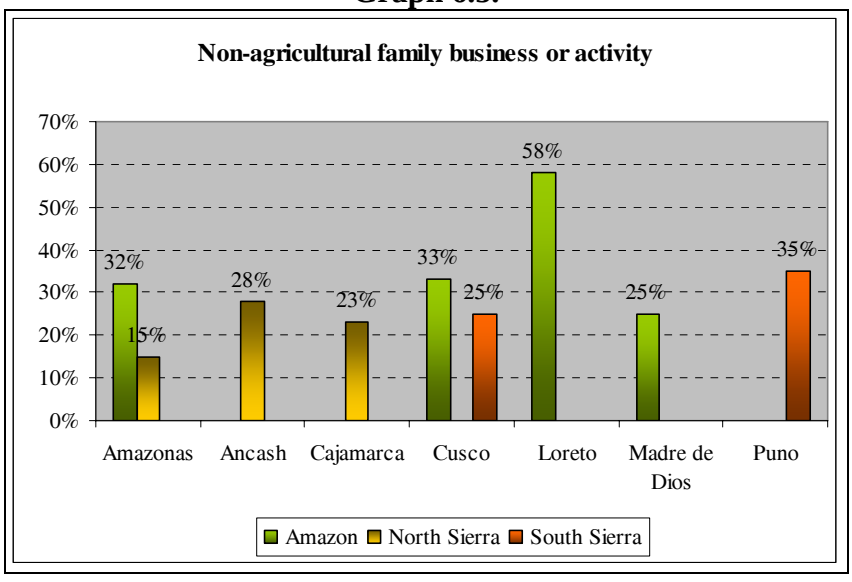
Source: Household Survey of Impact Evaluation of Foncodes (JBIC PE-19, PE-24), 2006.

About 13% receive remittances from family members living elsewhere. The importance of remittances is biggest in Ancash (34%), followed by Puno (21%) and Cusco (16%). On the other side, in almost all Amazonian departamentos (Amazonas, Loreto and Madre de Dios) remittances play a minor role.

The use of off-farm salary is another important strategy which is used by 51% of households. Only in Loreto this option is not massively important (35%), reflecting probably geographic constraints to have local-regional labour markets in this extremely disperse Amazonian region. For all the rest of departamentos off-farm salaried work is a very important source of income, with more of 50% of them using it as a source of family income.

Regarding the presence of a non-agricultural family business, we also see in **Table 6.13.** that a 36% of families use this strategy. This is displayed in **Graph 6.5** as well. Loreto is the region with more use of these indedependent non-agricultural activities as a source of income, although in this case it mostly refers to the cutting of trees in the jungle (which are exploited as an open resource).

Graph 6.5.



The importance of agriculture for these households is displayed in **Table 6.14.** Almost all respondents have agricultural activities (96%). The average time conducting a farm is 15.2 years. By regions, in Amazonian departamentos it is clear that the number of years practising agriculture is lower due to a shorter period of time of households living in these communities vis a vis Sierra regions.

Table 6.14: Agriculture activity in families

	Agriculture activities				Years in agriculture			
	Amazon	North Sierra	South Sierra	Total	Amazon	North Sierra	South Sierra	Total
Amazonas	95%	99%		98%	12,6	13,7		13,38
Ancash		95%		95%		20,5		20,46
Cajamarca		97%		97%		16,0		16,01
Cusco	95%		97%	97%	17,5		17,6	17,55
Loreto	94%			94%	12,4			12,42
Madre de Dios	90%			90%	15,3			15,32
Puno			100%	100%			23,3	23,32
Total	94%	97%	97%	96%	13,0	15,9	18,4	15,2

Source: Household Survey of Impact Evaluation of Foncodes (JBIC PE-19, PE-24), 2006.

Table 6.15. shows some key variables on agricultural assets. In average, a farmer in this sample has 2.2 plots and 5.7 hectares. Farms in Amazonian region are larger and with less plots than in the more fragmented Sierra region.

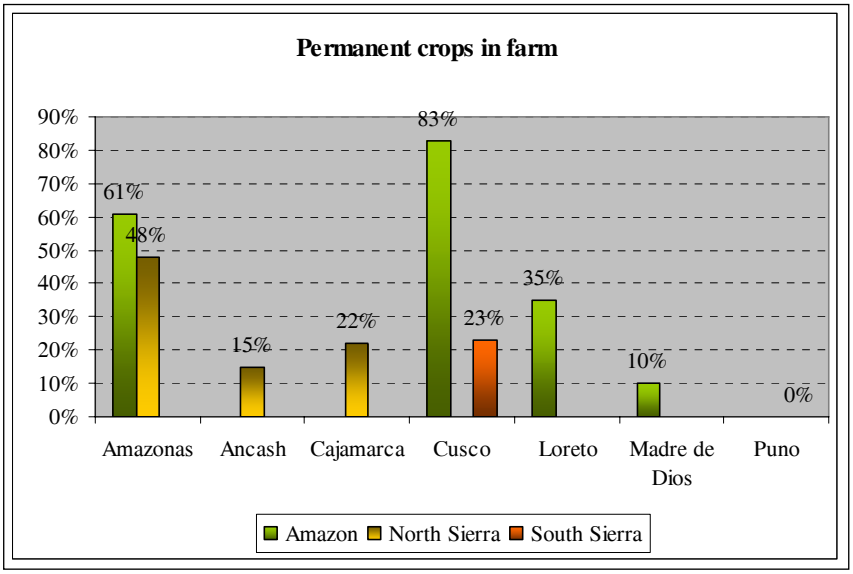
Table 6.15: Agricultural assets

	Number of plots				Size of farm				Permanent crop			
	Amazon	North Sierra	South Sierra	Total	Amazon	North Sierra	South Sierra	Total	Amazon	North Sierra	South Sierra	Total
Amazonas	1,6	2,2		2,05	3,5	7,2		6,1	61%	48%		52%
Ancash		3,8		3,77		2,0		2		15%		15%
Cajamarca		2,2		2,19		3,1		3,1		22%		22%
Cusco	1,6		3,3	3,14	9,7		3,3	3,9	83%		23%	29%
Loreto	1,5			1,52	6,7			6,7	35%			35%
Madre de Dios	1,1			1,14	22,5			22,5	10%			10%
Puno			2,9	2,9			6,9	6,9			0%	0%
Total	1,5	2,5	3,3	2,2	7,5	4,7	3,8	5,7	38%	32%	19%	31%

Source: Household Survey of Impact Evaluation of Foncodes (JBIC PE-19, PE-24), 2006.

The presence of permanent crops in farms is 31% in the overall sample, but there are variations by departamentos as can be seen in **Graph 6.6.** Again, the Amazonian departamentos (especially Amazonas and Cusco) show a higher presence of permanent crops than Sierra departamentos. Puno has a null presence of permanent crop.

Graph 6.6



Another important feature of agricultural activities refer to the use of land rental markets. **Table 6.16** presents the incidence of this market on respondents. A very low 1% declare to have rented out land, whereas a significant 13% to be renting in land at the moment of the survey. It seems that the operation of land rental markets is important in these rural areas, specially in the North Sierra region. This importance seems to be much lower in the Amazonian region.

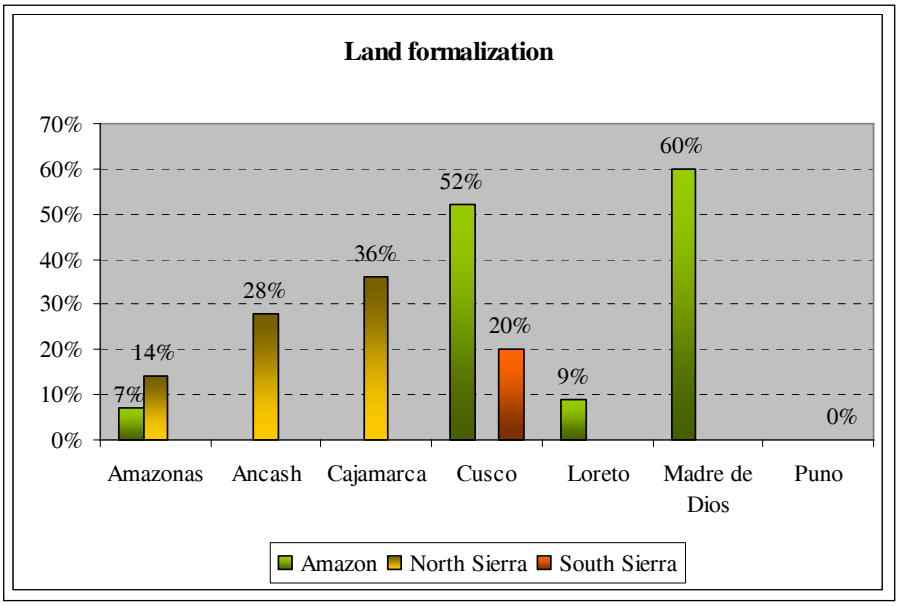
Table 6.16: Use of the land rental market

	Renting plot				Renting in				Registered title			
	Amazon	North Sierra	South Sierra	Total	Amazon	North Sierra	South Sierra	Total	Amazon	North Sierra	South Sierra	Total
Amazonas	1%	3%		3%	12%	9%		10%	7%	14%		12%
Ancash		2%		2%		25%		25%		28%		28%
Cajamarca		1%		1%		23%		23%		36%		36%
Cusco	2%		1%	1%	15%		14%	14%	52%		20%	23%
Loreto	1%			1%	9%			9%	9%			9%
Madre de Dios	0%			0%	11%			11%	60%			60%
Puno			0%	0%			7%	7%			0%	0%
Total	1%	2%	1%	1%	9%	17%	13%	13%	16%	25%	17%	19%

Source: Household Survey of Impact Evaluation of Foncodes (JBIC PE-19, PE-24), 2006.

Table 6.16 also shows information on the degree of land formalization in these areas. The figure represents the percentage of farmers who declared having at least one plot titled and registered. The overall response was 19% with at least one plot registered, showing the high degree of land informality that still remains in Peruvian rural areas. **Graph 6.7** displays the same information.

Graph 6.7.



As can be seen, formalization of land has been higher in the Sierra departamentos of Ancash and Cajamarca, in which the national Project of Titling (PETT) has been very active during the last four years. In the rest of departamentos (with the exception of Madre de Dios), however, land formalization is quite low, especially in Puno and Loreto.

Farmers not only produce crops but also subproducts and livestock goods, as can be seen in **Table 6.17.** Producing subproducts from agricultural goods is an extended practice in Sierra departamentos like Cusco, Puno and Cajamarca (72%, 98% and 79%, respectively). Likewise, livestock production (which in this case includes minor animals) is important for most farmers in all regions.

Table 6.17: Other agricultural activities

	Agricultural subproducts				Livestock production				Ag. Products sold at farm			
	Amazon	North Sierra	South Sierra	Total	Amazon	North Sierra	South Sierra	Total	Amazon	North Sierra	South Sierra	Total
Amazonas	40%	54%		49%	93%	97%		96%	12%	15%		14%
Ancash		42%		42%		95%		95%		22%		22%
Cajamarca		79%		79%		100%		100%		12%		12%
Cusco	69%		72%	71%	82%		96%	95%	25%		16%	17%
Loreto	56%			56%	81%			81%	14%			14%
Madre de Dios	77%			77%	93%			93%	15%			15%
Puno			98%	98%			99%	99%			11%	11%
Total	57%	61%	75%	63%	83%	97%	97%	91%	15%	15%	15%	15%

Source: Household Survey of Impact Evaluation of Foncodes (JBIC PE-19, PE-24), 2006.

The table also displays the proportion of farmers who sell their agricultural products at farm, instead of carrying these at local or regional markets. Only 15% sell their products at their farms, and in this case there are no important differences among natural regions.

Finally, we present information about farmers participation in alternative social organizations in **Table 6.18**. A 53% are affiliated to a community organization (comunidad campesina o nativa), percentage which is particularly high for the South Sierra (Cusco 90% and Puno 79%). Loreto has the lowest use of this type of organizations by farmers (22%).

Table 6.18: Participation in organizations

	Community organization				Ronda campesina				Irrigation organization			
	Amazon	North Sierra	South Sierra	Total	Amazon	North Sierra	South Sierra	Total	Amazon	North Sierra	South Sierra	Total
Amazonas	64%	37%		45%	11%	37%		29%	7%	6%		6%
Ancash		46%		46%		6%		6%		28%		28%
Cajamarca		65%		65%		53%		53%		10%		10%
Cusco	78%		91%	90%	5%		30%	27%	0%		17%	16%
Loreto	22%			22%	2%			2%	0%			0%
Madre de Dios	80%			80%	1%			1%	0%			0%
Puno			79%	79%			6%	6%			5%	5%
Total	35%	49%	90%	53%	3%	37%	26%	18%	1%	12%	16%	8%

Source: Household Survey of Impact Evaluation of Foncodes (JBIC PE-19, PE-24), 2006.

The use of "rondas campesinas" (organizations for self-protection against robbery) are also important, especially in the North Sierra (Cajamarca 53% and Amazonas 36%). This type of organization does not have the same relative importance in the Amazonian region. Finally, participation in irrigation organizations appears as particularly low, with only 8% declaring participation. Departamentos from Sierra have higher percentage of participation, especially in Ancash (28%) and Cusco (17%). In the Amazonian region these organizations are not common as most agriculture is not irrigated.

6.2. Analyzing community characteristics

One of the main measuring instruments that we use to gather data for this evaluation is the Community Survey. This section analyzes socio-economic features, access to public infrastructure and other characteristics of 224 communities. As we can show in **Table 6.19**, 80 communities from the Amazonian region was interviewed, 73 from the North Sierra and 71 from the South Sierra. Take care about these results.

Table 6.19 Community sample by natural region

	Total sample			
	Amazon	North Sierra	South Sierra	Total
Amazonas	14	31		45
Ancash		14		14
Cajamarca		28		28
Cusco	7		61	68
Loreto	49			49
Madre de Dios	10			10
Puno			10	10
Total	80	73	71	224

Source: Community Survey of Impact Evaluation of Foncodes (JBIC PE-19, PE-24), 2006.

We applied the survey to qualified informants about several topics (demography, economic activities, public programs, access to infrastructure, presence of institutions of credit, participation in organizations and prices –land, labour, goods). Also, if the community was intervened by Foncodes, the survey collected information about topics related with the project. In many cases, the local authority (i.e. community leader) and the teniente gobernador were the most frequent qualified informants interviewed as it can be seen in **Table 6.20**.

Table 6.20 Qualified informants

	Type of informant				
	Local authority	Municipal authority	Teniente gobernador	Others	Total
Amazonas	10	6	17	12	45
Ancash	1		5	8	14
Cajamarca		3	21	4	28
Cusco	43	1	12	12	68
Loreto	7	4	23	15	49
Madre de Dios	4		4	2	10
Puno	8		2		10
Total	73	14	84	53	224

Source: Community Survey of Impact Evaluation of Foncodes (JBIC PE-19, PE-24), 2006.

6.2.1. Community size and access to public infrastructure

In **Table 6.21** we have the median of the number of inhabited dwellings in the sample communities. In general, there are not visible differences among regions. In all cases the median is nearly 50 dwellings: 45 in the Amazonian, 50 in the North Sierra and 50 in the South Sierra. By departamentos Cajamarca shows the largest number of inhabited dwellings (75) whereas Madre de Dios has the smaller (21).

Table 6.21 Number of inhabited dwellings (median)

	Total sample			
	Amazon	North Sierra	South Sierra	Total
Amazonas	52	40		42
Ancash		47		47
Cajamarca		75		75
Cusco	35		52	51
Loreto	45			45
Madre de Dios	21			21
Puno			50	
Total	45	50	50	50

Source: Community Survey of Impact Evaluation of Foncodes (JBIC PE-19, PE-24), 2006.

Regarding access to infrastructure, in the case of the elementary school in the community, we have higher percentages in the Amazonian (94%) and the North Sierra (90%) than the South Sierra (65%). Communities from Puno and Cusco have the lower presence of this type of infrastructure. In the case of the posta médica (small health center), in general the Amazonian region has a higher access to this type of health service than the Sierra region. This may not reflect a better access to health services, since it is likely that the presence of "posta médica" in the Amazonian departamentos really reflects a relatively more isolated communities, whereas the other regions may be better located and having more access to bigger "centros de salud" which are located in larger localities nearby [See **Table 6.22**].

There are significant differences in the access to irrigation infrastructure by natural region. Since the most agriculture in the Amazonian region is not irrigated, the presence of irrigation canals is not common. In the North Sierra region, Ancash has the highest percentage of communities with access to this type of productive infrastructure.

Table 6.22: Access to infrastructure

	Elementary school				Posta médica				Irrigation channels			
	Amazon	North Sierra	South Sierra	Total	Amazon	North Sierra	South Sierra	Total	Amazon	North Sierra	South Sierra	Total
Amazonas	92%	96%		96%	42%	32%		35%	7%	10%		9%
Ancash		79%		78%		7%		7%		57%		57%
Cajamarca		89%		89%		32%		32%		18%		18%
Cusco	57%		66%	64%	14%		9%	10%	14%		23%	22%
Loreto	100%			100%	44%			44%	0%			0%
Madre de Dios	90%			90%	30%			30%	0%			0%
Puno			60%	60%			40%	40%			0%	0%
Total	94%	90%	65%	83%	40%	27%	14%	27%	3%	22%	20%	14%

Source: Community Survey of Impact Evaluation of Foncodes (JBIC PE-19, PE-24), 2006.

Another important feature is the presence of commerce and micro business in the community. The **Table 6.23** shows the number of micro and small business (i.e: predominantly shops),

3.4 in general. Puno has the lowest average in the sample (0.6) whereas Cusco (Amazonian region) the highest (5.2). At aggregate level, a very low 8% of qualified informants declared the presence of local fair at the moment of the survey. This result is the lowest in the Amazonian region (in Amazonas and Loreto is null). It seems that the operation local fairs is more important in Sierra, especially in Cajamarca and Cusco.

Table 6.23: Commerce and micro business

	Number of micro and small business				Presence of shops				Presence of local fair			
	Amazon	North Sierra	South Sierra	Total	Amazon	North Sierra	South Sierra	Total	Amazon	North Sierra	South Sierra	Total
Amazonas	2,1	3,5		3,1	57%	64%		62%	0%	6%		4%
Ancash		2,1		2,1		42%		42%		0%		0%
Cajamarca		3,6		3,6		82%		82%		71%		7%
Cusco	5,2		3,3	3,5	85%		55%	58%	0%		15%	13%
Loreto	4,9			4,9	92%			91%	4%			
Madre de Dios	0,9			0,9	30%			30%	10%			10%
Puno			0,6	0,6			10%	10%			10%	10%
Total	3,9	3,3	2,9	3,4	78%	67%	49%	65%	4%	5%	14%	8%

Source: Community Survey of Impact Evaluation of Foncodes (JBIC PE-19, PE-24), 2006.

6.2.2. Price of inputs

The community survey gathers information for the most important inputs in rural area: labour and land. For the first input, we distinguish between agricultural and non-agricultural salary. In the case of land, we obtained information about selling and renting prices for irrigated land. We estimated the median of salary in **Table 6.24.**

Table 6.24 Price of labour

	Agricultural salary				Non-agricultural salary			
	Amazon	North Sierra	South Sierra	Total	Amazon	North Sierra	South Sierra	Total
Amazonas	10	10		10	15	18		15
Ancash		10		10		10		10
Cajamarca		5		5		10		10
Cusco	8		5	6	14		8	8
Loreto	10			10	10			10
Madre de Dios	20			20	22			22
Puno			8	8			8	8
Total	10	10	6	10	15	11	8	10

Source: Community Survey of Impact Evaluation of Foncodes (JBIC PE-19, PE-24), 2006.

For the agricultural salary, we can find the higher labour value in the Amazonian and North Sierra, and the lowest in South Sierra (only about 6 Soles, with 3.2 Soles=1 US$). There is an important difference among departamentos; especially in Madre de Dios (where median of salary is about 20 soles). This result can be related with the agricultural production of coffee and brazilian nuts in this region. For the non-agricultural salary, the Amazonian region has

the higher salary (15), followed by the North Sierra region (11). If we compare both salaries, agricultural activity seems to generate lower earnings than other economic activities in these communities.

Table 6.25 Value of irrigated land (median)

	Selling land				Renting land			
	Amazon	North Sierra	South Sierra	Total	Amazon	North Sierra	South Sierra	Total
Amazonas	1800	5500		3000	500	900		800
Ancash		5000		5000		200		200
Cajamarca		3000		3000		1000		1000
Cusco	1000		5000	5000	2400		500	500
Loreto	650			650	250			250
Madre de Dios	2000			2000	300			300
Puno			4000	4000			1400	1400
Total	1000	5000	5000	3500	400	1000	500	500

Source: Community Survey of Impact Evaluation of Foncodes (JBIC PE-19, PE-24), 2006.

In the case of land irrigated (See **Table 6.25**) we see significant differences in the value per hectare between the Amazonian and Sierra regions. This can be related with the biophysical characteristics of soils. In the Amazon, the quality of soils is poor, and do not allow sustainable agricultural activity because of acidity and other factors. That's why the selling and renting value of land are higher in all Sierra than in Amazonian areas.

6.2.3. Access to technical assistance

We also gather information about access to technical assistance in agriculture. The result for each region is shown in **Table 6.26.** In general, the presence of technical assistance is higher in the South Sierra (34%), followed by the North Sierra (23%).However we can find differences among departamentos. The communities from Ancash has a lower presence (7%), whereas Amazonas (communities from the North Sierra) has a higher (41%) in the whole sample.

Table 6.26 Access to technical assistance

	Presence of agro - technical assistance			
	Amazon	North Sierra	South Sierra	Total
Amazonas	21%	41%		35%
Ancash		7%		7%
Cajamarca		11%		11%
Cusco	29%		34%	34%
Loreto	12%			12%
Madre de Dios	10%			10%
Puno			30%	30%
Total	15%	23%	34%	24%

Source: Community Survey of Impact Evaluation of Foncodes (JBIC PE-19, PE-24), 2006.

For more detail, we explore the types of suppliers of technical assistance following the next classification: public, private and NOG supplier (See **Table 6.27**).

Table 6.27 Suppliers of technical assistance

	Public				Private				NGO			
	Amazon	North Sierra	South Sierra	Total	Amazon	North Sierra	South Sierra	Total	Amazon	North Sierra	South Sierra	Total
Amazonas	7%	19%		16%	7%	16%		13%	14%	12%		13%
Ancash		0%		0%		0%		0%		7%		7%
Cajamarca		4%		4%		4%		4%		3%		4%
Cusco	0%		11%	10%	14%		4%	5%	28%		19%	20%
Loreto	8%			8%	2%			2%	2%			2%
Madre de Dios	10%			10%	0%			0%	0%			0%
Puno			30%	30%			0%	0%			0%	0%
Total	8%	10%	14%	10%	4%	8%	4%	5%	6%	8%	16%	10%

Source: Community Survey of Impact Evaluation of Foncodes (JBIC PE-19, PE-24), 2006.

At aggregate level, we can find a major presence of public suppliers and NGO suppliers, especially in the South Sierra region (especially Cusco). In the Amazon, this presence is not significant.

6.2.4. Presence of formal credit in the community

Regarding to the presence of formal institutions of credit in the community, in the **Table 6.28** show the result obtained from the community survey. In general, we can not across with significant differences among natural regions (all of them have an access nearly to 10%). However, it is possible to find them among departmentos. In the Amazonian sample, only Loreto has access to credit institutions (14%). In the North Sierra region, only Amazonas (16%) and Cajamarca (7%) access to someone. This access is null in Madre de Dios and

Puno communities.

Table 6.28 Presence of formal credit

	Acces to formal credit			
	Amazon	**North Sierra**	**South Sierra**	**Total**
Amazonas	0%	16%		11%
Ancash		0%		0%
Cajamarca		7%		7%
Cusco	0%		11%	10%
Loreto	14%			14%
Madre de Dios	0%		0%	0%
Puno			0%	0%
Total	9%	10%	10%	9%

Source: Community Survey of Impact Evaluation of Foncodes (JBIC PE-19, PE-24), 2006.

It is worth noting that there is a difference in the type of credit institutions by region. In **Table 6.29** we show a list of financial institutions that operate in some communities. As it can be seen, private banks (as Mibanco) have presence in the Amazonian region. In the case of CRAC`S and CMAC's, they appear in few communities of the North Sierra and the South Sierra. In general, ONG has a major importance in the Sierra than in the Amazonian region.

Table 6.29 Credit institutions

Organization	**Amazon**	**North Sierra**	**South Sierra**	**Total**
AGROBANCO	1	0	1	2
CAJA MUNICIPAL	0	0	2	2
CAJA RURAL	0	1	1	2
MI BANCO	6	0	0	5
CREDIVISION	0	0	1	1
ARARIWA	0	0	2	2
PERHUSA	0	1	0	1
PROASSA	0	1	0	1
PRODESUR	0	1	0	1
RED RURAL	0	0	1	1
WORLD VISION	0	0	1	1
OTHERS	1	4	7	12
Total	**8**	**8**	**16**	**31**

Source: Community Survey of Impact Evaluation of Foncodes (JBIC PE-19, PE-24), 2006.

6.2.5. Presence of other public programs

Other important variable to taking into account is the presence of public programs (productive and social programs) in the communities. In **Table 6.30.** we present a list of the most important programs. There is no a significant difference in the presence of Land titling program among regions, despite the efforts made by PETT in Sierra during the last 10 years. Agricultural sanitation, promoted by SENASA, has more importance in the communities from the North Sierra (33%). Finally, reforestation and land conservation programs, promoted by Pronamachcs, have more presence in the Sierra than in the Amazon because of erosion soil problems in this region.

Table 6.30. Presence of public programs

Program	Region			
	Amazon	North Sierra	South Sierra	Total
Land titling program - PETT	36%	44%	31%	37%
Sanidad agropecuaria	8%	33%	18%	19%
Reforestation	11%	27%	30%	22%
Land conservation program	4%	10%	17%	10%
Glass of milk	88%	92%	85%	88%
Comedor popular	6%	33%	8%	16%
School breakfast	79%	84%	70%	78%
Cash transfer program -JUNTOS	1%	11%	4%	5%

Source: Community Survey of Impact Evaluation of Foncodes (JBIC PE-19, PE-24), 2006.

Regarding to social programs, the Glass of milk program (promoted by municipal government) has an important coverage in all regions. On the other side, the cash transfer program Juntos, appears in few communities from the Sierra, especially in the North (11%).

6.2.6. Presence of organization in the community

Finally, we show information about presence of social organizations in the community (See **Table 6.31**). In general, community organization has an important presence in all regions, especially in the South Sierra (94%). All communities from Cusco (in Amazonian region), Madre de Dios and Puno have it.

Table 6.31: Presence of organizations in community

	Community organization				Agricultual association				Irrigation organization			
	Amazon	North Sierra	South Sierra	Total	Amazon	North Sierra	South Sierra	Total	Amazon	North Sierra	South Sierra	Total
Amazonas	78%	77%		77%	14%	29%		24%	14%	12%		13%
Ancash		64%		64%		0%		0%		57%		57%
Cajamarca		71%		71%		14%		14%		28%		28%
Cusco	100%		93%	94%	14%		16%	16%	0%		49%	44%
Loreto	77%			77%	10%			10%	2%			2%
Madre de Dios	100%			100%	40%			40%	0%			0%
Puno			100%	100%			0%	0%			10%	10%
Total	82%	72%	94%	93%	15%	17%	14%	15%	3%	27%	43%	24%

Source: Community Survey of Impact Evaluation of Foncodes (JBIC PE-19, PE-24), 2006.

In the case of irrigation organization, this type has an important weight in the Sierra (27% in the North Sierra and 43% in the South Sierra) than in Amazonian region. In the Amazonian these organizations are not common as most agriculture is not irrigated. The irrigation organization works as to the management for water resource in presence of irrigation channels (infrastructure) that facilitate it.

7. Impact analysis: water projects

7.1. Redefinition of the control groups

The total sample of communities for this evaluation is shown in **Table 7.1**. Of the 224 interviewed communities, we have 98 which correspond to the original "water sample", i.e., communities which will be used for assessing the impact of this type of projects.

Table 7.1: Total sample of communities

Total sample

	Other sample	Water Sample	**Total**
AMAZONAS	25	20	**45**
ANCASH	0	14	**14**
CAJAMARCA	14	14	**28**
CUSCO	45	23	**68**
LORETO	40	9	**49**
MADRE DE DIOS	2	8	**10**
PUNO	0	10	**10**
Total	126	98	**224**

Source: Field work survey, GRADE, October 2006

The distribution of the "water sample" in terms of treated and untreated communities in the original sample is shown in **Table 7.2**.

Table 7.2. Original water sample

Original composition of water sample

	Control	Treatment	**Total**
AMAZONAS	11	9	**20**
ANCASH	7	7	**14**
CAJAMARCA	7	7	**14**
CUSCO	11	12	**23**
LORETO	6	3	**9**
MADRE DE DIOS	3	5	**8**
PUNO	5	5	**10**
Total	50	48	**98**

Source: Field work survey, GRADE, October 2006

We have 48 communities considered as "treated" by Foncodes water projects and 50 communities which were selected to be used as controls. We checked if the latter communities were indeed good potential controls former, using data from both household and community surveys. We gave special attention to the presence of water infrastructure in these communities. After this analysis, we found that there was an important number of communities which were not good controls as shown in **Table 7.3**.

Table 7.3. Checking and redefinition of control sample for water projects

Departamento	Control	Treatment	Total	Loss	Potential Substitutes	Control Final(*)
AMAZONAS	11	9	20	3	4	12
ANCASH	7	7	14	4	0	3
CAJAMARCA	7	7	14	5	4	6
CUSCO	11	12	23	4	24	31
LORETO	6	3	9	1	28	33
MADRE DE DIOS	3	5	8	3	3	3
PUNO	5	5	10	0	0	5
Total	50	48	98	20	63	93

(*) Not all controls are necessarily used in matching at departamento level

In total, 20 communities from the original control group did have water infrastructure and services and needed to be discarded from the control group (these communities got water investment from other sources and interventions). Thus, we only have 30 of the 50 original control communities to do the analysis. To avoid this important loss of observations we decided to take additional control communities from the rest of the sample of controls (for electricity and transport projects) within the same departamento. We checked communities without water services or infrastructure at the moment of the survey and we came up with 63 additional communities which are usable as potential controls for the water treated sample. Adding these to the 30, we have a total of 93 potential controls for the water sample as shown in **Table 7.3**. We recovered the pscore values obtained for the water matching process and the sample selection process in each departamento for each of these potential substitutes and so could use this as the pscore matching in the evaluation of impacts.

7.2. Assessing main impacts of water projects at the community level

First we assess the impacts of Foncodes water projects using variables constructed at the community level. These variables are mainly sample means or sample proportions. We discuss in **Annex 5** about the reliability of these sample statistics to represent total community values, arguing that the sample size of 8-12 families taken from communities with 40-60 families is big enough to have reliable aggregates.

We apply a matching procedure in each departamento and using the original *p*-score estimated in the sampling process. The matching was performed using the one-to-one procedure with replacement, and the option of common support was used in all cases. We used licensed software Stata v. 9.0, with command psmatch2.

Table 7.4 shows the impact estimations for selected impact variables for water projects at the community level. This Table shows the aggregate result for the entire sample of communities and departamentos. Results for each departamento and impact variable are presented in **Annex 4.**

Table 7.4. Matching estimation of water project impacts at community level

	Treated	Control	ATT	Std Err	t-stat	sign	#Treated	#Controls
Daily time to collect water (minutes)	2.70	9.20	-6.50	1.15	-5.65	**	38	38
Average number of hygiene practices	2.04	1.85	0.19	0.18	1.04		38	38
Average monthly expenditure on hygiene products (soles)	14.32	12.05	2.26	1.08	2.09	**	38	38
Percentage of hh. Covering water recipients (%)	68.5%	64.3%	4.2%	8.8%	0.48		36	36
Percentage of hh who consider water is of good quality (%)	65.5%	55.0%	10.5%	5.4%	1.94	**	38	38
Rate of infant mortality (per 1000)	14.10	8.24	5.86	10.44	0.56		38	38
Incidence of diarrhoea on children 0-6 (%)	32.8%	36.3%	-3.5%	5.1%	-0.69		38	38
Incidence of skin diseases on children 0-6 (%)	3.9%	6.4%	-2.5%	2.4%	-1.04		38	38
Percentage of children 2-10 with malnutrition (%)	26.5%	31.7%	-5.2%	4.7%	-1.11		38	38

(**) Significant at 95%; (*) Significant at 90%.

The main positive impacts found for water projects are:

- Daily time required to collect water is 6.50 minutes lower for treated group (2.70 versus 9.20 minutes in average for control)
- A higher expenditure in hygiene products in treated communities of 2.09 Soles
- A higher percentage of people say the water is of good quality at the community level, (65% for treated versus 55% for control)

At this level of analysis, we did not find significant impacts for crucial indicators like incidence of diarrhea on children 0-6 years old, or in children nutrition status in water projects. The proportion of children 2-10 years old suffering malnutrition was measured as height-for-age using World Health Organization standards[8].

7.4. Impacts of water projects at the household level

We also estimated impacts of water projects at the household level. This is useful for two

[8] We used Anthro 2005 from WHO software for estimating the incidence of malnutrition among children between 2 and 10 years old, based on height and age (weight values were not reliable due to problems with the used scales that did not work well in high altitudes in Peru).

main reasons. First, we can incorporate household-level variables in the matching procedure, thereby generating more precise estimates of impacts. Second, because we have bigger samples for the analysis, the estimates will likely be of higher quality. We estimated impacts on a subset of variables that were analyzed as aggregates at the community level, but in this case measured for each household. We considered that all households in a treated community receive direct and indirect benefits from the projects, so all selected households in a treated community are considered as treated households.

The matching procedure was applied in two stages. The first stage corresponds to the original community matching procedure used for sampling, in which potential substitute controls were injected. This stage deals exclusively with community-level characteristics. The second stage deals exclusively with household-level characteristics and is performed for each treatment community over a set of neighbor communities in terms of the first-stage p-score.

For the first stage, we identified for each treated community in each departamento, all control communities that were closer than +/- 0.1 in pscore value estimated in the sampling procedure for each line of investment and within each departamento. As for the substitute control communities, we had their original pscores values in the corresponding line (in this case water projects), so we kept consistency with the original matching procedure. The restriction of control communities to be within this radius of 0.1 assures that the treated households are compared to households located in the vicinity of the original pscore in which the sampling was based.

After selecting the control communities (and households) within this 0.1 radius in pscore value, we ran a new matching process estimating mean treatment effects on the treated (ATT), and using in this case exclusively household-level variables (family size, head education, head age, head gender, head mother's tongue) in the new pscore estimation. The matching was done using the one-to-one procedure with replacement and for each community within each departamento. This implies that the same households might be used as controls in different matchings, depending on their distance to the treated household in the original pscore. Standard errors for the estimates were collected and aggregated using an iterative routine based on analytical estimates provided by a customized version of psmatch2 and based on its same hypotheses. Results are presented in Table 7.5.

Table 7.5. Impacts at household level

	Treated	Control	ATT	Std Err	t-stat	sign	used obs
Time to collect water	2.67	7.58	-4.91	0.28	-17.41	**	710
Quality of water is OK	0.66	0.57	0.09	0.02	3.90	**	735
Infant mortality	0.01	0.011	0.000	0.01	0.00		259
Incidence of diarrhea	0.39	0.55	-0.16	0.04	-4.13	**	274
Incidence of skin disease	0.07	0.19	-0.12	0.03	-4.40	**	274
Child malnutrition	0.30	0.30	0.00	0.03	0.16		469

(**) Significant at 95%; (*) Significant at 90%.

As can be seen, in this case we are able to estimate positive impacts on two very important indicators: incidence of diarrhea and skin diseases among children 0-6 years old. The rate of diarrhea dropped 16 percent points (from 55% to 39% of incidence) due to the Foncodes water project intervention, and the rate of skin diseases in children in 12 points (from 19% to 7%). Impacts on time saving and favorable perceptions on water quality are in line with what we found in the community analysis. No significant impacts were found on infant mortality and child malnutrition.

Part of the explanation of these differences on impacts on diarrhea and skin diseases with the community level analysis may be related to introduction of additional household level covariates in the matching procedure, as this may reduce variances and generate more precise estimates. Bigger samples also may have played a role in this more precise result.

7.5. Regression analysis for water connection and hygiene practices

Access to piped water at home and number of hygiene practices are two key impact variables which have potential positive effects on health status of family members. Besides Foncodes intervention, it is important to know what variables may influence the probability of households connecting to the water network, and the adoption of a certain number of hygiene practices. For this reason we estimated regression models for water connection and number of hygiene practices using the overall sample of households. We considered as explanatory variables in the connection regression, income percapita, community and water project features, and some household characteristics. In the case of number of hygiene practices we included as explanatory if the household has water connection. Results are presente in Tables 7.6. and 7.7.

Table 7.6.

