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The World Bank

Report No: ICR00003098

IMPLEMENTATION COMPLETION AND RESULTS REPORT
(IBRD-74230)

ON A

LOAN

IN THE AMOUNT OF US\$ 50.0 MILLION

TO THE

REPUBLIC OF PERU

FOR A

DECENTRALIZED RURAL TRANSPORT PROJECT

February 27, 2014

Sustainable Development Department
Bolivia, Chile, Ecuador, Peru and the Bolivarian Republic of Venezuela
Latin America and the Caribbean Region

CURRENCY EQUIVALENTS

(Exchange Rate Effective June 2, 2014)

Currency Unit = Peruvian Nuevo Sol

2.78 PEN = US\$1

FISCAL YEAR

January 1 – December 31

ABBREVIATIONS AND ACRONYMS

AADT	Average Annual Daily Traffic	MEF	Ministry of Economy and Finance
		WB	World Bank
CBA	Cost Benefit Analysis	MIDIS	<i>Ministerio de Desarrollo e Inclusión Social</i> (Ministry of Development and Social Inclusion)
CEA	Cost Effectiveness Analysis	MTC	<i>Ministerio de Transporte y Comunicaciones</i> (Ministry of Transport and Communications)
		NGO	Non-Governmental Organization
DRTP	Decentralized Rural Transport Project	NMT	Non-Motorized Transport
ERR	Economic Rate of Return	NPV	Net Present Value
FONIE	<i>Fondo Para la Inclusión Económica de Zonas Rurales</i> (Fund for the Economic Inclusion of Rural Zones)	OM	Operations Manual
FRRP	First Rural Roads Project	PAD	Project Appraisal Document
		PDO	Project Development Objective
		PPRP	Participatory Provincial Road Plan
GIS	Geographic Information System	PRI	Provincial Road Institute
GoP	Government of Peru	PSM	Propensity Score Matching
IDB	Inter-American Development Bank	RED	Road Economic Decision (model)
		RIP	Rural Infrastructure Plan
LDW	Local Development Window	SRRP	Second Rural Roads Project

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PERU

Decentralized Rural Transport Project

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A. Basic Information			
Country:	Peru	Project Name:	Peru Decentralized Rural Transport Project
Project ID:	P095570	L/C/TF Number(s):	IBRD-74230
ICR Date:	06/24/2014	ICR Type:	Core ICR
Lending Instrument:	SIL	Borrower:	GOVERNMENT OF PERU
Original Commitment:	Total USD 50.00M	Disbursed Amount:	USD 49.95M
Revised Amount:	USD 50.00M		
Environmental Category: B			
Implementing Agencies: PROVIAS Descentralizado			
Cofinanciers and Other External Partners: IDB - Inter-American Development Bank			

B. Key Dates				
Process	Date	Process	Original Date	Revised / Actual Date(s)
Concept Review:	04/11/2006	Effectiveness:	07/12/2007	07/12/2007
Appraisal:	09/11/2006	Restructuring(s):		07/23/2010 03/23/2012 03/26/2013 12/30/2013
Approval:	12/19/2006	Mid-term Review:	10/01/2010	09/14/2010
		Closing:	03/31/2012	12/31/2013

C. Ratings Summary	
C.1 Performance Rating by ICR	
Outcomes:	Highly Satisfactory
Risk to Development Outcome:	Moderate
Bank Performance:	Satisfactory
Borrower Performance:	Satisfactory

C.2 Detailed Ratings of Bank and Borrower Performance (by ICR)			
Bank	Ratings	Borrower	Ratings
Quality at Entry:	Satisfactory	Government:	Satisfactory
Quality of Supervision:	Satisfactory	Implementing Agency/Agencies:	Satisfactory
Overall Bank Performance:	Satisfactory	Overall Borrower Performance:	Satisfactory

C.3 Quality at Entry and Implementation Performance Indicators			
Implementation Performance	Indicators	QAG Assessments (if any)	Rating
Potential Problem Project at any time (Yes/No):	No	Quality at Entry (QEA):	None
Problem Project at any time (Yes/No):	No	Quality of Supervision (QSA):	None
DO rating before Closing/Inactive status:	Satisfactory		

D. Sector and Theme Codes		
	Original	Actual
Sector Code (as % of total Bank financing)		
Central government administration	4	4
General transportation sector	1	1
Rural and Inter-Urban Roads and Highways	83	83
Sub-national government administration	12	12
Theme Code (as % of total Bank financing)		
Decentralization	17	17
Legal institutions for a market economy	16	16
Municipal governance and institution building	17	17
Rural non-farm income generation	17	17
Rural services and infrastructure	33	33

E. Bank Staff		
Positions	At ICR	At Approval
Vice President:	Jorge Familiar Calderon	Pamela Cox
Country Director:	Livia M. Benavides	Marcelo Giugale
Sector Manager:	Aurelio Menendez	Jose Luis Irigoyen
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F. Results Framework Analysis

Project Development Objectives (from Project Appraisal Document)

The Project Development Objective was to contribute to territorial development and to the fight against rural poverty in the Borrower's territory by improving access of rural households and

entrepreneurs to goods, social services and income generating opportunities through reduced transport costs and better rural transport infrastructure.

Revised Project Development Objectives (as approved by original approving authority)

(a) PDO Indicator(s)

Indicator	Baseline Value	Original Target Values (from approval documents)	Formally Revised Target Values	Actual Value Achieved at Completion or Target Years
Indicator 1 :	Decreased travel time			
Value quantitative or Qualitative)	0	-20%		24.2% decrease in travel to schools and 26.2% decrease in travel to agricultural point of sale
Date achieved	11/15/2006	04/16/2007		12/31/2013
Comments (incl. % achievement)	Exceeded. Target was exceeded for students' travel to schools and farmers' travel to point of sale for agricultural products, relative to the counterfactual scenario. These reductions represent 5.6 minutes for students and 26.3 minutes for farmers.			
Indicator 2 :	Decreased transport cost			
Value quantitative or Qualitative)	0	-5%		Mixed results
Date achieved	11/15/2006	04/16/2007		12/31/2013
Comments (incl. % achievement)	The Impact Evaluation did not provide conclusive evidence on changes in transportation costs. M&E only measured trip fares, which result from supply-demand interactions in transport markets. More precise instruments are required.			
Indicator 3 :	Number of days with road closure			
Value quantitative or Qualitative)	0	-20%		-55.6%
Date achieved	11/15/2006	04/16/2007		12/31/2013
Comments (incl. % achievement)	Exceeded. This target was exceeded relative to the counterfactual. It represents a reduction of road closures by 21.25 days per year.			
Indicator 4 :	Increased number of beneficiaries of the program			
Value quantitative or Qualitative)	0	3.5 million		3.9 million
Date achieved	11/15/2006	04/16/2007		12/31/2013
Comments (incl. % achievement)	Exceeded. Includes 1.2 M direct beneficiaries of road rehabilitations, 0.83 M direct beneficiaries of the NMT track improvements, and 2.45 million indirect beneficiaries (remaining rural population) from scaling-up of sector management countrywide.			

Indicator 5 :	Increased number of school registered children			
Value quantitative or Qualitative)	0	+5%		19.2% increase in children ages 12 to 18 registered in school
Date achieved	11/15/2006	04/16/2007		12/31/2013
Comments (incl. % achievement)	Exceeded for rural road rehabilitation. This indicator was exceeded relative to the counterfactual. No improvement in school attendance was found after NMT track improvements.			
Indicator 6 :	Increased number of health consultations			
Value quantitative or Qualitative)	0	+10%		+17.8% for rural roads rehabilitation and +70% for NMT track improvement
Date achieved	11/15/2006	04/16/2007		12/31/2013
Comments (incl. % achievement)	Exceeded. This indicator was exceeded relative to the counterfactual for rural roads and NMT tracks. Consultations were normalized by number of people reporting illness.			
Indicator 7 :	Number of people having access to at least two basic infrastructure services in provinces where the infrastructure pilot has been implemented			
Value quantitative or Qualitative)	0	+20%		+59.6%
Date achieved	11/15/2006	04/16/2007		12/31/2013
Comments (incl. % achievement)	Exceeded. A survey of people living near road rehabilitations in two provinces of the Rural Infrastructure Pilot showed that the percentage of people with at least two other basic infrastructure services increased from 35.8% in 2006 to 95.4% in 2013.			

(b) Intermediate Outcome Indicator(s)

Indicator	Baseline Value	Original Target Values (from approval documents)	Formally Revised Target Values	Actual Value Achieved at Completion or Target Years
Indicator 1 :	Km of rural roads rehabilitated by the program			
Value (quantitative or Qualitative)	0	3,000	3,358	3,277
Date achieved	11/15/2006	03/31/2012	03/31/2012	12/31/2013
Comments (incl. % achievement)	Revised target substantially achieved (98%).			
Indicator 2 :	Km of rural roads periodically maintained at project standards			
Value (quantitative or Qualitative)	0	11,200	7,506	7,806
Date achieved	11/15/2006	03/31/2012	03/31/2012	12/31/2013

Comments (incl. % achievement)	Revised target exceeded (104%).			
Indicator 3 :	Km of non-motorized tracks rehabilitated by the program			
Value (quantitative or Qualitative)	0	2,650	2,515	2,356
Date achieved	11/15/2006	03/31/2012	03/31/2012	12/31/2013
Comments (incl. % achievement)	Revised target substantially achieved (94%).			
Indicator 4 :	Number of bridges rehabilitated and maintained by the program			
Value (quantitative or Qualitative)	0	50	1	1
Date achieved	11/15/2006	03/31/2012	03/31/2012	12/31/2013
Comments (incl. % achievement)	Revised target achieved. It was met with the rehabilitation of a 44 meter bridge in the Department of Ancash.			
Indicator 5 :	Amount of resources dedicated by municipalities to efficient rural transport activities			
Value (quantitative or Qualitative)	0	USD\$75 million		USD\$250 million
Date achieved	11/15/2006	03/31/2012		12/31/2013
Comments (incl. % achievement)	Exceeded (330 %). Starting in 2007, the Central Government has since assigned US\$140 million for periodic and routine maintenance. In 2011, it assigned an additional US\$109 million for the same activities.			
Indicator 6 :	Number of Provincial Road Institutes fully operational			
Value (quantitative or Qualitative)	0	150		188
Date achieved	11/15/2006	03/31/2012		12/31/2013
Comments (incl. % achievement)	Exceeded (125%). Aside from the two provinces of the capital city, only four provinces were not interested in establishing a Provincial Road Institute.			
Indicator 7 :	Number of Participatory Provincial Road Plans approved			
Value (quantitative or Qualitative)	0	150		188
Date achieved	11/15/2006	03/31/2012		12/31/2013
Comments (incl. % achievement)	Exceeded (125%). Every new Provincial Road Institute worked on the preparation of their Participatory Provincial Road Plan, and those that already had one updated it.			
Indicator 8 :	Number of qualified microenterprises created and delivering quality maintenance			
Value (quantitative or Qualitative)	0	120	134	325

Date achieved	11/15/2006	03/31/2012	03/31/2012	12/31/2013
Comments (incl. % achievement)	Exceeded (270%). At the start of the project (Dec 2006) there were 532 micro-enterprises and by the end there were 857.			
Indicator 9 :	Number of one-year equivalent permanent unskilled jobs created by micro-enterprises			
Value (quantitative or Qualitative)	0	1,400	1,560	3,250
Date achieved	11/15/2006	03/31/2012	03/31/2012	12/31/2013
Comments (incl. % achievement)	Exceeded (230%).			
Indicator 10 :	Number of production activities financed and implemented through the LDW / number of said activities identified and assessed			
Value (quantitative or Qualitative)	0	50/200		46/210
Date achieved	11/15/2006	03/31/2012		12/31/2013
Comments (incl. % achievement)	Target achieved. 46 small business private initiatives were implemented, 52 business plans were financed, and 210 activities were identified and assessed.			
Indicator 11 :	Number of rural infrastructure plans prepared and approved			
Value (quantitative or Qualitative)	0	15		15
Date achieved	11/15/2006	03/31/2012		12/31/2013
Comments (incl. % achievement)	Target achieved.			
Indicator 12 :	Number of provincial infrastructure institutes			
Value (quantitative or Qualitative)	0	15		0
Date achieved	11/15/2006	03/31/2012		12/31/2013
Comments (incl. % achievement)	Not achieved as such. Instead of creating Provincial Infrastructure Institutes, the Borrower prioritized the expansion and strengthening of Provincial Road Institutes and transferred the Rural Infrastructure Pilot concept to another sector.			
Indicator 13 :	Number of provinces where rural infrastructure investments prioritized by rural infrastructure plans have been implemented			
Value (quantitative or Qualitative)	0	15		0
Date achieved	11/15/2006	03/31/2012		12/31/2013
Comments (incl. % achievement)	Not achieved as such. The Government decided to implement the concept of the Rural Infrastructure Pilot through a new MIDIS program called FONIE.			

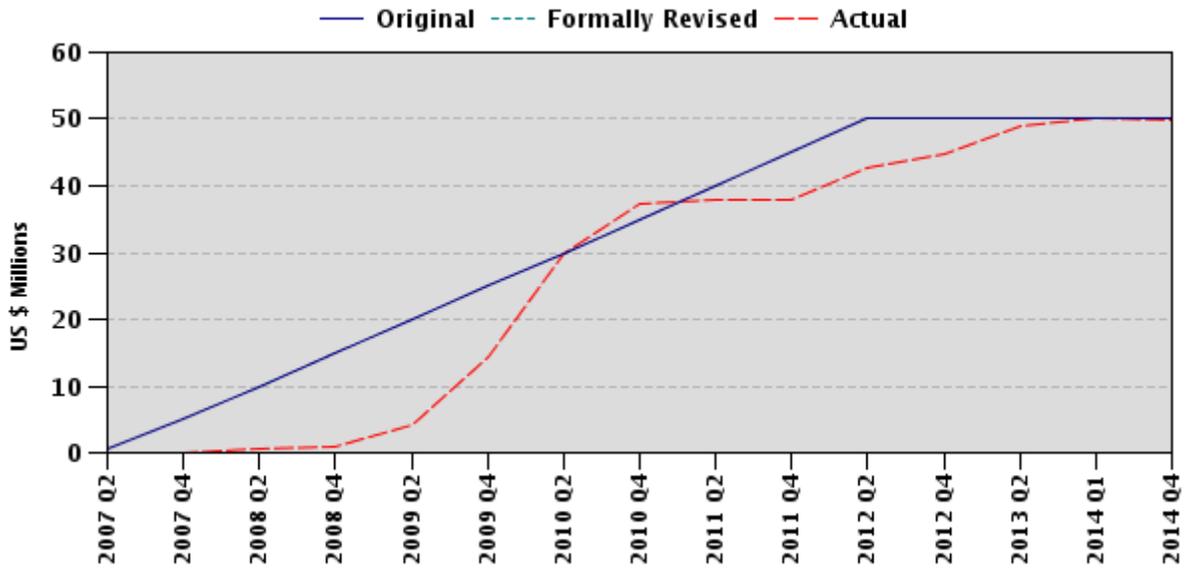
G. Ratings of Project Performance in ISRs

No.	Date ISR Archived	DO	IP	Actual Disbursements (USD millions)
1	01/19/2007	Satisfactory	Satisfactory	0.00
2	09/12/2007	Satisfactory	Satisfactory	0.00
3	12/18/2007	Satisfactory	Satisfactory	0.50
4	06/20/2008	Satisfactory	Satisfactory	0.50
5	12/24/2008	Satisfactory	Satisfactory	4.08
6	04/08/2009	Satisfactory	Satisfactory	8.17
7	11/15/2009	Satisfactory	Moderately Satisfactory	22.16
8	05/15/2010	Moderately Satisfactory	Moderately Satisfactory	34.30
9	02/14/2011	Satisfactory	Satisfactory	37.80
10	08/02/2011	Satisfactory	Satisfactory	37.80
11	04/18/2012	Satisfactory	Satisfactory	42.80
12	11/11/2012	Satisfactory	Satisfactory	47.30
13	06/26/2013	Satisfactory	Satisfactory	49.00
14	01/18/2014	Highly Satisfactory	Highly Satisfactory	50.00

H. Restructuring (if any)

Restructuring Date(s)	Board Approved PDO Change	ISR Ratings at Restructuring		Amount Disbursed at Restructuring in USD millions	Reason for Restructuring & Key Changes Made
		DO	IP		
07/23/2010		MS	MS	37.30	Reallocation of Loan proceeds and adjustment of Performance Indicators.
03/23/2012	N	S	S	42.80	The closing date was extended a year to March, 31 2013
03/26/2013		S	S	49.00	Loan extension by nine months to December 31, 2013 and proceeds reallocated.
12/30/2013		S	S	50.00	Reallocation of Loan proceeds for account closing.