Probit model for water in-house connection
Marginal effects

	dy/dx	stand-err	z-value	sign
Log(per capita income)	0.028	0.018	1.55	^
Community size	0.000	0.001	-0.08	
Project amount	0.000	0.000	-1.05	
Project age	-0.008	0.080	-0.10	
Project working	0.203	0.095	2.13	**
Benefits all	0.145	0.083	1.74	*
External initiative	-0.034	0.082	-0.41	
Head years of education	0.004	0.006	0.70	
Head age	-0.001	0.001	-0.50	
Head is male	0.070	0.045	1.56	^
Selva	-0.220	0.079	-2.80	**
Observations	1195			
Design df	109			
F(11,99)	6			

Source: Field work survey, GRADE (October 2006)
** significant at 95%, * at 90%, ^ at 85%

The probability of households connecting the water network is positively related to per capita income, as expected, and also to some attributes of the water project, like it being working well and benefiting all people in the community (according to informants´ opinions). Also, the gender of household head seems to affect water connection (pointing out a gender bias in this key variable) . Also, households located in selva have more difficulties to get water connection.

Table 7.7.

Regression model for number of hygiene practices at home

Marginal effects

variable	dy/dx	Std.Err	z-value	sign
Log(per capita income)	-0.094	0.054	-1.74	*
Water connection	0.254	0.147	1.73	*
Community size	0.001	0.001	1.09	
Project amount	0.001	0.001	0.87	
Project age	-0.016	0.174	-0.09	
Project working	-0.266	0.216	-1.23	
Benefits all	0.168	0.185	0.91	
External initiative	-0.045	0.167	-0.27	
Head years of education	0.025	0.014	1.79	*
Head age	-0.009	0.003	-3.42	**
Head is male	-0.029	0.139	-0.21	
Selva	0.884	0.171	5.19	**
Observations	1195			
Design df	109			
F(12,98)	8.13			

Source: Field work survey, GRADE (October 2006)

** significant at 95%, * at 90%, ^ at 85%

In the case of hygiene practices, per capita income does not appear as important for adopting these, by the contrary, it seems that less poores households tend to have less hygiene practices (-9%). However, connection to the water network does have a clear and relatively big impact on the adoption of hygiene practices (marginal impact of 25%), and so, this seems to be akey variable for people adopting this type of practices. Also, head´s education appears as important in adopting hygiene practices and head age, with older heads having less hygiene practices at home. Also, households in selva hava a higher number of hygiene practices at home, probably because water quality is much lower than in the sierra region.

7.6. Using SAPI data to analyze the evolution of children height-for-age estimates in Selva region

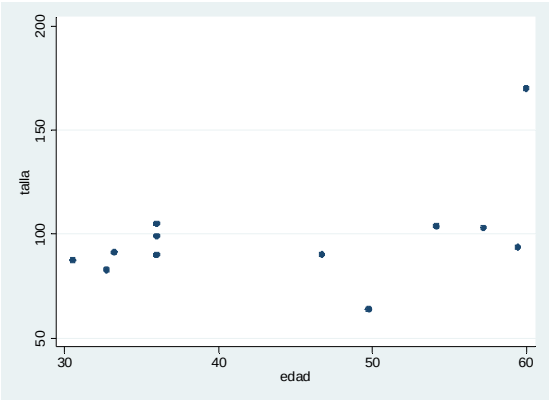
The overall behavior of height as related to age and intervention factors is modeled by regression as follows (N=615):

Table 7.8 Linear regression for children height as a function of age for SAPI and survey characteristics

Height	*Coef.*	*Std. Err.*	*t*	*P>t*
age	0.72	0.26	2.73	0.0070
age^2	0.00	0.00	-0.65	0.5160
2006	2.26	0.81	2.79	0.0050
Foncodes	0.13	1.39	0.10	0.9240
Age 36-48	0.35	2.30	0.15	0.8800
Age 48-72	1.20	2.69	0.45	0.6560
Foncodes 36-48	-2.06	2.17	-0.95	0.3420
Foncodes 48-72	-4.49	1.80	-2.49	0.0130
Madre de Dios	1.74	4.55	0.38	0.7010
Girls	-0.13	0.73	-0.18	0.8600
Girls in MDD	7.41	5.56	1.33	0.1830
constant	63.69	5.99	10.63	0.0000

It would seem girls in Madre de Dios have a very important effect on the overall model. However, the data from Madre de Dios is available for only 12 observations where height as a function of age is aberrant as can be seen in **Graph 7.1**.

Graph 7.1. Height as a function of Age for girls in Madre de Dios



Then, recalculating the overall model for Loreto only we get more precise results as depicted in **Table 7.9** (N=603):

Table 7.9. Linear regression for children height as a function of age for SAPI and survey characteristics, Loreto only

Height	*Coef.*	*Std. Err.*	*t*	*P>t*
age	0.71	0.25	2.84	0.0050
age^2	0.00	0.00	-0.66	0.5110
2006	1.85	0.77	2.39	0.0170
Foncodes	0.19	1.32	0.14	0.8870
Age 36-48	0.38	2.18	0.18	0.8610
Age 48-72	1.19	2.56	0.47	0.6420
Foncodes 36-48	-2.07	2.06	-1.00	0.3160
Foncodes 48-72	-4.68	1.72	-2.72	0.0070
Girls	-0.13	0.70	-0.19	0.8510
constant	64.09	5.71	11.23	0.0000

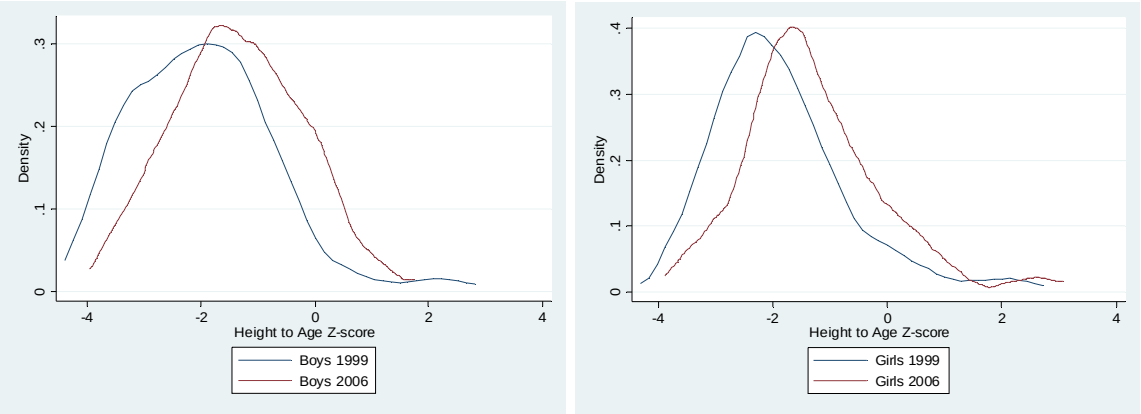
Therefore, there is an increase in children height from 1999 to 2006, and significantly less so in the communities intervened by Foncodes for children aged 4 to 6. The growth effect cannot be discriminated in this model between girls and boys.

Malnutrition relative to WHO standards

In order to relate our measures more closely with malnutrition proper, we relate them to the World Health Organization (WHO) children growth standards. We calculate the z-scores giving the position of each of our measures relative to the normal standard measures for height relative to age. This height-to-age z-score is usually referred to as HAZ.

We used WHO's anthro2005 system with both the 1999 and 2006 SAPI child data, using the US National Center for Health Statistics (NCHS) and WHO reference data. Overall, see **Graph 7.2**, a large and significant shift is observed in HAZ (Kruskal-Wallis test yields a difference at $p<10^{-4}$), showing better height-to-age distributions for 2006 relative to 1999. (Note that the following distributions have been clipped to the -4 to 4 range, therefore ignoring outliers; the non-parametric Kruskal-Wallis test has been used for the same reason.)

Graph 7.2. HAZ distributions for genders in 1999 and 2006 (children <10yo)



Defining malnutrition as HAZ below -2 (i.e. height-to-age ratio below two standard deviations of the reference mean) gives slightly better rates in children aged 2 to 6 for WHO compared to NCHS. That's perfectly explained given the way in which the reference populations are defined (world-bound vs. US-bound, respectively). Reported in **Table 7.10.** malnutrition rates dropped from around 42% in 1999 according to SAPI to near 25% in 2006 according to our survey.

Table 7.10. Malnutrition rates according to WHO and NCHS standards

	1999	***2006***
Boys	41.80%	27.56%
Girls	42.48%	21.99%

WHO standard

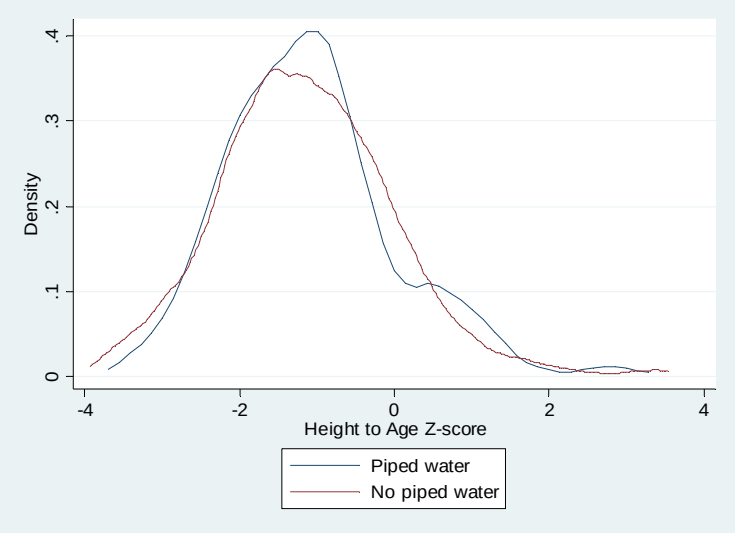
	1999	***2006***
Boys	44.05%	25.20%
Girls	44.44%	21.99%

NCHS standard

There has been a clear improvement given any of these malnutrition indicators, especially for girls.

This finding seems to be general to the whole SAPI sample and uncorrelated with water access, since we cannot find significant differences for current HAZ between communities having access to piped water and otherwise in 2006.

Graph 7.3 HAZ Distribution by access to water



Exploring whether practices, access to Foncodes programs or plain access to health care have been factors in this evolution, we use the following methodology: we compare HAZ distributions between (i) 1999 and 2006, and (ii) individuals grouped by characteristics. For each of (i) and (ii) we compare the other two distributions using Kruskal-Wallis tests. The *p*-values for determining rejection of the null hypothesis of equal distributions are reported in **Table 7.11**.

Table 7.11.
1999-2006 and having/not having pairwise HAZ distribution comparisons

Comparison 1999 vs. 2006		
	Group	*K-W p-value*
Chlorine use	No	0.0001
	Yes	0.0001
Higiene practices	No	0.0021
	Yes	0.0001
Water boiling	No	0.0001
	Yes	0.0001
Bleach use	No	0.0001
	Yes	0.0001
Health center	No	0.0001
	Yes	0.0067
Health post	No	0.0352
	Yes	0.0001
Foncodes	No	0.0001
	Yes	0.0001

Comparison between having conditions/ infrastructure/ practices and not		
	Group	*K-W p-value*
Chlorine use	1999	0.9053
	2006	0.4939
Higiene practices	1999	0.8733
	2006	0.4327
Water boiling	1999	0.8778
	2006	0.4686
Bleach use	1999	0.8308
	2006	0.8866
Health center	1999	0.8883
	2006	0.1583
Health post	1999	1.0000
	2006	0.1145
Foncodes	1999	0.9209
	2006	0.0616

Therefore, neither Foncodes intervention nor water care practices (nor access to water, as

noted previously) seem to be factors of malnutrition receding in Selva. On the other hand, access to a health post or center in the community does seem to have a differential impact in height-to-age ratio and therefore in malnutrition rates.

The difference in 2006 between Foncodes-intervened and non-intervened communities is surprising: although the HAZ distributions are different at p~0.06, the Foncodes-intervened communities have a higher malnutrition rate in 2006 (28% for boys and 25% for girls against 26% and 11% respectively). Indeed, we comfort the previous result that Foncodes-intervened communities fared worse than those that didn't. The intervention logic applied by Foncodes might be a factor in this perplexing result: accessibility to Foncodes-intervened communities is significantly better than for non-intervened communities (mean 2.6 hours away vs. 3.4; Kruskal-Wallis distribution difference test $p<10^{-4}$). In contrast, the health micronet system strives at having health posts in the farthest communities, and relaying increasingly difficult cases to health centers and then hospitals. Health posts, being attended mainly by nursing staff, do have stronger emphasis on preventive health care.

The variable seemingly explaining this recess is access to health care through health posts: a health center in the community does not clearly influence a differential evolution, but access to a health post seems better related to a stronger reduction in malnutrition rates.

Actually, calculating malnutrition as before, the drop in rates is higher in communities hosting a health post, and much more so for girls:

Table 7.12.
Malnutrition rates given presence of health post

	Malnutrition rate	
	Boys	***Girls***
No health post in community		
1999	44.8%	39.7%
2006	33.3%	26.1%
Health post in community		
1999	43.3%	50.0%
2006	24.7%	20.0%

8. Impact analysis: electricity projects

8.1. Re-definition of the control group

As in the case of water projects, for electricity projects we need to check if the selected communities as controls are indeed appropriate as counterfactuals for communities with Foncodes financed electricity projects. In **Table 8.1**. we present the distribution of the total sample of communities, identifying the ones in the electricity sample. We only have 37 communities sampled for this purpose, concentrated in Cusco and Loreto.

Table 8.1. Total and electricity original sample

Total sample

Departamento	Other sample	Electricity sample	**Total**
AMAZONAS	45	0	**45**
ANCASH	14	0	**14**
CAJAMARCA	28	0	**28**
CUSCO	45	23	**68**
LORETO	35	14	**49**
MADRE DE DIOS	10	0	**10**
PUNO	10	0	**10**
Total	187	37	**224**

Source: Field work survey, GRADE, October 2006

The distribution of treated and untreated (control) communities is displayed in **Table 8.2**. We have 19 communities as treatment group and 18 as control group, all located in Cusco and Loreto.

Table 8.2. Electricity sample

Original composition of electricity sample

Departamento	Control	Treatment	**Total**
CUSCO	11	12	**23**
LORETO	7	7	**14**
Total	18	19	**37**

Source: Field work survey, GRADE, October 2006

In **Table 8.3**, on the other hand, we present the checking of original control communities which need to be discarded as these have electricity infrastructure according to the field surveys we have applied. A total of 4 out of 19 communities needed to be discarded from the

control group due to this situation.

Table 8.3. Checking and redefining the control group for electricity sample

Departamento	Control	Treatment	Total	Losses	Potential substitutes	Control Final(*)
CUSCO	11	12	23	1	29	39
LORETO	8	7	15	3	17	21
Total	19	19	38	4	46	60

In order to increase the potential number of communities in the control group for the electricity projects we also reviewed the situation of the rest of the control sample, finding 46 communities without electricity services which can be potential controls for the intervened ones.

Using procedures similar to the ones discussed in the previous section, we estimated the impacts of electricity projects in a set of pre-defined variables as shown in **Table 8.4**.

Table 8.4.. Matching estimations of electricity impacts on communities

	Treated	Controls	ATT	Std Err	t-stat	sign	#Treated	#Controls
Number of small enterprises at cc.pp.	6.74	1.89	4.84	1.88	2.58	**	19	19
Number of electric appliances	1.72	0.76	0.96	0.25	3.83	**	19	19
Telephone service at cc.pp. (%)	5.3%	10.5%	-5.3%	8.8%	-0.60		19	19
Average non-agricultural income at cc.pp. (soles)	1365.5	777.2	588.3	401.8	1.46		19	19
Average annual net income of households (soles)	9257.9	5672.2	3585.7	1593.6	2.25	**	19	19
Weekly hours of study by students at home	7.74	6.97	0.78	0.61	1.27		19	19
Rental value of house (soles)	45.25	40.08	5.17	10.46	0.49		19	19
Selling value of house (soles)	3455.9	1710.6	1745.3	771.7	2.26	**	17	17

(**) Significant at 95%; (*) Significant at 90%.

There are four main average impacts of electricity projects on the treatment group:

- The number of small businesses increases in 4.8, going from only 1.9 for untreated communities to 6.7 small businesses in the treated sample;

- The average number of electric appliances by household increases in 0.96;
- Average total income of families increase 3,585 (more than 50%) in the treated communities.
- Selling value of houses increase in 100% approximately for treated communities

We do not find effects in the hours of study at home, or in the rental and selling value of houses in the treated communities.

8.3. Impacts at household level

For matching results at the household level we followed a similar procedure as the one described for water projects in section 7. We included household variables in the probit model for estimating community-specific pscores. The results of estimating impacts at household level is presented in **Table 8.5**.

Table 8.5. Impacts of electricity projects at household levels

	Treated	Control	ATT	Std Err	t-stat	sign	used obs
Household has a family business	0.42	0.22	0.20	0.04	5.55	**	336
Number of electric appliances	1.28	0.29	0.98	0.06	15.48	**	336
Non-agricultural income	1302.12	2208.18	-906.06	619.86	-1.46		336
Total income	8989.06	9252.74	-263.68	1145.65	-0.23		336
Weekly hours to study at home	8.17	7.04	1.12	0.38	2.99	**	243
Rental value of house	45.42	82.69	-37.27	15.95	-2.34	**	163
Selling value of house	2655.70	1671.19	984.51	249.03	3.95	**	176

(**) Significant at 95%; (*) Significant at 90%.

In this case we find impacts which are similar to the ones at the community level. The presence of a Foncodes financing electricity project increases in 20% the probability for a household to have a family business (this variable is different from the one at the community level, which was based on informants´ assessments about the number of businesses in the community. Here the variables identifies whether each household runs a family non-agricultural business. The average number of electric appliances per household increases in 0.98. Curiously, in this case we do not find an impact in incomes at the household level, something we found in the community level estimates. It seems that controlling for household specific covariates tends to eliminate the differences in income that were detected when only matching communities. However, there is a significant increase in weekly hours

devoted to study at home by children in school and also on the selling value of the houses, in line with the effects at community level and other studies on impact of electrification projects. On the other hand, the rental value of houses shows a negative impact, reflecting perhaps the scarce development of this market in rural areas of Peru.

9. Impact analysis: transportation projects

9.1. Definition of the treated and control groups

In the case of the roads and bridges (transportation) projects of Foncodes, we did not have any observable variable which we can use to check if the control group did not have other transport projects that we do not observe in the sampling process. Because of this we keep the same structure for the control sample as the original one, described in **Table 9.1**.

Table 9.1. Original and final sample for transport projects

Original composition of roads & bridges sample

Departamento	Control	Treatment	**Total**
AMAZONAS	12	13	**25**
CAJAMARCA	7	7	**14**
CUSCO	11	11	**22**
LORETO	4	5	**9**
Total	34	36	**70**

Source: Field work survey, GRADE (October 2006)

9.2. Assessing transport project impacts at community level

After applying a matching procedure similar to the one described in sections 7 and 8, we have estimated potential impact of transport projects for a large set of variables, as shown in **Table 9.2**. As we can seen, we do not find any statistical significant impacts of transport projects at the community level for any of the selected variables.

Table 9.2. Estimated impacts of transport projects

	Treated	**Control**	**ATT**	**Std Err**	**t-stat**	**sign**	**#Treated**	**#Controls**
Non-agricultural income	768.9	444.1	324.8	287.4	1.13		36	31
Income from wage job	1471.2	1100.3	370.9	386.9	0.96		36	31
Total net income	6116.4	5608.7	507.7	858.2	0.59		36	31
Price of hectare of land with irrigation	5324.4	3374.4	1950.1	1966.5	0.99		21	16
Price of hectare of pasture in cc.pp.	8673.7	4108.6	4565.1	2656.4	1.72	*	24	21
Rental value of house	34.5	51.6	-17.1	13.6	-1.25		32	24
Selling value of house	2395.5	2029.6	365.9	417.5	0.88		32	24
School enrollment	88.1%	87.8%	0.2%	3.6%	0.07		36	31
Average days w/o school attendance last month	1.10	1.47	-0.4	0.5	-0.78		36	31
Average days w/o school attendance last 3 months	1.94	3.09	-1.2	1.0	-1.16		36	31

(**) Significant at 95%; (*) Significant at 90%.

At the community level, the only impact that we find of transportation projects is in the price of land devoted to pasture. No other indicator appears with a significant impact. However, at the household level we will find some relevant impacts as described next.

9.3. Impacts at household level

We checked for impacts when the unit of measurement is the household. In **Table 9.3** we present the estimation of impacts at household level. Contrary to what we have at the community level, in this case we do find significant impacts in several variables:

Table 9.3. Impact of transport projects at household level

	Treated	Control	ATT	Std Err	t-stat	sign	used obs
Number of weeks working out of farm	10.49	7.18	3.32	0.56	5.94		606
Non-agricultural income	660.03	707.89	-47.85	133.12	-0.36		606
Income from wage job	1301.26	649.66	651.59	94.66	6.88	**	606
Total net income	5970.60	5420.43	550.17	430.02	1.28		606
Rental value of house	40.41	77.28	-36.88	10.15	-3.63	**	240
Selling value of house	3025.47	2938.02	87.45	225.18	0.39		314
School enrollment	0.95	0.94	0.00	0.01	0.32		366
Average days with no school attendance last month	0.79	1.44	-0.65	0.16	-4.13	**	402
Average days with no school attendance last three months	1.41	2.34	-0.93	0.21	-4.36	**	402

(**) Significant at 95%; (*) Significant at 90%.

Income from wage jobs increases with transportation projects in 650 Soles (about US$ 200 per year). This is an increase of about 100% in this source of income for rural families in treated communities. Also, the estimation at household level indicates a positive impact on the rate of attendance to school by children. The average days of non-attendance during last three months is lower in 1 day for children in treated communities versus non-treated, although this does not appear to be much in this context. Finally, we found again a negative effect on the rental value of houses that does not have a clear explanation.

No other variables show any significant impacts on the treated group of households. In this case we could not apply the conditioning analysis due to the small size of the treated sample and the difficulty of finding appropriate conditioning variables for this type of projects. Again, the main explanation for catching impacts at the household level that did not appear at the community level must be related to the use of household covariates which increase the precision of the estimations. After controlling for these variables, impacts can be measured

in a more precise way using the matching method.

10. Identifying bottlenecks in the projects

In this section we build an index of "project success" using the impact measures found in each of the three lines evaluated. The index is built as follows: (i) for each intervention a subset of impact indicators are chosen; (ii) we work only with the treated communities; (iii) for each chosen indicator we assign the value of one if the corresponding value for the community is above average for all treated communities or zero otherwise; (iv)we add up the ones for each community and have an overall measure of "impacts" above average; (v) we assign the category of High is the number of "impacts" is higher than a critical number (generally the median of the constructed index) and Low otherwise; (vi) we use the High/Low variables as indicator of relative success for each treated community in each type of intervention.

With this variable we analyze some attributes of the context in which the project was developed and also about some attributes of the project itself. In this case, we explore the bilateral relationship between the success index and each factor, and also try to estimate a multiple regression (although the number of observations is always a limitation for this type of analysis). The results are presented for each intervention in what follows.

10.1. Water projects

In the case of water projects we use three impact variables for constructing our success index: (i) time saved collecting water; (ii) favorable opinion about water quality; (iii) reduction in diarrhea among children 0-6 years old. In **Tables 10.1** and **10.2** we present the relationship between our dichotomous index of project success and some potential factors affecting it for each departamento and aggregated.

Table 10.1. Success index (si) for water projects for some project and ccpp characteristics by departamento

	# Treated ccpp			Size of ccpp		Project budget		
	low si	high si	overall	low si	high si	low si	high si	overall
AMAZONAS	3	6	9	36.7	57.5	99	106	103
ANCASH	1	2	3	25.0	35.0	48	103	85
CAJAMARCA	2	3	5	55.5	61.0	53	245	168
CUSCO	7	5	12	76.7	51.4	98	83	92
LORETO	2	1	3	63.5	27.0	246	96	196
MADRE DE DIOS	2	2	4	21.0	20.0	133	177	155
PUNO	1	1	2	18.0	85.0	66	196	131
Total	18	20	38	53.9	50.3	109	132	121

Source: community survey, GRADE (2006)

The first category of **Table 10.1** only gives the size of the treated sample which was analyzed. In terms of size of communities (number of dwellings) we do not see much difference between High and Low performance projects in the aggregate. However, some differences appear at the departamento level for Puno and Loreto, although with the relationship in different way. We also present the average budget (thousand of soles) spent in the project and see that in the aggregate there is higher budget for more successful water projects. This is more clear for Cajamarca, Madre de Dios and Puno. In the case of Loreto the situation is reversed, more successful projects have lower budgets. In this case, the overall picture indicates that higher budgets (with the same level of efficiency assumed) will indeed favor better impacts on the beneficiaries. However, this relationship could be departamento-specific, as the case of Loreto in which less budgets generated better projects. In general, this calls for a more specific evaluation of the optimal size of water projects in different contexts.

Table 10.2 shows three factors related to the projects which seem to influence in their performance: the functioning of the project; if it was done due to external initiative (not due to local initiative), and if a tariff for the service is charged currently.

Table 10.2 Success index (si) for water projects given project characteristics by departamento

	Functioning?			**External initiative?**			**Is a tariff charged?**		
	low si	**high si**	**overall**	**low si**	**high si**	**overall**	**low si**	**high si**	**overall**
AMAZONAS	100%	100%	100%	0%	0%	0%	100%	50%	67%
ANCASH	100%	50%	67%	0%	0%	0%	100%	100%	100%
CAJAMARCA	100%	100%	100%	50%	33%	40%	100%	100%	100%
CUSCO	57%	80%	67%	14%	0%	8%	50%	100%	75%
LORETO	100%	100%	100%	100%	0%	67%	0%		0%
MADRE DE DIOS	50%	50%	50%	0%	0%	0%	0%	0%	0%
PUNO	100%	100%	100%	100%	0%	50%	0%	0%	0%
Total	78%	85%	82%	28%	5%	16%	62%	69%	66%

Source: community survey, GRADE (2006)

The Table indicates than in the aggregate, projects which are currently functioning are more effective; that projects which were promoted with local initiative were more successful and charging a tariff is positively related to more effectiveness. These and the factors mentioned in **Table 10.1** are used in a multiple regression framework (probit model) to assess the overall importance of these variables in the relative performance of water projects. The results are presented in **Table 10.3**.

Table 10.3 Probit regression on high performance of water project

	Coef.	Std. Err.	z	sign
selva	-0.67	0.54	-1.24	
size of cc.pp.	0.00	0.01	-0.54	
budget of project	0.01	0.00	1.76	*
working	0.29	0.59	0.49	
external initiative	-2.30	1.31	-1.76	*
constant	-0.24	0.69	-0.34	
			Number obs : 38	
			Pseudo R^2 : 0.1782	

(**) Significant at 95%; (*) Significant at 90%.

As can be seen, both the budget of the project and the variable on the type of initiative for building the project appear as the most important factor affecting water project performance in the treated communities. Projects located in Selva tend to have a lower performance although no statistically significant in the regression. This result is important and suggests paying particular attention to the evaluation of project size (budget) in different contexts. It could happen that there are some economies of scale in the building of water facilities which in certain contexts require more investment to achieve better results. The issue of finding optimal size of water projects in different contexts becomes an important further step in the evaluation of this intervention.

Also, the result about the importance of local initiative (versus external initiative) for the projects is consistent and will appear in the other interventions as well. This calls attention over the way in which Foncodes intervenes in these communities. For water projects, it seems that it is better that communities are the ones with the initiative for the project. This will reflect probably a higher demand for the service and also a higher involvement of the community in the operation phase, providing more resources and care to the maintenance of the facilities. It seems that external initiative for adopting water projects is not a good substitute for local initiative which must be promoted but not superseded by the intervention.

10.2. Electricity projects

For electricity projects we used the following impact variables for the performance index: (i) average number of businesses in the community; (ii) average non-agricultural income; (iii) number of weeks in non-agricultural jobs; (iv) selling value of the house.

The relationship between the performance index of electricity projects and some potential factors affecting it are presented in **Tables 10.4** and **10.5**.

Table 10.4 Success index (si) for electricity projects given ccpp characteristics

	# treated cc.pp.			size of cc.pp.			project budget		
	low si	high si	overall	low si	high si	overall	low si	high si	overall
CUSCO	8	4	12	40.4	48.8	43.2	185	131	167
LORETO	5	2	7	43.8	52	46.1	186	230	199
Total	13	6	19	41.7	49.8	44.3	185	164	179

Source: community survey, GRADE (2006)

In this case, the size of the community appears as positively affecting the performance of the projects, which may be associated to certain minimum scale for the presence of this type of investment. In terms of budget, however, the picture is mixed. For projects in Cusco, better projects are associated with lower budgets, which calls attention on the possibility of over-investment. In Loreto, by the contrary, higher performance is associated to bigger budgets, which in this case may be also explained by larger community size. In this case, also, it must be taken in consideration that there are communities in which the project are not currently working as shown in **Table 10.5**.

Table 10.5 Success index (si) for electricity projects given project characteristics

	working?			made before 2000			all benefited?			external initiative		
	low si	high si	overall	low si	high si	overall	low si	high si	overall	low si	high si	overall
CUSCO	100%	100%	100%	50.0%	50.0%	50.0%	0.25	0.5	0.33	38%	25%	33%
LORETO	60%	100%	71%	20.0%	50.0%	29.0%	0.4	1	0.57	60%	100%	71%
Total	85%	100%	89%	38.0%	50.0%	42.0%	0.31	0.67	0.42	46%	50%	47%

Source: community survey, GRADE (2006)

For the 5 projects located in the Low performance category in Loreto, only 3 are currently working, whereas all projects are working currently in Cusco. Another variable which seems to have some influence in performance is age of the project. Older projects seem to do better, especially in the case of Loreto. To the question if all people in the community benefited from the project, the responses were clear that only in 42% of all communities this was the case. Also, the high performance projects are featured by a higher proportion of responses saying that all population benefited. This raises the issue of access to this service by the entire community. As the process of connecting to the electric network depends on income, initial differences among people in the community are reflected in this factor of limited coverage for the electric projects.

Finally, in this case the external initiative does not appear affecting much the performance of

the projects.

We also estimated a probit model for the relative performance of electricity projects which is presented in **Table 10.6**.

Table 10.6 Probit regression on high performance electricity projects

	Coef.	Std. Err.	z	sign
selva	19.64	13.73	1.43	
size of cc.pp.	0.56	0.32	1.73	*
budget	0.02	0.03	0.77	
all benefited?	18.99	11.75	1.62	*
external initiative	-18.43	12.14	-1.52	
made before 2000	6.02	4.85	1.24	
constant	-47.66	27.52	-1.73	
			Number obs	19
			LR chi2(6)	19.53
			Prob > chi2	0.0034
			Pseudo R2	0.8239

(**) Significant at 95%; (*) Significant at 90%.

The only variables which affect performance significantly are the size of the community and the opinion (from the informant) that all in the community benefited or not. This may be associated to the same variables (income, other services, minimum scale), to which the electricity projects are sensitive. It seems that these projects are more effective above certain minimum size of the communities. In this case, particular attention must be paid to the distributional impacts of electricity projects which seem to favor only certain portions of the rural population living in the treated communities.

10.3. Transport projects

For the transport projects we used the following impact variables in our performance index: (i) mean non-agricultural income; (ii) wage income; (iii) assistance of children to classes at school.

Tables 10.7-10.9 present the values of some potential factors affecting performance of transportation projects.

Table 10.7 Success index for transport projects

	# treated cc.pp.			size of cc.pp.			project budget		
	low si	high si	overall	low si	high si	overall	low si	high si	overall
AMAZONAS	10	2	12	69.1	73.5	69.8	1447.3	2539	1629.3
CAJAMARCA	3	2	5	76.7	92.5	83	2348.7	2528	2420.4
CUSCO	1	3	4	70	53	57.3	3473	2839.7	2998
LORETO	2	3	5	31	45.3	39.6	102.5	90.3	95.2
Total	16	10	26	65.8	62.7	64.6	1574.8	1892.4	1697

Source: community survey, GRADE (2006)

In **Table 10.7**, we do not see a clear pattern for the size of community. In the case of altitude of the community (which may be associated to more difficulties for transport in Selva), we see that in all departamentos with selva, the higher performance communities in transportation tend to be in the higher (sierra) regions. In general, the impact of the transport projects in Selva appear as limited due to the higher restrictions in transport these communities face and which cannot be solved by the relatively small projects which are financed by Foncodes (mostly bridges, sidewalks, sometimes non-motorized roads).

Table 10.8 Success index for transport projects given project characteristics (1/2)

	Budget of project			working?			benefits all?		
	low si	high si	overall	low si	high si	overall	low si	high si	overall
AMAZONAS	193	140	184	80%	100%	83%	80%	100%	83%
CAJAMARCA	127	240	173	100%	100%	100%	100%	100%	100%
CUSCO	66	139	121	100%	67%	75%	100%	67%	75%
LORETO	74	148	118	100%	100%	100%	100%	100%	100%
Total	158	162	160	88%	90%	88%	88%	90%	88%

Source: community survey, GRADE (2006)

In **Table 10.7** we see that in the aggregate, the size of budget does not appear related to performance, although better projects in Cajamarca, Cusco and Loreto have higher budgets. About 90% of these projects are currently working (with no detectable difference in performance) and 88% are perceived as benefiting all in the community. By its nature, the benefits of transport projects are more appropriable by all people living in the community, although this category does not seem to affect performance.

Table 10.9 Success index for transport projects given project characteristics (2/2)

	External iniative			Good maintenance?		
	low si	**high si**	**overall**	**low si**	**high si**	**overall**
AMAZONAS	50%	0%	42%	17%	50%	25%
CAJAMARCA	0%	0%	0%	50%	50%	50%
CUSCO	0%	33%	25%	0%	50%	33%
LORETO	100%	33%	60%	50%	33%	40%
Total	44%	20%	35%	27%	44%	35%

Source: community survey, GRADE (2006)

In this case (**Table 10.9**.) the importance of local initiative for the success of the transport projects reappears (like for water projects). Also, the most effective projects are those in which there is higher perception of good maintenance (generally by the community). However, it must be stressed that in only 35% of the treated communities there is favorable opinion about maintenance from the informants. It also seems that the way in which the initiative was taken for the project affected the maintenance of it afterwards.

We tried to estimate a probit model for the performance of transport projects and the results are presented in **Table 10.10**.

Table 10.10
Probit regression on high performance of transport projects

	Coef.	**Std. Err.**	**z**	**sign**
Altitude	0.000	0.000	0.67	
Size of cc.pp.	-0.004	0.006	-0.68	
Budget	0.002	0.003	0.54	
Benefits all?	0.095	0.777	0.12	
External initiative	-0.768	0.579	-1.33	
Constant	-0.402	0.950	-0.42	
			Number obs	26
			LR chi2(5)	2.44
			Prob > chi2	0.7861
			Pseudo R2	0.0703

None of the variables have a significant coefficient, and only the “external initiative” comes close of having a negative impact on performance. Thus, we could not find a significant factor affecting the performance of transport projects, although there is some evidence about the importance of local initiative for good projects, and also that most transport projects have

severe problems for maintenance.

11. Conclusions and recommendations

In this evaluation we have assessed the impacts of three type of projects financed by Foncodes using JBIC financial support: (i) water projects; (ii) electricity projects; (iii) roads and bridges projects (transportation) in seven departamentos located in Selva and Sierra of Peru. We used a methodology of impact evaluation for non-experimental data which is based on matching procedures to build a reliable counterfactual for the treated communities using information from untreated communities.

One important feature of this evaluation was that the sampling process was based on a model of program participation (probit model) applied to participating and non-participating rural communities in all eight departamentos under evaluation. This allowed us to have a propensity score, pscore, value (probability of participating) for both treated and potential control communities. These models were ran for all departamentos and lines of intervention. After this was done, we were able to select a random systematic sample of treated communities for each intervention in each departamento (basing the systematic procedure on value of pscore), and select a corresponding control community to the one with closer pscore. This procedure was also useful to find substitutes of dropped controls after the field work was done.

The evaluation was oriented to measure potential impacts of Foncodes projects in indicators associated with the welfare of the rural population. Water projects were expected to improved the health conditions of families, especially children, and also, to generate better hygiene practices and child nutrition status. This intervention was also expected to save time in collecting water by family members, especially of women and children. Electricity projects, on the other hand, were expected to generate more economic activities, especially non-agricultural, and to increase the value of houses and increase the number of hours that children devote to study at home. Finally, transportation projects were expected to increase the value of agricultural activities and also agricultural assets, and increase in wage income. It was also expected that improved transportation generate better attendance of children to school.

The decision on the appropriate sample sizes for this study were based on pre-existent information on the variance of key impact variables like income (electricity and road projects) and incidence of diarrhea among children 0-6 years old. We used the national income survey (ENAHO) for getting those variances and getting the minimum sample sizes which will be required to measure differences between intervened and control groups if any. According to the budget for this project, we carried out a household survey with a maximum goal of 2,400 households applied in 224 communities, with an average of 10 households per community. The obtained data for the evaluation came from two questionnaires: (i) household survey; (ii) community survey. These two instruments were designed and tried out between August-September 2006, and applied during October-November 2006.

After the field work was done, we found that some control communities in the water and electricity lines have already get the corresponding service (likely from other institution), and were discarded for the analysis. These, however, were replaced by other control

communities (from other lines) in the same departamento using the stored pscore values for other controls and estimated in the sampling process. This procedure avoided loosing a significant part of the sample of controls in water projects and was consistent with the adopted methodology. We used the same original pscores when estimating impacts.

We estimated impacts at the community and household level. In each case we applied matching techniques to treated and untreated samples within each departamento and using saved pscores (from the sampling process). In the case of the impacts measured at household level, we used the original pscores to restrict the matching for each household to the households located in control communities (within the same departamento) which were no far away than a value of 0.1 of difference in pscores to the community of the treated household. A new matching procedure was applied to this restricted set of households including some household level variables (head gender, mother's tongue, education and family size) in the probit estimates to balance the samples. This generally gave sharper estimates of impacts that those found at the community level estimation.

In the water projects at community level we found that the main positive results are over daily time required to collect water (2.7 vs. 9.2 min in average for control group), expenditure in hygiene products (2.09 soles per month more in treated group) and perception of water quality (65% vs. 55%). At this level of analysis, we did not find significant impacts for crucial indicators like incidence of diarrhea among children 0-6 years old, or in children nutrition status. At household level, on the other hand, we were able to estimate additional positive impacts on two very important health indicators: incidence of diarrhea (it dropped from 55% to 39%) and of skin diseases (from 19% to 11%) among children 0-6 years old. Impacts on time saving and favorable perceptions on water quality are in line with what we found in the community analysis. No significant impacts were found on infant mortality and child malnutrition.

Using regression analysis it was found that the probability of households connecting the water network is positively related to per capita income, as expected, and also to some attributes of the water project, like it being working well and benefiting all people in the community (according to informants´ opinions). Also, the gender of household head seems to affect water connection (pointing out a gender bias in this key variable) . Also, households located in selva have more difficulties to get water connection.

In the case of hygiene practices, per capita income does not appear as important for adopting these, by the contrary, it seems that less poores households tend to have less hygiene practices (-9%). However, connection to the water network does have a clear and relatively big impact on the adoption of hygiene practices (marginal impact of 25%), and so, this seems to be akey variable for people adopting this type of practices. Also, head´s education appears as important in adopting hygiene practices and head age, with older heads having less hygiene practices at home. Also, households in selva hava a higher number of hygiene practices at home, probably because water quality is much lower than in the sierra region.

For electricity projects, at community level, there were four main average impacts of electricity projects on the treatment group. The number of small businesses increases in 4.8 (1.9 for untreated to 6.7 for treated), the average number of electric appliances by household increases in 0.96, the average total income of families increase 3,585 (more than 50%) in the treated communities, and the selling value of houses increases in about 100% for treated communities. We do not find effects in the hours of study at home, or in the rental and selling value of houses in the treated communities.

At household level, we find impacts which are similar to the ones at the community level. The presence of an electricity project increases in 20% the probability for a household to have a family business. The average number of electric appliances per household increases is 0.98. Curiously, in this case we do not find an impact in incomes at the household level, something we found in the community level estimates. It seems that controlling by head´s variables like education may have eliminated this effect found at community level.

In the case of Transport projects, we do not find any statistical significant impacts at the community level for any of the key selected variables. The only impact that we found was in the price of land devoted to pasture. No other indicator appeared with a significant impact. However, at the household level we did find some relevant impacts. Income from wage jobs increases with transportation projects in 650 Soles (about US$ 200 per year). This is an increase of about 100% in this source of income for rural families in treated communities. Also, we found a positive impact on the rate of attendance to school by children. The average days of non-attendance during last three months is lower by 1 day for children in treated communities versus non-treated. Finally, we found again a negative effect on the rental value of houses that does not have a clear explanation. No other variables show any significant impacts on the treated group of households in treated communities with transport projects.

Besides the impacts measured, we analyzed some attributes of the context in which the projects were developed and also about some attributes of the projects themselves to explore potential bottlenecks that may have prevented projects from getting the desired impacts. In this case, we explore the bilateral relationship between a “project success index” and each factor, and also try to estimate a multiple regression (although the number of observations was always a limitation for this type of analysis).

Comparing low and high performing projects, we do not see much difference in community size in the aggregate. Both the budget of the project and the variable on the type of initiative for building the project appeared as the most important factors affecting water project performance in the treated communities. Projects located in Selva tended to have a lower performance although no statistically significant in the regression analysis. These results suggest paying particular attention to the evaluation of project sizes (budget allocation) in different contexts of the Peruvian territory. Water projects in selva seem to face the more problems (both for generating impacts and for being sustainable). Also, there seems to exist some economies of scale in the building of water facilities which in certain contexts require more investment to achieve better results. Thus, the issue of finding optimal size of water projects in different contexts becomes an important further step in the evaluation of this

intervention.

The result about the importance of local initiative (versus external initiative) for the projects is consistent and will appear in the other interventions as well. This calls attention over the way in which Foncodes intervenes in these communities. For water projects, it seems that it is better that communities are the ones with the initiative for projects. This will reflect probably a higher demand for the service and also a higher involvement of the community in the operational phase, providing more resources and care to the maintenance of the facilities. It seems that external initiative for adopting water projects is not a good substitute for local initiative which must be promoted but not superseded by the intervention.

In the case of electricity projects, the only variables which affected performance significantly were the size of the community and the opinion (from the informant) that all in the community benefited from the project. This seems to be associated to variables like households income, presence of other services, minimum scale, to which the impact of electricity projects are sensitive. It seems that these projects are more effective above certain minimum size of the communities. In this case, however, particular attention must be paid to the distributional impacts of electricity projects which seem to favor only certain portions with higher income at the rural population living in the treated communities.

For transport projects we were not able to find variables which have a significant role in performance, and only the "external initiative" comes close of having a negative impact on performance. Thus, in this case there is some evidence about the importance of local initiative for good projects. The picture is also one in which most transport projects have severe problems for keeping a good maintenance along time.

Some recommendations

This impact evaluation has proved useful in measuring specific impacts in each line of intervention and for each departamento. Overall average impacts were emphasized in the analysis but also we could present more disaggregate results (at departamento levels, or for specific sub-groups of the treated sample). The general picture of impacts is that water projects have been effective in reducing the incidence of diarrhea among children and the incidence of skin diseases, and also that have been good at saving people's time spent in collecting water in the pre-intervention situation. Electricity projects, on the other hand, seem to be effective increasing the number of small businesses in rural localities and the value of houses. Finally, transport projects were more effective increasing wage income and children school attendance rates.

These were results at the average level. Many impacts, however, are very different for departamentos, regions, or sub-groups. In particular, water and transport projects seem to be less effective in the Selva region, whereas electricity projects less effective in Sierra. This calls attention to the great heterogeneity of conditions that characterizes rural Peru and which was a challenge for a centralized social Fund like Foncodes. However, this situation also

suggests that a more decentralized approach may be a good idea for better impacts if it is well designed and implemented.

We found that local participation (initiative) seem to play a central role in the success of projects, and this may be a call for more control of project cycle to be given to local communities. In this sense, the current trend for decentralization of Foncodes can be a good idea if correctly designed and implemented.

On the other hand, a big part of Foncodes success in producing effects on people's lives is related to a capacity to intervene in many and different places at the same time. Knowledge and technologies learned in this process must no be lost in the decentralization process; on the contrary, these assets must be the main contribution of a new Foncodes to the decentralization process.

In terms of specifics of projects, we find that both water and transport projects face severe problems of sustainability. In most cases, we did not find people paying tariffs and organizing themselves very well for the maintenance. There could be a trade off between the initial budget and maintenance as well, as bigger projects may require less maintenance (at least at the first stages) than cheaper projects. It is important to consider the fact that maintenance activities may be in some cases too demanding for the communities, and real capacity for this should be carefully assessed. In some case, a little more investment in the project may reduce demands on maintenance in the future, assuring a higher impact. The same applies to transport projects.

Electricity projects, on the other hand, do not face maintenance problems but pose equity challenges as in most of these only a fraction of the population starts to get benefits since inception. It seems that the cost of connection and tariffs are still important barriers for this to happen in higher proportion. This is a case in which a potential subsidy for rural communities must be assessed. This may no require more fiscal resources if a cross subsidy is designed to help rural poor people to get access to this important service. It is likely that the lack of impact on incomes at household level has to do with the fact that only a fraction of surveyed families in the treated communities were really getting the service.

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Annex 1: Community survey

ENCUESTA DE EVALUACIÓN DE IMPACTO DEL FONCODES
(JBIC PE-P19 Y PE-P24)

Encuesta a informantes calificados **No Encuesta** ☐

NOMBRE DEL CENTRO POBLADO	
CATEGORIA	
DISTRITO	
PROVINCIA	
DEPARTAMENTO	

Nota al encuestador: **Llenar siguiente formato, desde la SECCION 1 hasta la SECCION 7 con la información recogida a partir del "Informante N° 1". A partir de la SECCION 8, se recogerá información de un nuevo entrevistado, a quien llamaremos "Informante N° 2".**

****DATOS DEL INFORMANTE:**

	Nombres	Apelllido Paterno	Apellido Materno
INFORMANTE N° 1:			

CATEGORÍA DEL INFORMANTE: ☐ **(Clave 1)**

01 Autoridad comunal
02 Autoridad municipal
03 Teniente gobernador
777 Otros (especifique)

SECCION 1 INFORMACION DEMOGRAFICA

1.1 ¿Cuántas viviendas ocupadas permanentemente existen en ... [NOMBRE DE CENTRO POBLADO] ...? ☐ Viviendas

1.2 ¿Cuál es la población de ... [NOMBRE DE CENTRO POBLADO] ....? ☐ Habitantes

SECCION 2 ECONOMIA

2.1 ¿A que se dedican principalmente los habitantes de .....[NOMBRE DE CENTRO POBLADO] ....?

(NOTA: ANOTE EL ORDEN DE IMPORTANCIA DE LAS ACTIVIDADES QUE REALIZAN, "1" representa la más importante)

1	AGRICULTURA	☐	4	ACTIVIDADES EXTRACTIVAS	☐	7	ARTESANIA	☐
2	GANADERIA	☐	5	COMERCIO	☐	8	TRANSPORTE	☐
3	PESCA	☐	6	MANUFACTURA	☐	9	MINERIA	☐
						777	OTROS	☐

2.2 A. ¿Existe o se realiza en ... [NOMBRE DEL CENTRO POBLADO] ... alguna feria local?

01. Sí 02. No → **Pase a 2.2. C**

B. En caso exista o se realice:

1	¿Con qué frecuencia opera?	**(Clave 2)**
2	¿Aproximadamente cuántos agricultores (compradores o vendedores asisten)?	
3	¿Aproximadamente cuántos comerciantes (intermediarios) asisten?	

→ **Pase a 2.3**

Clave 2:
Diario..... 1
Semanal..... 2
Otros (especifique).. 3

C. En caso NO exista feria alguna en el CCPP, la feria principal a la que acuden los productores del CCPP se encuentra en:

Centro Poblado ☐ Distrito ☐ Provincia ☐

D. ¿Cuánto demora llegar a la feria cercana más importante usando el medio de transporte más frecuente?

Medio	Minutos

(Clave 3)

Clave 3:
A pie..... 1
Bus..... 2
Camión..... 3
Combi..... 4
Carro/taxi..... 5
Motocicleta..... 6
Bicicleta..... 7
Bestia / acémila..... 8
Peque peque..... 9
Canoa..... 10
Motonave..... 11
Deslizador..... 12
Otros
(especificar)..... 777

2.3 Locales de actividad económica en el CC.PP:

	Locales	2.3a ¿Cuenta el CCPP con: 01. Si 02. No ---->Pase a sgte local	2.3.b Indique cantidad
1	Taller de artesanías		
2	Taller de carpintería		
3	Taller de mecánica		
4	Tienda, bodega		
5	Albergue, hostal		
6	Restaurante		
777	Otros (especificar)		

SECCION 3 INFRAESTRUCTURA Y SERVICIOS

3.1 ¿Cuál es la principal vía de acceso para llegar a [NOMBRE DEL CENTRO POBLADO] ...?

1	Carretera (asfaltada)	
2	Carretera (sin asfaltar)	
3	Trocha Carrozable	
4	Camino de herradura	
5	Vía lacustre / fluvial.....	
777	Otro _____	
	(especifique)	

3.2 ¿Cuenta [NOMBRE DEL CENTRO POBLADO] ... con la siguiente infraestructura (local, instalaciones, obras, etc) de:

	Infraestructura / Obras / Instalaciones	3.2.a ¿Hay? 01.Sí 02.No	3.2.b ¿Cuándo se hizo? (Año)	3.2.c ¿Qué organismo o institución financió? **(Clave 4)**	3.2.d El estado de conservación es: 01.Bueno 02.Regular 03.Malo	3.2.e ¿Funciona? 01.Bien 02.Con problemas 03.No funciona **--> Pase a sgte obra**	3.2.f ¿Ha tenido mantenimiento en los últimos tres años? 01.Sí 02.No **--> Pase a sgte obra / instalación**	3.2.g ¿Quién se encargó del mantenimiento?
1	Wawawasi, CEI, PRONOEI							
2	Escuela primaria?							
3	Colegio secundario?							
4	Centro de salud?							
5	Puesto de salud?							
6	Letrinas?							
7	Alcantarillado?							
8	Red de energía eléctrica?							
9	Generador de energía eléctrica?							
10	Paneles solares?							
11	Postes para alumbrado público?							
12	Local para teléfono público?							
13	Local para mercado?							
14	Local para correo?							
15	Local para comisaría?							
16	Local comunitario o club?							
17	Campo deportivo?							
18	Pistas?							
19	Veredas?							
20	Puentes?							
21	Canales de regadío?							
22	Andenes?							
23	Local de la asamblea comunal?							
24	Gobernación?							
25	Local del municipio?							

Clave 4:

1	PRONAA
2	FONCODES
3	INFES
4	PROMUDEH, MIMDES
5	Min. de Educación
6	Min. de la Presidencia
7	Min. de Salud
8	CTAR, Gobierno Regional
9	Municipio, Gobierno Local
10	Otro estatal ***(especifique)***
11	Empresa privada
12	La comunidad
13	Otro privado ***(especifique)***
14	Organismo internacional ***(especifique)***
888	No sabe

3.3 ¿Cuenta [NOMBRE DEL CENTRO POBLADO] ... con la siguiente infraestructura de acceso a agua:

NOTA: SOLO PARA PROYECTOS QUE NO HAN SIDO FINANCIADOS POR FONCODES

	Infraestructura	3.3.a ¿Hay? 01.Sí 02.No	3.3.b ¿Cuándo se hizo? (Año)	3.3.c ¿Qué organismo o institución financió? **(Clave 4)**	3.3.d El estado de conservación es: 01.Bueno 02.Regular 03.Malo	3.3.e ¿Funciona? 01.Bien 02.Con problemas 03.No funciona **--> Pase a sgte sección**	3.3.f ¿Ha tenido mantenimiento en los últimos tres años? 01.Sí 02.No **--> Pase a sgte obra**	3.3.g ¿Quién se encargó del mantenimiento?	3.3.h ¿Con qué es purificada el agua? 01.Cloro 02.Yodo 03. Filtrada 04. El agua no es tratada 777. Otros (especifique)		3.3.i ¿Cuál es la tarifa de acceso al agua? (Soles)	
									Cod	Otros (esp)	S/.	Unidad
1	Agua potable en la vivienda?											
2	Piletas públicas?											
3	Tuberías para agua potable?											

SECCION 4 ACCESO A SERVICIOS

EXPLIQUE CÓMO LOS POBLADORES DEL CC.PP ACCEDEN A LOS SIGUIENTES LUGARES. PARA ELLO IDENTIFIQUE LA VÍA, EL MEDIO DE TRANSPORTE, TIEMPO Y ESTADO DE LA VÍA EN TEMPORADA DE VERANO E INVIERNO

	Destinos	4.1 Ubicación 01. Dentro del CC.PP --> Pase a sgte destino 02. Fuera del CC.PP	4.2 Indique la ubicación del destino			4.3 Número de tramo	4.4 Nombre del tramo *(asignar un nombre de referencia)*	Característización del Tramo									
								4.5 Tipo de vía (Clave 5)	4.6 Principal medio de transporte (Clave 6)			4.7 Tiempo		4.8 Costo de usar dicho medio	4.9 ¿Qué tan buena es la vía de acceso en la época de lluvias / invierno? (Clave 7)		4.10 ¿Qué tan buena es la vía de acceso en época seca / verano? -> Pase a sgte tramo (Clave 7)	
			CC.PP	Distrito	Provincia				Cod	Otros (esp)	Horas	Minutos	S/.	Cod	Otros (esp)	Cod	Otros (esp)
1	**Puesto de salud**					1											
						2											
						3											
						4											
2	**Centro de salud**					1											
						2											
						3											
						4											
3	**Escuela primaria**					1											
						2											
						3											
						4											
4	**Escuela secundaria**					1											
						2											
						3											
						4											
5	**Capital del distrito**					1											
						2											
						3											
						4											
6	**Principal mercado de venta de productos agrícola**					1											
						2											
						3											
						4											
7	**Mercado de compra de productos**					1											
						2											
						3											
						4											

Clave 5

Asfaltada..... 1	Sin Afirmar..... 3	Vereda..... 5	Rio..... 7
Afirmada..... 2	Sendero (trocha)..... 4	No Carrozable / Herradura..... 6	

Clave 6

A pie..... 1	Combi..... 4	Bicicleta..... 7	Canoa..... 10	Otros (especificar) 777
Bus..... 2	Carro/taxi..... 5	Bestia / acémila..... 8	Motonave..... 11	_____
Camión..... 3	Motocicleta / mototaxi..... 6	Peque peque..... 9	Deslizador..... 12	

Clave 7

Bien accesible para el medio de transporte más usado..... 1
Razonablemente accesible para el medio de transporte más usado..... 2
Accesible sólo para carretillas y acémilas..... 3
Sólo accesible a pie..... 4

SECCION 5 VÍAS DE ACCESO A OTRAS ZONAS

5.1 Liste en orden de importancia las localidades hacia donde más suele desplazarse la población del CC.PP:

Nº Orden	A CC.PP	B Distrito	C Provincia	D Tipo de Vía (Clave 5)	E Medio de Transporte (Clave 6)
1					
2					
3					
4					
5					

[SÓLO PARA EL CAMINO MAS IMPORTANTE DE ACCESO AL CENTRO POBLADO]

5.2 ¿En los últimos 3 años el camino de ..... A .....recibió algún tipo de rehabilitación?

01. Sí 02. No → **Pase a 5.5**

5.3 ¿En qué consistió el mantenimiento?

1 Limpieza
2 Llenado de huecos
3 Enripiado y nivelado sin uso de máquina
4 Enripiado y nivelado con máquina
777 Otro *(especificar)* _____

5.4 ¿Quién lo hizo?

1 La propia población (usuarios)
2 Con apoyo municipal
3 Gobierno regional
4 Programa de Caminos Rurales (MTC)
5 Alguna combinación de los anteriores
777 Otro *(especificar)* _____

5.5 ¿En qué estado de conservación se encuentra actualmente?

1 Muy bueno 3 Regular 5 Pésimo
2 Bueno 4 Malo

5.6 ¿En qué meses se encuentra intransitable (cerrado) para vehículos? Marcar con un aspa

Ene	Feb	Mar	Abr	May	Jun
Jul	Ago	Set	Oct	Nov	Dic

5.7 Respecto a los horarios, frecuencias y operatividad de los vehículos, el transporte en este tramo es:

1 Muy confiable 3 Poco confiable
2 Confiable 4 Nada confiable

5.8 Respecto a la seguridad en el viaje (robos, asaltos), el transporte en este tramo es:

1 Muy seguro 3 Poco seguro
2 Seguro 4 Nada seguro

5.9 ¿Existen vehículos de transporte público que ingresan a este CCPP a dejar o recoger pasajeros?

01. Sí 02. No

Nº de días por semana ____

SECCION 6 PRECIOS

6.1 ¿Cuál es el precio promedio de venta de los siguientes tipos de tierra?

1 Una Ha. de tierra agrícola con riego S/. ____
2 Una Ha. de tierra agrícola en secano S/. ____
3 Una Ha. de pastos S/. ____

6.2 ¿Cuánto costaría alquilar por un año los siguientes tipos de tierra?

1 Una Ha. de tierra agrícola con riego S/. ____
2 Una Ha. de tierra agrícola en secano S/. ____
3 Una Ha. de pastos S/. ____

6.3 En ... [NOMBRE CENTRO POBLADO] ... ¿Cuánto se paga en promedio por:

(NOTA: NO INCLUIR LA ALIMENTACIÓN)

	Hombre	Mujer	Niño
Jornal Agrícola (S/.)			
Jornal No Agrícola(S/.)			

SECCION 7 PRESENCIA INSTITUCIONAL

7.1 ¿Los agricultores del CC.PP reciben asistencia técnica agropecuaria?

01. Sí 02. No → **Pase a 7.3**

7.2 ¿De qué oficina o personas? (MARCAR TODOS LOS MENCIONADOS)

EMPRESAS	1	UNIVERSIDADES	5
MIN. AGRICULTURA	2	PROFESIONALES INDEPENDIENTES	6
COOPERATIVA	3	OTROS (Especifique) _____	777
ASOC. DE AGRICULTORES	4		

***Liste los nombres todas de las instituciones mencionadas:**

7.3 ¿Hay alguna institución que otorga créditos en el CC.PP?

01. Sí 02. No

¿Cuales?

7.4 Actividades / Programas en el CC.PP:

	Actividad / Programa	7.4.a ¿Se han desarrollado actividades en los siguientes programas? 01. Sí 02. No	7.4.b ¿Desde qué año?	7.4.c ¿Hasta qué año? (Si aún continúa, "0")	7.4.c Indique el nombre de la institución a cargo
PROGRAMAS AGROPECUARIOS					
1	Proyecto de Titulación de tierras				
2	Sanidad Agropecuaria				
3	Reforestación				
4	Recuperación de tierras (andenes, etc)				
ASISTENCIA ALIMENTARIA					
5	Vaso de Leche				
6	Canasta Alimentaria (PANFAR)				
7	Papilla u otro alimento para menores				
8	Alimentos para enfermos o ancianos				
9	Comedor Popular				
EDUCACION					
10	Desayuno o alimentación escolar				
11	Uniformes, buzos y calzado escolar				
12	Textos y útiles escolares				
13	Seguro escolar				
SALUD					
14	Control de crecimiento del niño				
15	Planificación familiar				
16	Control de tuberculosis				
17	Programas de Vacunas (inmunizaciones)				
SUBSIDIO DIRECTO					
18	Programa JUNTOS				
OTROS					
777	Especifique				

7.5 Organizaciones Locales en el CC.PP:

	Organización	7.5.a ¿En el CC.PP existe alguna de las siguientes organizaciones? 01. Sí 02. No	7.5.b ¿Se encuentra activa actualmente? 01. Sí 02. No	7.5.c Anote el orden de importancia de la organización
1	Junta directiva comunal			
2	Asociación de Residentes			
3	Club de madres			
4	Club del Vaso de Leche			
5	Asociación de Padres de Familia			
6	Comité de salud			
7	Asociación de Productores			
8	Usuarios de riego			
9	ONG			
10	Club deportivo			
11	Comité de autodefensa			

7.6 Participación local en asambleas comunitarias:

A. **¿Cuál es la frecuencia con la que se organizan asambleas comunitarias?** ____ **(Clave 7)**

B. **¿Cuál es el sistema usado para convocar a la comunidad a participar en las asambleas?** ____ **(Clave 8)**

C. **¿Quiénes participan en las asambleas?** _____

D. **Por lo general ¿Cuál es el porcentaje de mujeres que participan en dichas asambleas?**

1	Entre 0% y 20%
2	Entre 20% y 50%
3	Entre 50% y 70%
4	Mayor de 70%

Clave 7:
01 Semanal
02 Quincenal
03 Mensual
04 Bimestral
777 Otros (especifique) _____

Clave 8:
01 Carteles
02 Altoparlante
03 Radio
04 Se pasan la voz
777 Otros (especifique) _____

SECCION 8 EDUCACIÓN

Nota al encuestador: Llenar siguiente formato, SECCION 8, con la información recogida a partir del "Informante N° 2". A partir de la SECCION 9, se recogerá información de un nuevo entrevistado, a quien llamaremos "Informante N° 3"

****DATOS DEL INFORMANTE:**

	Nombres	Apellido Paterno	Apellido Materno
INFORMANTE N° 2:			

CATEGORÍA DEL INFORMANTE: _____ **Clave 9:**

01 Profesor
02 Director
03 Miembro de la APAFA
777 Otros (especifique)

ESCUELA PRIMARIA

8.1 ¿El CC.PP cuenta con escuela primaria?

01. Sí 02. No → **Pase a 8.12**

8.2 ¿Cuál es el grado más alto que ofrece esta escuela primaria? ____

8.3 Indique la cantidad de alumnos por grado:

Grado	Número de alumnos
1er	
2do	
3ro	
4to	
5to	
6to	

8.4 La enseñanza es:

01. Unidocente 02. Polidocente → **Pase a 8.6**

Indique el número de profesores que trabajan a la fecha: ____

8.5 Indique el grado y el curso que dicta cada profesor:

(NOTA: En caso que un mismo profesor dictase distintos cursos para distintos grados, registrar el dato en cada fila)

Profesor	Curso	Horas a la semana	Grado

8.6 Indique el nivel de inasistencia del profesor (es) en el último mes:

Profesor	Número de inasistencias

8.7 Indique qué meses del año la escuela primaria se encuentra en funcionamiento: (Marque con una "X")

Ene	Feb	Mar	Abr	May	Jun	Ago	Set	Oct	Nov	Dic

8.8 Indique los días de la semana que funciona la escuela primaria: (Marque con una "X")

Lun	Mar	Mie	Jue	Vie	Sáb

8.9 Indique el horario de funcionamiento de la escuela primaria: De ____ A ____

8.10 ¿La escuela ha cerrado por algún motivo en el último año?

01. Sí 02. No → **Pase a 8.12**

8.11 Indique las razones por las cuáles tuvo que cerrar la escuela:

01 Ausencia de profesores
02 Ausencia de alumnos
03 Inadecuadas condiciones de infraestructura por desastre natural
04 Inadecuadas condiciones de infraestructura por falta de mantenimiento
777 Otras (especifique) _____

ESCUELA SECUNDARIA

8.12 ¿El CC.PP cuenta con escuela secundaria?

01. Sí 02. No → **Finalice la encuesta**

8.13 ¿Cuál es el año más alto que ofrece esta escuela secundaria? ____

8.14 Indique la cantidad de alumnos por año:

Año	Número de alumnos
1er	
2do	
3ro	
4to	
5to	

8.15 La enseñanza es:

01. Unidocente 02. Polidocente → **Indique el número de profesores que trabajan a la fecha:** ____

→ **Pase a 8.17**

8.16 Indique el año y el curso que dicta cada profesor:

(NOTA: En caso que un mismo profesor dictase distintos cursos para distintos años, registrar el dato en cada fila)

Profesor	Curso	Horas a la semana	Año

8.17 Indique el nivel de inasistencia del profesor (es) en el último mes:

Profesor	Número de inasistencias

8.18 Indique en qué meses del año la escuela secundaria se encuentra en funcionamiento:

Ene	Feb	Mar	Abr	May	Jun	Ago	Set	Oct	Nov	Dic

8.19 Indique los días de la semana que funciona la escuela secundaria:

Lun	Mar	Mie	Jue	Vie

8.20 Indique el horario de funcionamiento de la escuela secunda De ____ A ____

8.21 ¿La escuela ha cerrado por algún motivo en el último año?

01. Sí 02. No → **Finalice la encuesta**

8.22 Indique las razones por las cuáles tuvo que cerrar la escuela:

01 Ausencia de profesores
02 Ausencia de alumnos
03 Inadecuadas condiciones de infraestructura por desastre natural
04 Inadecuadas condiciones de infraestructura por falta de mantenimiento
777 Otras (especifique) _____

SECCION 9 PROYECTOS FINANCIADOS POR FONCODES

8

****DATOS DEL INFORMANTE:**

	Nombre	Apellido Paterno	Apellido Materno
INFORMANTE N° 3:			

CATEGORÍA DEL INFORMANTE: [ ] **Clave 10:**

01 Presidente del núcleo ejecutor
02 Autoridad comunal
03 Miembro del equipo de mantenimiento
777 Otros (especifique) _____

A. Indique cuál o cuáles han sido los proyectos financiados por FONCODES en su CC.PP:

Sistema de agua potable	1
Redes secundarias de electrificación	2
Puentes peatonales	3
Veredas peatonales	4
Caminos carrozables	5

9.1 PROYECTO: SISTEMAS DE AGUA POTABLE [SI A=1]

I Gestión de la obra

9.1.1 ¿Quién tuvo la iniciativa para la construcción de la obra?

Algún dirigente de la localidad	1	Club de Madres / Vaso de Leche	6
El profesor de la escuela	2	FONCODES	7
El encargado del puesto de salud	3	Municipio	8
Un padre de familia	4	Otros (especifique) _____	777
Una madre de familia	5	No sabe	888

9.1.2 ¿Cree Ud que la organización de la comunidad (núcleo ejecutor u otra organización local) realizó un buen trabajo en la construcción de la obra?

01. Sí → **Pase a 9.1.4** 02. No

9.1.3 Explique por qué no:

No consultó a la población al respecto	1
No manejo adecuadamente los fondos destinados en la ejecución de la obra	2
Otros (especifique) _____	777

9.1.4 ¿Cree Ud que la organización de la comunidad (núcleo ejecutor u otra organización local) realiza un buen trabajo en el mantenimiento de la obra?

01. No ha habido organización al respecto 02. Sí 03. No

Pase a 9.1.6

9.1.5 Explique por qué no:

No se eligió adecuadamente a los integrantes de la junta	1
La junta no recaudaba dinero para el mantenimiento de la obra	2
La junta no sabía cómo administrar el mantenimiento de la obra	3
Otros (especifique) _____	777

II Operatividad de la obra

9.1.6 Indique el año en que fue concluida la obra: [ ]

9.1.7 ¿La obra se encuentra actualmente en funcionamiento?

01. Sí → **Pase a 9.1.10** 02. No

9.1.8 Indique la (las) razón (nes) por las cuáles no está en funcionamiento la obra:

El diseño del proyecto no fue el adecuado	1
Falta de apoyo de la autoridad local responsable	2
Falta de apoyo de la gente para su mantenimiento	3
La gente no paga por el uso de la obra	4
Daños provocados por desastres naturales	5
Otros (especifique) _____	777

9.1.9 ¿Cuánto tiempo estuvo en funcionamiento la obra antes de dejar de estar operativa?

Meses _____ 1 Nunca estuvo en funcionamiento..... 2

Pase a sgte proyecto, de lo contrario, finalice encuesta

9.1.10 ¿Todos los pobladores han sido beneficiados por este proyecto?

01. Sí → **Pase a 9.1.13** 02. No

9.1.11 Indique qué porcentaje de los hogares del CC.PP es beneficiado con la obra: [ ] **% de los hogares**

9.1.12 Indique la (las) razón (nes) por las cuáles no todos los pobladores han sido beneficiados por la obra:

La obra se ubica lejos	1
No todos pueden pagar por su uso	2
La obra no funciona adecuadamente	3
Otros (especifique) _____	777

Unidad

9.1.13 Indique cuál es la tarifa pagada por acceder al servicio [ ] Soles _____

9.1.14 ¿Con qué es purificada el agua? 01. Cloro 02. Filtrada 03. Yodo 04. El agua no es purificada

9.1.15 ¿Cuántas horas al día está operativa la obra? [ ] Horas al día

9.1.16 ¿Cuántos días a la semana está operativa la obra? [ ] Días a la semana

9.1.17 ¿Cuántos meses al año está operativa la obra? [ ] Meses al año

9.1.18 ¿Durante la temporada de verano, el funcionamiento de la obra se ve afectado? 01. Sí 02. No

9.1.19 ¿Durante la temporada de invierno / lluvia, el funcionamiento de la obra se ve afectado? 01. Sí 02. No

PROYECTO: REDES DE ELECTRIFICACIÓN **[SI A=2]**

Gestión de la obra

9.2.1 **¿Quién tuvo la iniciativa para la construcción de la obra?**

Algún dirigente de la localidad	1	Club de Madres / Vaso de Leche	6
El profesor de la escuela	2	FONCODES	7
El encargado del puesto de salud	3	Municipio	8
Un padre de familia	4	Otros (especifique) _____	777
Una madre de familia	5	No sabe	888

9.2.2 **¿Cree Ud que la organización de la comunidad (núcleo ejecutor u otra organización local) realizó un buen trabajo en la gestión de la obra?**

01. Sí → **Pase a 9.2.4** 02. No

9.2.3 **Explique por qué no:**

No consultó a la población al respecto	1
No manejo adecuadamente los fondos destinados en la ejecución de la obra	2
Otros (especifique) _____	777

9.2.4 **¿Cree Ud que la organización de la comunidad (núcleo ejecutor u otra organización local) realiza un buen trabajo en el mantenimiento de la obra?**

01. No ha habido organización al respecto 02. Sí 03. No

Pase a 9.2.6

9.2.5 **Explique por qué no:**

No se eligió adecuadamente a los integrantes de la junta	1
La junta no recaudaba dinero para el mantenimiento de la obra	2
La junta no sabía cómo administrar el mantenimiento de la obra	3
Otros (especifique) _____	777

Operatividad de la obra

9.2.6 **Indique el año en que fue concluida la obra:** ☐

9.2.7 **¿La obra se encuentra actualmente en funcionamiento?**

01. Sí → **Pase a 9.2.10** 02. No

9.2.8 **Indique la (las) razón (nes) por las cuáles no está en funcionamiento la obra:**

El diseño del proyecto no fue el adecuado	1
Falta de apoyo de la autoridad local responsable	2
Falta de apoyo de la gente para su mantenimiento	3
La gente no paga por el uso de la obra	4
Daños provocados por desastres naturales	5
Otros (especifique) _____	777

9.2.9 **¿Cuánto tiempo estuvo en funcionamiento la obra antes de dejar de estar operativa?**

Meses _____ 1 Nunca estuvo en funcionamiento..... 2

Pase a sgte proyecto, de lo contrario, finalice encuesta

9.2.10 **¿Todos los pobladores han sido beneficiados por este proyecto?**

01. Sí → **Pase a 9.2.13** 02. No

9.2.11 **Indique qué porcentaje de los hogares del CC.PP es beneficiado con la obra:** ☐ **% de los hogares**

9.2.12 **Indique la (las) razón (nes) por las cuáles no todos los pobladores han sido beneficiados por la obra:**

La obra se ubica lejos	1
No todos pueden pagar por su uso	2
La obra no funciona adecuadamente	3
Otros (especifique) _____	777

Unidad

9.2.13 **Indique cuál es la tarifa pagada por acceder al servicio** ☐ Soles _____

9.2.14 **¿Cuántas horas al día está operativa la obra?** ☐ Horas al día

9.2.15 **¿Cuántos días a la semana está operativa la obra?** ☐ Días a la semana

9.2.16 **¿Cuántos meses al año está operativa la obra?** ☐ Meses al año

9.2.17 **¿Durante la temporada de verano, el funcionamiento de la obra se ve afectado?**

01. Sí 02. No

9.2.18 **¿Durante la temporada de invierno / lluvia, el funcionamiento de la obra se ve afectado?**

01. Sí 02. No

9.3 PROYECTO: PUENTES PEATONALES [SI A=3]

I Gestión de la obra

9.3.1 ¿Quién tuvo la iniciativa para la construcción de la obra?

Algún dirigente de la localidad	1	Club de Madres / Vaso de Leche	6
El profesor de la escuela	2	FONCODES	7
El encargado del puesto de salud	3	Municipio	8
Un padre de familia	4	Otros (especifique) _____	777
Una madre de familia	5	No sabe	888

9.3.2 ¿Cree Ud que la organización de la comunidad (núcleo ejecutor u otra organización local) realizó un buen trabajo en la gestión de la obra?

01. Sí → **Pase a 9.3.4** 02. No

9.3.3 Explique por qué no:

No consultó a la población al respecto	1
No manejo adecuadamente los fondos destinados en la ejecución de la obra	2
Otros (especifique) _____	777

9.3.4 ¿Cree Ud que la organización de la comunidad (núcleo ejecutor u otra organización local) realiza un buen trabajo en el mantenimiento de la obra?

01. No ha habido organización al respecto 02. Sí 03. No

Pase a 9.3.6

9.3.5 Explique por qué no:

No se eligió adecuadamente a los integrantes de la junta	1
La junta no recaudaba dinero para el mantenimiento de la obra	2
La junta no sabía cómo administrar el mantenimiento de la obra	3
Otros (especifique) _____	777

II Operatividad de la obra

9.3.6 Indique el año en que fue concluida la obra: ☐☐☐☐

9.3.7 ¿La obra se encuentra actualmente en funcionamiento?

01. Sí → **Pase a 9.3.10** 02. No

9.3.8 Indique la (las) razón (nes) por las cuáles no está en funcionamiento la obra:

El diseño del proyecto no fue el adecuado	1
Falta de apoyo de la autoridad local responsable	2
Falta de apoyo de la gente para su mantenimiento	3
La gente no paga por el uso de la obra	4
Daños provocados por desastres naturales	5
Otros (especifique) _____	777

9.3.9 ¿Cuánto tiempo estuvo en funcionamiento la obra antes de dejar de estar operativa?