I. Disbursement Profile



1. Project Context, Development Objectives and Design

1.1 Context at Appraisal

1. **In 2004, more than half of Peruvians lived in poverty and 19.2 percent in extremely poverty, with rural areas being disproportionately affected.** Sustained economic growth improved this situation, decreasing extreme poverty in rural areas by 20 percent from 2000 to 2005. However, much of their underdevelopment could still be attributed to the acute infrastructure gap present in the country.¹ Rural communities in Peru had less access to electricity, roads, telephones, and sanitation services than the average for South America or for other similar developing countries. Poor access to quality infrastructure limited their economic opportunities, depressing incomes and making it harder for them to escape subsistence agriculture.²

2. **A decentralization agenda was adopted to promote rural development.** To tackle these issues, the Government of Peru (GoP) began a decentralization process in the late 1990s with the goal of simplifying and modernizing administrative systems so that more public sector responsibilities could gradually be transferred to local governments. Decentralization was viewed as essential to rural development because the Government in Lima could not have a clear understanding of the wide range of problems affecting isolated areas of the country, let alone attempt to fix them efficiently. In this context, the GoP implemented two consecutive projects with the assistance of the World Bank (WB) and the Inter-American Development Bank (IDB), establishing, for the first time in the country's history, a system for managing transportation infrastructure in rural areas in a decentralized manner.

3. **Decentralization reforms have been most successful in the rural roads sector.** In 1995, the First Rural Roads Project (FRRP) created an agency initially called Provias Rural (now Provias Descentralizado), which rehabilitated 4,039 km of rural roads and 3,465 km of non-motorized transport tracks in twelve of the poorest departments of the country. A network of microenterprises was formed from the surrounding communities to perform routine maintenance on these roads. The Second Rural Roads Project (SRRP), introduced in 2001, continued rehabilitating and maintaining rural roads, but in an increasingly decentralized manner through the creation of Provincial Road Institutes. These efforts to decentralize the sector were successful, becoming a trailblazer for the Government's broader decentralization agenda. The SRRP also introduced several complementary social initiatives to target extreme poverty, promote production activities, and encourage women's participation at all levels of the project.

4. By the end of the SRRP (Dec. 2006), 32 percent of Peru's rural road network had been rehabilitated (as estimated at appraisal) and was receiving adequate maintenance. Routine maintenance was being performed by 532 microenterprises employing 6,000 people (24 percent of whom were women).³ An Impact Assessment study conducted that same year revealed that improved transportation conditions caused positive impacts on: school accessibility, healthcare

¹ IPE (Instituto Peruano de Economía). "La Brecha en Infraestructura, Servicios Públicos, productividad y Crecimiento en el Perú," 2003.

² An extensive review of the literature is presented in Breneman, A. and Kerf, M., "Infrastructure and Poverty Linkages: A Literature Review," 2002.

³ These figures were estimated by the Implementation Completion and Results Report of the SRRP.

accessibility, agricultural productivity, and rural incomes. Annex 2 provides a summary of the objectives and successes of these first two rural roads projects in Peru.

5. Immediately afterwards, the **Decentralized Rural Transport Project (DRTP)** began implementation to expand the high-impact activities of the previous projects to the entire country and to continue strengthening the decentralization model. Additionally, based on the experiences of the previous projects, it became clear that the improvement of transportation conditions could achieve substantially more benefits if it was complemented by improvements in other types of basic infrastructure and in the business environment of the nearby communities. Roads alone might not be enough to quickly catalyze economic activity and reduce poverty; a more comprehensive territorial development approach was probably needed. Thus, besides the rehabilitation and maintenance for rural roads, the DRTP: (i) introduced the Rural Infrastructure Pilot to plan and coordinate investments among infrastructure sectors (water/sanitation, irrigation, electricity and telecommunications); and (ii) expanded the Local Development Window (LDW) to complement the investments in road improvements with economic generation opportunities along the newly rehabilitated roads. The LDW instrument would strengthen both the municipalities and local stakeholders in defining territorial development strategies and plans, and identifying potential production activity sponsors. It consisted of economic-production projects such as agricultural products or eco-tourism. The executing agency of the LDW was selected on a competitive basis from among private operators or NGOs. The projects were aligned to the interests and aspirations of the stakeholders and to the potential products in the area. These projects were operated by consultants or NGOs that worked to organize and support the rural producers for the implementation thereof.

6. *Rationale for Bank assistance:* The DRTP was well-aligned with the first objective of Peru's Country Assistance Strategy FY03 – FY06, Competiveness: Economic Management and Private Sector Development, through the integration of poor rural areas into the transportation network and the provision of employment opportunities to rural areas with high poverty rates. The Project also shared the objectives of Peru's Country Partnership Strategy for the period FY07 – FY11, particularly the first pillar (Economic Growth: Accelerating Growth and Widening the Base Growth Cluster), by increasing public investments in physical infrastructure, providing access to infrastructure and improving the quality thereof, and to labor market opportunities for low-income families. This Project and the previous two rural roads operations were co-financed by the IDB.⁴

7. Moreover, the Project included the broader objectives of decentralization and public sector reform by supporting regulations to define the role, responsibilities, and authority of the regional and local governments and the introduction of: (i) performance management; (ii) public contracting improvements; (iii) integrated financial management; and (iv) participatory planning that has been extended to regional, provincial, and local governments.

⁴ The partnership with the IDB has been very constructive and productive. Project preparation and supervision were carried-out jointly. Sharing of information and experience of both institutions was key to complement each other and eventually led to a better supervision of project implementation. The IDB Team was supportive and flexible, particularly pushing firmly for a more rapid preparation of the new potential project, while financing consultancies required for its preparation and carrying out close and proactive monitoring of progress.

1.2 Original Project Development Objectives (PDO) and Key Indicators (as approved)

8. The PDO was to contribute to territorial development and to the fight against rural poverty in the Borrower's territory by improving access of rural households and entrepreneurs to goods, social services and income generating opportunities through reduced transport costs and better rural transport infrastructure.

9. The key indicators and their targets can be found in the Results Framework Analysis table presented in Section F. They span outcomes in transportation conditions and access to public services and outputs in civil works and institutional development.

1.3 Revised PDO (as approved by original approving authority) and Key Indicators, and reasons/justification

10. Neither the project development objective nor the outcome indicators were revised during the life of the project.

11. The project was restructured on July 23, 2010 to reallocate funds among categories and to adjust the Performance Indicators targets established in the Loan Agreement, when the project was 76 percent disbursed. The revisions were made in light of the progress achieved as of the mid-term review of April 15, 2010.

12. The reallocation of Loan proceeds was meant to modify funding for the components that financed road works: a 16 percent increase for Component 1: Improvement of Rural Transport Infrastructure; and a 36 percent increase for Subcomponent 3.2: Rural Infrastructure Pilot. These changes were made possible through the reallocation of the contingency funds, a 2 percent decrease for project management, and increased national counterpart funds by about 20 percent. Funds allocated to institutional strengthening activities remained roughly unchanged.

13. The targets were adjusted to accommodate cost increases of 40 percent for road rehabilitation and 50 percent for periodic maintenance, given that prices for these works had not been revised since the year 2000, while a construction boom saturated supply markets (materials, machinery, and qualified labor). The target for road rehabilitation was increased despite the cost escalation, due to the prioritization of this component by the Government to counter the effects of the global economic crisis. The targets for periodic maintenance, improvement of non-motorized transport (NMT)⁵ tracks, and for bridges were reduced. Only one bridge was to be rehabilitated as part of the project, while fifteen bridges were to be rehabilitated using national counterpart funds. The implementation of this subcomponent was affected by the absence of a good quality bridge inventory. The number of microenterprises was increased to perform routine maintenance on the additional length of road rehabilitations. The other Performance Indicators remained unchanged at their original values.

⁵ NMT tracks are the only transportation infrastructure available for the remotest rural areas in Peru. They are narrow pathways, usually without drainage system, used by pedestrians and work animals. It is calculated that more than 100,000 km of NMT tracks exist in the country. Some NMT tracks are of interest for tourism and were financed under the DRTP.

1.4 Main Beneficiaries

14. The FRRP and SRRP had rehabilitated 15,692 km of rural roads and 7,000 km of NMT tracks in twelve of the poorest departments of the country. The DRTP sought to rehabilitate an additional 3,358 km in the 24 departments of the country, meaning that the entire rural road network would have been rehabilitated and would be receiving continuous routine maintenance (estimated at appraisal). The Project Appraisal Document (PAD) identified the people living near these roads as the main beneficiaries of the Project, reducing their social isolation and increasing the availability of economic opportunities with better access to markets, resources, and jobs. In addition, the LDW was expected to organize and assist rural producers in poor areas of selected provinces, and strengthen the ability of local governments to promote rural development. The participation of women at all levels of the Project would also continue to be promoted.

15. An ex-post analysis found that the DRTP increased the number of beneficiaries of the rural roads projects by 3.9 million, which included 1.16 million direct beneficiaries of road rehabilitation, 283,000 direct beneficiaries of NMT track improvements, and 2.45 million indirect beneficiaries from the rest of the rural population⁶, who benefited through: (i) the scaling-up of sector management countrywide; (ii) the creation and strengthening of Provincial Road Institutes (PRIs)⁷; and (iii) increase of road interventions outside of the DRTP. These beneficiaries are in addition to the 3.5 million people that benefited from the SRRP (Implementation Completion and Results Report), who continued to benefit in the DRTP from: (i) the periodic maintenance of roads that were previously rehabilitated; and (ii) continuation of routine maintenance microenterprises. Together, the rehabilitation of roads and improvement of NMT tracks in the DRTP directly benefited 19 percent of the country's rural population.

1.5 Original Components (*as approved*)

16. **Component 1: Improvement of Rural Transport Infrastructure.** Scaling-up and improving the decentralized management of rural roads in the entire Borrower's territory by: (i) rehabilitating or improving rural roads prioritized through Participatory Provincial Road Plans (PPRP)⁸; (ii) improvement and re-constructing selected connecting bridges; (iii) insuring periodic maintenance of rural roads; (iv) improving non-motorized transport tracks; (v) improving other types of rural transport infrastructure (including river-based equipment); and (vi) launching initial activities for the stabilization of slopes and the protection of rural roads against river-based erosion.

⁶ This was the methodology used to estimate the number of beneficiaries of the SRRP and to establish the target of beneficiaries for the DRTP: 3.5 million in the PAD.

⁷ The Provincial Road Institute is a decentralized unit in the provincial municipalities responsible for rural roads, managing routine maintenance contracts through microenterprises, the monitors' schedule, road planning, and technical studies. Specific capacity building arrangements have been established to provide PRIs with the ability and experience at the time of transference of fiduciary responsibilities. PRIs are governed by a Provincial Road Board, which includes the provincial and district mayors; and their operating costs are covered by contributions from Central Government transfers and municipalities. Currently there are 188 operative PRIs.

⁸ Plans were prepared or updated in each Province, with the assistance of the PRIs, to identify tertiary roads and NMT track needs, ranking rural road projects taking into consideration poverty criteria, stock of road assets, and the financial capacity of local governments to contribute counterpart funds. In most cases, the plans were prepared with the GIS inventory of the road network. The plans were approved by Provias for road funding selection.

17. **Component 2: Institutional Development**

a. Providing comprehensive institutional strengthening to Ministry of Transport and Communications (MTC) at the central level in order to improve regulatory capacity by, inter alia: (i) defining and regulating policies for rural transport; (ii) promoting research and innovation in rural transport; (iii) launching a fiscal revenues and road development study; and (iv) assisting in other related activities for MTC agencies involved in decentralized rural policies.

b. Providing comprehensive institutional strengthening to District Municipalities and Provincial Municipalities in order to empower them to better implement their rural transport policies, by inter alia: (i) preparing or updating PPRPs; (ii) improving the existing routine maintenance system with micro-enterprises; (iii) enhancing local capacity to handle social, cultural and environmental safeguards; (iv) mobilizing municipal financing for rural transport; (v) promoting private financing for rural transport; (vi) scaling-up the Geographic Information System (GIS) experience; and (vii) assisting said municipalities as well as selected Provincial Infrastructure Institutes and selected PRIs in other related capacity-building activities.

18. **Component 3: Transport for Territorial Development.** Enhancing impact of improved transport conditions on rural development by fostering complementarities with other types of investments and by promoting productive activities through:

a. the Local Development Window aimed at accelerating the emergence of productive activities in the areas where transport conditions have been improved, and

b. the Rural Infrastructure Pilot (RIP)⁹ aimed at increasing in the Selected Provinces the efficiency and effectiveness of rural economic infrastructure investments through enhanced coordination and promotion of greater complementarities between sectors, as well through works on rural roads segments as prioritized under the RIPs.

19. **Component 4: Project Management.** Supporting Provias Descentralizado in its day-to-day management of the project through:

a. the provision of technical advisory services for monitoring, evaluation and audits, including the updating or expansion of SIGAT and related training activities, mid-term and final impact evaluation studies and technical operational, environmental and social auditing activities to be performed during project implementation; and

b. administrative and operational support.

⁹ The RIP intended to experiment in a sample of 15 provinces, in the context of the decentralization reforms, with the planning and institutional arrangements of rural infrastructure investments. Local governments would lead the preparation of the plans for the pilot with the participation of different sectors, for example, electrification, water sanitation, telecommunications, and transport. About 40 km of road rehabilitations prioritized by the RIP plans were to be financed.

1.6 Revised Components

20. The components were not revised.

1.7 Other significant changes

21. The Project closing date was formally extended two (2) times for a total of 21 months. The first extension was from March 31, 2012 to March 31, 2013, when the Project was 86 percent disbursed. The Project had been affected by the regional and national elections that took place in 2010 and 2011, respectively, which resulted in the replacement of a large proportion of provincial administrators, including the technical staff of the PRIs. Due to the decentralized nature of the Project, this implied a long learning curve during the transitions and delays in implementation, in particular for the execution of periodic maintenance works. This was exacerbated by the low capacity level of newly-appointed technical staff; and the emergency decrees (to increase expenditures and in turn stimulate the economy) issued by the GoP during 2010-2011. Furthermore, the Project was affected by some rehabilitation contracts that were subject to arbitration, slowing the progress of civil construction works. In response, the implementing agency scaled up training activities to familiarize new provincial staff with the program and strengthen their capacity for the implementation of Project activities

22. The second extension was from March 31, 2013 to December 31, 2013, when disbursements stood at US\$49 million (98 percent of the Loan amount), which also included a reallocation of funds. The extension was justified by an unusually heavy rainy season that prevented the completion of periodic maintenance and the improvement of tourism-related NMT tracks; to remove previous backlogs in the institutional development activities; and to issue the contract for data collection and the impact evaluation analysis at the end of the Project. The reallocation of Loan proceeds was mostly justified by financial reasons, given the updated investment costs for rural transport infrastructure.