Meses _____ 1 Nunca estuvo en funcionamiento..... 2

Pase a sgte proyecto, de lo contrario, finalice encuesta

9.3.10 ¿Todos los pobladores han sido beneficiados por este proyecto?

01. Sí → **Pase a sgte proyecto, de lo contrario finalice encuesta** 02. No

9.3.11 Indique qué porcentaje de los hogares del CC.PP es beneficiado con la obra: ☐☐☐ **% de los hogares**

9.3.12 Indique la (las) razón (nes) por las cuáles no todos los pobladores han sido beneficiados por la obra:

La obra se ubica lejos	1
No todos pueden pagar por su uso	2
La obra no funciona adecuadamente	3
Otros (especifique) _____	777

9.4 PROYECTO: VEREDAS PEATONALES [SI A=4]

I Gestión de la obra

9.4.1 ¿Quién tuvo la iniciativa para la construcción de la obra?

Algún dirigente de la localidad	1	Club de Madres / Vaso de Leche	6
El profesor de la escuela	2	FONCODES	7
El encargado del puesto de salud	3	Municipio	8
Un padre de familia	4	Otros (especifique) _____	777
Una madre de familia	5	No sabe	888

9.4.2 ¿Cree Ud que la organización de la comunidad (núcleo ejecutor u otra organización local) realizó un buen trabajo en la gestión de la obra?

01. Sí → **Pase a 9.4.4** 02. No

9.4.3 Explique por qué no:

No consultó a la población al respecto	1
No manejo adecuadamente los fondos destinados en la ejecución de la obra	2
Otros (especifique) _____	777

9.4.4 ¿Cree Ud que la organización de la comunidad (núcleo ejecutor u otra organización local) realiza un buen trabajo en el mantenimiento de la obra?

01. No ha habido organización al respecto 02. Sí 03. No

Pase a 9.4.6

9.4.5 Explique por qué no:

No se eligió adecuadamente a los integrantes de la junta	1
La junta no recaudaba dinero para el mantenimiento de la obra	2
La junta no sabía cómo administrar el mantenimiento de la obra	3
Otros (especifique) _____	777

II Operatividad de la obra

9.4.6 Indique el año en que fue concluida la obra: ☐

9.4.7 ¿La obra se encuentra actualmente en funcionamiento?

01. Sí → **Pase a 9.4.10** 02. No

9.4.8 Indique la (las) razón (nes) por las cuáles no está en funcionamiento la obra:

El diseño del proyecto no fue el adecuado	1
Falta de apoyo de la autoridad local responsable	2
Falta de apoyo de la gente para su mantenimiento	3
La gente no paga por el uso de la obra	4
Daños provocados por desastres naturales	5
Otros (especifique) _____	777

9.4.9 ¿Cuánto tiempo estuvo en funcionamiento la obra antes de dejar de estar operativa?

Meses _____ Nunca estuvo en funcionamiento..... 2

Pase a sgte proyecto, de lo contrario, finalice encuesta

9.4.10 ¿Todos los pobladores han sido beneficiados por este proyecto?

01. Sí → **Pase a sgte proyecto, de lo contrario finalice encuesta** 02. No

9.4.11 Indique qué porcentaje de los hogares del CC.PP es beneficiado con la obra: ☐ **% de los hogares**

9.4.12 Indique la (las) razón (nes) por las cuáles no todos los pobladores han sido beneficiados por la obra:

La obra se ubica lejos	1
No todos pueden pagar por su uso	2
La obra no funciona adecuadamente	3
Otros (especifique) _____	777

9.5 PROYECTO: CAMINOS CARROZABLES [SI A=5]

I Gestión de la obra

9.5.1 ¿Quién tuvo la iniciativa para la construcción de la obra?

Algún dirigente de la localidad	1	Club de Madres / Vaso de Leche	6
El profesor de la escuela	2	FONCODES	7
El encargado del puesto de salud	3	Municipio	8
Un padre de familia	4	Otros (especifique) _____	777
Una madre de familia	5	No sabe	888

9.5.2 ¿Cree Ud que la organización de la comunidad (núcleo ejecutor u otra organización local) realizó un buen trabajo en la gestión de la obra?

01. Sí → **Pase a 9.5.4** 02. No

9.5.3 Explique por qué no:

No consultó a la población al respecto	1
No manejo adecuadamente los fondos destinados en la ejecución de la obra	2
Otros (especifique) _____	777

9.5.4 ¿Cree Ud que la organización de la comunidad (núcleo ejecutor u otra organización local) realiza un buen trabajo en el mantenimiento de la obra?

01. No ha habido organización al respecto 02. Sí 03. No

Pase a 9.5.6

9.5.5 Explique por qué no:

No se eligió adecuadamente a los integrantes de la junta	1
La junta no recaudaba dinero para el mantenimiento de la obra	2
La junta no sabía cómo administrar el mantenimiento de la obra	3
Otros (especifique) _____	777

II Operatividad de la obra

9.5.6 Indique el año en que fue concluida la obra: ☐

9.5.7 ¿La obra se encuentra actualmente en funcionamiento?

01. Sí → **Pase a 9.5.10** 02. No

9.5.8 Indique la (las) razón (nes) por las cuáles no está en funcionamiento la obra:

El diseño del proyecto no fue el adecuado	1
Falta de apoyo de la autoridad local responsable	2
Falta de apoyo de la gente para su mantenimiento	3
La gente no paga por el uso de la obra	4
Daños provocados por desastres naturales	5
Otros (especifique) _____	777

9.5.9 ¿Cuánto tiempo estuvo en funcionamiento la obra antes de dejar de estar operativa?

Meses _____ 1 Nunca estuvo en funcionamiento..... 2

Pase a sgte proyecto, de lo contrario, finalice encuesta

9.5.10 ¿Todos los pobladores han sido beneficiados por este proyecto?

01. Sí → **Pase a sgte proyecto, de lo contrario finalice encuesta** 02. No

9.5.11 Indique qué porcentaje de los hogares del CC.PP es beneficiado con la obra: ☐ **% de los hogares**

9.5.12 Indique la (las) razón (nes) por las cuáles no todos los pobladores han sido beneficiados por la obra:

La obra se ubica lejos	1
No todos pueden pagar por su uso	2
La obra no funciona adecuadamente	3
Otros (especifique) _____	777

SECCION 10 **PRECIOS** 13

Recoger información sobre precios en bodega / tienda del CC.PP

Si alguien quisiera compra los siguientes items en el CC.PP ¿Cuánto le costarían?

1	Saco de urea (50 kgs.)	S/.	
2	Lata de Leche evaporada	S/.	
3	Fideo a granel (1kg)	S/.	
4	Azúcar blanca (1kg)	S/.	
5	Aceite de cocina (1 lt.)	S/.	
6	Arroz corriente embolsado (1kg)	S/.	
7	Huevos (1 unidad)	S/.	
8	Kerosene (1 galón)	S/.	
9	Detergente (1 kg.)	S/.	
10	Lejía (1 cojín)	S/.	
11	Jabón de tocador (1 barra)	S/.	
12	Jabón para lavar ropa (1 barra)	S/.	
13	Vela (unidad)	S/.	

Annex 2: Household Survey

ENCUESTA DE EVALUACIÓN DE IMPACTO DEL FONCODES (JBIC PE-19, PE-24)

Encuesta a hogares

Nota al encuestador: Si el número de años de residencia del hogar el la localidad es menor que dos, cambiar de hogar.

CÓDIGO DE ENCUESTA	

Hora de inicio:	
Hora de fin:	

A. UBICACIÓN GEOGRÁFICA

			CÓDIGO
Departamento			
Provincia			
Distrito			
Centro Poblado	Nombre		
	Categoría(*)		

(*) Categoría de Centro Poblado:

CIUDAD..... 1
PUEBLO..... 2
CASERÍO..... 3
ANEXO..... 4
VILLA..... 5
Otros (Especificar)…….. 777

B. PERSONAL DE LA ENCUESTA

Datos del Encuestador

Primer Nombre	Segundo Nombre	Apellido Paterno	Apellido Materno	Cod	Fecha de Visita

Datos del Supervisor

Primer Nombre	Segundo Nombre	Apellido Paterno	Apellido Materno	Cod	Fecha de Supervisión

Datos del Digitador

Primer Nombre	Segundo Nombre	Apellido Paterno	Apellido Materno	Cod	Fecha de Digitación

C. INFORMACIÓN DEL ENTREVISTADO

Primer Nombre	Segundo Nombre	Apellido Paterno	Apellido Materno

Dirección:			
Sexo:	Masculino.....1	Edad (Años cumplidos):	
	Femenino.....2		
Relación con Jefe de Hogar (código):			
Jefe de Hogar.....1	Hijo (a).....3	(Solo si es mayor de edad)	
Cónyuge.....2	Otro (especifique)…….....777		

D. NÚMERO DE AÑOS QUE EL HOGAR RESIDE EN ESTA LOCALIDAD: _____ **Años**

*****OBSERVACIONES (Referencias sobre la ubicación del hogar, etc):**

SECCION 1: CARACTERISTICAS SOCIODEMOGRÁFICAS DEL HOGAR

Para todos los miembros del hogar

Cuadro 1A : MIEMBROS del HOGAR

Código Personal	A1 **Quisiera hacer una lista completa de los nombres de todas las personas que viven habitualmente y comparten comidas en este hogar** **ENCUESTADOR** **Tome en cuenta el siguiente orden:** *a) Jefe del Hogar* *b) Cónyuge* *c) Hijos solteros, de mayor a menor* *d) Hijos casados con sus cónyuges e hijos, de mayor a menor* *e)Otros parientes* *f) Personas no parientes*	A2 **Relación de parentesco con el jefe** 02 Cónyuge (o conviviente) 03 Hijo/Hija 04 Yerno/ Nuera 05 Nieto/Nieta 06 Padres/ Suegro 07 Otro pariente 08 Otra persona no pariente	A3 **Esposa (o conviviente)** *Sólo en caso que aparezca en la lista de miembros del hogar*		A4 **Madre** *Sólo en caso que aparezca en la lista de miembros del hogar*		A5 **Sexo** 01 M 02 F	A6 **Edad** *Años cumplidos, en caso de tener menos de 1año, indicar el número de meses*		**Lengua** 01 Castellano 02 Quechua 03 Aymara 44 Otra lengua nativa (Especifique) 777 Otro idioma (Especifique)			
										A7a Lengua Materna (*)		**A7b Segunda Lengua**	
			Nombre	**Código Personal**	***Nombre***	**Código Personal**		***Años***	***Meses***	**Cod.**	**777, Otros (esp)**	**Cod.**	**777, Otros (esp)**
1		**01**											
2													
3													
4													
5													
6													
7													
8													
9													
10													
11													
12													
13													
14													
15													
16													
17													
18													
19													
20													

(*) Primera lengua que aprendió.

SECCION 1: CARACTERISTICAS SOCIODEMOGRÁFICAS DEL HOGAR

***Solo para el jefe de hogar y su cónyuge:** Información sobre sus respectivos padres (en caso de no vivir éstos en el hogar o de haber fallecido).*

CUADRO 1B: PADRES CONYUGES

B1 Código del jefe de hogar y su cónyuge	B2 Relación de parentesco	B3 Lugar de nacimiento				B4 ¿Aún vive?	B5 Indique la edad actual o la edad que tenía al fallecer	¿Cuál es (fue) el nivel y último año de educación que aprobó?		Lengua				B8 En caso de estar vivo, indique el lugar de residencia actual			
	01. Padre 02. Madre	01 En el CC.PP 777 Fuera del CC.PP *(especifique distrito, provincia y departamento)* 999 No aplica				01. Sí 02. No		01. Ninguno 02. Inicial 03. Primaria 04. Secundaria 05. Técnica Superior 06. Universitaria 07. Post Grado		01 Castellano 02 Quechua 03 Aymara 44 Otra lengua nativa (Especifique) 777 Otro idioma (Especifique)				01 En el CC.PP 777 Fuera del CC.PP *(especifique distrito, provincia y departamento)*			
										B7a Lengua Materna (*)		B7b Segunda Lengua					
		Cod.	777, Otros (esp)				Años	B6a	B6b					Cod.	777, Otros (esp)		
			Dist	Prov	Dept			Nivel	Año / Grado	Cod.	777,Otros (esp)	Cod.	777,Otros (esp)		Dist	Prov	Dept
01	Padre																
01	Madre																
02	Padre																
02	Madre																

SECCION 2: EDUCACIÓN

Para todos los miembros del hogar mayores de 3 años

CUADRO 2C: EDUCACIÓN DE LOS MIEMBROS DEL HOGAR

Sólo para opción 01 en C5

Código Personal	C1 Nombre de la persona	C2 ¿Sabe leer / escribir?	C3 ¿Asistió alguna vez a la escuela?	¿Cuál es el último grado o año de estudios que aprobó?		C5 ¿Cuándo fue la última vez que asistió a clases?	C6 Indique las razones por las cuales decidió dejar de estudiar		C7 ¿Cuál fue el resultado que obtuvo en el 2005?		Indique el número de veces que ha faltado al colegio, escuela o centro de estudios durante:		C9 Durante la última semana ¿Cuántas horas dedicó a hacer las tareas y a estudiar fuera de clase?
		01.Sí 02.No **-->Sgte miembro**	01.Sí 02.No **-->Sgte miembro**	01 Ninguno 02 Inicial 03 Primaria 04 Secundaria 05 Técnico Superior 06 Universitario 07 Post - grado		01 Todavía asiste a clases **--> Pase a C7** 02 Se matriculó este año, pero dejó de asistir 03 El último año que asistió fue el año pasado (2005) 04 Dejó de estudiar antes del 2005 **---> Pase a sgte miembro**	01 Problemas económicos / tenía que trabajar 02 No tenía dinero para matrícula/ materiales 03 Las tareas domésticas no me lo permiten 04 Mi familia no quería que estudie 05 No había colegio / no había el grado que me correspondía 06 Tenía malas notas 07 Quedé embarazada 08 No quería estudiar más / Prefiero trabajar 09 Por enfermedad / accidente 10 Matrimonio/ Convivencia 777 Otros (Especifique)		01 Aprobado 02 Desaprobado 03 No aprueba ni desaprueba (inicial) 777 Otro (especifique)		C8a Último mes	C8b Últimos 3 meses	
				C4a Nivel	C4b Año / Grado		Cod.	777, Otros (es)	Cod.	Otros (es)	Nº Días	Nº Días	Nº Horas

SECCION 2: EDUCACIÓN
(Continuación)

CUADRO 2C: EDUCACIÓN DE LOS MIEMBROS DEL HOGAR

		Sólo para opciones 01 y 02 en C5						Sólo para opción 01 en C5					
Código Personal	Nombre de la persona	C10 Ubicación del centro de estudios 01 En el CC.PP 777 Otros (especifique el Centro poblado)		C11 ¿Qué tipo de transporte emplea/ empleaba para ir a la escuela, colegio o centro de estudios? 01 A pie 02 Bicicleta 03 Moto 04 Carro 05 Coaster 06 Bus / ómnibus 07 Bote / canoa 08 Bestia / acémila 777 Otro (Especifique)		C12 ¿Cuánto tiempo le toma/ tomaba llegar a su centro de estudios con dicho medio de transporte ?	C13 La escuela a la que Ud asiste/ asistía es: 01. Unidocente 02. Polidocente	C14 Indique cuántas veces faltó el profesor durante los últimos tres meses (En caso de tratarse de escuela polidocente, considere las faltas del tutor del aula) (En caso de NO haber faltado, "0")	C15 ¿La escuela a la que asiste cuenta con APAFA? 01. Sí 02. No **--> Pase a C17**	C16 ¿Sus padres u otro familiar suelen asistir a las reuniones organizadas por la APAFA? 01. Sí 02. No	C17 En su centro de estudios, recibe alguno de los siguientes beneficios: (R: Múltiple) 01. Desayuno 02. Almuerzo 03. Vaso de Leche *(En caso de no recibir alguno de los sgtes beneficios, indicar con "0")*		
		Cod.	Otros (es)	Cod.	Otros (es)	Minutos		Veces					

SECCION 3: SALUD

Salud Infantil

Para niños menores de 6 años

Nota Encuestador1 :Vea la lista de los miembros del hogar, use el nombre del niño al preguntar y coloque el respectivo código en las siguientes tablas. Asegúrese que esté la madre del niño presente durante el desarrollo de esta sección.

Nota al encuestador 2: En caso que el niño haya padecido más de una enfermedad, registre cada una de ellas en cada fila.

CUADRO 3D: SALUD INFANTIL

Sólo si ha padecido Diarrea: opción 01 en D2

Código Personal	D1 Nombre del niño	D2 En los últimos dos meses, ¿[NOMBRE DEL NIÑO] ha padecido alguna de las siguientes enfermedades?		D3 ¿Cuántos días duró el episodio de diarrea?	D4 El peor día de la diarrea, ¿Cuántas deposiciones el niño hizo?	D5 ¿Aún continúa el episodio de Diarrea?	D6 ¿Qué hizo para tratar la enfermedad?		D7 Si NO acudió a un establecimiento de salud, explique por qué no lo hizo:	
		01 Diarrea 02 Infección respiratoria 03 Enfermedad de la piel 777 Otras (especifique) **Pase a D6** 999 Ninguna **---> Pase a sgte niño**		(Si no sabe….888)	(Si no sabe….888)	01. Sí 02. No	01 Nada 02 Aplicó tratamiento casero con medicina/hierbas naturales 03 Acudió a un establecimiento de salud (posta médica, centro de salud, hospital; incluir policia nacional, consultorio médico, clínica particular, farmacia o botica) **---> Pase a sgte enfermedad** 04 Acudí a curandero 777 Otro (especificar)		01 No existe por mi zona / Queda muy lejos 03 No confío en el personal 04 El personal trata mal al público 05 No hay medicinas 06 No tenía con qué pagar 07 No lo consideré necesario / los síntomas no eran graves 08 Sé qué darle en esos casos 09 No tenía tiempo 10 El padre del niño no quiso 777 Otro (especificar) **---> Sgte enfermedad**	
		Cod	Otros (esp)		Nº Deposiciones		Cod	Otros (esp)	Cod	Otros (esp)

SECCION 3: SALUD

Antropometría (madres e hijos)

Nota al encuestador 1: Al momento de estimar el peso de la madre/ niño, asegurarse que suban a la balanza con los pies descalzos. Asimismo, al momento de medir la talla, además de continuar descalzos, asegurarse que permanezcan en posición erguida durante la medición.

CUADRO 3E: Medición de la madre

Código de la madre	E1 Nombre de la madre	E2 Talla (cm)	E3 Peso (kg)

CUADRO 3F: Medición de los niños (entre 2 y 10 años de edad)

Código de la madre	F1 Nombre de la madre	F2 Nombre del niño	F3 Talla del niño (cm)	F4 Peso del niño (kg)

CUADRO 3G: Medición de los niños (menores de 2 años) - TOMAR INFORMACIÓN DE CARTILLA SIS

***Nota al encuestador*:** Registrar los datos de la cartilla SIS referidos a la última medición realizada de cada niño menor de dos años en el siguiente cuadro:

Código de la madre	G1 Nombre de la madre	G2 Nombre del niño	G3 ¿Tiene la cartilla? 01. Sí 02. No → > Pase a sgte niño	G4 Indique edad del niño respecto de la última medición registrada en la cartilla		G5 Talla del niño según cartilla SIS (cm)	G6 Peso del niño según cartilla SIS (kg)
				Año	Meses		

SECCIÓN 4: CARACTERÍSTICAS GENERALES DE LA VIVIENDA

RESPUESTAS ESPONTÁNEAS Y OBSERVACIÓN

I1 La vivienda que ocupa su hogar es:

¿Alquilada?	1 →	S/.
¿Propia, pagándola a plazos?	2	
¿Propia, totalmente pagada?	3	
¿Propia, por invasión?	4	
¿Cedida por el centro de trabajo?	5	
¿Cedida por otro hogar o institución?	6	
Otro _____ (Especificar)	777	

I1a. ¿Cuánto paga por el alquiler?

I2 En total, ¿cuántas habitaciones hay en esta vivienda?

(No contar los baños, cocina, pasadizos, garaje, depósitos ni espacios de patio)

[Encuestador(a):Verifique la rpta.]

I3 ¿Cuál es el material predominante de las paredes exteriores?

Ladrillo / bloque de cemento	1	Pona (madera palmera)	8
Piedra o sillar con cal o cemento	2	Estera	9
Adobe / Tapia	3	Piedra con barro	10
Quincha (caña con barro)	4	Calamina / fierro	11
Piedra con barro	5	Sin paredes	12
Madera / troncos	6	Otros (especificar)	777

[Encuestador(a):Verifique la rpta.]

I4 ¿Cuál es el material predominante del techo?

Concreto armado	1	Caña / esteras con torta de barro	5
Madera / troncos	2	Estera	6
Tejas / losetas	3	Paja / hojas de palmera	7
Calamina / fibra de cemento	4	Otros (especificar)	777

[Encuestador(a):Verifique la rpta.]

I5 ¿Cuál es el material predominate del piso?

Parquet / madera pulida	1	Cemento	5
Láminas asfálticas/ vinílicos	2	Tierra / arena	6
Losetas / terrazos	3	Pona (madera palmera)	7
Madera (entablados)	4	Otros (especificar)	777

[Encuestador(a):Verifique la rpta.]

I6 En los últimos 12 meses, de agosto 05 a septiembre 06, ¿Ha realizado ampliaciones o modificaciones a esta vivienda u otra vivienda de su propiedad?

Sí 1 → **I6a.¿Cuántos metros cuadrados modificó y/o construyó?** **m2**
No 2

I7 El servicio higiénico que tiene su vivienda está conectado a:

Red pública dentro de la vivienda	1
Red pública fuera de la vivienda	2
Pozo artesanal, pozo ciego o negro (letrina), pozo séptico	3
No hay servicio (matorral/campo/río)	4
Otro (especifique) _____	777

I8 ¿Qué tipo de combustible usa para cocinar?

Electricidad	1	Leña	5
Gas	2	Bosta / Champa	6
Kerosene	3	Otro (especifique)	777
Carbón	4	No cocina en casa	888

I9 Si Ud. alquilara esta vivienda., ¿Cuánto cree que le pagarían de alquiler mensual? (poner código "99" si no existen referencia para valoración) **Soles al mes**

I10 Si Ud. vendiera esta vivienda., ¿Cuánto cree que le pagarían de la venta? (poner código "99" si no existen referencia para valoración) **Soles al mes**

I11 ACTIVOS DEL HOGAR

	I11a ¿Tienen Uds. en el hogar .....? Sí 1 / No 2 →Pase a sgte activo	I11b ¿Cuántos… tiene actualmente?	I11c ¿Hace cuántos años lo/la compró (elaboró)?	I11d ¿Funciona(n)? Si 1 / No 2	I11e ¿Hace uso de el (ellos)? Si 1 / No 2
01 Radio					
02 Equipo de sonido					
03 Televisor blanco y negro					
04 Televisor a colores					
05 Licuadora, batidora, picatodo					
06 Refrigeradora / Congeladora					
07 Máquina de coser eléctrica					
08 Máquina de cosar manual / pedal					
09 Cocina a kerosene					
10 Cocina a gas					
11 Bicicleta					
12 Teléfono fijo					
13 Teléfono celular					
14 Automóvil / Carro					
15 Canoa					
16 Peque peque					
17 Bote					
18 Terma					
19 Motocicleta					
20 Minibus / Bus					
21 Reloj de pared					
22 Reloj pulsera					
23 Plancha eléctrica					
24 Plancha a carbón					
25 Otros (especificar)					
26 Otros (especificar)					
27 Otros (especificar)					

I12 ¿Cuáles son los 4 activos más valiosos que posee su hogar?

	Activo **(Cod)**	Valorización*
1		S/.
2		S/.
3		S/.
4		S/.

* ***Nota al encuestador:*** Al momento que el jefe de hogar valorice el activo/ equipo, debe considerar la situación actual en la que se encuentra el artefacto.

SECCION 3: SALUD

Salud materna y natalidad

3.2 En los últimos 5 años a la fecha, ¿alguna de las mujeres de

Sí 1 →
No 2 →

Nota al encuestador: Registre cada embarazo que haya tenido ca

CUADRO 3H: SALUD MATERNA Y NATALIDAD

Nota al encuestador: Considere todos los embarazos que haya ten

Código Personal	H1 Nombre de la mujer	H2 Código de embarazo	H3 ¿Ud ha tenido (tiene) controles pre-natales durante dicho embarazo? 01….. Sí (Indique Nº de controles) ----> Pase a H5 02. ….No	
			Cod.	Nº Controles

SECCIÓN 4: CARACTERÍSTICAS GENERALES DE LA VIVIENDA

SUMINISTRO DE AGUA

Nota al encuestador: En caso que el hogar empleara fuentes de agua distintas para beber y cocinar, registre como 1ra prioridad la fuente empleada para beber y como 2da prioridad la fuente de agua utilizada para la cocción de los alimentos.

Agua para beber / cocinar

Opción Colocar en orden de prioridad	J1 ¿Dónde obtiene el agua? Clave 1	J2 ¿Cuánto tiempo se demora en ir, recoger el agua y regresar? Minutos	J3 Principal persona a cargo del recojo de agua (Código personal)	J4 Indique el número de veces que va a recoger agua: 01. Día 02. Semana J5a Veces	J4 J5b Periodo	J5 ¿Sabe si el agua es potable? 01. Sí 02. No 03. No sabe	J6 ¿Cuál es su opinión sobre la calidad del agua que usa para beber? 01. Buena ->Pase a J8 02. Regular 03. Mala	J7 ¿Por qué no es buena? 01 Mal sabor 02 Mal olor 03 Viene turbia 777 Otros Cod	J7 777,Otros (esp)	J8 ¿Qué tratamiento le da al agua antes de beberla? 01. Nada 02. La hiervo 03. Uso tabletas de cloro 04. Le hecho gotas de lejía 05. Dejo que se asiente 06. La filtro 777. Otros (especifique) --> Pase a sgte prioridad en fuente de agua Cod	J8 777, Otros (esp)
1											
2											
3											
4											

Clave 1

01 Red pública dentro de la vivienda **--> Pase a J5**
02 Red pública fuera de la vivienda
03 Pilón de uso público / caño público / pileta
04 Pozo
05 Río / acequia
06 Quebrada (solo aplica en selva)
07 Manantial / chorro
08 lago (cocha)
09 Agua de lluvia almacenada
777 Otros (especifique)

Agua para aseo y uso doméstico (lavar ropa, platos, entre otros)

Opción Colocar en orden de prioridad	J9 ¿Dónde obtiene el agua? Clave 1	J10 ¿Usa el agua de la fuente en el mismo lugar? 01. Sí --> Pase a J14 02. No	J11 ¿Cuánto tiempo se demora en ir, recoger agua y volver? Minutos	J12 Principal persona a cargo del recojo de agua (Código personal)	Indique el número de veces que va a recoger agua: (Periodo) 01. Día 02. Semana J13a Veces	J13b Periodo
1						
2						
3						
4						

J14 ¿Realiza algún pago por el agua que utiliza el hogar? (considere el gasto total en todas las fuentes y usos del agua) — Sí.....1 / No.....2 → J14.a. Indique monto pagado durante el último mes: S/.

J15 ¿Usted accede a agua de algún proyecto que haya sido financiado por FONCODES? — Sí.....1 / No.....2 → J15.a. Indique monto pagado durante el último mes: S/.

J16 ¿Usted accede a agua de algún otro proyecto que NO haya sido financiado por FONCODES? — Sí.....1 / No.....2 → J16a. Indique monto pagado durante el último mes: S/.

J17 Utensilios usados para almacenar el agua:

	J17a Tipo de recipiente (Si no aplica, "0")	J17b ¿Suele estar cubierto? 01. Si 02. No	J17c Tipo de cobertura usada (Clave 2) Cod	J17c Otros (esp)	J17d ¿Se ubican lejos de los animales? 01. Si 02. No
A.					
B.					
C.					
D.					

Clave 2:

01. Cartón
02. Plástico
03. Tapa hermética
04. Nada
777. Otros (Especifique)

SECCIÓN 4: CARACTERÍSTICAS GENERALES DE LA VIVIENDA

**** Para la persona encargada de la cocina / preparación de alimentos y del cuidado de los niños en el hogar***

HÁBITOS DE HIGIENE

K1 Ud se lava las manos antes de cocinar:

Siempre…… 1
A veces……2
Nunca……3

K2 Los niños se lavan las manos después de ir al baño:

Siempre…… 1
A veces……2
Nunca……3

K3 Los niños se lavan las manos antes de cada comida:

Siempre…… 1
A veces……2
Nunca……3

K4 Por lo general, ¿qué usan en su hogar para lavarse las manos ?

Solo agua……1
Jabón…… 2
Detergente……3

K5 ¿A dónde va el agua sucia usada para cocinar/lavarse las manos/o bañarse?

Conexión a un sistema público de drenaje 1
Posee pozo séptico 2
Ninguna de las anteriores pero se ha adaptado un sistema de evacuación de desperdicios lejos del hogar 3
No se cuenta con ningun sistema 4

K6 Indique el monto gastado/ consumido en los siguientes productos: *(Si no gastó/ consumió, "0")*

Producto	Último mes (Soles)	Anual (Soles)
01 Jabón de tocador		
02 Jabón para lavar ropa		
03 Detergente para ropa		
04 Lejía		

ELECTRICIDAD

L1. ¿Cuál de las siguientes fuentes de energía son las que usted usa en su hogar para alumbrar? (R: Múltiple)

	Fuente	L1a ¿Utiliza dicha fuente? 01.Sí 02.No	L1b Indique en orden cuál es el que más utiliza: (1, más usado)	L1c Indique su costo mensual: (Si no gastó, 0) S/. al mes
1	Electricidad de una red interconectada			
2	Electricidad de conexión de generador			
3	Panel solar			
4	Baterías			
5	Velas			
6	Kerosene			
7	Carbón			
777	Otra (especifique)			

L2. ¿Tiene su hogar conexión eléctrica? (hace referecia tanto a la red interconectada como a la

Si ……..1

No…....2 **----> Pase a L5**

L3. ¿Hace uso su hogar de la conexión eléctrica?

Si ……..1 ----> **Pase a L6**

No…....2

L4. Indique si alguno de los siguientes argumentos explican por qué el hogar no usa la conexión eléctrica (R: Múltiple)

Nuestro hogar no puede pagar la tarifa mensual	1
No sabíamos que teníamos que pagar una tarifa mensual	2
En realidad, no queríamos conexión eléctrica pero nos la pusieron	3
Estamos satisfechos con la actual fuente de energía	4
Otro (especificar)	777

---> Pase a sgte sección

L5. ¿En algún momento, en el pasado, su hogar estuvo conectado a la red?

Si……1 → **K5a. ¿Hace cuánto tiempo que viven sin estar conectados a la red de energía eléctrica?**

No……..……2

---> Pase a sgte sección

[ ] meses **---> Pase a sgte sección**

L6. Normalmente, ¿cuántos meses al año su hogar dispone del servicio eléctrico? [ ] Meses al año
(Si no sabe, 888)

L7. Normalmente, ¿cuántos días al mes su hogar dispone del servicio eléctrico? [ ] Días al mes
(Si no sabe, 888)

L8. Normalmente ¿cuántas horas a la semana su hogar dispone del servicio eléctrico? [ ] Horas al día

(Si no sabe, 888)

L9. Después de recibir energía eléctrica, ¿usted compró alguno de los siguientes artefactos?

	Artefacto	¿Compró? 01. Sí 02. No --> Pase a sgte artefacto
1	Radio	
2	Equipo de sonido	
3	Televisor	
4	Licuadora, batidora o picadora	
5	Refrigeradora / congeladora	
6	Máquina de coser	
7	Terma	
8	Plancha Electrica	
777	Otro (Especifique)	

SECCIÓN 4: CARACTERÍSTICAS GENERALES DE LA VIVIENDA

*** Para todos los miembros del hogar mayores de 15 años**

Uso del Tiempo (I)

CUADRO N: Para Miembros mayores de 15 Años

Código personal	M1 Nombre de la persona	M2 Descripción de la actividad	Horas													
			Ayer Día________		Hace 2 días Día________		Hace 3 días Día________		Hace 4 días Día________		Hace 5 días Día________		Hace 6 días Día________		Hace 7 días Día________	
			M3a AM	M3b PM	M4a AM	M4b PM	M5a AM	M5a PM	M6a AM	M6b PM	M7a AM	M7b PM	M8a AM	M8b PM	M9a AM	M9b PM
		01 Trabajo agrícola (dentro de UA)														
		02 Trabajo asalariado														
		03 Trabajo independiente no agrícola														
		04 Labores domésticas*														
		05 En cama (enfermedad)														
		01 Trabajo agrícola (dentro de UA)														
		02 Trabajo asalariado														
		03 Trabajo independiente no agrícola														
		04 Labores domésticas*														
		05 En cama (enfermedad)														
		01 Trabajo agrícola (dentro de UA)														
		02 Trabajo asalariado														
		03 Trabajo independiente no agrícola														
		04 Labores domésticas*														
		05 En cama (enfermedad)														
		01 Trabajo agrícola (dentro de UA)														
		02 Trabajo asalariado														
		03 Trabajo independiente no agrícola														
		04 Labores domésticas*														
		05 En cama (enfermedad)														
		01 Trabajo agrícola (dentro de UA)														
		02 Trabajo asalariado														
		03 Trabajo independiente no agrícola														
		04 Labores domésticas*														
		05 En cama (enfermedad)														
		01 Trabajo agrícola (dentro de UA)														
		02 Trabajo asalariado														
		03 Trabajo independiente no agrícola														
		04 Labores domésticas*														
		05 En cama (enfermedad)														
		01 Trabajo agrícola (dentro de UA)														
		02 Trabajo asalariado														
		03 Trabajo independiente no agrícola														
		04 Labores domésticas*														
		05 En cama (enfermedad)														

***En LABORES DOMÉSTICAS, considerar las siguientes actividades: cocina de alimentos, aseo del hogar, cuidado de los niños, recojo de agua para el uso del hogar, etc.**

SECCIÓN 4: CARACTERÍSTICAS GENERALES DE LA VIVIENDA

*** Para todos los miembros del hogar mayores de 15 años**
(Continuación)

Uso del Tiempo (I)

CUADRO N: Para Miembros mayores de 15 Años

Código personal	M1 Nombre de la persona	M2 Descripción de la actividad	Horas													
			Ayer Día________		Hace 2 días Día________		Hace 3 días Día________		Hace 4 días Día________		Hace 5 días Día________		Hace 6 días Día________		Hace 7 días Día________	
			M3a AM	M3b PM	M4a AM	M4b PM	M5a AM	M5a PM	M6a AM	M6b PM	M7a AM	M7b PM	M8a AM	M8b PM	M9a AM	M9b PM
		01 Trabajo agrícola (dentro de UA)														
		02 Trabajo asalariado														
		03 Trabajo independiente no agrícola														
		04 Labores domésticas*														
		05 En cama (enfermedad)														
		01 Trabajo agrícola (dentro de UA)														
		02 Trabajo asalariado														
		03 Trabajo independiente no agrícola														
		04 Labores domésticas*														
		05 En cama (enfermedad)														
		01 Trabajo agrícola (dentro de UA)														
		02 Trabajo asalariado														
		03 Trabajo independiente no agrícola														
		04 Labores domésticas*														
		05 En cama (enfermedad)														
		01 Trabajo agrícola (dentro de UA)														
		02 Trabajo asalariado														
		03 Trabajo independiente no agrícola														
		04 Labores domésticas*														
		05 En cama (enfermedad)														
		01 Trabajo agrícola (dentro de UA)														
		02 Trabajo asalariado														
		03 Trabajo independiente no agrícola														
		04 Labores domésticas*														
		05 En cama (enfermedad)														
		01 Trabajo agrícola (dentro de UA)														
		02 Trabajo asalariado														
		03 Trabajo independiente no agrícola														
		04 Labores domésticas*														
		05 En cama (enfermedad)														
		01 Trabajo agrícola (dentro de UA)														
		02 Trabajo asalariado														
		03 Trabajo independiente no agrícola														
		04 Labores domésticas*														
		05 En cama (enfermedad)														

***En LABORES DOMÉSTICAS, considerar las siguientes actividades: cocina de alimentos, aseo del hogar, cuidado de los niños, recojo de agua para el uso del hogar, etc.**

*** Para todos los miembros del hogar entre los 5 y los 15 años.**

Uso del Tiempo (II)

CUADRO N: Para Miembros Entre 5 y 15 Años

Código personal	N1 Nombre de la persona	N2 Descripción de la actividad	Horas													
			Ayer Día________		Hace 2 días Día________		Hace 3 días Día________		Hace 4 días Día________		Hace 5 días Día________		Hace 6 días Día________		Hace 7 días Día________	
			N3a AM	N3b PM	N4a AM	N4b PM	N5a AM	N5a PM	N6a AM	N6b PM	N7a AM	N7b PM	N8a AM	N8b PM	N9a AM	N9b PM
		01 Estudio/ tareas escolares (fuera de las horas de clase)														
		02 Ayuda en la chacra del hogar														
		03 Trabajo fuera de la chacra del hogar														
		04 Ayuda con el cuidado del ganado del hogar (1)														
		05 Ayuda con labores domésticas del hogar (2)														
		06 Juego														
		07 Ver televisión														
		08 En cama (enfermedad)														
		01 Estudio/ tareas escolares (fuera de las horas de clase)														
		02 Ayuda en la chacra del hogar														
		03 Trabajo fuera de la chacra del hogar														
		04 Ayuda con el cuidado del ganado del hogar (1)														
		05 Ayuda con labores domésticas del hogar (2)														
		06 Juego														
		07 Ver televisión														
		08 En cama (enfermedad)														
		01 Estudio/ tareas escolares (fuera de las horas de clase)														
		02 Ayuda en la chacra del hogar														
		03 Trabajo fuera de la chacra del hogar														
		04 Ayuda con el cuidado del ganado del hogar (1)														
		05 Ayuda con labores domésticas del hogar (2)														
		06 Juego														
		07 Ver televisión														
		08 En cama (enfermedad)														
		01 Estudio/ tareas escolares (fuera de las horas de clase)														
		02 Ayuda en la chacra del hogar														
		03 Trabajo fuera de la chacra del hogar														
		04 Ayuda con el cuidado del ganado del hogar (1)														
		05 Ayuda con labores domésticas del hogar (2)														
		06 Juego														
		07 Ver televisión														
		08 En cama (enfermedad)														
		01 Estudio/ tareas escolares (fuera de las horas de clase)														
		02 Ayuda en la chacra del hogar														
		03 Trabajo fuera de la chacra del hogar														
		04 Ayuda con el cuidado del ganado del hogar (1)														
		05 Ayuda con labores domésticas del hogar (2)														
		06 Juego														
		07 Ver televisión														
		08 En cama (enfermedad)														

(1) En AYUDA CON EL CUIDADO DEL GANADO DEL HOGAR, considerar las siguientes actividades: dar de beber al ganado, llevar a pastar al ganado, entre otras.

(2) En AYUDA CON LABORES DOMÉSTICAS DEL HOGAR, considerar las siguientes actividades: aseo de la casa, ayuda en la cocina, recojo de agua para el uso del hogar, entre otras.

SECCIÓN 4: CARACTERÍSTICAS GENERALES DE LA VIVIENDA

*** Para todos los miembros del hogar entre los 5 y los 15 años.**
(Continuación)

Uso del Tiempo (II)

CUADRO N: Para Miembros Entre 5 y 15 Años

Código personal	N1 Nombre de la persona	N2 Descripción de la actividad (Clave 1)	Horas													
			Ayer Día________		Hace 2 días Día________		Hace 3 días Día________		Hace 4 días Día________		Hace 5 días Día________		Hace 6 días Día________		Hace 7 días Día________	
			N3a AM	N3b PM	N4a AM	N4b PM	N5a AM	N5a PM	N6a AM	N6b PM	N7a AM	N7b PM	N8a AM	N8b PM	N9a AM	N9b PM
		01 Estudio/ tareas escolares (fuera de las horas de clase)														
		02 Ayuda en la chacra del hogar														
		03 Trabajo fuera de la chacra del hogar														
		04 Ayuda con el cuidado del ganado del hogar (1)														
		05 Ayuda con labores domésticas del hogar (2)														
		06 Juego														
		07 Ver televisión														
		08 En cama (enfermedad)														
		01 Estudio/ tareas escolares (fuera de las horas de clase)														
		02 Ayuda en la chacra del hogar														
		03 Trabajo fuera de la chacra del hogar														
		04 Ayuda con el cuidado del ganado del hogar (1)														
		05 Ayuda con labores domésticas del hogar (2)														
		06 Juego														
		07 Ver televisión														
		08 En cama (enfermedad)														
		01 Estudio/ tareas escolares (fuera de las horas de clase)														
		02 Ayuda en la chacra del hogar														
		03 Trabajo fuera de la chacra del hogar														
		04 Ayuda con el cuidado del ganado del hogar (1)														
		05 Ayuda con labores domésticas del hogar (2)														
		06 Juego														
		07 Ver televisión														
		08 En cama (enfermedad)														
		01 Estudio/ tareas escolares (fuera de las horas de clase)														
		02 Ayuda en la chacra del hogar														
		03 Trabajo fuera de la chacra del hogar														
		04 Ayuda con el cuidado del ganado del hogar (1)														
		05 Ayuda con labores domésticas del hogar (2)														
		06 Juego														
		07 Ver televisión														
		08 En cama (enfermedad)														
		01 Estudio/ tareas escolares (fuera de las horas de clase)														
		02 Ayuda en la chacra del hogar														
		03 Trabajo fuera de la chacra del hogar														
		04 Ayuda con el cuidado del ganado del hogar (1)														
		05 Ayuda con labores domésticas del hogar (2)														
		06 Juego														
		07 Ver televisión														
		08 En cama (enfermedad)														

(1) En AYUDA CON EL CUIDADO DEL GANADO DEL HOGAR, considerar las siguientes actividades: dar de beber al ganado, llevar a pastar al ganado, entre otras.

(2) En AYUDA CON LABORES DOMÉSTICAS DEL HOGAR, considerar las siguientes actividades: aseo de la casa, ayuda en la cocina, recojo de agua par el uso del hogar, entre otras.

SECCIÓN 5: ACCESO A SERVICIOS

***Sobre el acceso a los siguientes destinos:**

	Destinos	O1 ¿Alguno de los sgtes lugares se encuentra al interior del CCP? 01. Sí --> Pase a sgte destino 02. No	O2 Indique el nombre del CC.PP en el que se encuentra	O3 Principal vía de acceso empleada (Clave 1)	O4 Principal medio de transporte usado en dicha vía (Clave 2) Cod.	O4 Otros (esp)	O5 Costo del pasaje usando dicho medio de transporte *(considere sólo el costo de IDA)* Soles	O6 Costo total en transporte del viaje hacia dicho destino *(considere sólo el costo de IDA)* Soles	Frecuencia de viaje (Periodo) 01. Semana 02. Mes 03. Anual O7a Nº Veces	O7b Periodo
1	Posta médica									
2	Centro de salud									
3	Escuela primaria									
4	Escuela secundaria									
5	Capital del distrito									
6	Mercado de venta de productos agrícola*									
7	Mercado de compra de productos									

***En este caso, considere la distancia entre la explotación agrícola (lugar de producción del hogar, la chacra) y dicho destino.**

Clave 1

Asfaltada	1	Vereda	5
Afirmada	2	No Carrozable / Herradura	6
Sin Afirmar	3	Rio	7
Sendero (trocha)	4		

Clave 2

A pie	1	Motocar	7	Otros (especificar)	
Bus	2	Bicicleta	8		
Camión	3	Bestia / acémila	9		
Combi	4	Canoa	10		
Carro/taxi	5	Peque peque	11		
Motocicleta	6	Motonave/ colectivo acuatico	11		
		Deslizador/ fuera de borda	12		

SECCION 6: INGRESOS SALARIALES

6.1 ¿En los últimos 12 meses, entre octubre 05 y septiembre 06, Ud. o algún miembro del hogar trabajó para otra persona, finca o empresa, fuera del hogar?

Sí……1 ⟶ **REGISTRE LOS DATOS DE CADA ACTIVIDAD EN EL CUADRO 6A**

No……2 ⟶ ***PASE A LA PREGUNTA 6.2 (Siguiente Página)***

Nota al encuestador: En caso de presentarse distintos episodios para una misma actividad, utilice 1 fila para cada uno de ellos.

(REGISTRE CUALQUIER ACTIVIDAD PARA LA CUAL RECIBIÓ UN PAGO)

CUADRO 6A: TRABAJO ASALARIADO (VENTA DE FUERZA DE TRABAJO POR SALARIO O POR TAREA INCLUYENDO OTRAS UNIDADES AGROPECUARIAS AJENAS A LA PROPIA)

Código personal	P1 Nombre de la persona (la misma persona puede tener más de un trabajo, por lo que se debe usar una fila para cada trabajo)	P2 Descripción de la actividad (CLAVE 1)		P3 ¿Cuántas semanas trabajó en total en este último año? (Oct 05 - Sep 06)	P4 ¿Durante cuántos meses trabajó en el último año? (Oct 05 - Sep 06) (en este tipo de trabajo)	P5 El pago que recibió fue en: 01 Efectivo 02 En especie 03 Ambas	P6 ¿Cuánto fue el jornal por unidad de tiempo? (incluyendo valorización de lo pagado en especie) CLAVE 2: 1. Mes 2. Quincena 3. Semana 4. Día 5.Hora 777.Otro (especifique)			P7 El lugar donde trabajó se ubica: 01. Dentro del CCPP 02. En otro distrito 03. En otra provincia 04. En otro departamento
		Cod.	Otros (es)				Unidad de Tiempo CLAVE 2	01.Soles 02.Dólares	Pago	

CLAVE 1:
01.Agropecuario
02.Comercio
03.Transporte
04.Artesanías
05.Procesamiento de alimentos
06.Construcción
07.Pequeña Industria
08.Caza
09.Pesca
10. Minería
11.Acuicultura
12.Piscicultura
13. Lombricultura
14. Servicio doméstico
15. Tala (forestal)
777. Otros (Especifique)

SECCION 6: INGRESOS NO SALARIALES

6.2. En los últimos 12 meses, entre octubre 05 y septiembre 06, Ud. o algún miembro del hogar manejó algún negocio o trabajó por cuenta propia?

Sí……1 ⟶ **REGISTRE LOS DATOS DE CADA ACTIVIDAD EN EL CUADRO 6B**

No…….. 2 ⟶ ***PASE A LA PREGUNTA 6.3 (Siguiente Página)***

Nota al encuestador: Consignar también información sobre lo autoinsumido en el proceso

CUADRO 6B: TRABAJO NO SALARIAL NO AGROPECUARIO

Código personal	Q1 Nombre de la persona a cargo	Q2 Tipo de negocio/actividad (Clave 1)		Q3 Descripción de la actividad	Q4 ¿Cuántas semanas trabajó en total en este último año (acumular todo lo trabajado)? (Oct 05 - Sep 06)	Q5 ¿En que número de meses trabajó en el último año? (Oct 05 - Sep 06)	¿Cuáles fueron en promedio anual los:	
							Q6a Ingresos brutos	Q6b Gastos monetarios o inversión
		Cod.	Otros (esp)				*S/.*	*S/.*

CLAVE 1:

	5. Caza	9. Comercio por mayor	13. Industria de bienes de capital
2. Minería	6. Pesca	10. Comercio por menor	14. Restaurant
3. Transporte	7. Recolección	11. Industria de bienes de consumo	777. Otros (Especifique)
4. Tala (Forestal)	8. Construcción	12. Industria de bienes intermedios	

HOJA DE AYUDA PARA ESTIMACION DE PRODUCCION EN CASO DE ACTIVIDAD EXTRACTIVA O PRODUCTIVA

TIPO PRODUCCION DE CARBON, PESCA, RECOLECCION, TALA, ENTRE OTROS.

1 Determinar períodos de extracción en un año

	Inicio (mes)	Final (mes)	Escribir el mes que corresponda
Período 1			
Período 2			
Período 3			
Período 4			
Período 5			
Período 6			

2 Determinar número de jornadas laborales por períodos

	Días / Semana	x	# semanas	=	Total días
Período 1		x		=	
Período 2		x		=	
Período 3		x		=	
Período 4		x		=	
Período 5		x		=	
Período 6		x		=	

3 Volumen de producción por jornada laboral

Unidad de medida

	Volumen **máximo** producido	x	# días de volumen **máx**. producido	+	Volumen **promedio** producido	x	# días de volumen **promedio** producido	+	Volumen **mínimo** producido	x	# días de volumen **mín.** producido	=	**Total producción**
Período 1		x		+		x		+		x		=	
Período 2		x		+		x		+		x		=	
Período 3		x		+		x		+		x		=	
Período 4		x		+		x		+		x		=	
Período 5		x		+		x		+		x		=	
Período 6		x		+		x		+		x		=	

Total producción en kg.

4 En caso que las unidades de medida de la producción no son estandarizadas

En el caso que la unidad de medida usada por el productor no se pueda llevar directamente a kg., utilizar los siguientes criterios que posibilitan la desagregación de los volúmenes de producción:

1 Indagar por la unidad usada para la venta del producto

Por ejemplo, si el productor vende pescados por "canastas" a un precio dado, este sería el punto de partida, teniendo como objetivo valorizar el peso de una "canasta". En este sentido, una aproximación útil es indagar por el número de recipientes de menor capacidad, necesarios para el llenado de la "canasta". Entonces, si el productor indica que necesita 20 tazones con pescado para llenar una "canasta". Habrá que estimar el número promedio de peces que llenan un tazón y el peso promedio de un pescado.

2 Indagar sobre el transporte de la producción y el pago de fletes

Este puede ser otro punto de partida para la estimación de los valores de la producción, por ejemplo: Si el productor transporta la producción por "camionadas", tenemos el número de "camionadas" que conforman la producción. Luego, se indagará por una unidad de medida menor que permita desagregar el volumen de una "camionada", preguntando por la manera de llenado del camión. Con este dato, se estima el peso de cada una de las unidades de "llenado" y el número de unidades de "llenado" necesario para obtener una "camionada".

SECCION 6: TRANSFERENCIAS E INGRESOS POR ALQUILER O VENTA

6.3. En los últimos 12 meses, entre octubre 05 y septiembre 06, Ud. o algún miembro del hogar, recibió alguno de los siguientes tipos de ingreso?

1) Pensión o jubilación

2) Ingreso por alquiler o venta de un predio *no agrícola* , cuarto, maquinaria, animales (yunta) u otro bien.

3) Ingreso por alquiler o venta de tierras

4) Herencia

5) Remesas

Sí…… 1 ⟶ **REGISTRE LOS DATOS DE CADA ACTIVIDAD EN EL CUADRO 6C**

No…… 2 ⟶ ***PASE A LA SECCIÓN SIGUIENTE***

CUADRO 6C: TRANSFERENCIAS RECIBIDAS O INGRESO POR ALQUILER

R1 No. de orden	R2 Tipo de Transferencia (Clave1)		R3 ¿Quién la recibió? Código Personal	R4 ¿Cuántas veces la recibió en los últimos 12 meses?	R5 ¿Cuánto recibió en promedio anual? *S/.* *(si recibió en comida o bienes, indique el valor aproximado)*
	Cod.	Otros (esp)			
1					
2					
3					
4					
5					
6					
7					
8					
9					
10					

Clave 1:

1. Pensión (por jubilación, discapacidad, viudez, etc).
2. Alquiler de maquinaria, animales u otro bien
3. Dinero heredado
4. Alquiler de predio no agrícola o casa
5. Venta de maquinaria, animales u otro bien
6. Venta de predio no agrícola o casa
7. Alquiler de predio agrícola
8. Venta de predio agrícola
9. Reparto de utilidades
10. Remesas
777. Otro (Especifique)

SECCIÓN 7: CREDITO Y PRESTAMOS

7.1. Entre octubre del 2005 y septiembre del 2006, ¿Ud. u otro miembro del hogar recibió un crédito de alguna institución para la actividad agropecuaria, negocio, construcción de casa u otra necesidad familiar?

Sí..... 1 → ***REGISTRE LOS DATOS EN EL CUADRO 7A***
No..... 2 → ***Pase al Cuadro 7B (Siguiente página)***

NOTA: En caso el interés mensual sea variable, considere el interés anual

CUADRO 7A: CRÉDITOS RECIBIDOS (entre octubre 2005 y septiembre 2006)

	S1	S2	S3	S4	S5		S6		S7		Tasa de interés:		S9	S10		S11	S12
	Fuente del crédito	Indique si recibió crédito de: 01. Sí 02. No --> Pase a sgte fuente	¿Quién recibió el crédito? (Código personal)	El crédito fue en: 01. Efectivo 02. Insumos, bienes o servicios	Monto total del crédito (Si recibió en especies, convertirlo a soles)		¿Cuándo recibió el crédito?		Propósito del préstamo (Clave 1)		S8a ¿Cuál es la tasa de interés que le cobra? %	S8b Indique el periodo de referencia de dicha tasa de interés: (Clave 2)	¿Ya canceló el crédito? 01.Sí 02.No --> Pase a S11	¿Cuándo lo canceló?		¿Cuál es/era el plazo del crédito? (meses)	¿Qué tipos de garantía le exigió? (Clave 3)
					Valor	01.Soles 02 Dólares	Año	Mes	Cod	Otros (esp)				Año	Mes		
01	Agrobanco																
02	Fondo rotatorios																
03	Banco privado																
04	CMAC (Caja Municipal de Ahorro y Crédito)																
05	CRAC (Caja Rural de Ahorro y Crédito)																
06	Cooperativa o Asociación de productores																
07	ONG																
777	Otros (especifique)																

Clave 1:
01 Producción / Inversión en la actividad agrícola
02 Producción / Inversión en actividades no agrícolas
03 Compra de activos (casa, tierra, etc)
04 Repago de otros préstamos
05 Consumo del hogar
06 Enfermedad de un familiar
777 Otros (especifique)

Clave 2
01 Año
02 Mes
03 Quincena
04 Semana
05 Día
777 Otro (especifique)
888 No sabe

Clave 3
01 Tierra titulada
02 Tierra no titulada
03 Vivienda
04 La cosecha
05 Ganado
06 Vehículo/ maquinaria
07 Aval de otro
08 Ninguno
777 Otro (especifique)

CUADRO 7B: CRÉDITOS SOLICITADOS (entre octubre 2002 y agosto 2005)

	T1 Fuente del crédito	T2 Indique si solicitó crédito de: 01. Sí --> Pase a T4 02. No	T3 Explique por qué no solicitó el préstamo: (Clave 1) ---> Pase a sgte fuente		T4 ¿Fue rechazada su petición de préstamo por la entidad? 01. Sí 02. No --> Pase a T6	T5 Explique la razón por la cual fue rechazada su petición de préstamo: (Clave 2) ---> Pase a sgte fuente		T6 ¿El monto del crédito fue suficiente? 01. Sí --> Pase a sgte fuente 02. No	T7 Explique la razón por la cual no fue suficiente el monto que le ofrecieron (PREGUNTA ABIERTA) ---> Pase a sgte fuente	
			Cod	Otros (esp)		Cod	Otros (esp)		Cod	Otros (esp)
01	Agrobanco									
02	Fondo rotatorios									
03	Banco privado									
04	CMAC (Caja Municipal de Ahorro y Crédito)									
05	CRAC (Caja Rural de Ahorro y Crédito)									
06	Cooperativa o Asociación de productores									
07	ONG									
777	Otros (especifique)									

Clave 1:

01 No lo necesitaba / tenía capital propio
02 No deseaba endeudarme
03 La tasa de interés es muy elevada / condiciones poco atractivas para pedir el préstamo
04 Piensa que no se lo darían de todas formas
05 Trámites demasiado largos y costosos
06 No tenía información sobre dónde solicitar el préstamo
07 No quería dar las garantías que exigían
08 Vive demasiado lejos de las oficinas del prestamista
09 Sintió temor de perder sus tierras u otros bienes
777 Otros (especificar)

Clave 2:

01 No contaba con título de propiedad de alguna de sus parcelas
02 No contaba con garantías suficientes
03 No contaba con la documentación requerida
04 Tenía una deuda anterior sin cancelar
05 Su historial crediticio no es bueno
06 El historial crediticio de otros miembros del hogar no es bueno
07 Su producción es demasiado riesgosa
777 Otros (especificar)

PASE A SIGUIENTE SECCIÓN

SECCIÓN 8: ACTIVOS PRODUCTIVOS DEL HOGAR

CUADRO 8A: EQUIPO AGROPECUARIO

Equipo	U1 ¿Tienen Uds. en el hogar? Sí……1 No……2 -->Pase a sgte equipo	U2 ¿Cuántos tiene?	U3 ¿Hace cuántos años lo compró / tiene?	U4 ¿Hace uso de ellos? Si……..1 --> --> Pase a sgte equipo No…….2	U5 ¿Funcionan? Si……..1 No…….2
01 Tractor					
02 Camión					
03 Bomba de Mochila de 15 Lts.					
04 Bomba de Mochila de 20Lts.					
05 Ordeñadora					
06 Romana					
07 Pesas (para balanza)					
08 Arado de fierro					
09 Arado de madera					
10 Cosechadora/sembradora					
11 Machetes/ hoces					
12 Azadón / Azada					
13 Hacha					
14 Motosierra					
15 Chaquitaclla					
16 Barreta					
17 Trilladora					
18 Desgranadora					
19 Ensiladora					
20 Carretilla					
21 Pico, lampas, palas, palanas					
22 Zaranda					
23 Horquetas					
24 Horquilla					
25 Rastrillos					
26 Molino					
27 Trampa / Red de pesca					
28 Anzuelo					
29 Arpón					
30 Escopeta					
31 Serbatana (pucuna)					
32 Trapiche					
33 Despulpadora de café					
34 Animal de tiro					
35 Otros, especificar:_____					
36 Otros, especificar:_____					
37 Otros, especificar:_____					
37 Otros, especificar:_____					

U6 ¿Cuáles son los 4 equipos agropecuarios más valiosos que posee su hogar?

	Activo	Valorización*
1		S/.
2		S/.
3		S/.
4		S/.

* *Nota al encuestador:* Al momento que el jefe de hogar valorice el equipo, debe considerar la situación actual en la que se encuentra.

SECCIÓN 8: ACTIVOS PRODUCTIVOS DEL HOGAR

CUADRO 8B: CARACTERÍSTICAS DE LAS PARCELAS

Código de parcela	V1 Nombre de la parcela o sector	V2 Tamaño de la parcela			V3 Actualmente, ¿cuál es el uso principal de la parcela? 01 Cultivo permanente 02 Cultivo transitorio 03 Pastos Naturales 04 Pastos cultivados 05 Bosque cultivado 06 Bosque natural 07 Descanso 08 Barbecho 09 Eriazo 777 Otros (especifique) 888 No sabe		V4 ¿Desde qué año posee/ maneja esta parcela?	V5 Régimen de tenencia de la parcela 01 Propia y conducida por el hogar 02 Propia pero no conducida por el hogar 03 Ajena conducida por el hogar	V6 ¿Cómo accedió a esta parcela? 01 Alquiler 02 Al partir / medianería / aparcería 03 Prestada 04 Anticresis 05 Compra 06 Cesión 07 Sucesión intestada 08 Herencia con testamento 09 Denuncio 10 Aportado por el/la cónyuge 11 Parcelación de cooperativa 12 Entregado por comunidad 13 Invasión 777 Otro (especifique)		V7 ¿Qué certificado garantiza la propiedad de la parcela? Considere también las parcelas que son ajenas pero conducidas por el hogar (código 03 de V5) (Clave 2)	
		Extensión	U.M. (CLAVE 1)	Equiv. en has.	Cod	Otros (esp)			Cod	Otros (esp)	Cod	Otros (esp)

CLAVE 1:

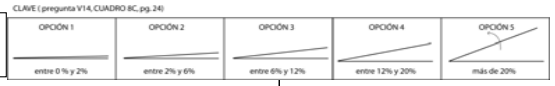
Hectáreas……...1 Yugada…….4 Otro (especificar)……..77
Topo……...2 Masa……5
Metros Cuadrados……3 Coyito…….. 6

CLAVE 2:

01 Título inscrito en RRPP
02 Título sin registrar
03 Título en trámite
04 Certificado Posesión MINAG
05 Certificado Posesión C. Campesina
06 Contrato compra/venta
07 Escritura juez
08 Concesión forestal
09 Denuncio
10 Minuta
777 Otros (especificar)
888 No Sabe
999 Ninguno

SECCIÓN 8: ACTIVOS PRODUCTIVOS DEL HOGAR

Nota Encuestador: **Mostrar gráfica de niveles de pendiente al encuestado**



CUADRO 8C: CARACTERÍSTICAS DE LAS PARCELAS (Continuación)

Código de parcela	Nombre de la parcela o sector	V8 Vía principal de acceso a la parcela		Tiempo de la parcela a la vivienda en medio de transporte más usado			V10 ¿Tiene riego?	V11 Porcentaje con riego	V12 Tipo de riego principal		V13 ¿Esta parcela cuenta con alguna de las sgtes prácticas de conservación de suelos?			V14 ¿Cómo es la pendiente del terreno?	V15 Indique si en esta parcela se ubica su vivienda	V16 Si usted tuviera que alquilar una parcela como la suya para una campaña, ¿Cuánto pagaría por ella?		V17 Si usted tuviera que comprar una parcela como la suya, ¿a cuánto la compraría?	
				V9a Medio		V9b Tiempo											Monto	U. M.	Monto	U. M.
		Cod	Otros (esp)	Cod	Otros (esp)				Cod	Otros (esp)								1=S 2=$		1=S 2=$
				01 Pie																
		01	Asfaltado	02	Animal		01 Si		01	Inundación	01. Terraza de tierra			01. entre 0% a 2%	01. Sí				
		02	Afirmado	03	Carro		02 No--> **Ir a V13**	%	02	Aspersión	02. Terraza de piedra			02. entre 2% a 6%	02. No				
		03	Sin afirmar	04	Bus	(Minutos)			03	Goteo	03. Ambos tipos de terraza			03. entre 6% a 12%					
		04	No carrozable / Herradura	05	Camión			(del área con uso productivo)	777	Otro (especificar)	04. Cerco vivo			04. entre 12% y					
		05	Río	06	Moto						05. Camellón								
		777	Otros (especifique)	07	Bote				888	No sabe	06. Patapata			05. más de 20%		*(Precioxha)* (# hectáreas)*		*(Precioxha)* (# hectáreas)*	
		888	No sabe	777	Otros (especifique)						07. Ninguno								

SECCION 9: PRODUCCION AGRÍCOLA, PECUARIA Y SUS PRODUCTOS TRANSFORMADOS

9.1 ¿En los últimos 12 meses, entre octubre 05 y septiembre 06, ha realizado actividades agrícolas en alguna de sus parcelas?

Sí..... 1 → **REGISTRE LOS DATOS EN EL CUADRO 9A**
No..... 2 → **PASE AL SGTE CUADRO 9D**

CUADRO 9A: PRODUCCIÓN AGRÍCOLA
¿Qué cultivos se cosecharon durante los últimos 12 meses?

Nota Encuestador: Se debe consignar los cultivos de forma genérica, **no** diferenciando por variedad o clases. Ejemplo: consignar la producción de maiz en conjunto, no diferencias en MAD, Amilaceo, Morado.

Cod parcela	W1 Nombre parcela	W2 Nombre del cultivo	Uso de semillas				W4 Superficie cosechada		Fecha de cosecha		Producción total			Destinos de la Producción							
			W3a ¿Cuánto de semilla empleó?		W3b UM	W3c Gasto total	W4a Total	W4b UM (Clave 1)	W5a Año	W5b Mes	W6a Total	W6b UM (Clave 2)	W6c Equivalencia en Kg de la UM	Auto Consumo		Venta		Auto insumo		Otros destinos	
														W7a Cantidad	W7b Valor S/.	W8a Cantidad	W8b Valor S/.	W9a Cantidad	W9b Valor S/.	W10a Cantidad	W10b Valor S/.
			Autoinsumo	Compra		(Soles)															

CLAVE 1: Hectáreas.....1 Topo.....2 Metros Cuadrados.....3 Yugada.....4 Masa.....5 Coyito.....6 Otro (especificar).....777

CLAVE 2: Sacos....1 Quintales.....2 Libra.....3 Unidades.....4 Toneladas.....5 Kilogramos.....6 Arrobas.....7 Otros (especificar).....777

CUADRO 9B: COMERCIALIZACIÓN DE LOS PRODUCTOS AGRÍCOLAS

X1 ¿ Dónde realiza, generalmente, la mayor parte de sus ventas?		X2 En general ¿Mantiene Ud. una relación estable con sus compradores?		X3 Por lo general ¿Quiénes son sus compradores?		¿Cuánto cuesta un viaje de ida y vuelta para transportar la producción al mercado más frecuentado por Ud.? (Soles)				
				1. Comerciante Mayorista	5.Hogares	X4a Gasolina	X4b Pago por transportar el producto por unidad de volumen		X4c Pasaje en bus/ camión/ canoa/ bote	X4d Renta de caballo/ acémila	X4e Costo Total
Chacra	1			2. Comerciante Minorista	6.Exportadores		Soles	UM (Clave 2)			
Feria o mercado local	2			3. Productores utilizadores	777.Otros ,						
Procesadora (molino, ind.)	3	Siempre	1	4. Rematista	(Especifique)						
Mercado Mayorista	4	Ocasional	2								
Otros (especifique)	777	Nunca	3								

SECCION 9: PRODUCCION AGRÍCOLA, PECUARIA Y SUS PRODUCTOS TRANSFORMADOS

CUADRO 9C: MANO DE OBRA UTILIZADA EN LA EXPLOTACION AGRICOLA

1. MANO DE OBRA FAMILIAR

(Tiempo dedicado por Ud y/o por los demás miembros de su hogar a la producción agrícola durante los últimos 12 meses, entre octubre 05 y septiembre 06)

	Siembra / Cosecha			Labores Culturales		
	Y1a Número de individuos	Y2a Horas al día (promedio)	Y3a Días a la semana (promedio)	Y1b Número de individuos	Y2b Horas al día (promedio)	Y3b Días a la semana (promedio)
Hombres (15 años a más)						
Mujeres (15 años a más)						
Niños (14 años a menos)						

2. MANO DE OBRA CONTRATADA

(Mano de obra contratada por Ud y/o por los demás miembros de su hogar para trabajar en la producción agrícola durante los últimos 12 meses, entre octubre 05 y septiembre 06)

	Siembra / Cosecha			Labores Culturales		
	Y4a Número de jornales pagados en dinero	Y5a Precio del jornal (Soles)	Y5a Número de jornales pagados en especies	Y4b Número de jornales pagados en dinero	Y5b Precio del jornal (Soles)	Y6b Número de jornales pagados en especies
Hombres (15 años a más)						
Mujeres (15 años a más)						
Niños (14 años a menos)						

SECCION 9: PRODUCCION AGRÍCOLA, PECUARIA Y SUS PRODUCTOS TRANSFORMADOS

PRODUCTOS PROCESADOS

9.2 ¿Durante los últimos 12 meses, entre agosto 05 y septiembre 06, Ud ha producido: leche, huevos, mantequilla, fibras, arroz pilado, café seco, papa seca, chuño, charqui, cecina, entre otros?

Sí……1 ⟶ **REGISTRE LOS DATOS EN EL CUADRO 9D**
No……2 ⟶ ***PASE A SIGUIENTE PÁGINA***

CUADRO 9D: PRODUCTOS PROCESADOS

(Leche, huevos, queso, mantequilla, fibras, cuero, cañazo, papa seca, chuño, charqui, arroz pilado, cecina, carne, entre otros)

Z1	Z2		Z3	Destinos de la Producción (para lo producido en los últimos12 meses)				Z5	Z6
				Z4a	Venta		Z4d		
Producto	Volumen producido en el último mes		Volumen producido en el año	Auto Consumo	Z4b Total	Z4c Valor S/.	Otros destinos	Precio de referencia para destinos diferentes a la venta (x UM)	Gastos en la elaboración del producto (acumulado 12 meses) (Soles)
	CANTIDAD	UM							

CUADRO 9E: COMERCIALIZACIÓN DE LOS PRODUCTOS PROCESADOS

AA1 ¿ Dónde realiza, generalmente, la mayor parte de sus ventas?		AA2 Por lo general ¿Tiene Ud. una relación estable con sus compradores?	AA3 ¿Quiénes son sus compradores?			¿Cuánto cuesta un viaje de ida y vuelta para transportar la producción al mercado más cercano?. En Soles					
						AA4a	AA4b		AA4c	AA4d	AA4e
Chacra	1		1. Comerciante Mayorista	5.Hogares		Gasolina	Pago por transportar el producto		Pasaje en bus/camión/canoa/bote	Renta de caballo/acémila	Costo Total
Feria o mercado local	2		2. Comerciante Minorista	6.Exportadores			Soles	UM			
Procesadora (molino, industria)	3		3. Productores utilizadores	777.Otros ,							
Mercado Mayorista	4	Siempre 1	4. Rematista	(Especifique)							
Otros (especifique)	777	Ocasional 2									
		Nunca 3									

SECCION 9: PRODUCCION AGRÍCOLA, PECUARIA Y SUS PRODUCTOS TRANSFORMADOS

CUADRO 9F: GASTOS EN ACTIVIDADES AGRÍCOLAS (PARA LOS CULTIVOS DEL CUADRO 9A) PARA LA PRODUCCION DE LOS ULTIMOS 12 MESES, ENTRE OCTUBRE 05 Y SEPTIEMBRE 06.

Nota encuestador: Considerar los gastos para la totalidad de las campañas ejecutadas (Ver Cuadro 9A)

	En la actividad agrícola, ¿Cuánto gastó en:	Monto Total (s/.)
AB1	Gastos en semillas y plantones	
AB2	Gastos en abonos y fertilizantes	
AB3	Insecticidas	
AB4	Fungicidas	
AB5	Herbicidas	
AB6	Otros Agroquímicos	
AB7	Gasto en compra de sacos, canastas, cajones, u otros envases, etc.	
AB8	Gasto en gasolina	
AB9	Gasto en almacenamiento de productos	
AB10	Tarifa del Agua	
AB11	Asesoramiento técnico	
AB12	Alquiler de maquinaria, reparaciones, etc.	
AB13	**Total de gastos agrícolas**	

SECCION 9: PRODUCCION AGRÍCOLA, PECUARIA Y SUS PRODUCTOS TRANSFORMADOS

PRODUCCION PECUARIA

9.3 ¿Durante los últimos 12 meses, entre octubre 05 y septiembre 06, crió algún tipo de animal ?

Sí.....1 ⟶ **REGISTRE LOS DATOS EN EL CUADRO 9G**

No.....2 ⟶ **PASE A LA SECCIÓN 10**

Nota Encuestador 1: En el caso de aves de corral, sólo considerar aquellas que tienen más de 1 mes a partir de su nacimiento.

Nota Encuestador 2: Al hacer la contabilidad, debe efectuarse el arqueo de la cantidad actual de animales, dados los incrementos y reducciones en el stock, es decir, AC3+AC7-AC11=AC2

CUADRO 9G: PRODUCCION PECUARIA

¿Qué tipo de animales ha criado Ud. en los últimos 12 meses? (Ver Tabla de Código)		AC2 ¿ Qué cantidad de animales tiene actualmente? NOTA: AC2 = AC3+AC7-AC11	AC3 ¿ Qué cantidad de animales tenía hace 12 meses, en el mes agosto del año 2005?	Incrementos de Stock — En los últimos 12 meses ¿ Qué cantidad de animales:						
				AC4 ¿Nacieron ?		AC5 ¿Compró ?		AC6 ¿Otros incrementos?		AC7 Total
AC1a Tipo de animal	AC1b Código			Cantidad	Valor s/. (Unitario)	Cantidad	Valor s/. (Unitario)	Cantidad	Valor s/. (Unitario)	

Tabla de Códigos:

Ternera (0 - 12meses)	1	Llama	18
Ternero macho (0 - 12 meses)	2	Alpaca	19
Vaquilla (12-24 meses)	3	Cuy macho	20
Torete macho (12-24 meses)	4	Cuy hembra	21
Novillo (castrado) (12 - 24 meses)	5	Pato	22
Vaquillona (24 - 36 meses)	6	Pata	23
Novillo (castrado) (24 - 36 meses)	7	Gallo	24
Toro (24 - 36 meses)	8	Gallina	25
Vaca (mayor de 36 meses)	9	Pollo	26
Toro (mayor de 36 meses)	10	Otros (especificar)	777
Buey (castrado)(mayor de 36 meses)	11	Otros (especificar)	7777
Caballo	12		
Burro	13		
Mula	14		
Cerdos	15		
Oveja	16		
Cabra	17		

Reducciones de stock — En los últimos 12 meses ¿ Qué cantidad de animales:						
AC8 ¿Vendió ?		AC9 ¿Consumió el hogar ?		AC10 ¿Otras reducciones?		AC11 Total
Cantidad	Valor s/. (Unitario)	Cantidad	Valor s/. (Unitario)	Cantidad	Valor s/. (Unitario)	

SECCION 9: PRODUCCION AGRÍCOLA, PECUARIA Y SUS PRODUCTOS TRANSFORMADOS

CUADRO 9H: GASTOS EN ACTIVIDADES PECUARIAS

Durante los últimos 12 meses, entre octubre 05 y septiembre 06 ¿Cuánto gastó en:

		Monto S/.
AD1	Alimento para animales	
AD2	Compra de animales	
AD3	Servicios veterinarios	
AD4	Productos veterinarios (medicamentos)	
AD5	Otros (especificar)	
AD6	Total del Gasto Pecuario S/.	

SECCIÓN 10: PARTICIPACIÓN SOCIAL Y COMUNAL

AE1. ¿Pertenece Ud o algún miembro del hogar pertenece a alguna de las siguientes organizaciones?