23. A reallocation among Loan categories was approved on December 20, 2013, to make resources available in each category and close the accounts after the final expenditures had been updated.

2. Key Factors Affecting Implementation and Outcomes

2.1 Project Preparation, Design and Quality at Entry

24. **Soundness of Background Analysis.** The Project was designed based on the experiences accumulated in the successful implementation of the FRRP and SRRP. These projects were an integral part of the Government's efforts to promote rural development, decentralization, and social inclusion, providing many lessons learned from their implementation. Impact Evaluation studies were conducted in 2000, 2004, and 2006.

25. A **Quality at Entry** review rated the Project as Satisfactory due to: the relevance of the operation to strategic priorities in Peru's Country Assistance Strategy FY03 – FY06; the excellent engagement of key stakeholders and beneficiaries; the thorough sector work and impact evaluations underpinning the operation; the partnership with the IBD; and the innovations being piloted and mainstreamed under the project.

26. **Assessment of Project Design.** The design was satisfactory, especially considering the lessons learned from the previous projects, to continue decentralization reforms, scaling up project activities to the entire country, including the LDW and promoting the participation of women. The DRTP expanded the most impactful components of the previous projects and introduced a RIP to explore ways of amplifying these impacts. However, this Pilot sought ambitious institutional reforms which proved difficult to implement. Nonetheless, as a Pilot it demonstrated the usefulness of infrastructure bundling, which was subsequently adopted by the GoP outside of the DRTP.

27. **Safeguards.** The Project was classified as “Category B,” which triggered the following four safeguards: (i) Environmental Assessment (OP/BP 4.01); (ii) Cultural Property (OPN 11.03, being revised as OP 4.11); (iii) Involuntary Resettlement (OP/BP 4.12); and (iv) Indigenous Peoples (OP/BP 4.10).

28. **Adequacy of Government Commitment.** The GoP was supportive of the DRTP, with the Ministry of Economy and Finance (MEF) transferring resources to the Municipal governments for routine maintenance, and promoting the participation of local governments, who embraced decentralization more energetically than anticipated. Local leaders and stakeholders participated in the PPRP and the Road Committees were successful in eliciting the support of the community for the improvement of the NMT tracks.

29. **Assessment of Risks.** The overall risk of the Project was realistically rated as Modest. The weakening of decentralization reforms was identified as Modest, but this risk turned to be low, as decentralization became one of the main strengths of the DRTP. Reduced counterpart funding, insufficient institutional capacity of municipalities, and/or rejection of the decentralization model were rated Substantial. However, due to appropriate mitigation strategies and institutional strengthening, these risks did not materialize. The Procurement and Financial Management risks were assessed as Modest/Substantial and Low, respectively, and a series of mitigation measures were incorporated, which proved effective for proper procurement and financial management. On the other hand, the risk that other sectors would resist the RIP was underestimated as “Modest,” partially because a Memorandum of Understanding had been signed. This MOU was ultimately not complied with by the parties involved. A more careful accounting of political realities could have led to the incorporation of more binding coordination mechanisms, or even to the involvement of higher levels of government.

30. The PAD also appropriately rated as “Low” the risk that Provias would become overextended by the scaling-up of the Project to the whole country. However, an important risk that was not identified in the PAD was the potential for slow implementation due to capacity constraints. In the later years of the Project, Provias became overloaded with additional responsibilities unrelated to the banks’ projects, and with internal unresolved issues that affected its responsiveness. To resolve this issue, the Bank organized a workshop where the role of the implementing agency was analyzed, the risks that any shortcomings pose to the Project were evaluated, and a strategy was prepared to mitigate these risks. It was agreed that the mitigation measures were to be incorporated in the design of the new potential project.

2.2 Implementation

31. Project implementation, including compliance with Loan covenants, was Satisfactory. Implementation was also rated Satisfactory in most of the Implementation Status Reports. However, implementation was downgraded to Moderately Satisfactory in two consecutive supervision periods, despite high disbursement rates, based on concerns regarding lack of

sufficient routine maintenance by the microenterprises, and sluggish implementation of environmental aspects. Overall, the Project was generally implemented smoothly and efficiently by Provias, who had gained considerable experience in the implementation of the FRRP and SRRP, including in: promoting collaboration between the central and the local governments; applying their knowledge of the procedures of the national and the financial institutions (IDB and WB); utilizing risk management tools to keep the Project on track; and keeping a group of capable and committed personnel. The Project was relatively complex, with a wide scope, and required intensive involvement from Provias due to the decentralization. Nonetheless, the Project was implemented successfully.

32. **At Mid-term Review** in February 2010, the Project presented a high level of financial execution, but had delays in other areas. To overcome these disparities, Provias made strong efforts to advance institutional and regional aspects, such as: the RIPs; evaluation and monitoring of the PRIs; the LDW; and the evaluation of impacts. Another specific concern was that only one-third of the rehabilitated roads had continuous routine maintenance. Provias solved this issue by reaching an agreement with the MEF that intergovernmental transfers were to finance two-thirds of the routine maintenance costs and the remaining third was to be financed by the municipalities. The creation and continuation of routine maintenance microenterprises was also fortified by Provias.

33. **Provias exhibited leadership in road rehabilitation.** By February 2010, the Project had achieved 72 percent of its road rehabilitation target, primarily because these works were prioritized by the implementing agency following a broader mandate of the GoP to increase countercyclical expenditures to stimulate the economy during the 2008 global recession. The Project's other civil works initially lagged, but their implementation was accelerated mid-project, eventually achieving output targets.

34. **Swift action by Provias mitigated the impacts of high staff turnover following local elections and unusually heavy rains.** In the 2010 local elections, 83 percent of local mayors were ousted, which led to 47 percent of PRI managers being replaced, and left another 24 percent of PRIs without a manager for at least the following two years. Often, the incoming managers were political appointees with little experience in rural roads, representing a considerable loss of capabilities for the PRIs. This delayed the transfer of responsibilities to the PRIs, requiring the Project closing date to be formally extended from March 31, 2012 to March 31, 2013. To mitigate this issue, Provias: (i) on-boarded nominees on rural roads management before elections; (ii) implemented the oversight of PRIs by a committee of district mayors instead of just the provincial mayor; (iii) implemented a requirement that managers must be professional engineers or economists; and (iv) focused on strengthening processes and institutions instead of people. Unusually heavy rains at the end of the Project required Provias to refocus its efforts in order to achieve project targets. The closing date was promptly extended from March 31, 2013 to December 31, 2013 to accommodate these efforts.

35. **The Project adapted rapidly to external cost pressures due to higher-than-expected economic growth.** An unprecedented countrywide economic boom, unexpected at the time of Appraisal, drove up input costs considerably (e.g., materials, machinery, labor, technical expertise). A survey taken in 2010 found that rehabilitation and periodic maintenance costs had increased by 40 and 50 percent, respectively, from the estimates used in the PAD. This not only led to the 2010 project restructuring that updated project costs and output targets, but it also led Provias to diffuse bids more widely and change bid requirements to encourage more firms to compete.

36. **Concerns over the implementation pace** of the institutional strengthening, rural infrastructure pilot, monitoring and evaluation, and gender action plan activities persisted throughout 2010 and 2011. Also, most of the Provias management team had been replaced, affecting the working knowledge of the institution. To ensure that Provias continued to contribute to decentralization, the banks intensified discussions to raise awareness of the value added to these complementary activities.

37. **Project implementation was facilitated considerably by the success of decentralization reforms.** By 2011, PRIs had been created in 97 percent of provinces, and their capabilities were strengthened beyond the expectations of the PAD, due to the steady support received from local governments and the institutional strengthening efforts. Each PRI became involved in the planning of Project investments and fulfilled important study, performance, and oversight responsibilities. Recognizing this strength, the MEF transferred resources to the local level for performing routine maintenance.

38. **Local governments were strong allies of the LDW** in the promotion of territorial development. Because of the successful promotion of rural productive initiatives, the LDW demonstrated to local governments the value of providing direct support for the rural economy. As a result, many local governments where the LDW was active created economic development offices, passed favorable territorial development regulation, and took over the responsibility of promoting strategic rural producers' associations. This was observed at the district, provincial, and regional levels of government, and represented a significant accomplishment in ensuring project sustainability.

39. **The planning component of the RIP received broad input from stakeholders and prioritized roads were rehabilitated.** The RIPs that identified "infrastructure bundles" were successfully prepared with support from the PRIs. Roads in these plans were promptly rehabilitated by Provias in four provinces (122 km). However, the other infrastructure sectors (water/sanitation, irrigation, electricity, and telecommunications) were slower in adopting these plans and coordinating investments. In an effort to reinforce this concept, the GoP transferred it to the Ministry of Development and Social Inclusion (MIDIS) as the new Fund for the Economic Inclusion of Rural Zones (FONIE)¹⁰, which seeks to incentivize joint infrastructure investments in poor and vulnerable areas of the country.

2.3 Monitoring and Evaluation, Design, Implementation and Utilization

40. The DRTP strengthened the already adequate system that had been built up during the FRRP and SRRP, providing thorough data and analyses to track project progress in the context of the results framework and output indicators. The Integrated System for Technical and Administrative Management was improved and used more broadly by Provias, its zone offices, and the PRIs to share project information on budgets, contracts, logistics, staffing, and financing, among other things. The Project also financed the expansion of the GIS inventory of roads and public services to cover 164 provinces. Using this and other information, Provias prepared Biannual Progress Reports and Annual Operational Reports for the Bank. Consultancy studies were contracted to evaluate the LDW and RIP.

¹⁰ El Fondo para la Inclusión Económica en Zonas Rurales (FONIE) is a financial instrument from the MIDIS created to provide water and sanitation, rural roads, electricity and telecommunications to the poorest households in rural areas of Peru. The fund intervenes in the poorest 570 districts of the country or in conflictive or border rural areas.

41. Three Impact Evaluation studies were performed in 2000, 2004, and 2006 to assess the impacts of the FRRP and SRRP (the findings of these studies are summarized in Annex 6). In 2006, baseline data was collected to evaluate the use of a difference-in-differences methodology by the DRTP, comparing households and communities near intervened roads against those near control roads (NMT tracks were also considered). In 2013, these households and communities were re-surveyed to estimate the impacts of the Project. On one hand, this Impact Evaluation study was well-designed in measuring impacts in the outcome indicators of the results framework, including on transportation conditions and accessibility to public services and economic opportunities. However, this study faced the following issues: (i) survey attrition was substantial and likely systematic (there was some evidence that the families that benefited the most from the interventions were likelier to move to nearby urban centers); (ii) the long observation time of the study (7 years) exacerbated the confounding effect of unobserved variables; and (iii) a significant proportion of the “control” roads were intervened outside of the DRTP. Several steps were taken that successfully corrected for some of these issues, permitting an honest estimation of project impacts.

2.4 Safeguard and Fiduciary Compliance

42. **Environmental Aspects.** The management of environmental aspects was Moderately Satisfactory. The DRTP did not involve major negative environmental impacts because it rehabilitated and maintained existing infrastructure. An Environmental Management Plan and Environmental Impact Assessments were prepared for each road rehabilitation subproject. However, their recommendations were often not fully implemented by the provinces. The DRTP gradually introduced the environmental management agenda at the provincial level due to the provinces’ low capacities. However, extensive institutional strengthening in environmental management at the local level is still needed.

43. **Social Safeguards, Involuntary Resettlement, and Indigenous Peoples.** These policies were not triggered because no new roads were being constructed and the existing roads were rehabilitated and maintained within their right of way.

44. **Procurement Management.** The management of procurement processes by Provias was Satisfactory overall. Six ex-post procurement reviews were performed between 2009 and 2014, as well as an Independent Procurement Review, conducted in April 2010 by an international expert. The reports and Supervision Missions provided the following recommendations: (a) better management of the procurement plan; (b) training of procurement staff; and (c) improvement in filing and archiving of the procurement documentation. These recommendations were mostly complied with during project implementation. A situation occurred in the evaluation of proposals (for post-review processes) after a misinterpretation of the Bank’s Procurement Guidelines by the staff of the Project. This was due to a provision in the Operations Manual (OM) and the Standard Bidding Documents for NCB and Shopping, which allowed Provias to reject bids because of omissions or mistakes that could have been clarified by the bidder. The Bank proceeded to engage the Provias procurement staff in training events to do away with this practice.

45. **Financial Management.** The financial management performed by Provias was Satisfactory, since it maintained adequate arrangements and applied sound financial management practices during implementation. These included adequate internal controls and the use of an information module to track transfers and execution in provincial governments, providing useful and timely information for monitoring purposes by Provias and the Bank. Provias has been characterized by maintaining qualified and experienced key operational staff, adequate processes and procedures, and an information system. Project implementation was standard and submission

of interim financial reports and financial audits was done by deadline. However, given that the Project design involved the provincial governments, and local governments with high staff turnover, Project implementation demanded extensive work and follow-up to monitor and train the local staff in order to rapidly insert them in Project operation.

2.5 Post-completion Operation/Next Phase

46. The institutional sustainability of Project activities was strengthened considerably by the success of decentralization reforms: the creation and strengthening of PRIs and microenterprises gave local governments and communities ownership over rural roads, management, and a culture of maintenance. PRIs now procure and manage 90 percent of routine maintenance (with funds from districts and municipalities), and 28 percent of periodic maintenance (with DRTP funds). A natural constituency has developed that holds local governments to higher standards on rural transportation, and resources have been dedicated to continue maintenance.

47. At the national level, Provias remains strong, with a significant project portfolio aside from Bank financed activities. It established itself as the agency that manages rural transportation in the country, and provides technical oversight on the transfer of resources from the MEF to the local governments for road maintenance. However, Provias still remains a “special temporary program” of the MTC. This affects a long-term strategic vision, or at least a medium- to long-term plan; the organizational structure; and career paths and motivation for staff. No national rural roads laws exist to institutionalize procedures, management arrangements, and financing in the sector. This is causing challenges in several areas, including: (i) national contracting laws not recognizing the social impacts of routine maintenance by microenterprises, forcing them to compete for contracts with private firms; (ii) national contracting prohibiting the explicit promotion of the employment of women, essentially stopping various components of the Gender Action Plan; and (iii) restrictions on government financing of pilot projects or promoting rural production activities with national resources.

48. The overarching theme of the next phase of the Project (which is currently being defined) will be to regularize and integrate rural roads management (the systems, methods, and procedures developed) into the existing policies and programs of the GoP. This has been a challenge in the past, as evidenced by the lack of a rural transport law; the difficulties faced in the RIP; and the persistent conflicts with national contracting laws in routine maintenance. The next phase will work to resolve this by: (i) operating through FONIE to coordinate infrastructure investments with poverty reduction objectives; (ii) intervene in rural roads that feed “logistics corridors” that have been prioritized by the GoP with economic objectives; and (iii) work with the state procurement and women’s affairs sectors to ensure the sustainability of microenterprises and gender inclusion within the country’s legal framework. This will give the Project key government allies in achieving its social and economic objectives, making the most out of the complementary policies and resources available.

3. Assessment of Outcomes

3.1 Relevance of Objectives, Design and Implementation

Rating: **High**

49. The development objectives and implementation of the Project contributed to Peru’s Country Assistance Strategy FY03 – FY06 goal of “strengthening subnational management capacity” by: (i) successfully promoting decentralization reforms in the sector; (ii) creating and

strengthening more than twice as many PRIs as expected; (iii) getting PRIs to manage and finance some of the periodic maintenance and routine maintenance; and (v) getting PRIs to engage in the planning of investments. They are also highly relevant to the priorities of the GoP, contributing to all four of the Strategic Objectives of Peru's Country Partnership Strategy FY12 – FY16. In particular, it contributes to providing “better transport and infrastructure to reduce inequality” by: (i) improving transportation in the poorest areas of the country; (ii) improving NMT tracks used by the most isolated and poorest communities; (iii) getting LDWs to help small rural producers increase competitiveness; and (iv) promoting the employment of women, who often have few opportunities in rural areas. The DRTP had a strong focus on social issues directly related to inequality. No other infrastructure sector in Peru has decentralized as successfully, or emphasized social issues and equity as vigorously. As such, the DRTP helped shape the priorities of the GoP by pioneering these areas. This resonates with the agenda of the current President, who was elected largely on the promises of providing poor and disenfranchised Peruvians, especially in rural areas, with greater access to the growing economy. His creation of the MIDIS and FONIE complemented the DRTP by implementing the RIP model, and will become a key partner in follow-up operations in the sector.