	Organización	AE1a ¿Pertenece? Sí…….01 No……02 --> Sgte organización	En caso de pertenecer: AE1b ¿Cuántas reuniones han tenido entre octubre 05 y septiembre 06?	AE1c ¿En cuántas ha participado?
1	Sindicato /Cooperativa de trabajo			
2	Asociación /Comité vecinal			
3	**Comunidad Campesina / Nativa**			
4	Comité de productores			
5	Asociación de agricultores			
6	Comité de regantes			
7	Ronda campesina			
8	Empresa comunal			
9	Organización para la comercialización de productos			
10	Otro (especifique)			
11	Otro (especifique)			

AE2. En los últimos 12 meses, entre octubre 05 y septiembre 06, ¿Ud o algún miembro de la familia trabajó con otras personas de su comunidad / centro poblado para hacer algo en beneficio de la zona?

Sí……1 ⟶ Especifique _____ No……2 **----> Pase a AE5**

AE3. ¿Cuántas veces, en los últimos 12 meses, Ud o algún miembro del hogar participó en este tipo de actividades?

[ ] Veces

AE4. La participación en este tipo de actividades fue:

Voluntaria…… 1
Obligatoria…… 2
A veces voluntaria y a veces obligatoria…… 3

PERCEPCIÓN SOBRE GESTIÓN DE LOS DIRECTIVOS DE LA COMUNIDAD

AE5. ¿Conoce la labor de la actual directiva de la comunidad? Sí……1 No……2

AE6. ¿La actual directiva de la comunidad, a través de sus delegados, representa o refleja los intereses de su caserío? Sí……1 No……2

AE7. Con respecto a la gestión de la acual directiva de la comunidad, Ud. considera que:

01	Es muy confiable	01	Es muy honesta	01	Hace muy bien su trabajo	01	Informa mucho lo que hace
02	Es confiable	02	Es honesta	02	Hace bien su trabajo	02	Informa lo que hace
03	Es poco confiable	03	Es poco honesta	03	Hace mal su trabajo	03	Informa poco lo que hace
04	Es nada confiable	04	Es nada honesta	04	Hace muy mal su trabajo	04	No informa lo que hace
05	No sabe / No opina	05	No sabe / No opina	05	No sabe / No opina	05	No sabe / No opina

PERCEPCIÓN SOBRE GESTIÓN DE LA MUNICIPALIDAD

AE8. ¿Conoce la labor del actual alcalde distrital? Sí……1 No……2

AE9. ¿El actual municipio representa o refleja los intereses de su caserío? Sí……1 No……2

AE10. Con respecto a la gestión de la municipalidad, Ud. considera que:

01	Es muy confiable	01	Es muy honesta	01	Hace muy bien su trabajo	01	Informa mucho lo que hace
02	Es confiable	02	Es honesta	02	Hace bien su trabajo	02	Informa lo que hace
03	Es poco confiable	03	Es poco honesta	03	Hace mal su trabajo	03	Informa poco lo que hace
04	Es nada confiable	04	Es nada honesta	04	Hace muy mal su trabajo	04	No informa lo que hace
05	No sabe / No opina	05	No sabe / No opina	05	No sabe / No opina	05	No sabe / No opina

SECCION 11: PARTICIPACION EN PROGRAMAS SOCIALES

AF1 **Entre octubre 05 y septiembre 06, ¿Ud. o algún miembro de su hogar participó o se benefició con ... [NOMBRE DE PROGRAMA]?**			**¿Cuánto pagaron y cuánto recibieron Uds. por ... [PROGRAMA] ... la última vez y en que mes sucedio eso?** **(VALORIZARA ESPECIES** RECIDIBAS A PRECIO LOCAL MINORISTA) No sabe……888			**¿Cuántas veces y cada cuánto tiempo recibieron Uds. ... [PROGRAMA] ... durante los últimos 12 meses?**	
			AF2a	**AF2b**	**AF2c**	**AF3a**	**AF3b**
NOMBRE DEL PROGRAMA	**SI**	**NO**	**MONTO PAGADO**	**VALOR RECIBIDO**	**MES**	**VECES**	**UNIDAD TIEMPO**
Desayuno escolar	1	2					
Vaso de leche	1	2					
Comedor popular	1	2					
Club de madres	1	2					
Canasta Familiar (PANFAR)	1	2					
Alimento por trabajo	1	2					
Comedor parroquial	1	2					
Donación directa de alimentos	1	2					
Wawa Wasi / PRONOEI/Cuna	1	2					
Uniformes, buzos ó calzado escolar	1	2					
Textos y utiles escolares	1	2					
Seguro escolar	1	2					
Capacitación laboral	1	2					
Vacunaciones (VAN)	1	2					
Control de tuberculosis	1	2					
Juntos (Programa de transferencia)	1	2					
Pronamachcs	1	2					
Otros (especifique)	1	2					

UNIDAD DE TIEMPO

HORA 1
DIA 2
SEMANA 3
QUINCENA..... 4
MES 5
TRIMESTRE 6
SEMESTRE 7
AÑO 8

SECCIÓN 11: PROYECTOS FINANCIADOS POR FONCODES

11.1 ¿Su comunidad ha sido beneficiada con algún proyecto financiado por FONCODES?

Sí.....1 ⟶ **REGISTRE INFORMACIÓN EN EL CUADRO 11A**
No.....2 ⟶ **FINALICE LA ENCUESTA**

CUADRO 11A: PARTICIPACIÓN DEL HOGAR EN PROYECTOS FINANCIADOS POR FONCODES

Nota al encuestador: En caso de haber sido la comunidad beneficiada con más de un proyecto, utilice una fila para registrar cada obra financiada por Foncodes.

AG1	AG2	AG3	AG4	AG6	AG7	AG8	AG9	AG10	AG11	
Indique el tipo de obra:	**¿Usted o algún miembro del hogar participó en alguna reunión para elegir dicho proyecto?**	**¿Usted o algún miembro del hogar participó en alguna reunión para elegir al "Núbleo Ejecutor" de dicho proyecto?**	**¿Usted o algún miembros del hogar participó en la construcción de la obra?**	**¿Recibió algún pago por su participación en la construcción?**	**¿Usted o algún miembro del hogar colaboró con el mantenimiento de la obra?**	**¿Recibió algún pago por su participación en el mantenimiento?**	**¿Usted o algún miembro del hogar recibió algún tipo de capacitación de parte de Foncodes?**	**¿Su hogar hace uso de la obra?**	**Explique las razones por las cuales su hogar no hace uso de la obra:**	
									01 El costo es elevado 02 La obra no llega hasta mi vivienda 03 La obra no funciona adecuadamente 777 Otros (especifique)	
01. Sistema de agua 02. Puentes peatonales 03. Caminos carrozables 04. Veredas peatonales 05. Proyectos de electrificación	01. Sí 02. No	01. Sí 02. No	01. Sí 02. No **----> Pase a AG7**	01. Sí 02. No	01. Sí 02. No **----> Pase a AG9**	01. Sí 02. No	01. Sí 02. No	01. Sí **----> Pase a sgte proyecto, de lo contrario, finalice la encuesta** 02. No	**Cod**	**Otros (esp)**

Annex 3 : Analysis of quality of samples

Amazonas water projects

Variable	Means						Tests													
	Control Universe	Control Support	Treatment Universe	Treatment Support	Control saMple	Treatment saMple	Cu<>Tu	k	Cu<>Tu	t	Cs<>Ts	k	Cs<>Ts	t	Cm<>Tm	t	Cm<>Cs	t	Tm<>Ts	t
Longitude	-78.08	-78.08	-78.18	-78.19	-78.18	-78.27	0.0008		0.0004		0.0009		0.0004		0.3703		0.2703		0.1806	
Latitude	-5.34	-5.34	-5.62	-5.64	-5.59	-5.37	0.0003		0.0004		0.0002		0.0002		0.4189		0.2656		0.1569	
Altitude	1104	1104	1404	1417	1347	1092	0.0004		0.0013		0.0003		0.0009		0.4862		0.4552		0.1102	
Population pre-census	143.7	144.6	234.8	234.1	218.3	301.9	0.0001		0.0000		0.0001		0.0000		0.2619		0.1261		0.2682	
Dwellings pre-census	30.55	30.6	46.74	46.66	44.23	66.39	0.0001		0.0000		0.0001		0.0000		0.2004		0.0985		0.2123	
Distance to district capital (km)	52.39	52.49	27.55	27.31	30.77	25.56	0.0001		0.0000		0.0001		0.0000		0.5370	*	0.0050		0.7981	**
Time to district capital (h)	9.65	9.81	4.37	4.36	4.2	4.07	0.0001		0.0000		0.0001		0.0000		0.9416	***	0.0000		0.8660	**
Primary schools	0.74	0.74	0.92	0.92	0.92	0.94	0.0001		0.0000		0.0001		0.0001		0.8238	**	0.0423		0.7245	**
Health centers	0.11	0.12	0.22	0.22	0.15	0.44	0.0040		0.0062		0.0057		0.0085		0.0784		0.7336	**	0.0851	
Very poor 1993	0.26	0.27	0.46	0.47	0.23	0.44	0.0001		0.0000		0.0001		0.0000		0.2224		0.7813	**	0.8624	**
Extremely poor 1993	0.5	0.5	0.26	0.25	0.38	0.33	0.0001		0.0000		0.0001		0.0000		0.7793	**	0.4371		0.5164	*
Illiteracy 1993	25.24	25.19	23.67	23.49	21.08	23.82	0.0149		0.0280		0.0101		0.0189		0.3681		0.1254		0.8522	**
Infant Mortality 1993	62.04	61.75	60.91	60.54	54.62	58.39	0.2336		0.4558		0.1938		0.4271		0.3824		0.0334		0.5257	*
Water in 1993	0.07	0.07	0.11	0.11	0.09	0.12	0.0002		0.0019		0.0001		0.0013		0.4905		0.6807	*	0.7767	**
Electricity in 1993	0.07	0.07	0.07	0.07	0.1	0.09	0.0152		0.9301	***	0.0206		0.9849	***	0.7797	**	0.4883		0.7086	**
Water in 1999	0	0	0.47	0.48	0	0.51	0.0001		0.0000		0.0001		0.0000		0.0000		.		0.7046	**
Electricity in 1999	0.04	0.04	0.14	0.14	0	0.13	0.0001		0.0001		0.0001		0.0001		0.0682		0.0001		0.8170	**
Sewage in 1999	0.01	0.01	0.07	0.07	0	0.04	0.0001		0.0000		0.0001		0.0000		0.1943		0.0067		0.2922	
Population 1999	156.2	157.4	226.6	225.2	161.3	273.9	0.0001		0.0000		0.0001		0.0000		0.0634		0.9248	***	0.2762	
Dwellings 1999	31.45	31.71	46.54	46.33	33.54	56.59	0.0001		0.0000		0.0001		0.0000		0.0473		0.8121	**	0.2481	
Amount approved	.	.	130000	130000	.	160000	.		.		.		.		.		.		0.1810	
Amount requested	.	.	5030	5183	.	1667	.		.		.		.		.		.		0.1587	

Ancash water projects

Variable	Means						Tests						
	Control Universe	Control Support	Treatment Universe	Treatment Support	Control saMple	Treatment saMple	Cu<>Tu k	Cu<>Tu t	Cs<>Ts k	Cs<>Ts t	Cm<>Tm t	Cm<>Cs t	Tm<>Ts t
Longitude	-77.75	-77.74	-77.56	-77.55	-78.06	-77.43	0.0001	0.0000	0.0001	0.0000	0.0025	0.0000	0.3980
Latitude	-9.21	-9.22	-9.14	-9.14	-9.06	-9.19	0.0368	0.1182	0.0334	0.1063	0.2926	0.0982	0.5977 *
Altitude	2970	2990	2986	3005	2209	3169	0.8001 **	0.8578 **	0.6534 *	0.8679 **	0.0481	0.0859	0.3826
Population pre-census	116.5	119.2	200.6	200.5	258.6	203	0.0001	0.0000	0.0001	0.0000	0.6668 *	0.2700	0.9618 ***
Dwellings pre-census	29.17	29.45	52.42	52.39	51.86	44	0.0001	0.0000	0.0001	0.0000	0.7357 **	0.3070	0.4655
Distance to district capital (km)	16.84	16.75	10.45	10.47	14.93	7.4	0.0001	0.0000	0.0001	0.0000	0.1619	0.6737 *	0.3666
Time to district capital (h)	2.57	2.62	1.9	1.92	3.35	1.28	0.0001	0.0202	0.0001	0.0174	0.1926	0.6058 *	0.3779
Primary schools	0.51	0.52	0.71	0.7	1	0.86	0.0006	0.0004	0.0017	0.0014	0.3559	0.0000	0.3370
Health centers	0.01	0.01	0.09	0.09	0	0	0.0006	0.0022	0.0008	0.0023	.	0.3189	0.0007
Very poor 1993	0.48	0.47	0.53	0.54	0.43	0.43	0.3475	0.3484	0.3053	0.3061	1.0000 ***	0.8309 **	0.6206 *
Extremely poor 1993	0.02	0.03	0.05	0.06	0	0.14	0.1713	0.1933	0.1930	0.2118	0.3559	0.0451	0.5685 *
Illiteracy 1993	35.49	35.61	37.74	37.94	35.69	36.3	0.0437	0.2043	0.0476	0.2003	0.9450 ***	0.9925 ***	0.6661 *
Infant Mortality 1993	64.24	64.55	66.18	66.55	59.24	69.71	0.3929	0.4470	0.4094	0.4428	0.4385	0.6673 *	0.6040 *
Water in 1993	0.17	0.17	0.14	0.14	0.09	0.21	0.7352 **	0.0675	0.6874 *	0.0737	0.1226	0.0297	0.3209
Electricity in 1993	0.17	0.17	0.14	0.14	0.09	0.13	0.1882	0.1407	0.1380	0.1267	0.6047 *	0.1603	0.9844 ***
Water in 1999	0	0	0.73	0.73	0	0.66	0.0001	0.0000	0.0001	0.0000	0.0000	.	0.2801
Electricity in 1999	0.19	0.19	0.26	0.26	0.26	0.2	0.0066	0.0793	0.0162	0.1553	0.7561 **	0.7101 **	0.6486 *
Sewage in 1999	0.01	0.01	0.03	0.03	0	0.05	0.0001	0.0026	0.0001	0.0027	0.1852	0.0007	0.5786 *
Population 1999	107.9	109.7	172.7	173.4	216.9	173.3	0.0001	0.0000	0.0001	0.0000	0.6621 *	0.2798	0.9979 ***
Dwellings 1999	23.71	24.09	39.77	40.02	45.43	39.43	0.0001	0.0000	0.0001	0.0000	0.7762 **	0.3029	0.9435 ***
Amount approved	.	.	95000	94000	.	76000	.	.	.	.	.	.	0.3446
Amount requested	.	.	8801	7732	.	0	.	.	.	.	.	.	0.0004

Cajamarca water projects

Variable	Means						Tests						
	Control Universe	Control Support	Treatment Universe	Treatment Support	Control saMple	Treatment saMple	Cu<>Tu k	Cu<>Tu t	Cs<>Ts k	Cs<>Ts t	Cm<>Tm t	Cm<>Cs t	Tm<>Ts t
Longitude	-78.76	-78.77	-78.76	-78.76	-78.77	-78.56	0.8587 **	0.8135 **	0.5597 *	0.5405 *	0.3846	0.9842 ***	0.2287
Latitude	-6.47	-6.47	-6.31	-6.31	-6.73	-6.56	0.0152	0.0009	0.0175	0.0012	0.6058 *	0.3332	0.2586
Altitude	2147	2129	2283	2273	2518	2269	0.0136	0.0111	0.0110	0.0086	0.4595	0.1725	0.9865 ***
Population pre-census	180.2	177.4	302.9	304	250.9	384.7	0.0001	0.0000	0.0001	0.0000	0.2540	0.4299	0.2910
Dwellings pre-census	38.04	37.36	65.24	65.14	48.86	78.56	0.0001	0.0000	0.0001	0.0000	0.1504	0.4307	0.3718
Distance to district capital (km)	21.93	21.68	22.03	21.7	19.29	17.11	0.3553	0.9492 ***	0.2931	0.9912 ***	0.7635 **	0.6711 *	0.3690
Time to district capital (h)	3.53	3.64	3.15	3.19	3.24	4.7	0.1205	0.0897	0.0646	0.0508	0.6003 *	0.6502 *	0.5739 *
Primary schools	0.7	0.7	0.89	0.89	1	1	0.0001	0.0000	0.0001	0.0000	.	0.0000	0.0000
Health centers	0.07	0.07	0.21	0.2	0	0.44	0.0001	0.0000	0.0001	0.0000	0.0353	0.0000	0.2114
Very poor 1993	0.7	0.72	0.69	0.69	0.86	0.56	0.7190 **	0.7203 **	0.3257	0.3316	0.2043	0.3680	0.4799
Extremely poor 1993	0.03	0	0	0	0	0	0.0028	0.0000	0.0001	.	.	.	.
Illiteracy 1993	28.5	28.42	29.15	29.07	28.1	31.84	0.2885	0.2476	0.3173	0.2578	0.4691	0.9248 ***	0.4930
Infant Mortality 1993	55.49	55.24	59.34	58.92	65.59	63.87	0.0006	0.0008	0.0012	0.0015	0.8797 **	0.3037	0.4540
Water in 1993	0.1	0.1	0.09	0.1	0.04	0.13	0.5492 *	0.2509	0.5061 *	0.2419	0.1867	0.0078	0.6007 *
Electricity in 1993	0.1	0.1	0.09	0.09	0.08	0.16	0.0479	0.8975 **	0.0769	0.7997 **	0.2380	0.5449 *	0.3053
Water in 1999	0	0	0.53	0.53	0	0.52	0.0001	0.0000	0.0001	0.0000	0.0032	.	0.9645 ***
Electricity in 1999	0.03	0.04	0.06	0.07	0	0.09	0.0019	0.0118	0.0014	0.0125	0.3260	0.0000	0.7530 **
Sewage in 1999	0.01	0.01	0.04	0.04	0	0.01	0.0001	0.0017	0.0001	0.0022	0.1405	0.0000	0.0005
Population 1999	153.1	150.8	265.4	266.1	144.9	307.3	0.0001	0.0000	0.0001	0.0000	0.2058	0.8541 **	0.7304 **
Dwellings 1999	32.17	31.81	57.07	57.19	29.43	64.11	0.0001	0.0000	0.0001	0.0000	0.2060	0.6784 *	0.7881 **
Amount approved	.	.	97000	97000	.	180000	.	.	.	.	.	.	0.1934
Amount requested	.	.	127.5	131.5	.	0	.	.	.	.	.	.	0.3181

Cusco water projects

Variable	Means						Tests													
	Control Universe	Control Support	Treatment Universe	Treatment Support	Control saMple	Treatment saMple	Cu<>Tu	k	Cu<>Tu	t	Cs<>Ts	k	Cs<>Ts	t	Cm<>Tm	t	Cm<>Cs	t	Tm<>Ts	t
Longitude	-72.23	-72.21	-72.03	-71.93	-72.34	-71.97	0.0025		0.0010		0.0001		0.0000		0.0791		0.4506		0.7250	**
Latitude	-13.43	-13.44	-13.64	-13.71	-13.32	-13.73	0.0023		0.0032		0.0001		0.0001		0.1043		0.4989		0.8967	**
Altitude	2695	2713	3117	3233	2553	3197	0.0550		0.0001		0.0092		0.0000		0.1280		0.5998	*	0.9056	***
Population pre-census	142.9	143.6	283.5	284.8	172.4	213.6	0.0001		0.0000		0.0001		0.0000		0.2980		0.2927		0.0646	
Dwellings pre-census	34.59	34.62	75.44	75.54	45.14	61.5	0.0001		0.0000		0.0001		0.0000		0.1848		0.1432		0.2625	
Distance to district capital (km)	34.82	34.71	16.25	15.26	37.92	24.42	0.0001		0.0000		0.0001		0.0000		0.4630		0.8419	**	0.3251	
Time to district capital (h)	4.33	4.45	1.96	1.93	5.18	2.22	0.0001		0.0000		0.0001		0.0000		0.2197		0.7489	**	0.6869	*
Primary schools	0.33	0.34	0.59	0.58	0.32	0.5	0.0001		0.0000		0.0001		0.0000		0.2770		0.8629	**	0.5717	*
Health centers	0.04	0.04	0.09	0.08	0.23	0	0.0323		0.0945		0.0959		0.1792		0.0215		0.0578		0.0024	
Very poor 1993	0.55	0.53	0.41	0.39	0.55	0.5	0.0046		0.0047		0.0041		0.0039		0.7894	**	0.8892	**	0.4155	
Extremely poor 1993	0.21	0.22	0.31	0.32	0.18	0.31	0.0212		0.0364		0.0116		0.0231		0.3792		0.6774	*	0.9256	***
Illiteracy 1993	30.33	30.21	35.02	34.94	35.19	33.7	0.0001		0.0000		0.0001		0.0000		0.6803	*	0.0819		0.6278	*
Infant Mortality 1993	82.39	82.29	94.69	94.57	90.36	100.6	0.0001		0.0000		0.0001		0.0000		0.2397		0.0954		0.4342	
Water in 1993	0.11	0.11	0.12	0.12	0.12	0.09	0.0030		0.3688		0.0046		0.4230		0.4540		0.7130	**	0.3224	
Electricity in 1993	0.17	0.18	0.22	0.22	0.18	0.15	0.0054		0.0314		0.0118		0.0475		0.6400	*	0.8594	**	0.1834	
Water in 1999	0	0	0.44	0.45	0	0.59	0.0001		0.0000		0.0001		0.0000		0.0001		.		0.2233	
Electricity in 1999	0.18	0.19	0.42	0.44	0.13	0.4	0.0001		0.0000		0.0001		0.0000		0.0495		0.3895		0.7251	**
Sewage in 1999	0.05	0.05	0.09	0.09	0.06	0.2	0.0001		0.0360		0.0001		0.0390		0.1299		0.8519	**	0.2311	
Population 1999	110	110.4	226.6	224.6	139.7	191.2	0.0001		0.0000		0.0001		0.0000		0.1793		0.3613		0.2133	
Dwellings 1999	25.9	25.96	53.36	52.99	32.14	44.71	0.0001		0.0000		0.0001		0.0000		0.1372		0.3451		0.2112	
Amount approved	.	.	110000	110000	.	150000	.		.		.		.		.		.		0.2978	
Amount requested	.	.	33000	35000	.	22000	.		.		.		.		.		.		0.4129	

Loreto water projects

Variable	Means						Tests						
	Control Universe	Control Support	Treatment Universe	Treatment Support	Control saMple	Treatment saMple	Cu<>Tu k	Cu<>Tu t	Cs<>Ts k	Cs<>Ts t	Cm<>Tm t	Cm<>Cs t	Tm<>Ts t
Longitude	-73.65	-73.66	-73.53	-73.53	-73.59	-73.37	0.9680***	0.5820*	0.9603***	0.5656*	0.3465	0.7388**	0.5310*
Latitude	-4.13	-4.13	-4.19	-4.19	-4.27	-4.37	0.6838*	0.7642**	0.6732*	0.7803**	0.7459**	0.4504	0.5752*
Altitude	105.2	105.2	108.3	108.3	107	100	0.9447***	0.7150**	0.9301***	0.7151**	0.4291	0.7645**	0.4318
Population pre-census	214.5	213.9	338.5	338.5	370.8	300.7	0.0022	0.0224	0.0021	0.0218	0.4477	0.0328	0.6337*
Dwellings pre-census	36.15	35.93	56.88	56.88	62.58	51.33	0.0009	0.0088	0.0008	0.0082	0.5239*	0.0322	0.7151**
Distance to district capital (km)	25.29	25.39	20.95	20.95	22.64	14.77	0.6478*	0.3072	0.6328*	0.2965	0.4881	0.5979*	0.5708*
Time to district capital (h)	2.73	2.75	2.5	2.5	2.48	1.8	0.9458***	0.6733*	0.9566***	0.6515*	0.6273*	0.6380*	0.6138*
Primary schools	0.91	0.91	1	1	0.95	1	0.1481	0.0324	0.1448	0.0324	0.3306	0.5817*	.
Health centers	0.08	0.08	0.29	0.29	0.37	0	0.0026	0.0779	0.0029	0.0794	0.0045	0.0210	0.0201
Very poor 1993	0.45	0.45	0.53	0.53	0.63	0.67	0.5257*	0.5454*	0.5412*	0.5602*	0.9281***	0.1445	0.7292**
Extremely poor 1993	0.34	0.34	0.24	0.24	0.32	0.33	0.3882	0.3666	0.3830	0.3611	0.9639***	0.8455**	0.8014**
Illiteracy 1993	13.43	13.51	10.51	10.51	12.18	10.93	0.0100	0.0033	0.0083	0.0027	0.4793	0.1788	0.7992**
Infant Mortality 1993	72.37	72.54	76.01	76.01	80.05	85.53	0.0485	0.3482	0.0524	0.3715	0.2191	0.0159	0.0720
Water in 1993	0.13	0.13	0.14	0.14	0.08	0.05	0.4302	0.8311**	0.4046	0.7913**	0.5541*	0.0874	0.0855
Electricity in 1993	0.26	0.26	0.33	0.33	0.25	0.31	0.3324	0.2497	0.3017	0.2251	0.5408*	0.8507**	0.8304**
Water in 1999	0	0	0	0	0	0	0.0001	.	0.0001	.	.	.	.
Electricity in 1999	0.04	0.03	0.12	0.12	0.12	0.2	0.0065	0.2148	0.0055	0.2063	0.7362**	0.2065	0.7306**
Sewage in 1999	0.03	0.03	0.11	0.11	0.05	0.33	0.0010	0.1896	0.0012	0.1914	0.4485	0.5699*	0.5397*
Population 1999	192.7	192.7	288.2	288.2	323.9	288	0.0001	0.0056	0.0001	0.0057	0.7475**	0.2026	0.9969***
Dwellings 1999	37.7	37.73	52.94	52.94	64.79	48.67	0.0003	0.0191	0.0003	0.0194	0.4610	0.1996	0.6588*
Amount approved	.	.	190000	190000	.	200000	.	.	.	.	.	.	0.9381***
Amount requested	.	.	73000	73000	.	59000	.	.	.	.	.	.	0.7620**

Madre de Dios water projects

Variable	Means						Tests						
	Control Universe	Control Support	Treatment Universe	Treatment Support	Control saMple	Treatment saMple	Cu<>Tu k	Cu<>Tu t	Cs<>Ts k	Cs<>Ts t	Cm<>Tm t	Cm<>Cs t	Tm<>Ts t
Longitude	-69.81	-69.73	-69.57	-69.57	-69.18	-69.46	0.1119	0.1203	0.4662	0.3479	0.2292	0.0000	0.6675*
Latitude	-12.48	-12.4	-12.49	-12.49	-12.64	-12.69	0.9926***	0.9394***	0.4431	0.4845	0.5224*	0.0056	0.0999
Altitude	266.6	267.5	253.4	253.4	195.8	227.8	0.7683**	0.3869	0.8379**	0.4054	0.1445	0.0000	0.2613
Population pre-census	100.6	96.22	143.6	143.6	151.3	120.2	0.0181	0.0472	0.0131	0.0321	0.5777*	0.2777	0.5572*
Dwellings pre-census	23.75	22.31	30.55	30.55	35.5	26.4	0.0443	0.0784	0.0163	0.0389	0.4179	0.2139	0.5785*
Distance to district capital (km)	34.04	35.29	30.35	30.35	22.5	28.4	0.7945**	0.5441*	0.8130**	0.4221	0.5866*	0.2587	0.7667**
Time to district capital (h)	5.46	5.71	1.57	1.57	0.84	1.47	0.0368	0.0228	0.0672	0.0641	0.4864	0.0314	0.9067***
Primary schools	0.74	0.84	0.95	0.95	1	0.8	0.0437	0.0048	0.2267	0.1418	0.3739	0.0037	0.5028*
Health centers	0.49	0.53	0.55	0.55	0.25	0.6	0.6541*	0.6612*	0.8766**	0.8790**	0.3515	0.3507	0.8594**
Very poor 1993	0.4	0.57	0.55	0.55	0.25	0.2	0.2241	0.2418	0.8876**	0.8902**	0.8809**	0.2961	0.1731
Extremely poor 1993	0.05	0	0	0	0	0	0.2872	0.0447	0.0001	.	.	.	.
Illiteracy 1993	10.96	9.78	9.07	9.07	6.88	6.94	0.5933*	0.0585	0.8138**	0.3534	0.9649***	0.0485	0.1221
Infant Mortality 1993	58.74	57.67	51.38	51.38	43.4	42.38	0.0367	0.0319	0.0512	0.0647	0.8756**	0.0525	0.0885
Water in 1993	0.13	0.13	0.15	0.15	0.27	0.29	0.1508	0.6974*	0.2090	0.7254**	0.8562**	0.2042	0.0964
Electricity in 1993	0.33	0.33	0.4	0.4	0.54	0.58	0.0658	0.2496	0.0992	0.2516	0.8018**	0.1771	0.0987
Water in 1999	0	0	0.07	0.07	0	0	0.0001	0.0838	0.0011	0.0838	.	.	0.0838
Electricity in 1999	0.05	0.07	0.09	0.09	0.2	0	0.5790*	0.4995	0.8201**	0.7660**	0.3989	0.5590*	0.1090
Sewage in 1999	0.04	0.05	0.15	0.15	0.05	0	0.0715	0.0825	0.2082	0.1422	0.0852	0.9103***	0.0197
Population 1999	107.7	90.73	144.7	144.7	135.5	56.8	0.3058	0.2474	0.0468	0.0979	0.2930	0.5233*	0.0099
Dwellings 1999	24.4	21.9	35.4	35.4	32.5	16	0.2989	0.1508	0.0818	0.0827	0.3205	0.5019*	0.0159
Amount approved	.	.	200000	200000	.	180000	.	.	.	.	.	.	0.6766*
Amount requested	.	.	7428	7428	.	7187	.	.	.	.	.	.	0.9769***

Puno water projects

Variable	Means						Tests						
	Control Universe	Control Support	Treatment Universe	Treatment Support	Control saMple	Treatment saMple	Cu<>Tu k	Cu<>Tu t	Cs<>Ts k	Cs<>Ts t	Cm<>Tm t	Cm<>Cs t	Tm<>Ts t
Longitude	-69.98	-69.99	-69.88	-69.91	-70.19	-70.2	0.0212	0.0085	0.0585	0.0261	0.9683***	0.3828	0.0001
Latitude	-15.34	-15.35	-15.29	-15.29	-15.26	-15.42	0.5437*	0.3570	0.5303*	0.3718	0.3665	0.5175*	0.3577
Altitude	3895	3928	3797	3861	3897	3853	0.0010	0.0305	0.0049	0.0307	0.2338	0.4010	0.7836**
Population pre-census	202.6	203.5	350.9	353.4	243	319.8	0.0001	0.0000	0.0001	0.0000	0.6713*	0.7080**	0.8284**
Dwellings pre-census	52.3	52.52	88.63	88.39	61.2	81	0.0001	0.0000	0.0001	0.0000	0.6174*	0.7578**	0.8065**
Distance to district capital (km)	12.24	12.13	10.04	10.11	7.6	8.8	0.1921	0.0040	0.3078	0.0091	0.6155*	0.0487	0.4880
Time to district capital (h)	1.54	1.53	1.34	1.36	1.26	0.98	0.5784*	0.1201	0.4627	0.2104	0.7017**	0.5752*	0.5350*
Primary schools	0.31	0.31	0.64	0.63	0.6	0.6	0.0001	0.0000	0.0001	0.0000	1.0000***	0.3051	0.9215***
Health centers	0.05	0.05	0.13	0.1	0.2	0.4	0.0001	0.0097	0.0224	0.0872	0.5454*	0.4877	0.2830
Very poor 1993	0.67	0.69	0.69	0.71	0.8	0.6	0.5783*	0.5738*	0.6358*	0.6315*	0.5454*	0.6180*	0.6716*
Extremely poor 1993	0.18	0.15	0.2	0.17	0.2	0.2	0.6208*	0.6331*	0.5317*	0.5529*	1.0000***	0.8226**	0.9037***
Illiteracy 1993	26.18	26.2	26.89	26.88	25.8	25.58	0.2291	0.2164	0.2629	0.2567	0.9677***	0.8930**	0.7856**
Infant Mortality 1993	88.13	88.3	86.5	86.57	71.9	81.54	0.1905	0.3089	0.2065	0.2956	0.4076	0.0201	0.6380*
Water in 1993	0.09	0.09	0.08	0.08	0.07	0.08	0.2079	0.0671	0.2388	0.1102	0.8891**	0.6161*	0.9505***
Electricity in 1993	0.09	0.09	0.09	0.09	0.08	0.17	0.3338	0.8636**	0.3499	0.9708***	0.5041*	0.5831*	0.5773*
Water in 1999	0	0	0.22	0.22	0	0	0.0001	0.0000	0.0001	0.0000	.	.	0.0000
Electricity in 1999	0.18	0.19	0.3	0.29	0.03	0.49	0.0001	0.0020	0.0001	0.0083	0.0800	0.0043	0.3877
Sewage in 1999	0.03	0.03	0.03	0.03	0.02	0	0.0293	0.6072*	0.0503	0.7322**	0.3739	0.8979**	0.0008
Population 1999	132.3	133.5	218.1	217.3	144.4	240	0.0001	0.0000	0.0001	0.0000	0.4906	0.8164**	0.8610**
Dwellings 1999	35.53	35.6	57.44	56.93	42.4	61.4	0.0001	0.0000	0.0001	0.0000	0.5875*	0.6732*	0.8880**
Amount approved	410000	410000	120000	120000	.	110000	0.0155	0.0119	0.0156	0.0123	.	.	0.7866**
Amount requested	0	0	4273	4719	.	16000	0.7757**	0.0350	0.7642**	0.0350	.	.	0.5220*

Amazonas roads and bridges projects

Variable	Means						Tests						
	Control Universe	Control Support	Treatment Universe	Treatment Support	Control saMple	Treatment saMple	Cu<>Tu k	Cu<>Tu t	Cs<>Ts k	Cs<>Ts t	Cm<>Tm t	Cm<>Cs t	Tm<>Ts t
Longitude	-78.05	-78.04	-78.02	-78.01	-78.07	-78.08	0.1899	0.4529	0.3365	0.6221*	0.9141***	0.7199**	0.5469*
Latitude	-6	-6.01	-5.93	-5.98	-5.96	-5.76	0.1214	0.3761	0.1695	0.6643*	0.2762	0.6616*	0.1611
Altitude	1805	1823	2025	2056	2127	1608	0.0177	0.0684	0.0154	0.0574	0.1212	0.1331	0.1349
Population pre-census	145	144.6	227	221.4	245.9	295.5	0.0001	0.0017	0.0001	0.0042	0.5955*	0.0533	0.3821
Dwellings pre-census	31.94	31.7	49.97	48.68	52.94	67.15	0.0001	0.0020	0.0001	0.0048	0.5486*	0.0604	0.4048
Distance to district capital (km)	25.33	25.3	18.82	18.82	24.12	18.62	0.8067**	0.0742	0.7858**	0.0764	0.4685	0.7976**	0.9771***
Time to district capital (h)	5.79	5.96	3.34	3.42	4.34	1.84	0.2028	0.0070	0.2075	0.0074	0.0022	0.0750	0.0485
Primary schools	0.59	0.59	0.91	0.9	0.94	1	0.0001	0.0000	0.0001	0.0000	0.3313	0.0000	0.0131
Health centers	0.07	0.07	0.25	0.24	0.22	0.38	0.0001	0.0019	0.0001	0.0034	0.3573	0.1548	0.3582
Very poor 1993	0.49	0.48	0.6	0.6	0.56	0.46	0.0933	0.0931	0.0869	0.0874	0.6207*	0.5453*	0.4012
Extremely poor 1993	0.1	0.11	0.09	0.08	0.06	0.15	0.8195**	0.8158**	0.5326*	0.4985	0.4155	0.3869	0.5154*
Illiteracy 1993	20.49	20.4	20.82	20.58	19.18	21.05	0.7513**	0.6671*	0.7985**	0.8026**	0.4092	0.4173	0.8020**
Infant Mortality 1993	57.72	57.41	64.73	64.32	60.72	57.45	0.0126	0.0074	0.0185	0.0109	0.6021*	0.5367*	0.1148
Water in 1993	0.12	0.12	0.11	0.11	0.09	0.09	0.5134*	0.3843	0.5981*	0.4258	0.9282***	0.3098	0.4936
Electricity in 1993	0.08	0.09	0.07	0.08	0.08	0.07	0.3331	0.5458*	0.3879	0.5574*	0.7339**	0.9802***	0.8598**
Water in 1999	0.46	0.45	0.52	0.54	0.34	0.59	0.3654	0.2454	0.1585	0.0862	0.0848	0.2360	0.7116**
Electricity in 1999	0.16	0.16	0.14	0.15	0.04	0.21	0.8490**	0.6647*	0.9488***	0.8724**	0.1121	0.0195	0.5560*
Sewage in 1999	0.06	0.06	0.08	0.07	0.02	0.08	0.1278	0.4308	0.1250	0.5484*	0.1748	0.0057	0.9364***
Population 1999	142.7	144	224.8	214.4	201.6	306.1	0.0001	0.0003	0.0005	0.0015	0.0723	0.1614	0.0560
Dwellings 1999	30.6	30.88	47.52	45.63	43.06	64.31	0.0001	0.0001	0.0001	0.0008	0.0697	0.1225	0.0617
Amount approved	.	.	180000	180000	.	190000	.	.	.	.	.	.	0.8469**
Amount requested	.	.	7164	7510	.	6923	.	.	.	.	.	.	0.9225***