3.2 Achievement of Project Development Objectives

50. In order to assess the PDO, it was broken down into the following four objectives: (1) contributing to territorial development in the Borrower's territory; (2) contributing to the fight against rural poverty in the Borrower's territory; (3) improving access of rural households and entrepreneurs to goods, social services, and income-generating opportunities; and (4) reducing transport costs and improving rural transport infrastructure.

51. The DRTP was **Highly Satisfactory** in accomplishing these development objectives. This was validated by an Impact Evaluation study conducted at the end of the Project, which controlled for a variety of exogenous factors (see Annex 6 for a description of its methodology and results). The Project accomplished these positive outcomes and impacts by achieving or exceeding 11 out of its 13 output targets (as detailed in the Results Framework Analysis), with the remaining two targets reflecting the Government's decision to implement the model of the RIP outside the Project.

52. In most of the Implementation Status Reports, the achievements of the Project toward its PDO were rated as Satisfactory. This was increased to Highly Satisfactory because the very positive results of the Impact Evaluation had just become available at the time of preparation of the last Implementation Status Report.

53. **Objective 1: Contributing to territorial development in the Borrower's territory. Highly satisfactory.** Hectares of land cultivated increased by 33.8 percent, with a decrease in fallow time, presumably reflecting the increased productivity of agriculture.¹¹ Livestock production also improved, with increased ownership of cattle (27.5 percent), pigs (8.1 percent), goats (12.1 percent), horses (12.0 percent), chickens (18.1 percent), and guinea pigs (15.9 percent). The travel times to “points of sale” decreased substantially, as shown in Objective 4, with the reduction being much greater for reaching local consolidation centers, which are farther away and can potentially offer better prices to farmers as they serve a wider market. This caused

¹¹ The impacts of the project were estimated relative to a counterfactual scenario that was constructed using a difference-in-differences methodology with Propensity Score Matching. All results were presented with at least 10% statistical significance.

an increase of 10.1 percentage points in the proportion of sales to these centers and a reduction of 14.5 percentage points in sales to local markets. The prices of local agricultural products appear to have increased with the improved transportation conditions (with a couple exceptions), which is to be expected given the higher proportion of sales to consolidation centers, which provide access to wider markets. Overall, a significant increase in per capita incomes was not observed, although the number of hours worked per week increased by 8.5 percent, reflecting the greater availability of employment opportunities. Higher expenditures were also observed. There was some evidence of changes in the composition of employment, but they were generally difficult to interpret.

54. **The Local Development Window** component of the Project contributed to the territorial development of 28 provinces in the following two ways: first, it assisted small associations of rural producers in developing 52 business plans, helping 46 of them obtain funding from various sources (mostly local governments) and providing assistance in their implementation; and secondly, it worked to strengthen the public sector's involvement in rural development, by (i) assisting municipalities in the preparation of 30 local development plans; (ii) helping develop and approve 60 rural development resolutions; (iii) and, most importantly, by convincing local governments to adopt many of their objectives and strategies. This approach to territorial development was unique in Peru, since it focused on demonstrating to public institutions the benefits of supporting rural producers and strengthening them so they can continue and expand these efforts in the future. Indeed, by the end of the DRTP, several local governments had adopted this approach.

55. The planning phase of the RIP, which was part of the territorial development strategy of the DRTP, successfully prepared 15 rural infrastructure plans for the pilots (100 percent of target). However, as mentioned before, the Government ultimately decided to implement the pilot concept outside the Project, under MIDIS/FONIE, which led to two related output targets not being achieved. Nonetheless, the DRTP rehabilitated 122 km of rural roads prioritized by the pilot plans, and the other infrastructure sectors have also made similar investments, although not concerted. However, Peru invested significantly in rural infrastructure over the course of the DRTP. A survey of people living near road rehabilitations in 2 of the 15 provinces of this Pilot showed that the percentage of people with access to at least two basic infrastructure services (in addition to the road rehabilitation) increased from 35.8 percent in 2006 to 95.4 percent in 2013 (these services included: water, sanitation, and electrification) (300 percent of output target based on an incomplete sample).

56. **Objective 2: Contributing to the fight against rural poverty in the Borrower's territory. Highly satisfactory.** The Impact Evaluation study found that the rehabilitation and maintenance of roads had a large and robust impact on decreasing extreme poverty by 13.8 percentage points (1 percent statistical significance), if calculated through expenditures. The Evaluation found that the expenditures log increased by 3.7 percent on average (5 percent statistical significance), although no change in total poverty was observed, suggesting that most of this benefit accrued among the poorest population. On the other hand, when measuring poverty through the degree of Unmet Basic Needs (UBN), an improvement of 7.5 percentage points was observed (5 percent statistical significance).

57. **Objective 3: Improving access of rural households and entrepreneurs to goods, social services, and income-generating opportunities. Highly satisfactory.** The major improvements in transportation conditions by road were seen to increase the accessibility of rural households to social services. The sharp reduction in travel times to schools (see Objective 4), along with reductions in closures, caused school enrollment to increase by 19.2 percent in

children ages 12 to 18 registered in school, as compared to the counterfactual (384 percent of outcome target). Despite the Impact Evaluation study finding no significant travel time reductions to health centers, the number of health consultations (given illness) increased by 17.8 percent (178 percent of outcome target), probably reflecting improvements in road closures and travel accessibility. Road interventions also caused the times students need to reach secondary school to decrease by 24.2 percent (121 percent of outcome target), with those travelling by vehicle benefiting the most. However, reductions in travel times were not observed for reaching health centers or workplaces, which may suggest that students are more sensitive to road condition. Accessibility to income-generating opportunities increased by reducing travel times needed to sell agricultural products by 26.2 percent (131 percent of outcome target). A decrease in bus fares was observed, although the estimated magnitude of this effect was difficult to interpret.

58. The improvement of NMT tracks was observed to have an even larger effect of health consultations, increasing them by 70.0 percent, probably because of the higher level of isolation of these communities. However, no change in school enrollment was observed after these works. While improving NMT tracks was observed to reduce travel times to most destinations, few impacts were observed on incomes, employment, or rural productivity. This might be an indication that the control groups selected were not adequate, and required a similar matching procedure as with rural roads. Nonetheless, a noticeable improvement was observed in terms of the number of commercial establishments, private institutions, radio stations, and TV channels. With regard to agriculture, there appeared to be a similar shift occurring as with rural roads, where fallow land is increasingly farmed.

59. **Objective 4: Reduced transportation costs and better rural transport infrastructure. Highly satisfactory.** The rehabilitation of 3,277 km of rural roads (98 percent of target) had a direct and immediate impact on transportation conditions. Most of these roads were in states of critical disrepair, as they had not been intervened in decades. After the rehabilitation, these roads received continuous routine maintenance to ensure their transibility by 325 newly created microenterprises (270 percent of target) formed by 3,250 community members (230 percent of target). The DRTP also financed 7,806 km of periodic maintenance (104 percent of target) on roads that had been rehabilitated by the FRRP/SRRP or early in the DRTP.

60. The outcome of this comprehensive intervention strategy was to considerably improve the transportation conditions of the communities living near the intervened roads. The Impact Evaluation study found that road closures decreased by 55.6 percent relative to the counterfactual (278 percent of outcome target), likely reflecting: (i) the increased capacity of local governments to perform emergency roadwork; (ii) the availability of microenterprises to resolve small blockages; and (iii) the improved stability of the roadway and adjacent slopes. No changes in freight transport costs were observed. These improvements in transportation conditions had a mixed effect on traffic volumes, with auto traffic increasing by 18.0 vehicles per week, while no significant change was observed in bus, truck, or motorcycle traffic. This could suggest a transition into higher cost transportation modes.

61. The DRTP also indirectly contributed toward improving transportation conditions in areas outside its intervention scope by: (i) increasing the expectations of rural communities; (ii) lobbying local government on the importance of adequate road management; and (iii) developing standards and policies available countrywide. A random survey of roads that have not been intervened by the DRTP found that by the end of the Project, eight (8) had been improved (higher standard than rehabilitation); ten (10) had been rehabilitated; three (3) had minor interventions; and twenty-one (21) had not been intervened at all. While it is likely that many of these interventions do not meet the high standards of the DRTP, including that of continuous adequate

maintenance, this represents a clear change in the priorities of local governments, who rarely made these investments before the DRTP.

62. There is also strong evidence that the improvement of NMT tracks had a similarly strong positive outcome on the transportation conditions of the communities that depend on them. The DRTP improved 2,444 km of NMT tracks (97 percent of target) by contracting experienced NGOs to work with local communities to prioritize and execute the improvement works. Relative to the counterfactual¹², it reduced travel times to district capitals (38 percent), provincial capitals (20 percent), workplaces (35 percent), and health centers (71 percent). An increase in travel times to schools was also found. It is important to note that NMT tracks may take many hours, and even days, to traverse, making these reductions very significant in absolute terms. Also, the improvement to these tracks likely had major positive impacts on the safety of the people and their pack animals, which were not quantified by the Impact Evaluation study, although this impact is likely.

63. **Strengthening decentralization** of local institution for better transport infrastructure management. One of the main successes of the DRTP was the **strengthening of local institutions and the subsequent decentralization** of responsibilities to them. The most important of these was the PRI, which had been introduced in selected provinces as a pilot in the SRRP. Their objective was to increasingly take over responsibilities from Provias, who would transition into an oversight and assistance agency. The DRTP created twice as many PRIs as expected at appraisal, encompassing 97 percent of the country's provinces. PRIs were strengthened considerably by Provias through workshops, training sessions, and the streamlining of processes, especially through the expanded use of the Integrated System for Technical and Administrative Management. Learning-by-doing was encouraged and targeted assistance was provided when needed.

64. These efforts led to the following outcomes: the number of PRIs at capacity levels IV and III (the strongest, with best financial safeguards) increased from 20 in 2008 to 94 in 2013¹³. This allowed for the contracting and overseeing of routine maintenance activities to be transferred from Provias to the PRIs starting in 2008. In response, the MEF increased its financing share of routine maintenance from 60 percent to 100 percent, representing over US\$250 million in transfers to municipalities for maintenance in the last five years (330 percent of outcome target). By the end of the DRTP, 90 percent of routine maintenance was being contracted and managed by PRIs with MEF funds. This success in decentralization led Provias to begin transferring the contracting and managing of periodic maintenance to the PRIs, which were larger and more complex contracts. At the end of the Project, 28 percent of periodic maintenance km had been overseen by the PRIs, with no major challenges and comparable to the rest in terms of quality.

65. PRIs were also strengthened in terms of investment planning. Every PRI worked with consultants to develop or update their PPRPs (125 percent of target), prioritizing road rehabilitations through a multi-criteria analysis with significant community/stakeholder input. Fifteen selected PRIs worked with consultants to develop RIPs (100 percent of target) in order to prioritize infrastructure bundles that could catalyze rural development. Both of these planning efforts were facilitated by over 87 percent of PRIs developing GIS inventories of their road networks (some used contractors), which also included information about public services

¹² In order to evaluate the impacts of NMT track improvements, a difference-in-differences methodology was used with fixed effects at the village level.

¹³ Despite the significant loss of capabilities following the 2010 local elections.

available and demographics. Aside from conducting pre-investment studies, more capable PRIs conducted geotechnical studies and environmental impact studies, for example.

3.3 Efficiency

66. **Economic Analysis Framework.** An ex-ante economic evaluation of four representative intervention types was conducted in the PAD. These interventions were defined as: the rehabilitation and maintenance of roads with Annual Average Daily Traffic (AADT) less than 15, with AADT between 15 and 50, with AADT higher than 50, and the improvement of NMT tracks¹⁴. A Cost Benefit Analysis (CBA) was performed using the Road Economic Decision (RED) model for these representative interventions, with the exception of roads with AADT<15 which were analyzed with a Cost Effectiveness Analysis (CEA). This was done to allow for the consideration of roads interventions for primarily social objectives. An ex-post economic evaluation was conducted that consisted of: (i) redoing the representative CBA and CEA ex-ante evaluations with actual data on project costs and benefits, considering the results of the latest Impact Evaluation study; and (ii) reviewing the CBA and CEA performed on a sample of pre-investment feasibility studies prepared during project implementation.

67. **Ex-Ante and Ex-Post Economic Evaluations.** The CBA evaluations of higher volume rural roads and NMT tracks were performed using the RED model, which weighs the benefits accrued in the reduction of travel times, costs, and accidents against the investment costs of the project. Benefits were considered for both passenger and freight transportation. For a detailed discussion of the evaluation methodology, see Annex 4. The ex-ante evaluation estimated that the Project would produce a Net Present Value (NPV) of US\$13.91 million at an interest rate of 14 percent, and would have an External Rate of Return (ERR) of 29.2 percent. The ex-post evaluation found that the project produced a NPV of US\$108.3 million at an interest rate of 14 percent, and had an ERR of 54.6 percent. With regards to the CEA for low-volume roads, the ex-post analysis found an average of US\$30.17/person, which is reasonable.

68. The ERRs estimated in the ex-post analysis were considerably higher than those estimated in the ex-ante analysis, given that: (i) countrywide transportation costs were much higher than originally estimated; and (ii) the value of time for passenger travel was almost twice as high. Both of these were affected by the strong growth of the Peruvian economy during the project implementation period, which raised living standards and drove up the prices of resources. This led the improvements in transportation costs and speeds predicted by the RED model to have higher benefits than expected—basic transportation infrastructure was valued more. This effect was notable enough that it more than compensated for the increase in the investment costs of the civil works. Therefore, Project investments were found to have had a **high economic efficiency**, making the costs incurred in achieving its objectives reasonable.

3.4 Justification of Overall Outcome Rating

69. The high and efficient achievement of the PDO indicators leads the Project outcome to be rated as **Highly Satisfactory**. It achieved (and substantially exceeded, in some cases) 11 out of

¹⁴ These interventions were expected to account for 94 percent of the civil works investments of the project. The rehabilitation of bridges was not analyzed because the parameters of these interventions had not been defined by that point.

the 13 output indicators, with the remaining two reflecting the Government’s decision to implement the RIP outside of the project. The Results Framework Analysis demonstrated that the Project impacted positive transportation conditions and the decentralized management of the sector, which caused improvements in accessibility to healthcare centers and schools (social services), and promoted territorial development. In selected provinces, the LDW also contributed to territorial development and strengthened public institutions. Ultimately, robust evidence indicated that the Project had a substantial impact on reducing extreme poverty and increasing expenditures. These benefits are highly relevant to the strategic objectives of the GoP and the WB, and the efficiency analysis in the previous section demonstrated that they were achieved with reasonable costs.

3.5 Overarching Themes, Other Outcomes and Impacts

(a) Poverty Impacts, Gender Aspects, and Social Development

70. **Poverty.** As mentioned previously, the improvement of transportation conditions was observed to have had a major positive impact on reducing poverty and increasing expenditures. These benefits occurred as rural poverty in the country decreased substantially, as seen in Figure 1. The Project also tackled poverty through road maintenance microenterprise employment; temporary employment in road rehabilitation and periodic maintenance works; and the promotion of small rural production activities through the LDW. The rehabilitation and periodic maintenance of rural roads is estimated to have created 3,698 and 9,992 jobs, respectively, providing income opportunities and training in poor rural areas (one year equivalent skilled and unskilled jobs).

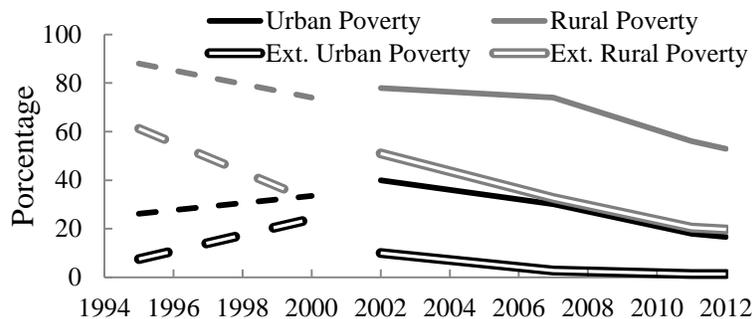


Figure 1: Evolution of Poverty in Peru from 1995 - 2012 (Nunez and Guerrero, 2014)

71. **Gender Inclusion.** Women in rural Peru have restricted access to social and economic opportunities, limiting them to household responsibilities. The SRRP implemented a Gender Unit within Provias and introduced a Gender Action Plan to promote the participation of women at all levels of the Project. This included: (i) the participation of at least 10 percent of women in the staff of the routine maintenance microenterprises; (ii) the identification and implementation of income-generating activities that directly benefit women in the context of the LDW; (iii) the inclusion of at least 20 percent of women in the Road Committees; and (iii) the development of a pilot training module for program staff, mayors, and community leaders to mainstream gender in the Project cycle.

72. The Gender Action Plan was streamlined in the Provias field offices and the PRIs in the DRTP. The activities proved to be very successful (see Annex 8 for more gender aspects of the project). The DRTP increased the participation of women in routine maintenance

microenterprises from 24 percent for those created before 2006 (SRRP) to 29.5 percent of those created since. Between 2008 and 2012, 24 percent of managerial positions in the production initiatives of the LDW were held by women. In Provias, 29 percent of managers are women, 80 percent of zonal offices attended gender awareness workshops, and 20 percent of attendees to institutional strengthening trainings and workshops were women. This success could be threatened in the future by Peru's laws, which do not allow for positive gender-based discrimination. This is particularly worrisome for microenterprises, since their contracting and management was transferred to local governments. Currently, there is an ongoing dialogue between the relevant governmental sectors on how to fairly promote gender inclusion within the country's legal system.

73. **Social Development.** The SRRP introduced the LDW in 12 provinces as a way of helping rural producers organize associations around specific income-generating activities (for example, agricultural niches, fish farming, and eco-tourism), and provided technical and business assistance, including facilitation in the securing of funding. Organizing rural producers also eliminated middlemen, who often exacted high premiums for getting rural goods to local markets. A key feature of the LDW was that it operated in areas that had benefited from the rural road projects, therefore maximizing the impacts thereof.

74. The DRTP expanded the LDW to 28 provinces and competitively contracted out the operation thereof to 15 NGOs. The LDW assisted and financed the preparation of 52 business plans for rural producers' associations (including 15 dairy, 8 livestock, 6 irrigation, 6 quinoa, 5 cacao, and 5 coffee projects, among many others). Associations were also trained in technical aspects and the commercialization of their products. Of these projects, 46 were funded through various sources and were successfully implemented. Initiatives often leveraged different funding sources.

75. In the DRTP, the LDW was given the additional responsibility of working with local governments to promote territorial development strategies and serve as advocates for rural populations. By the end of the Project, LDWs had helped municipalities develop and approve 30 local economic development plans, 41 local ordinances, 13 resolutions, and 6 municipal covenants. Many of these were aimed at strengthening municipalities so they could become more actively involved in promoting rural development. The LDW gave many presentations to municipal governments, emphasizing the importance of having territorial development policies and partnering with production sectors in rural areas. These lobbying efforts led to the creation of municipal offices in 12 provinces dedicated to promoting local economic development (most municipalities did not have these offices at the time). This engagement with local governments sets the LDW apart from other programs that have been implemented in the country to promote rural development (such as ALIADOS and AGROIDEAS), and it helped the production initiatives to often receive support from their local government after the contracts of the LDW had ended.

76. **Road Maintenance Microenterprises.** The FRRP and SRRP grew a system of community-formed microenterprises for the performance of routine maintenance on rehabilitated roads. The micro-entrepreneurs were essentially tasked with using manual labor to fill potholes, clear vegetation, clean drainage, remove small obstacles, and do general emergency work (especially during the rainy season). These organizations were also required to maintain proper legal status by paying taxes, having bank accounts, filing financial statements, developing internal operating procedures, and becoming registered. Provias and the PRIs assisted the microenterprises in each of these steps, providing detailed manuals for their work.

77. This approach to routine maintenance provided income and training opportunities for the poorest people, while creating community incentives for the work to be performed with good quality. It greatly benefited the communities surrounding the rehabilitated roads, and proved to be a cost-effective way of keeping the roads in good condition. It also created a natural constituency for routine maintenance work to continue. The DRTP created 325 microenterprises, bringing the total number operating throughout the country to 857.

(b) Institutional Change/Strengthening

78. The Project strengthened the institutional capabilities of the government at the central and local levels, as part of the ongoing decentralization reforms (second component of the Project). At the local and central level, the Project accomplished:

79. Strengthening of Decentralized Planning: The Provincial Road Management Pilot introduced in the SRRP had established 121 PRIs in 12 departments of the country, of which 36 attained full implementation capacity. The DRTP grew and strengthened this institutional model to encompass 188 PRIs, around 100 of them with full capacity.

80. One of the main responsibilities of PRIs was to plan rural road investments in their jurisdictions through PPRPs. PRIs worked with consultants to develop a consensus on the demand for transportation based on participatory workshops with local stakeholders and an analysis of socioeconomic data. On the one hand, this demand was estimated both for marginalized populations (the poorest and most isolated) and for economically-productive populations, emphasizing the potential for natural resource extraction. On the other hand, the existing supply of transportation was determined by surveying the road network (including its condition) using GIS. By crossing infrastructure supply with demand, potential projects could be ranked using multi-criteria analysis of relevant factors. This final prioritization was then validated with a technical working group and the results were presented in the PPRPs. The DRTP assisted provinces throughout this process.

81. Strengthening of the microenterprise routine maintenance system: By the end of the SRRP, there were 532 of these microenterprises maintaining 14,750 km of roads. The contracting of these activities had been transferred to the PRIs and municipalities were increasingly participating in their co-financing. The DRTP successfully expanded this system and fully decentralized its management to the PRIs. At the beginning of the Project, it transferred financing to the municipalities and district governments (who received some funds through FONCODES¹⁵). By the end of the DRTP, there were 857 microenterprises maintaining 16,867 km of roads in 143 provinces. This represented a creation of 325 new microenterprises and added 3,250 one-year equivalent permanent unskilled jobs.

82. Mobilizing municipal financing for rural transport and promotion of private financing of rural transport: In promoting decentralization, the DRTP helped increase the resources transferred

¹⁵ FONCODES (*Fondo de Cooperación para el Desarrollo*) is a national program run by the MIDIS that works to generate greater sustainable opportunities for households in rural areas living in extreme poverty, facilitating coordination between the private actors from both the demand and the supply side of goods and services required to empower and strengthen the business ventures of these households, thus contributing to the reduction of exclusion that prevents these households from incorporating themselves into the market.

by the MEF to the municipalities for transportation projects (mostly for routine maintenance). In 2007, this figure was US\$140 million, and in 2011 it was \$109 million. Through these transfers, the MEF has been the largest funder of rural transportation. However PRIs have proven adept at complementing these transfers from a variety of other sources. It is often the case that district governments contribute from their small budgets for road maintenance (resources they receive from FONCODES). In certain areas of the country, royalties from natural resource exploitation have been used to fund roadwork. And, to a lesser extent, PRIs currently receive funds in relatively small amounts from over 30 international and national aid funds.

83. Strengthening local capacity to handle fiduciary and safeguard aspects: The comprehensive institutional strengthening package provided to the PRIs included the implementation of financial management, procurement, and environmental safeguards. For funds to be transferred to them for contracting routine and periodic maintenance, the MEF implemented a rigorous set of rules to ensure the protection of these funds.

84. Scaling up the GIS Road Inventory: The SRRP introduced a pilot where two PRIs were trained in GIS technologies and given assistance so they could develop an inventory of their rural road network. This pilot demonstrated that this technology could be used relatively cheaply to enhance the planning process. The DRTP expanded the use of GIS to 164 PRIs, improving coordination and information-sharing. These inventories also contained information about demographics, the location of schools, hospitals, and information about the types of road interventions performed in the past. Inventories were designed to fit together and be incorporated for the tertiary network in the existing inventory of primary and secondary roads developed by the MTC.

85. Regulation and definition of policies for rural transport: The DRTP sought to begin work on sector policies in an effort to institutionalize the progresses achieved in decentralization and rural road management. However, little progress was actually made in this area. It proved to be difficult for Provias to achieve this engagement because it required operating outside their operational level functions. The follow-up project will attempt to address this at higher levels of government to resolve broad policy issues that are currently threatening the sustainability of the Project, such as: the contracting of routine maintenance microenterprises; the promotion of gender inclusion, decentralization reforms, etc.

86. Promotion of research and innovation in rural transport: The DRTP started several initiatives for exploring ways of innovating on technical aspects, focusing on tailoring interventions to different parts of the country, especially for regions that have frequent rains. This included the pilot for stabilization of slopes and the testing of a chemical additive in the Madre de Dios region to better stabilize soils. More research work is planned to be included in the follow-up project, including a pilot for using low-cost pavements.

(c) Other Unintended Outcomes and Impacts (positive or negative)

3.6 Summary of Findings of Beneficiary Survey and/or Stakeholder Workshops

87. An Impact Evaluation study was conducted at the end of the Project to estimate its impacts on various transportation, economic, and social indicators. It used a difference-in-differences methodology, where households in “control” and “intervened” areas that had been first surveyed in 2004 and 2006 were resurveyed again in 2013 to measure how they differed as a result of the interventions. Two distinct types of interventions were considered: the rehabilitation and maintenance of rural roads; and the improvement of NMT tracks. A detailed

description of the results can be found in Annex 6. This Annex also contains a description of the three previous Impact Evaluation studies conducted in 2000, 2004, and 2006.

88. Based on this evidence, it is clear that the rehabilitation of rural roads caused:
- An improvement in transportation conditions, similar to the 2006 Impact Evaluation study.
 - No increase in bus and truck traffic, similar to the 2006 Impact Evaluation study.
 - A large increase in school enrollment (similar to the 2006 Impact Evaluation study) associated with a decrease in travel times to schools, and a smaller improvement in health accessibility (the 2006 Impact Evaluation study found no impact in the short-run).
 - A large decrease in travel times to consolidation centers was found, with farmers increasingly selling their products at these locations, commanding higher prices due to their access to wider markets.
 - A large increase in cultivated land area (similar to 2006 Impact Evaluation study) and livestock holdings.
 - A mixed impact on employment (similar to 2006 Impact Evaluation study).
 - A large impact in reducing extreme poverty (-13.8%) and structural poverty UBN (-7.5%), and increasing per capita expenditures (7.3%). These are the types of long-term impacts have rarely been captured in Impact Evaluation studies.

89. On the other hand, the improvement of NMT tracks was observed to have caused:
- A large reduction in travel times (similar to 2006 Impact Evaluation study).
 - A large increase in accessibility to healthcare centers, with no improvement in accessibility to schools (similar to 2006 Impact Evaluation study).
 - A large increase in the availability of private and public services, including commercial establishments.
 - A shift of land use from fallow to cultivation, similar to that observed in rural roads interventions.
 - No impact on incomes, poverty, rural production, and employment (unlike the 2006 Impact Evaluation study, which found improvements in these, including poverty).

90. The Impact Evaluation study suffered from two limitations that probably biased its results negatively, leading to a conservative estimation of impacts and outcomes. First, the results do not include the benefits accrued to households that could not be found in the follow-up survey, which may have been caused by the migration of households that benefited the most, in terms of human and physical capital, to nearby cities. This would reduce the observed impacts of the Project considerably, because over 40 percent of households surveyed in 2004/2006 could not be found at a later date. And secondly, over half of the controls were eliminated from the sample because they had been intervened outside of the DRTP, which increased the estimate errors. This prevented many indicators that appeared to have interpretable signs from being designated as significant.

91. A **Stakeholder Workshop** on lessons learned and risk analysis was conducted in order to obtain their impressions of: (i) lessons learned, based on the performance of projects recently closed and under implementation; and (ii) risk analysis on future bank operations, including an analysis of Provias becoming institutionally sustainable in the medium and long term. Key high level Provias staff (more than 20), IDB's Task Team Leader, and the Bank Team participated in the workshop. The outcomes of the workshop helped convey the lessons learned and risk analysis, together with a mitigation action plan, which would improve Provias' institutional structure and functionality for a follow-up project on rural road and NMT track investments. The

main findings of the Workshop are presented in Annex 7, and some of the lessons learned are reflected in this ICR. The methodology and PowerPoint presentations at the Workshop for both themes are available in the project files.

4. Assessment of Risk to Development Outcome

Rating: **Moderate**

92. By the end of the DRTP, the rural road projects had been operating in Peru for 18 years, benefiting the public sector substantially and increasing the expectations of rural communities with regard to the quality of their transportation system. The decentralization of responsibilities to the PRIs led local governments to take ownership over road management. The co-financing of routine maintenance by the MEF and the local governments increased the stability of funding, brought more stakeholders to the table, and demonstrated a culture of maintenance that had been promoted by the DRTP. However, to address the rural roads asset management, Provias needs to study and report the maintenance requirements of the network as a whole, in a systematic manner.

93. The main risks to development outcomes stem from the lack of a statutory legal framework that solidifies and delineates the institutional arrangements and responsibilities created by the DRTP and the previous projects. The government currently views the procedures and policies created as “temporary,” which could be undone or changed without the input of the rural communities affected. In addition to leaving open the possibility for the program to be reduced or eliminated, the lack of a legal framework has caused issues in operations that could worsen over time. For one, national contracting laws conflict with several social initiatives of the Project, such as the direct contracting of microenterprises to perform routine maintenance and the promotion of women’s employment. Also, NMT tracks are currently not fully recognized as an important component of the rural transportation system, and PRIs are not permanent autonomous units of the provincial institutional structure. The lack of a rural transport law that outlines a vision for the decentralization of the sector and carves out exceptions for social initiatives poses an unlikely but potentially critical risk to the continuation of important parts of the DRTP in the future. The MTC could take on the preparation of the rural transport law, which includes the creation of a permanent body with a nationwide scope, regulatory functions for planning and investments, and advisory services to the subnational governments for effective and sustainable rural road transport.

5. Assessment of Bank and Borrower Performance

5.1 Bank Performance

(a) Bank Performance in Ensuring Quality at Entry

Rating: **Satisfactory**

94. The Bank swiftly responded to the GoP request for support for a third rural road project, given its strong strategic relevance to the continuity of the decentralization of rural road management. The Bank team, in partnership with the IDB, closely assisted with Project preparation work carried out by Provias staff and consultants. The Project PAD covered sector issues adequately and incorporated the lessons learned from previous projects; in particular, addressing a broad range of issues in an integrated framework and introducing complementary social initiatives to target extreme poverty and promote productive enterprises. Nonetheless, the Project was somewhat ambitious in going nationwide and including a broad range of actions at

the same time, e.g., exploring the design of additional incentives for greater coordination to manage rural infrastructure interventions.