Cajamarca roads and bridges projects

Variable	Means						Tests						
	Control Universe	Control Support	Treatment Universe	Treatment Support	Control saMple	Treatment saMple	Cu<>Tu k	Cu<>Tu t	Cs<>Ts k	Cs<>Ts t	Cm<>Tm t	Cm<>Cs t	Tm<>Ts t
Longitude	-78.64	-78.64	-78.67	-78.67	-78.75	-78.61	0.6058*	0.2952	0.8907**	0.5192*	0.4268	0.3539	0.6954*
Latitude	-6.62	-6.61	-6.51	-6.52	-6.45	-6.53	0.1343	0.1273	0.2156	0.2066	0.7666**	0.3887	0.9632***
Altitude	2369	2353	2418	2418	2452	2556	0.4554	0.5372*	0.3504	0.4314	0.6347*	0.5872*	0.3620
Population pre-census	216.1	215.6	371.4	380.7	360	554.1	0.0001	0.0000	0.0001	0.0000	0.4071	0.1950	0.4167
Dwellings pre-census	47.03	46.9	88.33	89.41	75.77	125.3	0.0001	0.0000	0.0001	0.0000	0.3585	0.2234	0.4697
Distance to district capital (km)	17.05	16.81	17.17	17.18	22.38	10	0.3465	0.9459***	0.3942	0.8414**	0.0172	0.1613	0.0573
Time to district capital (h)	3.27	3.36	3.34	3.48	3.66	6.78	0.0866	0.8954**	0.1700	0.8244**	0.5363*	0.5698*	0.5148*
Primary schools	0.66	0.66	0.84	0.85	0.77	0.75	0.0015	0.0007	0.0009	0.0004	0.9262***	0.3937	0.5885*
Health centers	0.1	0.1	0.24	0.23	0.15	0.13	0.0001	0.0028	0.0001	0.0047	0.8615**	0.6217*	0.4461
Very poor 1993	0.61	0.63	0.62	0.62	0.77	0.25	0.8642**	0.8646**	0.8103**	0.8131**	0.0230	0.2687	0.0640
Extremely poor 1993	0.03	0	0	0	0	0	0.1108	0.0000	0.0001	.	.	.	.
Illiteracy 1993	28.99	28.75	31.11	31.42	32.28	32.54	0.0070	0.0039	0.0016	0.0003	0.9384***	0.1416	0.6724*
Infant Mortality 1993	57	56.64	59.42	59.4	66.31	62.47	0.1686	0.2012	0.1087	0.1427	0.6735*	0.1014	0.6841*
Water in 1993	0.11	0.11	0.09	0.09	0.06	0.1	0.2018	0.0261	0.2024	0.0040	0.2125	0.0089	0.6739*
Electricity in 1993	0.11	0.11	0.09	0.09	0.1	0.15	0.2424	0.0443	0.1874	0.0124	0.2487	0.7105**	0.0809
Water in 1999	0.4	0.4	0.49	0.49	0.14	0.5	0.0212	0.0157	0.0241	0.0223	0.0227	0.0035	0.9156***
Electricity in 1999	0.06	0.06	0.11	0.12	0	0.14	0.0254	0.0596	0.0166	0.0459	0.2572	0.0000	0.8694**
Sewage in 1999	0.03	0.03	0.03	0.03	0.05	0	0.1140	0.9848***	0.1329	0.9729***	0.3620	0.7467**	0.0054
Population 1999	206.7	206.6	329.6	338.4	245.2	455.4	0.0001	0.0000	0.0001	0.0000	0.2224	0.4455	0.4720
Dwellings 1999	44.95	44.99	74.18	76	53	101.6	0.0001	0.0000	0.0001	0.0000	0.2092	0.4903	0.4817
Amount approved	.	.	160000	170000	.	160000	.	.	.	.	.	.	0.8507**
Amount requested	.	.	1031	1099	.	0	.	.	.	.	.	.	0.3200

Cusco roads and bridges projects

Variable	Means						Tests						
	Control Universe	Control Support	Treatment Universe	Treatment Support	Control saMple	Treatment saMple	Cu<>Tu k	Cu<>Tu t	Cs<>Ts k	Cs<>Ts t	Cm<>Tm t	Cm<>Cs t	Tm<>Ts t
Longitude	-71.91	-71.91	-72.08	-71.84	-72.07	-71.78	0.2937	0.1764	0.7245**	0.3336	0.0663	0.1850	0.6545*
Latitude	-13.82	-13.82	-13.72	-13.9	-13.74	-13.78	0.4877	0.4014	0.4574	0.5125*	0.8251**	0.5124*	0.5875*
Altitude	3478	3478	3271	3573	3154	3646	0.6154*	0.2662	0.3739	0.5396*	0.1311	0.1336	0.7995**
Population pre-census	153	155.6	341.6	333.1	201.9	249.1	0.0001	0.0000	0.0001	0.0004	0.2636	0.0896	0.1341
Dwellings pre-census	40.2	40.57	76.05	75.97	50.89	59.43	0.0001	0.0001	0.0001	0.0006	0.2669	0.0620	0.1322
Distance to district capital (km)	19.05	18.96	24.52	24.65	25.12	16.07	0.0410	0.3091	0.0575	0.3375	0.4166	0.5718*	0.1769
Time to district capital (h)	3.92	4.01	3.06	3.17	4.36	1.7	0.0153	0.3646	0.0124	0.4451	0.1501	0.8407**	0.2177
Primary schools	0.36	0.37	0.76	0.77	0.56	0.57	0.0001	0.0000	0.0001	0.0000	0.9256***	0.0684	0.2248
Health centers	0.02	0.02	0.07	0.09	0.11	0	0.0085	0.1804	0.0033	0.1630	0.0830	0.1397	0.0831
Very poor 1993	0.36	0.35	0.41	0.31	0.41	0.21	0.4791	0.4982	0.6869*	0.6864*	0.2050	0.5410*	0.4778
Extremely poor 1993	0.38	0.39	0.41	0.49	0.37	0.43	0.6293*	0.6408*	0.2419	0.2670	0.7299**	0.8568**	0.7271**
Illiteracy 1993	36.17	36.16	35.6	35.43	39.41	31.34	0.7773**	0.7551**	0.7325**	0.6967*	0.0529	0.1723	0.2844
Infant Mortality 1993	95.86	95.82	95.95	95.71	96.99	93.16	0.5336*	0.9859***	0.4937	0.9827***	0.6937*	0.7404**	0.8059**
Water in 1993	0.12	0.12	0.12	0.13	0.1	0.2	0.9916***	0.8720**	0.8526**	0.7868**	0.1521	0.5855*	0.2640
Electricity in 1993	0.2	0.2	0.18	0.19	0.17	0.27	0.3654	0.6700*	0.4048	0.7543**	0.3024	0.3612	0.4222
Water in 1999	0.35	0.36	0.41	0.43	0.24	0.45	0.2908	0.4354	0.2702	0.3405	0.1919	0.1540	0.9217***
Electricity in 1999	0.22	0.23	0.32	0.37	0.14	0.45	0.0967	0.1560	0.0818	0.0817	0.0388	0.1308	0.5857*
Sewage in 1999	0.05	0.05	0.09	0.1	0.05	0.03	0.0013	0.2252	0.0009	0.2135	0.5350*	0.9300***	0.1135
Population 1999	133.5	135.3	183.2	171.5	143.8	172	0.0001	0.0028	0.0009	0.0218	0.5061*	0.7865**	0.9889***
Dwellings 1999	31.3	31.66	42.19	39.26	33.84	38	0.0001	0.0019	0.0005	0.0154	0.6194*	0.7486**	0.8280**
Amount approved	.	.	190000	180000	.	200000	.	.	.	.	.	.	0.5559*
Amount requested	.	.	12000	14000	.	26000	.	.	.	.	.	.	0.3960

Loreto roads and bridges projects

Variable	Means						Tests						
	Control Universe	Control Support	Treatment Universe	Treatment Support	Control saMple	Treatment saMple	Cu<>Tu k	Cu<>Tu t	Cs<>Ts k	Cs<>Ts t	Cm<>Tm t	Cm<>Cs t	Tm<>Ts t
Longitude	-73.71	-73.72	-73.6	-73.61	-73.59	-73.35	0.7268 **	0.3102	0.8192 **	0.3245	0.2805	0.5397 *	0.0647
Latitude	-4.17	-4.18	-4.28	-4.29	-4.27	-4.36	0.0063	0.2200	0.0052	0.2125	0.6755 *	0.6120 *	0.6253 *
Altitude	106.1	106.1	106.4	106.5	107	98.14	0.3072	0.8903 **	0.2781	0.8624 **	0.1664	0.8764 **	0.0136
Population pre-census	204.5	203.9	240.8	240.8	370.8	258.4	0.0001	0.0186	0.0001	0.0165	0.1224	0.0241	0.4325
Dwellings pre-census	34.5	34.29	40.51	40.67	62.58	43.57	0.0001	0.0172	0.0001	0.0115	0.1265	0.0239	0.4888
Distance to district capital (km)	24.81	24.89	23.58	23.53	22.64	27.65	0.9490 ***	0.5597 *	0.9910 ***	0.5225 *	0.4928	0.6644 *	0.4660
Time to district capital (h)	2.7	2.71	2.75	2.74	2.48	3.39	0.2883	0.8534 **	0.3347	0.9163 ***	0.2974	0.6775 *	0.3653
Primary schools	0.86	0.86	0.96	0.96	0.95	0.93	0.0015	0.0306	0.0006	0.0156	0.8339 **	0.1978	0.6314 *
Health centers	0.07	0.07	0.08	0.08	0.37	0	0.6986 *	0.7090 **	0.7058 **	0.7156 **	0.0045	0.0173	0.0023
Very poor 1993	0.44	0.44	0.25	0.26	0.63	0.5	0.0005	0.0002	0.0005	0.0002	0.4693	0.1208	0.1127
Extremely poor 1993	0.32	0.32	0.55	0.55	0.32	0.43	0.0001	0.0000	0.0001	0.0000	0.5262 *	0.9504 ***	0.4198
Illiteracy 1993	13.21	13.28	12.65	12.6	12.18	12	0.6120 *	0.2478	0.7324 **	0.1671	0.8974 **	0.2590	0.6015 *
Infant Mortality 1993	71.56	71.7	73.9	73.91	80.05	78.74	0.0342	0.0917	0.0375	0.1138	0.7677 **	0.0083	0.2133
Water in 1993	0.14	0.14	0.1	0.1	0.08	0.06	0.2378	0.0186	0.3057	0.0277	0.7808 **	0.0434	0.4233
Electricity in 1993	0.28	0.27	0.26	0.26	0.25	0.27	0.8507 **	0.4414	0.7014 **	0.5676 *	0.7604 **	0.6472 *	0.8075 **
Water in 1999	0	0	0	0	0	0	0.5340 *	0.3182	0.5314 *	0.3182	.	0.3182	.
Electricity in 1999	0.04	0.03	0.06	0.05	0.12	0.09	0.4086	0.3154	0.5214 *	0.4595	0.6933 *	0.2062	0.5355 *
Sewage in 1999	0.03	0.03	0.05	0.05	0.05	0.16	0.0312	0.1818	0.0330	0.1846	0.3172	0.5694 *	0.2423
Population 1999	192.4	192.4	198.8	199.2	323.9	199.3	0.0149	0.7225 **	0.0173	0.7082 **	0.2323	0.2017	0.9983 ***
Dwellings 1999	37.68	37.71	38.38	38.48	64.79	38.07	0.0225	0.8384 **	0.0264	0.8246 **	0.2091	0.1993	0.9298 ***
Amount approved	.	.	140000	140000	.	180000	.	.	.	.	.	.	0.2031
Amount requested	.	.	47000	47000	.	32000	.	.	.	.	.	.	0.2297

Cusco electricity projects

Variable	Means						Tests						
	Control Universe	Control Support	Treatment Universe	Treatment Support	Control saMple	Treatment saMple	Cu<>Tu k	Cu<>Tu t	Cs<>Ts k	Cs<>Ts t	Cm<>Tm t	Cm<>Cs t	Tm<>Ts t
Longitude	-72.04	-72.02	-72.08	-72.03	-72.24	-72.2	0.3601	0.7025 **	0.5363 *	0.8713 **	0.8067 **	0.0952	0.3783
Latitude	-13.71	-13.73	-13.48	-13.49	-13.46	-13.35	0.0380	0.0296	0.0420	0.0321	0.6292 *	0.0870	0.5197 *
Altitude	3175	3210	2829	2856	2708	2568	0.0013	0.0800	0.0024	0.0946	0.7552 **	0.0543	0.5008 *
Population pre-census	143.3	145.2	271.3	293.6	184.4	201.4	0.0001	0.0015	0.0001	0.0015	0.6811 *	0.1161	0.0957
Dwellings pre-census	36.05	36.26	71.26	75.09	46.82	43.17	0.0001	0.0071	0.0001	0.0093	0.6591 *	0.0852	0.0413
Distance to district capital (km)	33.03	32.97	18.95	19.09	33.47	23.17	0.0020	0.0032	0.0018	0.0059	0.5152 *	0.9686 ***	0.7015 **
Time to district capital (h)	4.69	4.84	1.59	1.65	4.56	1.83	0.0001	0.0000	0.0001	0.0000	0.1676	0.8757 **	0.8341 **
Primary schools	0.38	0.39	0.67	0.67	0.5	0.58	0.0002	0.0007	0.0007	0.0023	0.6428 *	0.2536	0.6306 *
Health centers	0.04	0.04	0.05	0.06	0.11	0	0.7110 **	0.7465 **	0.5388 *	0.6199 *	0.0830	0.2665	0.1605
Very poor 1993	0.44	0.41	0.36	0.36	0.43	0.42	0.3470	0.3435	0.5580 *	0.5586 *	0.9469 ***	0.8877 **	0.7602 **
Extremely poor 1993	0.4	0.42	0.1	0.12	0.32	0	0.0002	0.0000	0.0007	0.0000	0.0013	0.2986	0.0436
Illiteracy 1993	35.83	35.75	30.45	30.51	37.81	25.51	0.0019	0.0056	0.0047	0.0119	0.0032	0.4190	0.1645
Infant Mortality 1993	92.6	92.54	87.19	85.85	94.57	70.27	0.1894	0.1716	0.1177	0.1306	0.0049	0.6434 *	0.0569
Water in 1993	0.09	0.09	0.17	0.17	0.13	0.22	0.0005	0.0049	0.0025	0.0111	0.1630	0.2873	0.4291
Electricity in 1993	0.14	0.14	0.33	0.34	0.17	0.39	0.0001	0.0001	0.0001	0.0004	0.0409	0.4063	0.6352 *
Water in 1999	0.23	0.23	0.46	0.48	0.21	0.47	0.0001	0.0019	0.0001	0.0019	0.0915	0.7219 **	0.9386 ***
Electricity in 1999	0	0	0.78	0.79	0	0.81	0.0001	0.0000	0.0001	0.0000	0.0000	.	0.7586 **
Sewage in 1999	0.03	0.03	0.13	0.14	0.05	0.16	0.0001	0.0149	0.0001	0.0129	0.1759	0.4869	0.7846 **
Population 1999	112.2	113.3	191.9	195.7	131.4	193.3	0.0001	0.0001	0.0001	0.0001	0.0497	0.3308	0.9365 ***
Dwellings 1999	25.86	26	47.67	48.41	30.64	42.09	0.0001	0.0000	0.0001	0.0000	0.0719	0.1968	0.3187
Amount approved	.	.	130000	140000	.	170000	.	.	.	.	.	.	0.6033 *
Amount requested	.	.	5831	6891	.	19000	.	.	.	.	.	.	0.4537

Loreto electricity projects

Variable	Means						Tests						
	Control Universe	Control Support	Treatment Universe	Treatment Support	Control saMple	Treatment saMple	Cu<>Tu k	Cu<>Tu t	Cs<>Ts k	Cs<>Ts t	Cm<>Tm t	Cm<>Cs t	Tm<>Ts t
Longitude	-73.66	-73.67	-73.82	-73.82	-73.64	-73.97	0.0099	0.5292 *	0.0104	0.5421 *	0.4366	0.9116 ***	0.7398 **
Latitude	-4.13	-4.13	-4.78	-4.78	-4.36	-4.93	0.0020	0.0068	0.0021	0.0070	0.0569	0.2942	0.5938 *
Altitude	105.2	105.3	106.4	106.4	107.9	105.3	0.1842	0.7941 **	0.1854	0.8033 **	0.7791 **	0.7120 **	0.8825 **
Population pre-census	191.5	192.6	264	264	289.4	261.4	0.0023	0.0207	0.0025	0.0222	0.6659 *	0.1244	0.9425 ***
Dwellings pre-census	32.28	32.33	47	47	47.13	46.14	0.0025	0.0186	0.0026	0.0189	0.9210 ***	0.0977	0.9078 ***
Distance to district capital (km)	26	26.13	20	20	26.08	24.86	0.3032	0.3852	0.2957	0.3762	0.9068 ***	0.9938 ***	0.6601 *
Time to district capital (h)	2.88	2.89	2.4	2.4	2.88	2.97	0.4709	0.5820 *	0.4697	0.5741 *	0.9464 ***	0.9989 ***	0.6855 *
Primary schools	0.91	0.91	1	1	0.94	1	0.2501	0.0394	0.2469	0.0393	0.3332	0.6819 *	.
Health centers	0.06	0.06	0.2	0.2	0.38	0	0.0889	0.3308	0.0924	0.3333	0.0090	0.0252	0.1679
Very poor 1993	0.41	0.42	0.7	0.7	0.56	0.71	0.0715	0.0955	0.0769	0.1006	0.5118 *	0.2862	0.9533 ***
Extremely poor 1993	0.37	0.37	0.2	0.2	0.38	0.29	0.2848	0.2533	0.2839	0.2524	0.6958 *	0.9459 ***	0.7131 **
Illiteracy 1993	13.54	13.63	10.36	10.36	12.18	12.17	0.1060	0.0922	0.0973	0.0864	0.9936 ***	0.1459	0.3889
Infant Mortality 1993	72.45	72.64	78.58	78.58	80.05	84.4	0.0922	0.4345	0.0950	0.4475	0.2797	0.0170	0.4729
Water in 1993	0.13	0.13	0.11	0.11	0.08	0.03	0.9110 ***	0.8307 **	0.9289 ***	0.8517 **	0.2225	0.1072	0.3288
Electricity in 1993	0.26	0.26	0.35	0.35	0.25	0.22	0.3496	0.4195	0.3299	0.4011	0.7882 **	0.9397 ***	0.3712
Water in 1999	0	0	0	0	0	0	0.0001	.	0.0001	.	.	.	.
Electricity in 1999	0	0	0.15	0.15	0	0	0.0001	0.1825	0.0001	0.1825	.	.	0.1825
Sewage in 1999	0.02	0.02	0.09	0.09	0.06	0.13	0.0141	0.4156	0.0152	0.4171	0.6205 *	0.5345 *	0.8303 **
Population 1999	155.2	156	278.1	278.1	205.7	193.1	0.0030	0.0872	0.0033	0.0890	0.8052 **	0.2538	0.2474
Dwellings 1999	30.3	30.48	54.7	54.7	38.88	38.43	0.0034	0.0812	0.0037	0.0831	0.9616 ***	0.2733	0.2536
Amount approved	.	.	190000	190000	.	200000	.	.	.	.	.	.	0.7225 **
Amount requested	.	.	41000	41000	.	35000	.	.	.	.	.	.	0.8752 **

Annex 4: Tables with matching results for each departamento

A.4.1. Water Projects (community level)

Daily time to collect water (minutes)

			ATT	Std Err	t-stat	sign	Treated	Controls
AMAZONAS	0.97	8.74	-7.77	1.97	-3.94	**	9	9
ANCASH	0.33	27.08	-26.75	8.61	-3.11	**	3	3
CAJAMARCA	4.28	16.28	-12.00	5.42	-2.22	**	5	5
CUSCO	1.83	2.06	-0.23	0.72	-0.32		12	12
LORETO	7.13	6.33	0.79	2.24	0.35		3	3
MADRE DE DIOS	4.77	9.28	-4.51	1.77	-2.54	**	4	4
PUNO	4.63	13.81	-9.19	2.43	-3.77	**	2	2
Total	2.70	9.20	-6.50	1.15	-5.65	**	38	38

Average number of hygiene practices

			ATT	Std Err	t-stat	sign	Treated	Controls
AMAZONAS	1.97	1.67	0.31	0.46	0.67		9	9
ANCASH	1.83	1.25	0.58	0.48	1.23		3	3
CAJAMARCA	2.58	2.30	0.28	0.54	0.51		5	5
CUSCO	1.81	1.72	0.09	0.34	0.28		12	12
LORETO	3.38	2.42	0.96	0.67	1.43		3	3
MADRE DE DIOS	2.28	2.75	-0.46	0.15	-3.17	**	4	4
PUNO	0.25	0.69	-0.44	0.14	-3.13	**	2	2
Total	2.04	1.85	0.19	0.18	1.04		38	38

Average monthly expenditure on hygiene products (soles)

			ATT	Std Err	t-stat	sign	Treated	Controls
AMAZONAS	14.06	12.16	1.90	2.50	0.76		9	9
ANCASH	13.91	11.88	2.03	2.62	0.77		3	3
CAJAMARCA	10.53	15.50	-4.98	1.91	-2.61	**	5	5
CUSCO	15.38	8.85	6.53	2.25	2.90	**	12	12
LORETO	18.93	16.35	2.59	4.70	0.55		3	3
MADRE DE DIOS	16.93	16.56	0.37	2.52	0.15		4	4
PUNO	7.09	7.01	0.09	0.68	0.13		2	2
Total	14.32	12.05	2.26	1.08	2.09	**	38	38

Percentage of hh. Covering water recipients (%)

			ATT	Std Err	t-stat	sign	Treated	Controls
AMAZONAS	73.8%	68.1%	5.7%	11.7%	0.49		9	9
ANCASH	33.3%	83.3%	-50.0%	34.4%	-1.46		3	3
CAJAMARCA	72.5%	72.5%	0.0%	27.0%	0.00		5	5
CUSCO	85.1%	58.0%	27.1%	18.8%	1.44		10	10
LORETO	58.3%	95.8%	-37.5%	29.5%	-1.27		3	3
MADRE DE DIOS	68.3%	39.3%	29.0%	25.5%	1.14		4	4
PUNO	20.0%	33.3%	-13.3%	38.9%	-0.34		2	2
Total	68.5%	64.3%	4.2%	8.8%	0.48		36	36

Percentage of hh who consider water is of good quality (%)

			ATT	Std Err	t-stat	sign	Treated	Controls
AMAZONAS	87.5%	56.9%	30.6%	0.10	2.99	**	9	9
ANCASH	83.3%	58.3%	25.0%	0.12	2.12	**	3	3
CAJAMARCA	50.0%	50.0%	0.0%	0.18	0.00		5	5
CUSCO	66.7%	59.4%	7.3%	0.11	0.65		12	12
LORETO	12.5%	58.3%	-45.8%	0.17	-2.75	**	3	3
MADRE DE DIOS	59.4%	34.8%	24.6%	0.15	1.65	*	4	4
PUNO	62.5%	62.5%	0.0%	0.13	0.00		2	2
Total	65.5%	55.0%	10.5%	0.05	1.94	**	38	38

Rate of infant mortality (per 1000)

			ATT	Std Err	t-stat	sign	Treated	Controls
AMAZONAS	0.00	0.00	0.00	0.00			9	9
ANCASH	0.00	0.00	0.00	0.00			3	3
CAJAMARCA	28.57	0.00	28.57	28.57	1.00		5	5
CUSCO	0.00	26.09	-26.09	19.36	-1.35		12	12
LORETO	47.62	0.00	47.62	47.62	1.00		3	3
MADRE DE DIOS	62.50	0.00	62.50	62.50	1.00		4	4
PUNO	0.00	0.00	0.00	0.00			2	2
Total	14.10	8.24	5.86	10.44	0.56		38	38

Incidence of diarrhea on children 0-6 (%)

			ATT	Std Err	t-stat	sign	Treated	Controls
AMAZONAS	24.9%	45.5%	-20.6%	9.7%	-2.12	**	9	9
ANCASH	25.0%	16.9%	8.1%	17.0%	0.47		3	3
CAJAMARCA	24.7%	29.0%	-4.4%	13.5%	-0.33		5	5
CUSCO	32.8%	41.5%	-8.7%	8.9%	-0.98		12	12
LORETO	60.8%	45.0%	15.8%	19.4%	0.81		3	3
MADRE DE DIOS	28.8%	26.9%	1.9%	19.8%	0.09		4	4
PUNO	66.1%	16.7%	49.4%	18.9%	2.61	**	2	2
Total	32.8%	36.3%	-3.5%	5.1%	-0.69		38	38

Incidence of skin diseases on children 0-6 (%)

			ATT	Std Err	t-stat	sign	Treated	Controls
AMAZONAS	5.3%	11.1%	-5.8%	6.3%	-0.92		9	9
ANCASH	0.0%	11.1%	-11.1%	11.1%	-1.00		3	3
CAJAMARCA	4.7%	3.3%	1.4%	4.4%	0.31		5	5
CUSCO	3.3%	3.5%	-0.3%	3.0%	-0.09		12	12
LORETO	12.9%	13.3%	-0.5%	15.7%	-0.03		3	3
MADRE DE DIOS	0.0%	3.1%	-3.1%	3.1%	-1.00		4	4
PUNO	0.0%	0.0%	0.0%	0.0%			2	2
Total	3.9%	6.4%	-2.5%	2.4%	-1.04		38	38

Percentage of children 2-10 with malnutrition (%)

			ATT	Std Err	t-stat	sign	Treated	Controls
AMAZONAS	19.0%	42.6%	-23.6%	10.1%	-2.33	**	9	9
ANCASH	37.3%	21.4%	15.9%	12.5%	1.27		3	3
CAJAMARCA	33.6%	42.2%	-8.6%	13.3%	-0.65		5	5
CUSCO	24.6%	33.3%	-8.6%	9.1%	-0.95		12	12
LORETO	19.7%	10.2%	9.5%	11.6%	0.81		3	3

MADRE DE DIOS	26.1%	5.3%	20.8%	12.2%	1.70	*	4	4
PUNO	48.9%	47.9%	1.0%	20.9%	0.05		2	2
Total	26.5%	31.7%	-5.2%	4.7%	-1.11		38	38

A.4.2. Water Projects (household level)

time to collect water

	Treated	Control	ATT	Std Err	t-stat	sign	used obs
Amazonas	1.55	13.85	-12.30	1.15	-10.68	**	66
Ancash	0.36	3.09	-2.73	0.81	-3.35	**	22
Cajamarca	3.40	14.24	-10.84	3.22	-3.37	**	50
Cusco	1.23	2.56	-1.33	0.46	-2.86	**	212
Loreto	7.03	8.67	-1.63	1.65	-0.99		60
MadreDeDios	5.40	8.60	-3.20	3.91	-0.82		9
Puno	4.63	13.93	-9.30	2.53	-3.67	**	54
Total	2.67	7.58	-4.91	0.28	-17.41	**	710

quality of water is OK

	Treated	Control	ATT	Std Err	t-stat	sign	used obs
Amazonas	0.85	0.64	0.21	0.14	1.48		66
Ancash	0.91	0.64	0.27	0.13	2.12	**	22
Cajamarca	0.40	0.64	-0.24	0.15	-1.65	*	50
Cusco	0.75	0.54	0.21	0.07	3.08	**	224
Loreto	0.20	0.40	-0.20	0.13	-1.55		60
MadreDeDios	0.57	0.43	0.14	0.29	0.50		14
Puno	0.74	0.74	0.00	0.14	0.00		54
Total	0.66	0.57	0.09	0.02	3.90	**	735

Infant mortality

	Treated	Control	ATT	Std Err	t-stat	sign	used obs
Amazonas	0.000	0.000	0.000	0.000	.		19
Ancash	0.000	0.000	0.000	.	.		2
Cajamarca	0.000	0.000	0.000	0.000	.		18
Cusco	0.000	0.022	-0.022	0.023	-0.956		88
Loreto	0.063	0.000	0.063	0.063	1.000		32
MadreDeDios	.	.	.	.	.		0
Puno	0.000	0.000	0.000	0.000	.		12
Total	0.01	0.011	0.000	0.01	0.00		259

Incidence of diarrhea

	Treated	Control	ATT	Std Err	t-stat	sign	used obs

Amazonas	0.36	0.73	-0.36	0.16	-2.30	**	21
Ancash	0.00	0.50	-0.50	.	.		2
Cajamarca	0.30	0.40	-0.10	0.22	-0.45		20
Cusco	0.24	0.46	-0.22	0.12	-1.75	*	89
Loreto	0.76	0.82	-0.06	0.17	-0.34		34
MadreDeDios	1.00	0.00	1.00	.	.		1
Puno	0.71	0.57	0.14	0.33	0.43		13
Total	0.39	0.55	-0.16	0.04	-4.13	**	274

Incidence of skin disease

	Treated	Control	ATT	Std Err	t-stat	sign	used obs
Amazonas	0.00	0.18	-0.18	0.14	-1.29		21
Ancash	0.00	0.00	0.00	.	.		2
Cajamarca	0.10	0.00	0.10	0.10	1.00		20
Cusco	0.02	0.11	-0.09	0.07	-1.24		89
Loreto	0.29	0.65	-0.35	0.19	-1.82	*	34
MadreDeDios	0.00	0.00	0.00	.	.		1
Puno	0.00	0.00	0.00	0.00	.		13
Total	0.07	0.19	-0.12	0.03	-4.40	**	274

Child malnutrition

	Treated	Control	ATT	Std Err	t-stat	sign	used obs
Amazonas	0.24	0.32	-0.09	0.12	-0.70		48
Ancash	0.60	0.20	0.40	0.55	0.72		8
Cajamarca	0.35	0.45	-0.11	0.13	-0.79		44
Cusco	0.29	0.23	0.07	0.09	0.75		138
Loreto	0.28	0.33	-0.05	0.12	-0.44		38
MadreDeDios	.	.	.	.	.		0
Puno	0.32	0.34	-0.02	0.22	-0.10		35
Total	0.30	0.30	0.00	0.03	0.16		469

A.4.3. Electricity projects (community level)

Number of small enterprises at cc.pp.

	Treated	Controls	ATT	Std Err	t-stat	sign	#Treated	#Controls
CUSCO	7.83	1.83	6.0	2.6	2.27	**	12	12
LORETO	4.86	2.00	2.9	2.3	1.22		7	7
TOTAL	6.74	1.89	4.8	1.9	2.58	**	19	19

Number of electric appliances

	Treated	Controls	ATT	Std Err	t-stat	sign	Treated	Controls
CUSCO	2.23	0.88	1.35	0.27	5.05	**	12	12
LORETO	0.86	0.57	0.29	0.50	0.57		7	7
TOTAL	1.72	0.76	0.96	0.25	3.83	**	19	19

Telephone service at cc.pp. (%)

	Treated	Controls	ATT	Std Err	t-stat	sign	Treated	Controls
CUSCO	0.08	0.17	-0.1	0.1	-0.60		12	12
LORETO	0.00	0.00	0.0	0.0			7	7
Total	0.05	0.11	-0.1	0.1	-0.60		19	19

Average non-agricultural income at cc.pp. (soles)

	Treated	Controls	ATT	Std Err	t-stat	sign	Treated	Controls
CUSCO	1371.75	86.25	1285.5	586.1	2.19	**	12	12
LORETO	1354.88	1961.75	-606.9	424.5	-1.43		7	7
TOTAL	1365.53	777.22	588.3	401.8	1.46		19	19

Average annual net income of households (soles)

	Treated	Controls	ATT	Std Err	t-stat	sign	Treated	Controls
CUSCO	11822.20	5177.66	6644.5	2360.4	2.82	**	12	12
LORETO	4861.95	6519.89	-1658.0	1528.9	-1.08	**	7	7
TOTAL	9257.89	5672.16	3585.7	1593.6	2.25	**	19	19

Weekly hours of study by students at home

	Treated	Controls	ATT	Std Err	t-stat	sign	Treated	Controls
CUSCO	8.76	8.10	0.7	0.9	0.72		12	12
LORETO	5.99	5.02	1.0	0.5	1.80	*	7	7
Total	7.74	6.97	0.8	0.6	1.27		19	19

Rental value of house (soles)

	Treated	Controls	ATT	Std Err	t-stat	sign	Treated	Controls
CUSCO	43.89	24.78	19.1	14.2	1.35		12	12
LORETO	47.60	66.32	-18.7	14.6	-1.29		7	7
TOTAL	45.25	40.08	5.2	10.5	0.49		19	19

Selling value of house (soles)

	Treated	Controls	ATT	Std Err	t-stat	sign	Treated	Controls
CUSCO	4587.46	2537.86	2049.6	1044.3	1.96	**	10	10
LORETO	1839.42	528.80	1310.6	1134.5	1.16		7	7
TOTAL	3455.91	1710.60	1745.3	771.7	2.26	**	17	17

A.4.4. Electricity Projects (household level)

Household has a family business

	Treated	Control	ATT	Std Err	t-stat	sign	used obs
Cusco	0.35	0.11	0.24	0.07	3.39	**	158
Loreto	0.58	0.48	0.09	0.17	0.53		66
Total	0.42	0.22	0.20	0.04	5.55	**	336

Number of electric appliances

	Treated	Control	ATT	Std Err	t-stat	sign	used obs
Cusco	1.80	0.37	1.43	0.18	8.14	**	158
Loreto	0.03	0.12	-0.09	0.09	-0.98		66
Total	1.28	0.29	0.98	0.06	15.48	**	336

Non-agricultural income

	Treated	Control	ATT	Std Err	t-stat	sign	used obs
Cusco	1238.38	106.58	1131.80	550.17	2.06	**	158
Loreto	1454.70	7239.27	-5784.58	3996.08	-1.45		66
Total	1302.12	2208.18	-906.06	619.86	-1.46		336

Total income

	Treated	Control	ATT	Std Err	t-stat	sign	used obs
Cusco	11061.20	7555.51	3505.73	2603.90	1.35		158
Loreto	4028.36	13315.80	-9287.42	4649.45	-2.00		66
Total	8989.06	9252.74	-263.68	1145.65	-0.23		336

Weekly hours to study at home

	Treated	Control	ATT	Std Err	t-stat	sign	used obs

Cusco	8.57	7.20	1.37	0.88	1.55		134
Loreto	6.24	6.30	-0.06	1.00	-0.06		28
Total	8.17	7.04	1.12	0.38	2.99	**	243

Rental value of house

	Treated	Control	ATT	Std Err	t-stat	sign	used obs
Cusco	46.20	96.70	-50.50	45.08	-1.12		78
Loreto	43.33	45.33	-2.00	11.84	-0.17		30
Total	45.42	82.69	-37.27	15.95	-2.34	**	163

Selling value of house

	Treated	Control	ATT	Std Err	t-stat	sign	used obs
Cusco	4827.10	2950.00	1877.10	1008.83	1.86	*	57
Loreto	556.67	435.00	121.67	238.17	0.51		60
Total	2655.70	1671.19	984.51	249.03	3.95	**	176

A.4.5. Transportation projects (community level)

Non-agricultural income

	Treated	Controls	ATT	Std Err	t-stat	sign	Treated	Controls
AMAZONAS	1026.9	471.3	555.5	667.2	0.83		13	11
CAJAMARCA	362.5	201.2	161.3	175.7	0.92		7	7
CUSCO	534.6	246.1	288.4	298.6	0.97		11	11
LORETO	1183.0	1149.3	33.7	884.1	0.04		5	2
TOTAL	768.9	444.1	324.8	287.4	1.13		36	31

Income from wage job

	Treated	Controls	ATT	Std Err	t-stat	sign	Treated	Controls
AMAZONAS	1693.3	1028.0	665.2	362.9	1.83	*	13	11
CAJAMARCA	1260.5	689.2	571.2	442.7	1.29		7	7
CUSCO	1402.2	1500.1	-98.0	1071.3	-0.09		11	11
LORETO	1340.5	984.0	356.5	963.7	0.37		5	2
TOTAL	1471.2	1100.3	370.9	386.9	0.96		36	31

Total net income

	Treated	Controls	ATT	Std Err	t-stat	sign	Treated	Controls
AMAZONAS	8389.3	7208.3	1181.1	1790.4	0.66		13	11

CAJAMARCA	3394.2	4263.6	-869.5	1142.5	-0.76		7	7
CUSCO	4808.1	5233.2	-425.1	1583.8	-0.27		11	11
LORETO	6896.4	4158.9	2737.5	1346.4	2.03	**	5	2
TOTAL	6116.4	5608.7	507.7	858.2	0.59		36	31

Price of hectare of land with irrigation cc.pp.