(b) Quality of Supervision

Rating: **Satisfactory**

95. The Bank conducted two full supervision missions per year, jointly with the IDB. Sufficient resources were allocated to supervision for the constant monitoring of the Project and for a junior intern at the office in Lima. The supervision team's engagement with the client highlighted key project issues and focused on project development effectiveness, as well as the monitoring of output and outcomes. Problems were quickly identified and the supervision team, working together with Provias staff, was able to implement appropriate solutions. The Bank office in Lima played an active role in supervising procurement, environmental safeguards, and financial management. The midterm review strengthened implementation by putting measures into effect to improve performance and assess the situation for project restructuring in 2010.

(c) Justification of Rating for Overall Bank Performance

Rating: **Satisfactory**

96. The Project was designed with a clear results framework, viable institutional arrangements, and grounded technical aspects. The Bank team closely supervised the Project and emphasized problem-solving and quick decision-making on remedial measures for improvement. The team carefully focused on the monitoring of Project outputs and outcomes at all stages of implementation, providing salient support for the Impact Evaluation study and Economic Evaluation of the investments. The continuity of the staff (there were only two task managers throughout project preparation and supervision) was another critical factor for the provision of focused and consistent support to the Borrower.

5.2 Borrower Performance

(a) Government Performance

Rating: **Satisfactory**

97. During preparation, the Borrower's contribution was significant and consistent with Project objectives. The GoP, MTC, and Provias were fully committed to supporting the decentralization model of rural roads management and expanding it through the DRTP. The Government consistently honored its counterpart fund obligations and, at the end of the Project, exceeded its contribution by US\$6 million. The Borrower was also committed to and solidified the transfers of resources to local governments for rural road maintenance.

(b) Implementing Agency or Agencies Performance

Rating: **Satisfactory**

98. Provias was focused on providing better road transport conditions, the involvement of local governments and communities in project implementation, and strengthening provincial governments so they could provide inputs to local development window recipients. Provias assumed its responsibilities of evaluating needs and channeling resources through the PRIs for the creation, operation, and supervision of routine maintenance microenterprises. Provias successfully supported the rural infrastructure decentralization process for rural transport functions by empowering local governments to contract out the periodic maintenance and executing routine maintenance through local microenterprises on their rural road networks. The

RIPs, prepared by Provias with the support of the local governments, have provided the basis for the national strategy for expansion of rural infrastructure in Peru. Fiduciary performance was adequate under Bank supervision and guidance.

99. However, implementation progress was affected in two central instances. At the beginning of the Project, too much emphasis was placed on advancing road rehabilitation contracts at the expense of the institutional strengthening and territorial development components. Later on, the slow delivery of periodic maintenance, NMT track improvements, the Impact Evaluation study, and the economic evaluation study required unusual Bank support and an extension of the Project's closing date.

(c) Justification of Rating for Overall Borrower Performance

Rating: **Satisfactory**

100. The Borrower has exhibited a strong commitment to insuring the sustainability of the program, with the continuation of fourth project that will continue to support the institutional development of the provincial and local municipalities through the decentralization model.

6. Lessons Learned

101. **Rehabilitating rural roads can be an effective mechanism for increasing access to education and health, as well as reducing extreme poverty.** The Impact Evaluation study found that from 2004/2006 to 2013, the Project caused substantial improvements in travel times, accessibility to education and health centers, availability of private and public services, and a 19.7 percent decrease in the proportion of persons living in extreme poverty.

102. **Road transport policies should explicitly include non-motorized transport tracks or community roads in their strategic planning and as part of the road network.** Non-motorized transport tracks are an important part of rural transportation; many communities depend on them to access schools, hospitals, and markets, and they have considerably benefited rural communities, especially in ensuring the safety of people and porter animals. The maintenance of these tracks is best performed through community service, but support for planning and technical advice should come from the local government.

103. **Using local expertise and knowledge is effective in understanding development problems, especially in isolated rural communities.** The decentralized execution of road access improvements, using participatory planning methods and involving local populations in road works, including gender balance, assisted in the creation of employment and local income-generating entrepreneurship. Complementarities in rural infrastructure investments gave communities the tools and resources to accelerate the emergence of production activities.

104. **The Local Development Window is a good complement to rural roads projects in catalyzing production activities that are possible because of improved transportation conditions.** Having adequate roads is necessary for a variety of production activities to be possible, but this is often not the only factor limiting rural communities from taking full advantage of better road transport. The Local Development Window assisted local governments in reducing barriers to organizing, training, and financing rural producers. It also promoted a culture of entrepreneurship that will likely have long-term impacts.

105. **Incorporating pilots, research initiatives, and building in adequate flexibility helped achieve the development objectives.** Some experimentation is required to tackle complex

social/economic issues in challenging environments. Throughout the rural roads program, several pilots have been successfully tested. The Provincial Road Institutes model has expanded significantly quicker than anticipated, emboldening decentralization reforms in the broader government context. The same can be said for the Gender Action Plan, focused on gender considerations and inclusion. The unsuccessful implementation of the Rural Infrastructure Pilot was useful to the government in shaping its replacement: FONIE.

106. **To ensure the sustainability of routine maintenance of the tertiary road network, institutional and financial arrangements should be made within the country's legal framework, in concordance with sector policies.** Institutional capacity for rural road decentralization is provided at the central level by Provias, at the Provincial level by the Provincial Road Institutes, and at the road site by the road maintenance microenterprises. However, neither Provias nor PRIs is a permanent part of the government, and the microenterprises are subjected to the national contracting Law. To build capacities and reduce the negative effects of recurring staff turnover, it is necessary for the MTC to pursue the incorporation of tangible commitments and goals in road transport policies and promote the rural roads law to normalize those institutions developed to respond to the needs of better roads for the rural population.

107. **A properly designed Impact Evaluation study can be a powerful tool in identifying the successes and shortcomings of development projects and better understanding how to tailor them to local conditions.** Incorporating Propensity Score Matching in the difference-in-differences framework appears to control for many of the most important biases that commonly afflict these studies. Having an observation time window of several years after the interventions is necessary to estimate long-term impact development indicators, such as poverty. Issues of survey attrition, stability of controls, and impact heterogeneity should be considered and dealt with before ex-ante data is collected.

7. Comments on Issues Raised by Borrower/Implementing Agencies/Partners

108. The Borrower and the Implementing Agencies didn't raise any issues.

Project Costs and Financing

(a) Project Cost by Component (in USD Million Equivalent)

Components	Appraisal Estimate (USD millions)	Actual/Latest Estimate (USD millions)	Percentage of Appraisal
1.Improvement of Rural Transport Infrastructure	99.6	129.8	130.0
2. Institutional Development	14.7	12.2	83.0
3.Transport for Territorial Development	11.1	2.0	18.0
3.1. Local Development Window	1.3	1.2	92.0
3.2. Rural Infrastructure Pilot	9.8	0.8	8.0
4. Project Management	17.4	16.0	92.0
Monitoring, Evaluation and Audits	2.4	1.0	42.0
Administrative Costs	15.0	15.0	100.0
Total Baseline Cost	142.8	160.0	112.0
Contingencies	7.2	0.0	100.0
Total Project Costs	150.0	160.0	107.0
Front-end Fee PPF	0.0	0.0	0.0
Front-end Fee IBRD	0.0	0.0	0.0
Total Financing Required	150.0	160.0	107.0

(b) Financing

Source of Funds	Type of Co-Financing	Appraisal Estimate (USD millions)	Actual/Latest Estimate (USD millions)	Percentage of Appraisal
Borrower		50.00	60.16	120.32
Inter-American Development Bank		50.00	50.00	100.00
International Bank for Reconstruction and Development		50.00	49.95	99.99

History of the Peru Rural Roads Projects

1. Peruvian law has always stated that municipalities are the entities responsible for managing rural roads.¹⁶ However, before 1995, they were not given any technical or financial support to fulfill this obligation, which forced most of them to abandon their rural road networks, leaving them to decay into states of critical disrepair. No systematic and formal way of managing the rural road sector existed in Peru at that time. The few investments that were made to rehabilitate rural roads were determined ad-hoc, following inconsistent standards, and usually only after emergencies or particularly bad weather. Also, no mechanism existed for maintaining these rehabilitated roads, leading them to deteriorate rather quickly—significantly reducing the value of those original investments. Overall, the transportation needs of rural communities were not being met by the central government or municipal governments. Instead, the priority was on improving primary and secondary roads that connect large and medium-sized urban centers, which was justifiable to an extent, since these roads were also in poor conditions.

2. **The First Rural Roads Project (FRRP)**, implemented from 1995 to 2000, had the overarching objective of improving the access of rural communities to a greater range of economic opportunities and public services by developing a sustainable system for rehabilitating and maintaining the transportation infrastructure of these areas. The project sought to accomplish this objective in 12 of the poorest departments in Peru (10 in the highlands and 2 in the jungle)¹⁷ by:

- Improving transportation costs, travel times, and reliability;
- Connecting physically isolated zones to regional centers;
- Improving transportation within villages;
- Generating local employment and economic activity through road rehabilitation and maintenance works; and
- Building capacities in this sector of the national government, the private sector, and local communities.

3. The project cost \$264 million, and was co-financed by the GoP, the IDB, and the WB. In spite of the severe underdevelopment of Peru's rural roads sector at the beginning of the project, the following was accomplished:

- Rehabilitation of 8,900 km of rural roads;
- Rehabilitation of 2,370 km of primary and secondary roads that connect to the rehabilitated rural roads, many of which had gone without maintenance for years and were in deplorable conditions;
- Rehabilitation and upgrading of 174 km of village streets;
- Establishment of a system where 10,900 km of rural roads received routine maintenance by 410 community-formed microenterprises;

¹⁶ On the other hand, primary roads are managed by the MTC and *Provias Nacional*, while secondary roads are managed by the regional governments.

¹⁷ In Ancash, Apurimac, Ayacucho, Cajamarca, Cusco, Huancavelica, Huanuco, Junin, Madre de Dios (jungle), Pasco, Puno, and San Martin (jungle).

- Introduction of a pilot program wherein Road Committees improved the quality and safety of tracks and footpaths used for **Non-Motorized Transport (NMT)**, which ended up improving 3,000 km of these tracks; and
- Implementation of various initiatives to strengthen the technical capabilities of the national government in this sector.

4. To achieve the above outcomes, the FRRP created a special agency under the MTC called *Provias Rural* to oversee and manage rural transportation in the country. Its main tasks were the planning and contracting of rehabilitation works, and the establishment of a system of MEMVs—cooperatives formed from the local populations—to perform routine maintenance on the rehabilitated roads using labor-intensive methods. Microenterprises received substantial technical and business assistance from *Provias* in order to successfully meet their yearly contracts. This system became one of the most important components of the FRRP because: (i) it proved to be a cost-effective approach; (ii) it significantly enhanced the sustainability of the project; (iii) it provided training, jobs, and income to some of the poorest people in poverty-stricken rural areas; and (iv) the capital and entrepreneurship gained was often put to use in other types of production ventures.

5. Another successful component was the introduction of a pilot program that uses a network of Road Committees to prioritize and execute improvements of NMT tracks in the most isolated parts of the country. NGOs were contracted to establish the Road Committees and to help them execute the improvement works.

6. In the 1990s, there was much talk in Peru about decentralization. This created high expectations in the FRRP for crafting a vision for decentralization in the sector and taking actions to pursue this goal. However, little of this was accomplished. The FRRP was run entirely by *Provias* in Lima, and the municipal governments were not formally involved.

7. The focus during the FRRP was to first build expertise in the rural roads sector, so that the national government could support decentralization in the future. The FRRP was particularly successful at building the technical and managerial capacities of all the institutions in the sector. With the help of the WB and IDB, *Provias* very quickly developed the capability to implement this multifaceted project in difficult environments. The private sector became involved in road rehabilitation and maintenance projects in higher rates than anticipated, quickly building capacities and new skills. This led to significantly lower rehabilitation costs than expected.

8. **The Second Rural Roads Project (SRRP)**, implemented from 2001 to 2006, continued with the general objectives of the FRRP in the same 12 Peruvian departments (adding 7 new provinces)¹⁸, while specifically emphasizing the:

- Gradual decentralization of the management and financing of rural transportation infrastructure to the provincial level;
- Strengthening of institutional capacities at the provincial level;
- Focus on poverty reduction by prioritizing works in the poorest areas and promoting community-based production initiatives that benefit from transportation improvements; and
- Promotion of gender inclusion at all levels of the project.

¹⁸ Chachapoyas (Amazonas), Sánchez Carrión (La Libertad), Huancabamba (Piura), Yauyos (Lima), Arequipa (Arequipa), and Coronel Portillo (Ucayali).

9. At a cost of \$136.43 million, the project accomplished the following:
- Rehabilitation of an additional 4,039 km of rural roads;
 - Rehabilitation of an additional 653 km of primary and secondary roads;
 - Expansion, strengthening, and decentralization of the system of microenterprises, widening its coverage to 14,750 km of rural roads;
 - Performance of periodic maintenance on 8,598 km of rural roads that had been previously rehabilitated;
 - Improvement of an additional 3,465 km of NMT tracks and footpaths;
 - Introduction of a pilot program to test the ability of a system of **Provincial Road Institutes (PRIs)** to assume the gradual decentralization of responsibilities in the sector, including the prioritization of investments through **Participatory Provincial Road Plans**;
 - Introduction of the **Local Development Window (LDW)** to encourage, assist, and help find financing for 72 production initiatives in 85 rural districts;
 - Introduction of a pilot in two provinces to develop PVPPs using **Geographic Information System (GIS)** technologies,
 - Introduction of the **River Transport Improvement Pilot** to explore ways of improving transportation in the jungle region, although many challenges were encountered; and
 - Continuation of institutional strengthening at the national level (policy formulation, monitoring, and training) and at the municipal level (technical and planning capacities).

10. One of the most successful components of this project was the pilot that established PRIs for the management of rural roads at the provincial level. Municipalities already had offices dedicated to managing primary and secondary roads, but they had none for rural roads. PRIs were tasked with developing sufficient institutional capacities to successfully take over responsibilities from *Provias*, and become the decentralized units in this sector. Over the five years of the SRRP, 108 PRIs were created, of which 36 reached full operational capabilities, significantly exceeding the original expectations of the project. The typical responsibilities of a fully operational PRI included: assisting in the preparation of Road Plans to systematically prioritize projects (71 were prepared in total); conducting studies of many types; and co-financing and supporting routine maintenance microenterprises. Overall, the rapid and successful adoption of the PRI model demonstrated the ability and desire of local governments to manage their own infrastructure assets, and in the process, it made the SRRP a trailblazer in the national decentralization agenda.

11. The SRRP introduced several new complementary initiatives to further promote social issues. LDWs were established in 85 districts to help catalyze community-led production activities by helping them develop business plans and find financing. The SRRP also increased the number of projects in the most isolated and poor areas of the country, increasing the number of Road Committees and introducing a pilot program for improving waterborne transportation in the jungle region. However, this pilot faced many challenges while operating in that remote area of the country and was eventually discarded. The SRRP also included a Gender Action Plan that promoted the involvement of women in all project activities. These efforts were quite successful. By the end of the project, women accounted for 23% of microenterprises' workforce and 24% of Road Committee members.

Outputs by Component

Component 1: Improvement of Rural Transport Infrastructure.

1. **Road Rehabilitation:** At closing, the program had rehabilitated 3,277 km of rural roads, representing most of the revised target of 3,358 km. Most of these investments were prioritized at the local level with participatory planning. These roads were generally in very poor condition before the rehabilitation, requiring the surface to be reestablished, drainage systems constructed, and slopes stabilized. Contracts were awarded competitively to private firms, and appropriate supervision and safeguards were implemented. Rehabilitations were financed entirely with Project resources, and were contracted and managed directly by Provias, since the Provincial Road Institutes (PRIs) were assessed at that time as lacking the adequate capability to execute these responsibilities. Future rural roads projects will have the objective of transferring these responsibilities to PRIs as appropriate.