	Treated	Controls	ATT	Std Err	t-stat	sign	Treated	Controls
AMAZONAS	4115.6	3083.0	1032.6	2714.4	0.38		8	6
CAJAMARCA	2648.0	3316.3	-668.3	3346.2	-0.20		6	5
CUSCO	9000.0	3757.1	5242.9	4117.6	1.27		7	5
TOTAL	5324.4	3374.4	1950.1	1966.5	0.99		21	16

Price of hectare of non-irrigated land in cc.pp

	Treated	Controls	ATT	Std Err	t-stat	sign	Treated	Controls
AMAZONAS	3227.9	2663.6	564.3	1378.9	0.41			
CAJAMARCA	10214.3	5386.1	4828.1	4580.4	1.05			
CUSCO	4525.0	1222.5	3302.5	1712.4	1.93	*		
LORETO	670.0	150.0	520.0	.				
TOTAL								

Price of hectare of pasture in cc.pp.

	Treated	Controls	ATT	Std Err	t-stat	sign	Treated	Controls
AMAZONAS	4206.2	2981.8	1224.4	1557.1	0.79		11	10
CAJAMARCA	22840.0	10061.2	12778.8	10685.7	1.20		5	5
CUSCO	5962.5	1937.5	4025.0	3784.1	1.06		8	6
TOTAL	8673.7	4108.6	4565.1	2656.4	1.72	*	24	21

Rental value of house

	Treated	Controls	ATT	Std Err	t-stat	sign	Treated	Controls
AMAZONAS	37.7	31.2	6.4	7.0	0.91		11	10
CAJAMARCA	26.4	21.1	5.3	4.5	1.17		6	6
CUSCO	18.9	78.5	-59.6	42.1	-1.42		10	6
LORETO	68.7	79.3	-10.7	16.5	-0.64		5	2
Total	34.5	51.6	-17.1	13.6	-1.25		32	24

Selling value of house

	Treated	Controls	ATT	Std Err	t-stat	sign	Treated	Controls
AMAZONAS	3477.5	2913.9	563.5	908.4	0.62		12	11
CAJAMARCA	3514.1	2254.2	1259.9	1037.1	1.21		6	6
CUSCO	1302.7	1638.7	-336.0	507.1	-0.66		9	5

LORETO	423.4	341.3	82.1	68.4	1.20		5	2
TOTAL	2395.5	2029.6	365.9	417.5	0.88		32	24

School enrollment

	Treated	Controls	ATT	Std Err	t-stat	sign	Treated	Controls
AMAZONAS	89.2%	86.3%	2.9%	4.8%	0.60		13	11
CAJAMARCA	84.0%	82.1%	1.9%	8.9%	0.21		7	7
CUSCO	90.3%	89.1%	1.2%	7.3%	0.16		11	11
LORETO	85.9%	96.8%	-10.9%	9.7%	-1.12		5	2
TOTAL	88.1%	87.8%	0.2%	3.6%	0.07		36	31

Average days with no school attendance last month

	Treated	Controls	ATT	Std Err	t-stat	sign	Treated	Controls
AMAZONAS	0.54	1.20	-0.7	0.8	-0.87		13	11
CAJAMARCA	0.68	0.81	-0.1	0.3	-0.41		7	7
CUSCO	0.66	0.71	-0.1	0.3	-0.18		11	11
LORETO	4.13	4.74	-0.6	2.6	-0.23		5	2
TOTAL	1.10	1.47	-0.4	0.5	-0.78		36	31

Average days with no school attendance last three months

	Treated	Controls	ATT	Std Err	t-stat	sign	Treated	Controls
AMAZONAS	1.00	1.85	-0.9	0.9	-0.93		13	11
CAJAMARCA	1.34	1.76	-0.4	0.7	-0.57		7	7
CUSCO	1.44	1.44	0.0	0.4	-0.01		11	11
LORETO	6.31	11.80	-5.5	6.6	-0.83		5	2
TOTAL	1.94	3.09	-1.2	1.0	-1.16		36	31

A.4.6. Transportation projects (household level)

Number of weeks working out of farm

	Treated	Control	ATT	Std Err	t-stat	sign	used obs
Amazonas	12.93	8.25	4.68	1.67	2.81	**	144
Cajamarca	10.09	5.16	4.93	2.24	2.19	**	88
Cusco	9.16	7.80	1.36	1.98	0.68		152
Loreto	4.90	3.60	1.30	6.31	0.21		20
Total	10.49	7.18	3.32	0.56	5.94		606

Non-agricultural income

	Treated	Control	ATT	Std Err	t-stat	sign	used obs
Amazonas	963.50	1466.81	-503.31	661.64	-0.76		144
Cajamarca	293.18	141.59	151.59	122.16	1.24		88
Cusco	590.07	293.71	296.36	314.19	0.94		152
Loreto	621.00	883.10	-262.10	489.59	-0.54		20
Total	660.03	707.89	-47.85	133.12	-0.36		606

Income from wage job

	Treated	Control	ATT	Std Err	t-stat	sign	used obs
Amazonas	1667.44	789.89	877.56	341.21	2.57	**	144
Cajamarca	1236.32	601.89	634.43	363.89	1.74	*	88
Cusco	943.42	572.49	370.93	226.91	1.63		152
Loreto	1670.00	436.80	1233.20	1747.30	0.71		20
Total	1301.26	649.66	651.59	94.66	6.88	**	606

Total net income

	Treated	Control	ATT	Std Err	t-stat	sign	used obs
Amazonas	9213.47	7609.06	1604.41	2018.54	0.79		144
Cajamarca	2479.29	3861.54	-1382.25	954.18	-1.45		88
Cusco	4785.36	4363.07	422.29	1086.53	0.39		152
Loreto	6991.42	4557.30	2434.12	2185.49	1.11		20
Total	5970.60	5420.43	550.17	430.02	1.28		606

Rental value of house

	Treated	Control	ATT	Std Err	t-stat	sign	used obs
Amazonas	37.51	40.95	-3.43	19.73	-0.17		74
Cajamarca	26.94	20.00	6.94	5.74	1.21		34
Cusco	23.68	212.90	-189.21	77.12	-2.45	**	37
Loreto	135.71	48.57	87.14	52.56	1.66		14
Total	40.41	77.28	-36.88	10.15	-3.63	**	240

Selling value of house

	Treated	Control	ATT	Std Err	t-stat	sign	used obs
Amazonas	3266.67	3466.74	-200.07	663.54	-0.30		114
Cajamarca	3848.28	3227.59	620.69	880.72	0.70		58
Cusco	1654.55	1675.09	-20.55	1495.88	-0.01		18
Loreto	522.22	200.00	322.22	121.29	2.66	**	18
Total	3025.47	2938.02	87.45	225.18	0.39		314

School enrollment

	Treated	Control	ATT	Std Err	t-stat	sign	used obs
Amazonas	0.96	0.89	0.07	0.04	1.73	*	80
Cajamarca	0.94	0.97	-0.03	0.03	-0.88		72
Cusco	0.95	0.97	-0.02	0.03	-0.63		78
Loreto	0.86	0.95	-0.10	0.11	-0.85		14
Total	0.95	0.94	0.00	0.01	0.32		366

Average days with no school attendance last month

	Treated	Control	ATT	Std Err	t-stat	sign	used obs
Amazonas	0.65	2.60	-1.96	0.79	-2.47	**	92
Cajamarca	0.86	0.86	0.00	0.43	-0.01		64
Cusco	0.81	0.63	0.18	0.31	0.59		96
Loreto	1.21	1.96	-0.75	1.02	-0.74		16
Total	0.79	1.44	-0.65	0.16	-4.13	**	402

Average days with no school attendance last three months

	Treated	Control	ATT	Std Err	t-stat	sign	used obs
Amazonas	1.29	3.11	-1.82	0.89	-2.05	**	92
Cajamarca	1.46	2.31	-0.85	0.97	-0.87		64
Cusco	1.37	1.59	-0.22	0.46	-0.47		96
Loreto	2.10	2.58	-0.48	1.62	-0.30		16
Total	1.41	2.34	-0.93	0.21	-4.36	**	402

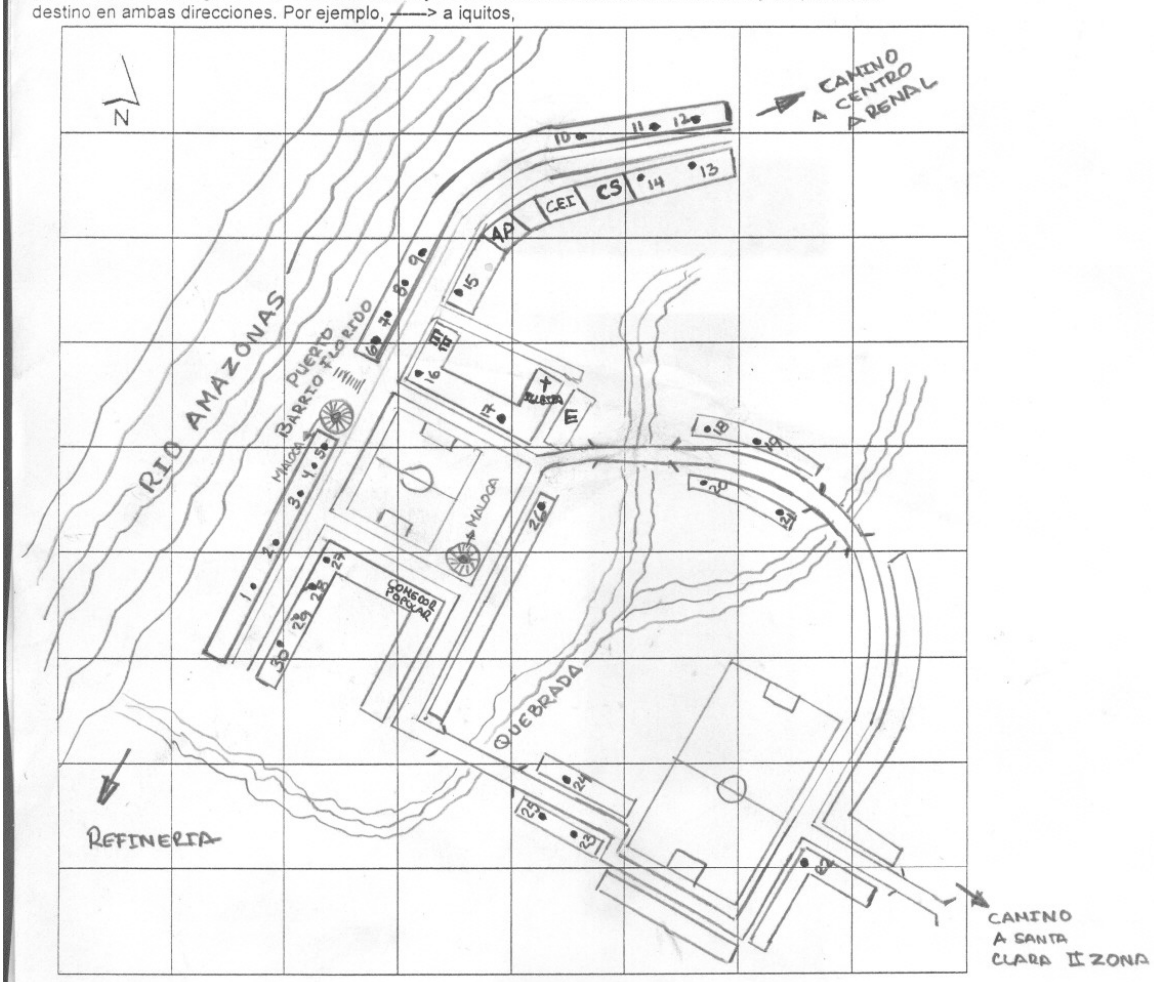
Annex 5 : Drawings used for selecting households at community level

Croquis de Ubicación de los Lugares Claves y las Viviendas Encuestadas

Elaborar un coquir detallado de los lugares claves de la localidad, ubicando las principales locaciones detalladas en el listado y los viviendas encuestadas (Usar la leyenda del listado)

Nota1: Se debe ubicar en primer lugar el Norte y alinearlo con la dirección indicada en el croquis para ese punto cardinal.

Nota2: La referencia generales como carreteras y rios deben tener indicados sus nombre y los puntos de destino en ambas direcciones. Por ejemplo, ------> a iquitos,



Listas Lugares Claves CCPP

Generador de energía eléctrica	EE
Obra de agua potable	AP
Puesto o centro de salud	CS
Local mercado	M
Local teléfono público	T
Local correo	CR
Local comisaría	C
Local comunitario o club	LC
Campos deportivos	CD
Carreteras	C
Pistas, camino	PC
Veredas	V

Puentes	P
Local asamblea comunal	AC
Gobernación	G
Local del municipio	LM
Prefectura	Pr
La escuela	E
Bosques	B
Rio	R
Otros 1(esp.)	O1
Otros 2(esp.)	O2
Otros 3(esp.)	O3

Croquis de Ubicación de los Lugares Claves y las Vivendas Encuestadas

Elaborar un coquir detallado de los lugares claves de la localidad, ubicando las principales locaciones detalladas en el listado y los viviendas encuestadas (Usar la leyenda del listado)

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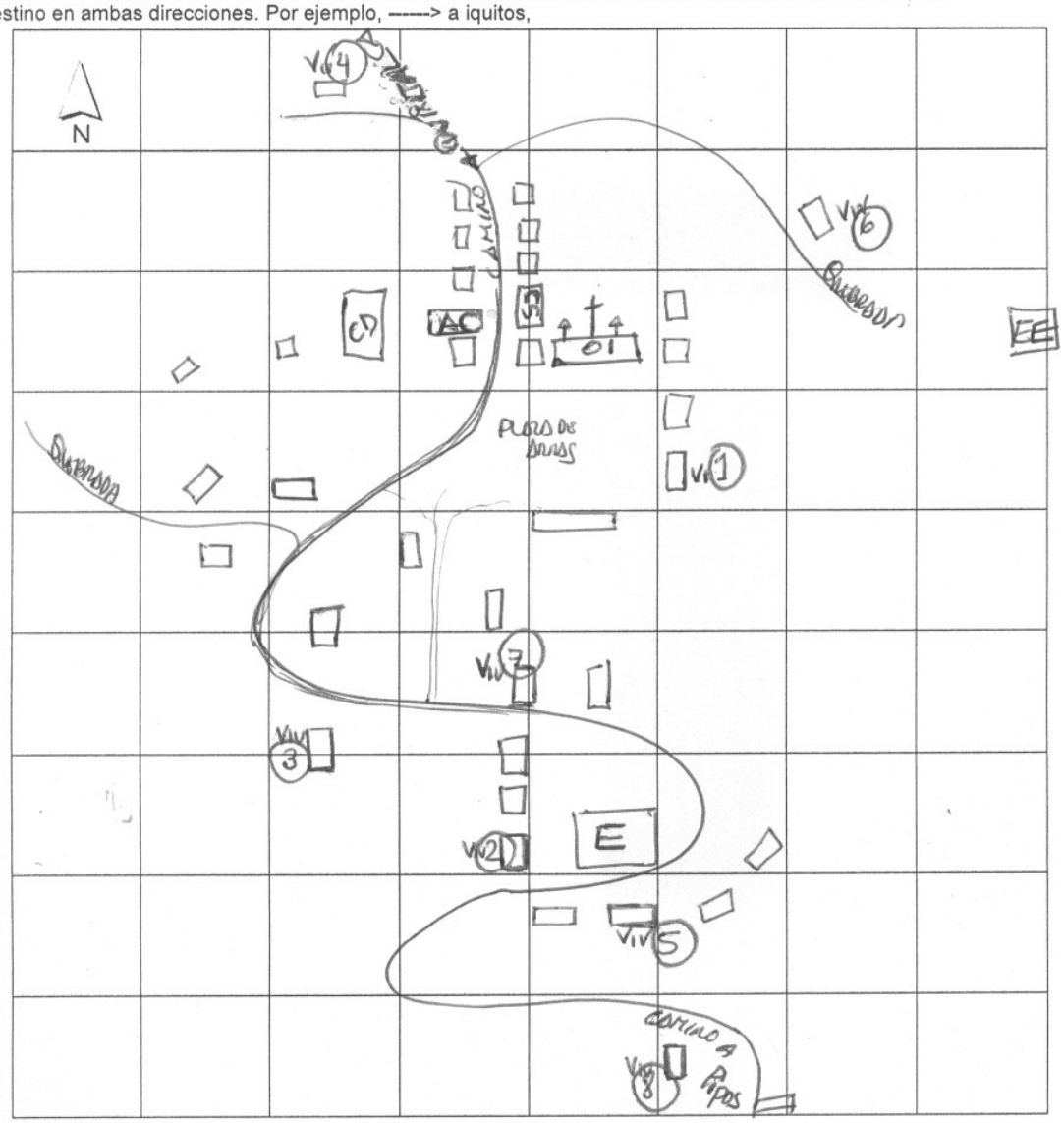

Listas Lugares Claves CCPP

Generador de energía eléctrica	EE
Obra de agua potable	AP
Puesto o centro de salud	CS
Local mercado	M
Local teléfono público	T
Local correo	CR
Local comisaría	C
Local comunitario o club	LC
Campos deportivos	CD
Carreteras	C
Pistas, camino	PC
Veredas	V
Puentes	P
Local asamblea comunal	AC
Gobernación	G
Local del municipio	LM
Prefectura	Pr
La escuela	E
Bosques	B
Rio	R
Otros 1(esp.) IGLESIA CATOLICA	O1
Otros 2(esp.)	O2
Otros 3(esp.)	O3

Croquis de Ubicación de los Lugares Claves y las Viviendas Encuestadas

Elaborar un coquir detallado de los lugares claves de la localidad, ubicando las principales locaciones detalladas en el listado y los viviendas encuestadas (Usar la leyenda del listado)

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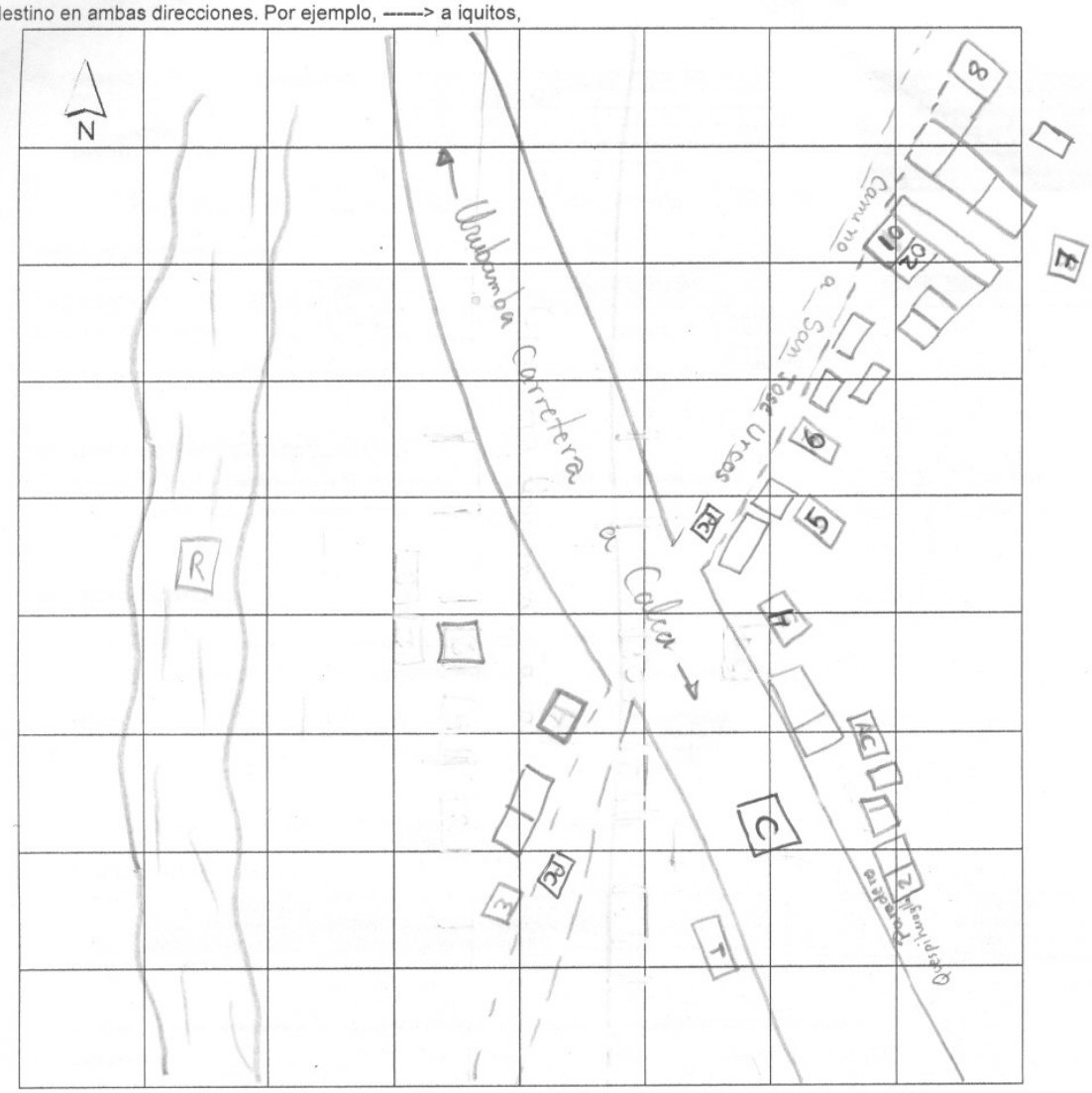
Nota2: La referencia generales como carreteras y rios deben tener indicados sus nombre y los puntos de destino en ambas direcciones. Por ejemplo, ------> a iquitos,



Listas Lugares Claves CCPP

Generador de energía eléctrica	EE	Puentes	P
Obra de agua potable	AP	Local asamblea comunal	AC
Puesto o centro de salud	CS	Gobernación	G
Local mercado	M	Local del municipio	LM
Local teléfono público	T	Prefectura	Pr
Local correo	CR	La escuela	E
Local comisaría	C	Bosques	B
Local comunitario o club	LC	Rio	R
Campos deportivos	CD	Otros 1(esp.) Capilla	O1
Carreteras	C	Otros 2(esp.) PRONAFI	O2
Pistas, camino	PC	Otros 3(esp.)	O3
Veredas	V		

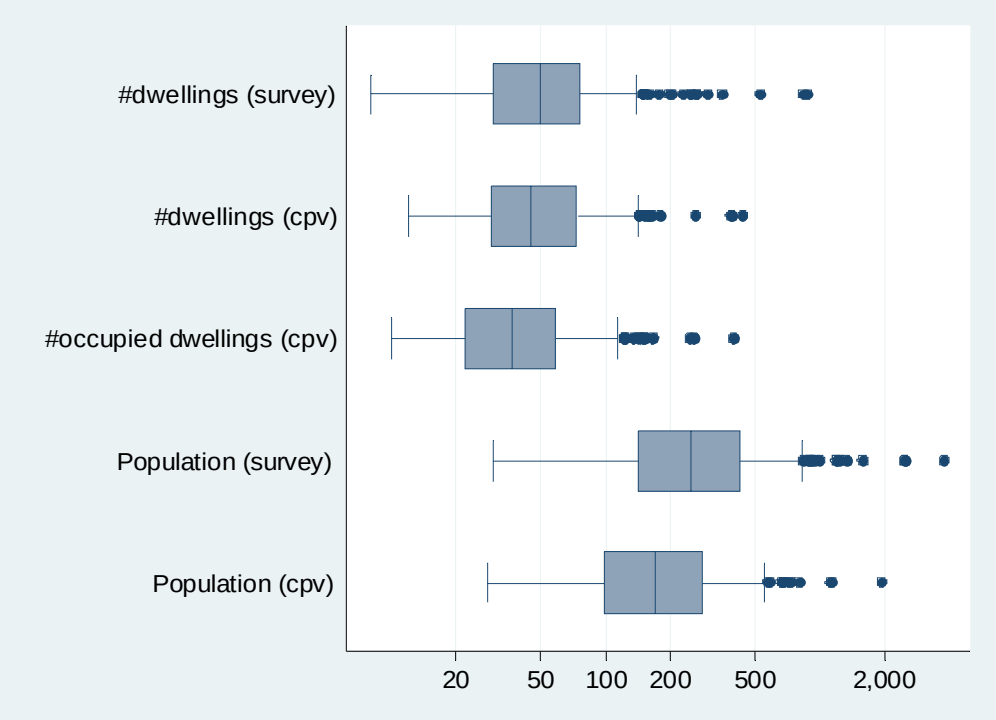
Annex 6: Assessment of the sample of communities

In order to assess the representativeness of our intra-community sample with respect to the community, we use data provided at the community and individual level by the 2005 Censo Nacional de Población y Vivienda (housing and population census, hereafter CPV). Note that this data was unavailable at the moment of defining the sample. We will compare community-level dimension data obtained from the community survey, community-level public service access and demographics data obtained from the household survey with the corresponding variables in CPV. Note that CPV was conducted under a novel methodology that has been heavily criticized, especially for its probable under-coverage.

Community-level data

Both population and housing data as given in the community survey – by a qualified informant – are, in distribution, slightly above the CPV results, although not in a significant way, as can be seen from **Figure A.6.1**.

Figure A.6.1: Distribution of main dimension variables for the sampled communities



The boxplots depict distributions of (from top to bottom) the number of occupied dwellings according to the survey, total number of dwellings in CPV, occupied dwellings in CPV, population according to the community survey and population according to CPV. The x-axis is logarithmic. Occupied houses in CPV were estimated equal to houses having responded the lighting source question. Since population has only been observed for occupied houses, it seems natural that CPV population be below the qualified informant's opinion.

At the community level, we can assess the data collected for public services: water and electricity. Given the complexity of all the different roads & bridges interventions, we don't have even a proxy variable to use in order to assess the intra-community samples relevance.

Service availability is strongly correlated between our survey results and census data, although in our sample electricity availability is slightly higher and water availability is slightly lower. We calculated for each community the fraction of the population having access to electricity as a source of lighting, water at a private tap and piped water from a public network (including private and public taps and untapped but piped public sources). The (statistically significant) correlation coefficients between community-level CPV-based and survey-reported data are shown in **Table A.6.1**.

Table A.6.1.: Correspondence of community-level access to public services

Correlation Coefficient CPV vs Survey	
Electricity	0.74
Private tap from public network	0.67
Piped water	0.58

Source: Household Survey, CPV

Demographics over the whole sample

We studied five main demographic aspects, available in both CPV and the household survey: gender, size, age, literacy and schooling. For the latter three, we compared several indicators.

The sample as a whole over-represents young children (in sierra), literacy rate and schooling with respect to the CPV results for the surveyed communities. Gender is distributed correctly along census data.

Detailing this difference by departamento gives the following results (**Table A.6.2**): gender distribution is hardly distinguishable between sample and census anywhere. For age distribution, only three departamentos do provide an indistinguishable distribution viz. census data. Different indicators for literacy give quite different results. Only for Ancash there is no indicator providing indistinguishableness. Schooling indicators were found to be always statistically different for sample and CPV. Indeed, our sample seems to privilege higher education households within the surveyed communities.

Table A.6.2. *p*-values for distribution comparison (Wilcoxon rank tests) between sample and census data for surveyed communities, by departamento

	Amazonas	*Ancash*	*Cajamarca*	*Cusco*	*Loreto*	*Madre de Dios*	*Puno*
Gender	0.0210	0.7631	0.9272	0.8098	0.0972	0.0222	0.5277
HH size	0.1869	0.9879	0.0002	0.6236	0.0003	0.0200	0.0001
Age	0.0025	0.4619	0.0000	0.0000	0.4448	0.1665	0.0000
Under 18yo	0.0310	0.8997	0.0000	0.0249	0.0250	0.3950	0.0000
Under 10yo	0.1260	0.3049	0.0000	0.0025	0.0162	0.4871	0.0032
Literacy	0.0000	0.0000	0.0000	0.0000	0.0000	0.0498	0.0394
Adult literacy	0.1614	0.0001	0.0117	0.7776	0.0000	0.0085	0.0612
Literacy over 10yo	0.1177	0.0001	0.0005	0.7212	0.0012	0.0346	0.0006
Women literacy	0.0001	0.0144	0.0000	0.0322	0.6741	0.0949	0.0007
Adult male literacy	0.1793	0.0028	0.6501	0.0749	0.0000	0.0028	0.3273
Schooling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
HH head schooling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Highest HH schooling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Women schooling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

Source: Household survey, CPV

Looking into more detail, the apparent difference between sierra and selva is indeed important. In **Table A.6.3**, we try to find important differences in distribution between census and sample data among both treatment and control groups.

As can be seen from these results, sex/gender is indistinguishable from sample to census in both the treatment and control groups (two leftmost columns). Furthermore, all of gender, age and literacy are not significantly different on any indicator between sample and census in centros poblados below 1000m of altitude, corresponding actually to Selva.

However, the distributions of all variables are similar between our control and treatment groups, therefore comforting the matching methodology, except in the case of literacy rate in Sierra (the only relevant indicator is adult male literacy). Census data is similarly distributed between our treatment and control groups, except once again for schooling and literacy rate, especially in Sierra. In Selva we have the most optimistic picture, having non-representativeness for schooling indicators but some level of agreement in at least one indicator for the other aspects, and good overall comparability between treatment and control, both in CPV and survey data.

Table A.6.3.: *p*-values for distribution comparisons between sample and CPV over Treated and Control communities

	Sample vs CPV		*Ttm vs ctl*	
Overall	***Ttm***	***Ctl***	***Cpv***	***Sample***
Gender	0.1710	0.2589	0.5224	0.6785
HH size	0.0210	0.6053	0.0046	0.0807
Age	0.0000	0.0000	0.0001	0.3202
Under 18yo	0.0000	0.4019	0.0001	0.1053
Under 10yo	0.0003	0.2454	0.0149	0.0572
Literacy	0.0000	0.0000	0.3206	0.8022
Adult literacy	0.4650	0.7118	0.4068	0.8620
Literacy over 10yo	0.0451	0.8388	0.0306	0.6762
Women literacy	0.0000	0.0303	0.2158	0.1018
Adult male literacy	0.0038	0.2884	0.8264	0.1397
Schooling	0.0000	0.0000	0.4026	0.1977
HH head schooling	0.0000	0.0000	0.8948	0.4938
Highest HH schooling	0.0000	0.0000	0.3747	0.2976
Women schooling	0.0000	0.0000	0.6976	0.6936
	Sample vs CPV		*Ttm vs ctl*	
Above 1000m	***Ttm***	***Ctl***	***Cpv***	***Sample***
Gender	0.3386	0.6601	0.9905	0.7193
HH size	0.0003	0.2238	0.4814	0.0303
Age	0.0000	0.0000	0.8114	0.7249
Under 18yo	0.0000	0.0165	0.7389	0.0352
Under 10yo	0.0000	0.0062	0.7060	0.3078
Literacy	0.0000	0.0000	0.0000	0.0000
Adult literacy	0.0883	0.0045	0.0000	0.0023
Literacy over 10yo	0.0010	0.0148	0.0000	0.0007
Women literacy	0.0000	0.0002	0.0000	0.0002
Adult male literacy	0.0516	0.0748	0.0000	0.9856
Schooling	0.0000	0.0000	0.0000	0.0247
HH head schooling	0.0000	0.0000	0.0390	0.1390
Highest HH schooling	0.0000	0.0000	0.0000	0.0000
Women schooling	0.0000	0.0000	0.0000	0.0583
	Sample vs CPV		*Ttm vs ctl*	
Below 1000m	***Ttm***	***Ctl***	***Cpv***	***Sample***
Gender	0.1212	0.2875	0.0363	0.6204
HH size	0.0742	0.0475	0.5855	0.9442
Age	0.3050	0.5284	0.8295	0.3693
Under 18yo	0.2245	0.2802	0.9870	0.9829
Under 10yo	0.2852	0.3241	0.0977	0.1892
Literacy	0.1480	0.6402	0.1920	0.0177
Adult literacy	0.0102	0.0011	0.2734	0.3237
Literacy over 10yo	0.0246	0.0497	0.0484	0.0527
Women literacy	0.8682	0.6309	0.0398	0.3010
Adult male literacy	0.0027	0.0005	0.6514	0.3301
Schooling	0.0000	0.0000	0.0001	0.2283
HH head schooling	0.0000	0.0000	0.6696	0.5684
Highest HH schooling	0.0000	0.0000	0.0002	0.2349
Women schooling	0.0000	0.0000	0.0215	0.5539

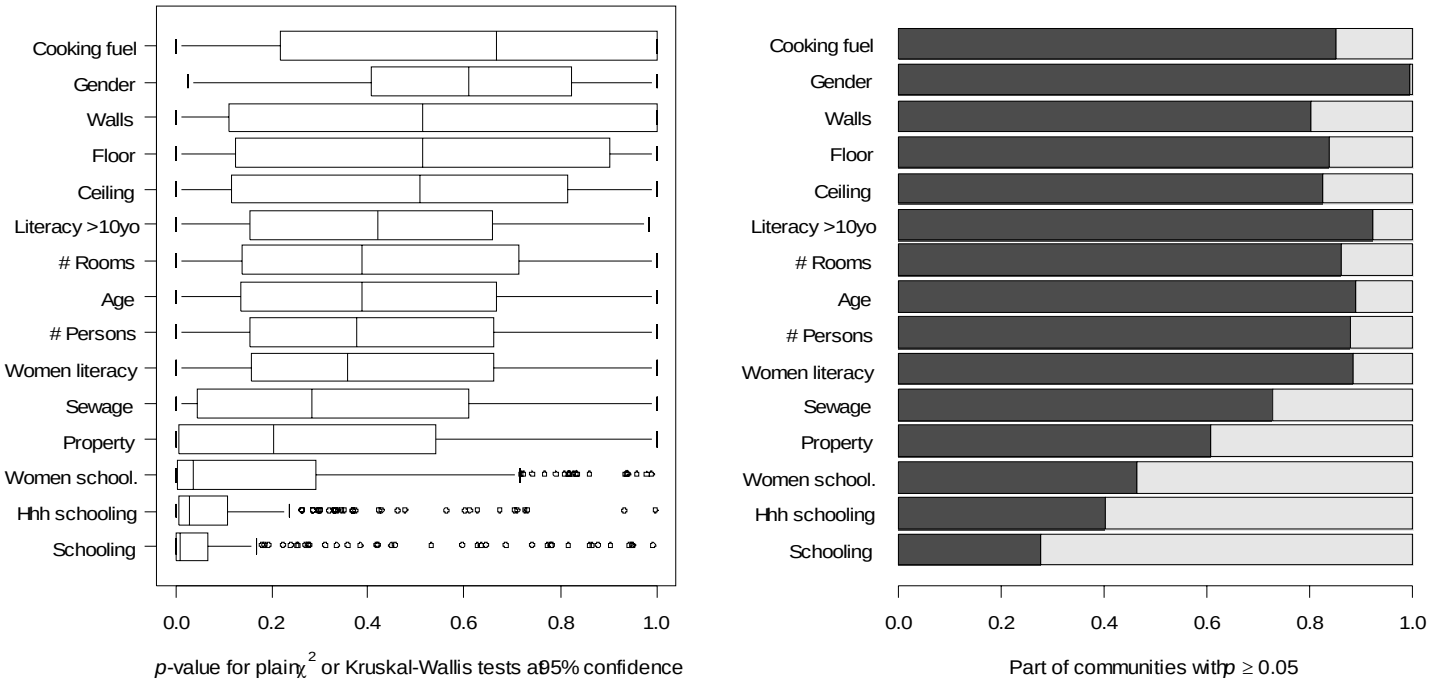
Source: Household survey, CPV, INEI, NASA

Intra-community sample representativeness

So far we have assessed the proximity of the sample to the universe (according to CPV) in the sampled communities. Whenever we found indistinguishableness, it was of the surveyed households with respect to all the households of all the surveyed communities. If we wish to push further into representativeness, we must follow the sampling design and assess each intra-community sample with respect to the community, always according to the CPV data.

We used both housing and demographic variables to assess correspondence of our sample viz. CPV. We used χ^2 tests for categorical variables and Kruskal-Wallis tests for ordered and numerical variables. Variables were selected for housing as all those that were common to CPV and our survey. The categories had been defined in the questionnaire design phase to be as compatible as possible with CPV. A recategorization was performed to enforce full compatibility between categorical and ordinal variables. Tests were conducted for each variable and each community. The results are reported in **Figure A.6.2** as distributions of p-values from the previous tests.

Figure A.6.2. Distribution of community-level *p*-values for housing and demographic comparisons between CPV and sample



Left: boxplots for intra-community distribution of CPV vs. sample p-value over all communities for selected housing and demographic variables; right: proportion of p-values above 5%, giving at 95% confidence indistinguishableness between intra-community sample and census data. Sources: Household survey, CPV.

Housing variables seem to be generally representative within the sampled communities, with the possible exception of property status. We seem to have surveyed more houses on loan than the corresponding CPV data states. Demographics are often representative for gender,

age, household size and literacy indicators. Schooling, however, is representative for only 28% to 45% of the surveyed communities, depending on the indicator. Indeed, CPV and survey give very different distributions even for broad categories of schooling level and only grown-up population, as shown in **Table A.6.4**. As for finer categories also, CPV shows a much larger part of the population as uneducated or below primary school; the sample surveyed within each community is more educated overall.

Table A.6.4: Distribution (in %) of schooling broadest categories for individuals beyond 10yo

	CPV	***Sample***
Below primary	35.4	0.3
Primary	62.8	68.2
Secondary or above	1.8	31.6

Source: household survey, CPV