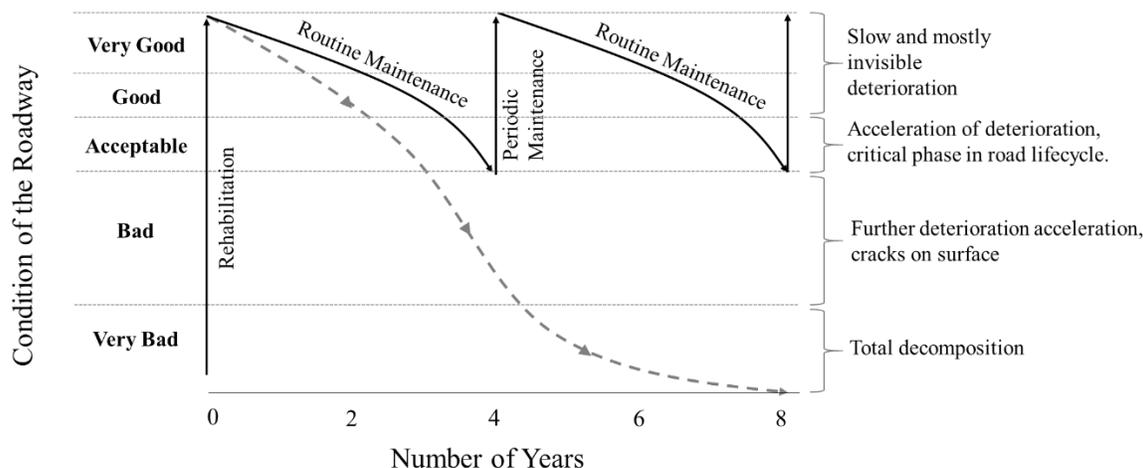


Figure 3-1: Rural Road Intervention Model

2. **Bridge Rehabilitation:** The revised target was met with the rehabilitation of a 44-meter bridge in the Department of Ancash.

Periodic Maintenance: The program performed periodic maintenance on 7,806 km of roads, surpassing the revised target of 7,506 km. All of these roads had been rehabilitated in either the First Rural Road Project (FRRP) or the Second Rural Road Project (SRRP). Periodic maintenance consisted of reestablishing the gravel surface and adding appropriate quarried material as needed. This work was contracted out competitively to small firms in the private sector, helping them grow and bid on larger contracts in related fields. Originally, periodic maintenance was scheduled to be performed every five years. However, recent experiences have demonstrated that in some areas of the country—especially in the jungle region—it is necessary to perform this work more frequently, even twice as much, due to heavy rains.

3. Over the course of the Decentralized Rural Transport Project (DRTP), the management and contracting of periodic maintenance was transferred to the PRIs as their capabilities grew. By the end, 28 percent of all periodic maintenance kilometers had been managed by the PRIs with

Project funds. After an initial learning curve, the quality of these activities and the performance of their contracts were comparable to those managed centrally by Provias. This validated the ability and interest of local governments in executing complex infrastructure works, and added fuel to further decentralization reforms.

4. **Non-Motorized Transport (NMT) Track Improvement:** As part of the Project, 2,444km of NMT tracks were improved, almost reaching the revised end target of 2,515 km. Achieving this required a significant effort toward the end of the Project, since these activities faced many delays caused by heavier-than-usual rainy seasons and higher costs. NMT tracks were improved by contracting NGOs with local experience to work with these isolated communities on the creation of Road Committees that would prioritize and execute these works. This often involved widening platform, removing obstacles, improving drainage systems, building small bridges, and building places for people to stay on multi-day trips.

Table 3-1: Project Works by Department (Data from Provias)

Department	Rehabilitation of Rural Roads			Improvement of NMT Tracks		
	No. of Projects	km Executed	No. of Beneficiaries	No. of Projects	km Executed	No. of Beneficiaries
Amazonas	5	85.0	58,500	23	200.8	26,956
Ancash	10	143.5	28,463	16	173.8	22,299
Apurímac	5	128.2	24,571	-	-	-
Arequipa	10	262.9	43,478	9	149.3	9,350
Ayacucho	19	479.5	130,172	16	172.0	47,316
Cajamarca	21	335.4	107,708	1	15.5	3,070
Cusco	12	262.2	102,042	7	142.9	32,609
Huancavelica	4	133.6	49,381	-	-	-
Huánuco	12	141.8	26,917	44	311.0	19,634
Ica	2	36.6	5,544	3	19.9	909
Junín	7	91.2	61,439	7	94.2	12,435
La Libertad	12	311.9	104,107	24	367.1	43,849
Lambayeque	3	20.3	4,898	5	76.3	4,779
Lima	6	35.1	23,916	6	77.5	5,070
Loreto	-	-	-	3	84.0	5,095
Madre de Dios	2	18.2	9,028	-	-	-
Pasco	2	31.0	13,919	7	85.5	6,643
Piura	3	55.9	18,459	7	98.6	8,420
Puno	11	271.3	86,814	10	92.1	11,750
San Martín	18	202.6	249,970	22	134.6	18,625
Tacna	1	20.6	2,299	-	-	-
Ucayali	1	15.7	8,641	5	48.9	3,950
Total	166	3,082.3	1,160,266	215	2,344.0	282,759

* Only completed contracts

5. **Improvements of Other Types of Rural Infrastructure in the Jungle Region:** The SRRP introduced a pilot with the goal of building docks to improve river transportation in the jungle region of the country, which turned out to be unsuccessful due to the many difficulties encountered in operations in these areas (challenging terrains, unfamiliar cultures, heavy rainy seasons, etc.). Nonetheless, the DTRP sought to continue working in the jungle region through regular planning and implementation channels. The Provincial Participatory Road Plans (PPRPs) developed for provinces in this area identified particular transportation needs around the key river and air channels that connect them to the rest of the country, and the potential for railroads to significantly improve travel times and costs. These and other consultancy studies emphasized the

need for adapting to local conditions and building additional contingencies into the planning. However, these ideas were received tepidly by Provias, given the earlier problems encountered while working in this area, including issues with two road rehabilitation contracts that ended in arbitration in 2009.

6. Moving forward, the Ministry of Transport and Communications’ policies in recent years have increased the resources and strength of its Waterborne Transportation Office in order to improve the navigability of large rivers in the country (most of them in the jungle region), including the improvement of several ports. Most of the projects that originated from these efforts are currently in the study and design stages. However, it is clear that the sector has prioritized projects that connect large urban centers in the jungle and not afforded much attention to its rural communities, which was one of the general goals of the DRTP. This remains an area where more work could be done in the future.

7. **Pilot for Stabilization of Slopes and Protection against Erosion:** In 2013, a local university (Universidad Nacional Agraria La Molina) performed an onsite study for Provias to evaluate bioengineered solutions for stabilizing slopes along the Llapay-Laraos-Lima road. Towards the end of the DTRP, the university submitted a proposal for the implementation of its recommendations, which is currently being evaluated by Provias.

8. The DRTP did not have routine maintenance as a subcomponent, since its financing was transferred to the GoP (co-financed between municipalities/PRIIs and district governments). This was a gradual process that started during the SRRP. However, the DRTP did have the objective of continuing to promote and strengthen the use of microenterprises and ensuring the high quality of these microenterprises’ work.

9. The Project was estimated to have created the jobs shown in Table 3-2.

Table 3-1: Jobs Created

	Unskilled Jobs	Skilled Jobs
Road Rehabilitation	617	3,081
Periodic Maintenance	2,312	7,680
Improvement of NMT Tracks	192	4,172

*Year-equivalent jobs

Component 2: Institutional Development

The Project strengthened the institutional capabilities of the government at the central and local levels in the context of the ongoing decentralization reforms. At the local and central levels, the Project achieved:

10. **Strengthening Decentralized Planning:** The Provincial Road Management Pilot, introduced as part of the SRRP, had established 121 PRIIs in 12 departments of the country, where 36 of them attained full implementation capacity. The DRTP grew and strengthened this institutional model to encompass 188 PRIIs, around 100 of them with full capacity.

11. One of the main responsibilities of PRIs was to plan rural road investments in their jurisdictions through PPRPs. PRIs worked with consultants to develop a consensus on the demand for transportation based on participatory workshops with local stakeholders and an analysis of socioeconomic data. On the one hand, this demand was estimated both for marginalized populations (the poorest and most isolated) and for economically productive populations, emphasizing the potential for natural resource extraction. On the other hand, the existing supply of transportation was determined by surveying the road network (including its condition) using Geographic Information Systems (GIS). By crossing infrastructure supply with demand, potential projects could be ranked using multi-criteria analyses of relevant factors. This final prioritization was then validated with a technical working group and the results were presented in the PPRPs. The DRTP assisted provinces throughout this process.

12. **Strengthening of the routine maintenance system with microenterprises:** By the end of the SRRP, there were 532 of these microenterprises maintaining 14,750 km of roads. The contracting of these activities had been transferred to the PRIs and municipalities were increasingly participating in their co-financing. The micro-entrepreneurs were essentially tasked with using manual labor to fill potholes, clear vegetation, clean drainages, remove small obstacles, and do general emergency work (especially during the rainy season). These organizations were also required to maintain proper legal status by paying taxes, having bank accounts, filing financial statements, developing internal operating procedures, and becoming registered. Provias and the PRIs assisted the microenterprises in each of these steps, providing detailed manuals for their work.

13. The DRTP successfully expanded this system and fully decentralized its management to the PRIs. At the beginning of the Project, it transferred their financing to the municipalities and district governments (who received some funds through FONCODES). By the end of the DRTP, there were 857 microenterprises maintaining 16,867 km of roads in 143 provinces. This represented a creation of 325 new microenterprises, adding 3,250 one-year equivalent permanent unskilled jobs.

14. **Mobilizing municipal financing for rural transport and the promotion of private financing of rural transport:** In promoting decentralization, the DRTP helped increase the resources transferred by the Ministry of Economy and Finance to the municipalities for transportation projects (mostly for routine maintenance). In 2007, this figure was US\$140 million, and in 2011, it was \$109 million. Through these transfers, the Ministry of Economy and Finance has been the largest funder of rural transportation. However, the PRIs have been adept at complementing these transfers with a variety of other sources. It is often the case that district governments contribute from their small budgets for road maintenance (resources they receive from FONCODES). In certain areas of the country, royalties from natural resource exploitation have been used to fund roadwork. To a lesser extent, PRIs currently receive funds in relatively small amounts from over 30 international and national aid funds.

15. **Strengthening local capacity to handle fiduciary and safeguard aspects:** The comprehensive institutional strengthening package provided to the PRIs included the implementation of financial management, procurement, and environmental safeguards. For funds to be transferred to them for the purpose of contracting out routine and periodic maintenance, the Ministry of Economy and Finance implemented a rigorous set of rules to ensure the protection of these funds.

16. **Scaling up the GIS Road Inventory:** The SRRP introduced a pilot where two PRIs were trained in GIS technologies and given assistance so they could develop an inventory of their rural

Subcomponent 3.1: Local Development Window

20. The SRRP introduced the LDW in 12 provinces as a way of helping rural producers organize associations around specific income-generating activities (for example, agricultural niches, fish farming, and eco-tourism), and provided technical and business assistance, including facilitation in the securing of funding. Organizing rural producers also eliminated middlemen, who often exacted high premiums for getting rural goods to local markets. A key feature of the LDW was that it operated in areas that had benefited from the rural road projects, therefore maximizing the impacts thereof.

21. The DRTP expanded the LDW to 28 provinces and contracted out their operation competitively to 15 NGOs. The LDW assisted and financed the preparation of 52 business plans for rural producers' associations (including 15 dairy, 8 livestock, 6 irrigation, 6 quinoa, 5 cacao, and 5 coffee projects, among many others). Associations were also trained in technical aspects and the commercialization of their products. Of these projects, 46 were funded through various sources and were successfully implemented. Initiatives often leveraged different funding sources.

22. In the DRTP, the LDW was given the additional responsibility of working with local governments to promote territorial development strategies and serve as advocates for rural populations. By the end of the Project, LDWs had helped municipalities prepare and approve 30 local economic development plans, 41 local ordinances, 13 resolutions, and 6 municipal covenants. Many of these aimed at strengthening municipalities to become more actively involved in promoting rural development. The LDW gave many presentations to municipal governments, emphasizing the importance of having territorial development policies and partnering with production sectors in rural areas. These lobbying efforts led to the creation of municipal offices in 12 provinces dedicated to promoting local economic development (most municipalities did not have these offices at the time). This engagement with local governments sets the LDW apart from other programs implemented in the country to promote rural development (such as ALIADOS and AGROIDEAS), and it helped the production initiatives to often receive support from their local government after the contracts of the LDW had ended.

Subcomponent 3.2: Rural Infrastructure Pilot (RIP)

23. The planning component of the RIP was relatively successful, but the implementation of these plans in coordination with the other sectors proved to be quite challenging. By the end of the DRTP, 15 Rural Infrastructure Plans (RIPs) had been prepared, meeting 100 percent of the appraisal target. These plans combined a multi-criteria analysis with stakeholder input to prioritize infrastructure investments across several sectors (roads, electrification, water, telecommunications, irrigation, etc.) according to social, political, and economic factors (emphasizing the latter). Despite signing a Memorandum of Understanding with the other sectors (and the municipalities of the 15 provinces) and attempting to reach out on numerous occasions, Provias was ultimately unsuccessful in achieving the level of cross-sectorial cooperation needed to implement the RIPs concertedly. The other sectors desired additional funds from the Ministry of Finance. In 2010, the role of facilitating coordination was transferred to the *Presidencia del Consejo de Ministros* (PCM), although they were equally unsuccessful.

24. Eventually, Provias executed 19 of the road projects prioritized by the RIPs (totaling 122 km) on its own. The other sectors also executed some of these projects, including 6 water projects under the *Agua para Todos* program, 3 of the irrigation projects, several smaller telecommunications projects, and various pre-investment studies. Peru invested significantly in rural infrastructure over the course of the DRTP. A survey of people living near road

rehabilitations in 2 of the 15 provinces of this Pilot (Vilcashuaman and Huacaybamba) showed that the percentage of people with access to at least two basic infrastructure services (in addition to the road rehabilitation) increased from 35.8% in 2006 to 95.4% in 2013¹⁹ (these services included: water, sanitation, and electrification) (300% of output target based on unbiased information).

25. Even though the RIPs were not implemented as expected, the principles and model of this Pilot were used by the Ministry of Development and Social Inclusion to create a similar initiative in 2013 called FONIE (*Fondo Para La Inclusion Economica de Zonas Rurales* in Spanish). FONIE differs from the RIPs mainly in that it seeks to focus investments on 570 of the poorest districts in the country, although both share the modality of pursuing enhanced benefits through the bundling of infrastructure projects. Furthermore, laws have recently been passed to expedite coordination between infrastructure sectors, such as Supreme Decree 004-2013-PCM.

26. In balance, the RIP was successful at exploring the capability of various sectors of the government for planning and coordinating across infrastructure sectors, socializing lessons learned, and leading to the creation of a new governmental program.

Component 4: Project Management

27. Project management was financed entirely by the Borrower in a sufficient and timely manner.

¹⁹ Including water, sanitation, and electrification

Economic and Financial Analysis

1. An ex-ante economic evaluation of four representative intervention types from the Decentralized Rural Transport Project (DRTP) was conducted in the Project Appraisal Document PAD. These interventions were defined as: the rehabilitation and maintenance of roads with less than 15 Annual Average Daily Traffic (AADT), with AADT between 15 and 50, with AADT higher than 50, and the improvement of Non-Motorized Transport (NMT) tracks²⁰. A Cost Benefit Analysis (CBA) was performed using the Road Economic Decision (RED) model on these representative interventions, with the exception of roads with AADT higher than 15 which were analyzed using a Cost Effectiveness Analysis (CEA). This was done to allow for the consideration of roads interventions with primarily social objectives. An ex-post economic evaluation was conducted that consisted of: (i) reviewing the CBA and CEA performed on a sample of pre-investment feasibility studies prepared during project implementation, and (ii) redoing the representative ex-ante CBA and CEA evaluations using actual data on project costs and benefits, including the results of the latest Impact Evaluation study.

Ex-Ante Economic Evaluation

2. The economic evaluations were stratified by level of development to allow for social considerations. Rehabilitating high-traffic roads is likely to accrue more economic benefits than low-traffic roads, especially in productivity gains. However, low-traffic roads might serve a critical role in reducing the isolation of some communities and providing them access to basic services. For roads with less than 15 AADT, a CEA indicator was estimated as the costs of these interventions per beneficiary population, which included anyone living within 2.5 km to either side of the road. Costs were estimated based on the present value of investments, supervision, environmental mitigation, and maintenance over a 10-year horizon.

3. For roads with more than 15 AADT and NMT tracks, a CBA was performed using the RED model developed by the World Bank for evaluating investment alternatives for rural roads. This model uses a “consumer surplus” approach to calculate project benefits from user savings (vehicle operating costs, passenger time costs, and accident costs), following vehicle speed and cost relationships from the Highway Development and Management Model (HDM-4). The characteristics of the roads and other contextual factors were also inputs. The evaluation assumed a 10-year horizon and considered a discount rate of 14 percent.

4. The results of the ex-ante evaluation found in Table 4-1 indicate that, for each road class, the Project was expected to have a satisfactory Economic Rate of Return (ERR). To estimate the ERR for the whole Project, it was necessary to approximate the proportion of investments in each road class. This was done through an analysis of how the planning methodology of the Project was likely to be implemented, considering several evaluation criteria and their valuations. Using these, it was estimated that the Project would have an ERR of 29.2 percent with a Net Present Value (NPV) of US\$13.91 million. A sensitivity analysis involving increased costs by 20 percent and decreased benefits by 20 percent yielded an ERR of 16.2 percent, which is still satisfactory

²⁰ These interventions were expected to account for 94 percent of the civil works investments of the project. The rehabilitation of bridges was not analyzed because the parameters of these interventions had not been defined by that point.

(greater than 14 percent). For details on the specific cost inputs and assumptions of this economic evaluation, see the tables in the following sections and the PAD.

Table 4-1: Ex-Ante Economic Evaluation Results (DRTP PAD)

Road Class	Length (km)	MT Traffic (AADT)	NMT Traffic (ppl/day)	Investment (M US\$)	Investment (M US\$/km)	NPV (M US\$)	ERR (%)
Rural Road with AADT < 15	1,610	NA	NA	25.6	15,900	NA	NA
Rural Road with AADT 15 < AADT < 50	1,207	20	30	19.2	15,900	7.71	26.5%
Rural Road with AADT > 50	183	65	0	2.9	15,900	2.72	40.0%
NMT Tracks	2,167	0	30	5.0	2,310	3.48	32.0%
Total	5,167	33.47	30	52.7		13.91	29.2%

Feasibility Report Economic Evaluations

5. During the implementation of the Project, economic evaluations were performed for most of the road rehabilitations and NMT track improvements. A survey was conducted of around 30 percent of these to compare them to the ex-ante analysis and provide some information on the variability of the economic efficiency of subprojects. Figure 4-1 shows that rehabilitation costs were skewed upwardly by a small amount of expensive projects, often in the jungle parts of the country, where road work was affected by heavy rains and other complications.

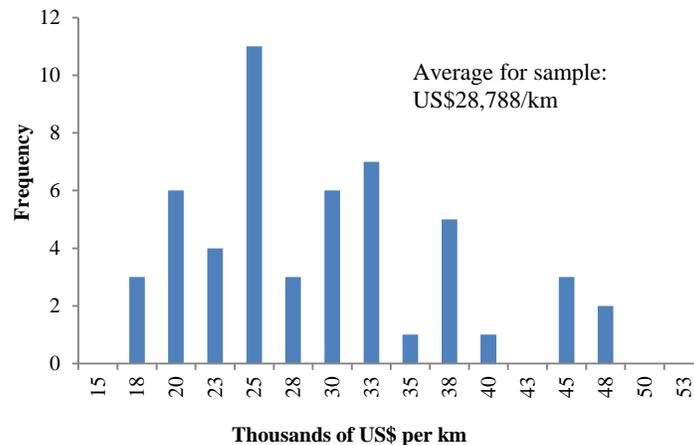


Figure 4-1: Distribution of Rehabilitation Costs (Sample of Pre-Investment Studies)

6. For rural roads with more than 15 AADT, the feasibility reports calculated an EER. As can be seen in Figure 4-2a, most of these calculations were favorable (higher than the discount rate, which was assumed to be 14 percent in the PAD), although to a lesser extent than estimated in the PAD. This reflects the higher-than-expected intervention costs of the Project. For roads with less than 15 AADT, the reports estimated the costs per beneficiary, which were also favorable.

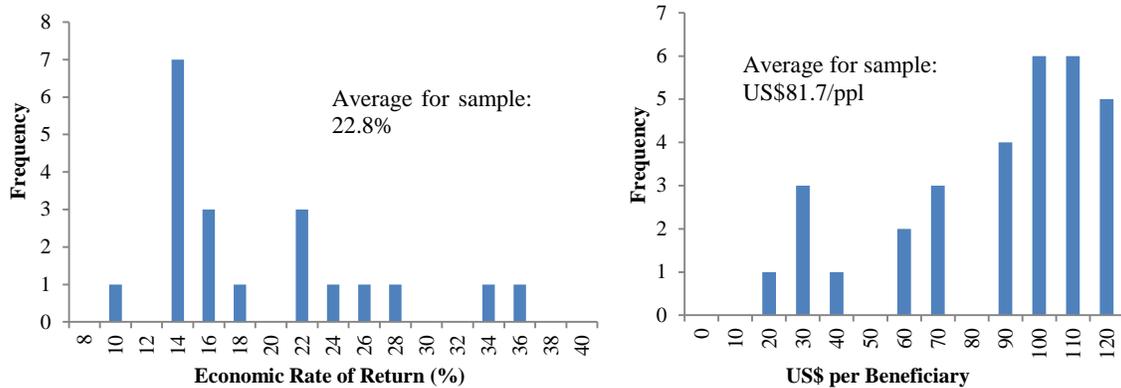


Figure 4-2: Distribution of (a) EERs for rehabilitation of medium- and high-volume roads; and (b) costs per benefit for rehabilitation of low-volume roads (sample of pre-investment studies)

7. For the improvement of NMT tracks, the feasibility reports estimated the costs per beneficiary. From the figure below, it may be observed that these were more favorable than for road rehabilitations, as expected. Most of the costs of these improvements remained in the range of US\$2,000-3,000/km, but the average was biased upwardly by a few very expensive projects. This was also the case with road rehabilitations, which suggests that more careful project selection could reduce costs significantly.

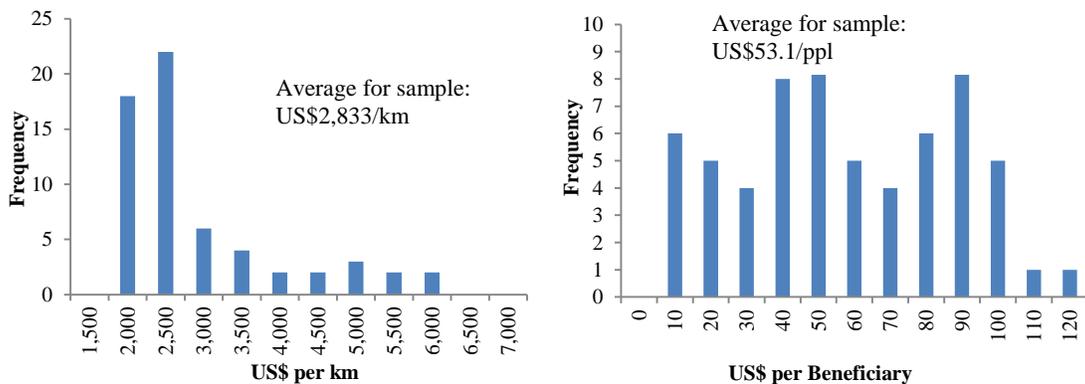


Figure 4-3: Distribution of (a) costs and (b) costs per beneficiary for the improvement of NMT tracks (sample of pre-investment studies)

Ex-Post Economic Evaluation

8. An ex-post economic evaluation of the Project was conducted (by a local consultant) to determine the economic efficiency of its investments. This analysis followed the methodology of the ex-ante evaluation, but with actual data on costs and impacts. The cost data summarized in Table 4-2 was obtained by analyzing final contracted costs for different types of civil works. These figures differ slightly from the average costs reported elsewhere because they include overruns and other issues not financed by the Project. It is clear from this table that actual costs were substantially higher than anticipated in the PAD, which was partially accounted for in the 2010 project restructuring.

Table 4-2: Average Investment Costs

Component	Ex-Ante Evaluation Inputs		Ex-Post Evaluation Inputs	
	Unit Cost (US\$ /km)	Km	Unit Cost (US\$ /km)	Km
Rehabilitation of Rural Roads	15,900	3,000	26,403	3,082
Periodic Maintenance*	2,800	11,200	5,210	7,678
Routine Maintenance (yearly)	900		1,279	2,477
Improvement of NMT Tracks	2,310	2,167	2,730	2,344

*In the ex-ante analysis, periodic maintenance was assumed to take place every 3 years, while in ex-post analysis the actual frequency was 5 years.

9. Road user costs were estimated for the five motorized vehicle types indicated in Table 4-3. This table shows that most of the unit costs increased considerably over the years based on a variety of data sources (if specific evidence was not available, cost parameters were inflated using aggregate indices). On the other hand, there is little evidence that the utilization and loading parameters changed decisively one way or the other. The value of time for car passengers was estimated at US\$2.67 per hour, based on an average income of 1,638 soles per month, 176 working hours per month, 70 percent work-related trips, and non-work time being valued at 25 percent of work time. For bus and truck passengers, the monthly income was assumed to be 750 soles with the same assumptions as for car passengers. For pedestrians on NMT tracks or rural roads, the value of time was estimated at US\$0.73 per hour based on an average income of 25 soles per day, 176 working hours per month, 50 percent of trips being work-related, and non-working time being valued at zero. The average cost of accidents is assumed to remain the same as in the ex-ante evaluation, at US\$100,000 per death, US\$5,000 per injury, and US\$500 for material damages only.

Table 4-3: Road User Costs and Characteristics

Costs	Ex-Ante Evaluation Inputs					Ex-Post Evaluation Inputs				
	Car	4-Wheel Drive	Bus	Light Truck	Medium Truck	Car	4-Wheel Drive	Bus	Light Truck	Medium Truck
Unit Costs										
New Vehicle Cost (US\$/vehicle)	11,855	18,579	89,700	69,000	86,250	11,784	18,468	89,162	68,586	85,733
New Tire Cost (US\$/tire)	37.40	63.80	274.10	110.90	274.10	46.9	80.1	344.1	139.2	344.05
Fuel Cost (US\$/liter)	0.49	0.49	0.53	0.53	0.53	1.29	1.33	1.33	1.33	1.33
Lubricant Cost (US\$/liter)	2.66	2.66	2.66	2.66	2.66	3.34	3.34	3.34	3.34	3.34
Maintenance Labor Cost (US\$/hour)	2.07	2.07	2.39	2.39	2.39	3.77	3.77	4.35	4.35	4.35
Crew Cost (US\$/hour)	-	0.80	2.79	1.68	2.15	-	1.46	5.08	3.06	3.91
Passenger Time (US\$/hour)	1.22	1.22	0.61	0.61	0.61	2.67	2.67	1.22	1.22	1.22
Cargo Delay (US\$/hour)	-	0.09	0.09	0.09	0.09	-	0.11	0.11	0.11	0.11
Utilization and Loading										

Kilometers Driven per Year (km)	25,000	40,000	120,000	60,000	90,000	25,000	40,000	120,000	60,000	90,000
Hours Driven per Year (hrs.)	480	960	2,496	1,440	2,400	480	960	2,496	1,440	2,400
Service Life (years)	10	8	10	8	10	10	8	10	8	10
Percent of Time for Private Use (%)	100	0	0	0	0	100	0	0	0	0
Number of Passengers	3	3	40	1	1	3	3	40	1	1
Gross Vehicle Weight (tons)	1.37	2.18	13.63	6.86	15.4	1.37	2.18	13.63	6.86	15.4

10. The economic evaluation also incorporated the results of an Impact Evaluation study conducted in 2013, which surveyed thousands of households within the area of influence of selected project roads and other control roads with similar characteristics (a similar analysis was also done for NMT tracks). This study found that road rehabilitations increased automobile traffic by 58 percent, changing the composition of vehicles on the roads. However, this was not considered in the economic evaluation, since its effect would likely be marginal, and was already captured to some extent in the assumptions specified for induced demand. It was assumed that automobile travel has a price elasticity of 2.0 and truck and bus travel have a price elasticity of 0.5. These were the same assumptions used in the ex-ante evaluation.

11. The Impact Evaluation study also found other benefits that were not explicitly incorporated into the economic analysis for various reasons. It found that the number of days with road closure decreased by 55.6 percent, but it was unclear how this could be translated into the traditional benefits summed up by the RED model. A road closure could imply that certain types of vehicles would be affected more than others, or that alternative routes are being used instead. Translating this into reductions in costs or travel times was impossible, given the information available. Additionally, the Impact Evaluation study also found that the Project had large positive impacts on production, such as an 8.5 percent increase in hours worked; a 33.8 percent increase in land cultivation; and a 15 to 20 percent increase in livestock holdings. However, because the consumer surplus approach was used to account for benefits and costs, these secondary benefits were not considered in the analysis. They are added implicitly in the value of time parameters specified for passenger and cargo transport.

Table 4-4: Traffic Composition and Growth

		Car	4-Wheel Drive	Bus	Light Trucks	Medium Trucks
Ex-Ante Evaluation Inputs	Traffic Composition (%)	46%	24%	2%	12%	16%
	Avg. Yearly Traffic Growth (%)	3.5%	3.5%	2.5%	2.5%	2.5%
Ex-Post Evaluation Inputs	Traffic Composition (%)	38%	28%	9%	14%	11%
	Avg. Yearly Traffic Growth (%)	2.62%	2.62%	2.62%	2.62%	2.62%

12. For the medium- and high-volume roads and NMT tracks, the CBA assumed a planning horizon of 10 years. The results are shown in Table 4-5. The rehabilitation of medium-volume roads had an ERR of 47 percent; rehabilitation of high-volume roads had an ERR of 61 percent;

and the improvement of NMT tracks had an ERR of 67 percent. The NPV was also calculated assuming a 14 percent interest rate to compare with the values obtained in the ex-ante analysis.

Table 4-5: Results of Ex-Post Analysis

Road Class	Length Surveyed (km)	Total Length (km)	Beneficiaries per km	MT Traffic (AADT)	NMT Traffic (ppl/day)	Investment (M US\$)	CEA (US\$ /beneficiary)	NPV at 14% (M US\$)	ERR (%)
Rural Road with AADT < 15	232	550	238	8.9	30	10.6	26.9	NA	NA
Rural Road with AADT 15 < AADT < 50	848	2,011	348	28.6	0	57.3	NA	61.6	47.5
Rural Road with AADT > 50	220	522	564	78.2	0	13.5	NA	24.2	61.2
NMT Tracks	2332	2332	170	0	30	6.4	NA	22.5	66.9
Total	1,300+2332	5414	281	33.5	30	81.4		108.3	54.6%

13. The ex-post ERRs were considerably higher than those estimated in the ex-ante analysis shown in Table 4-1. This was caused by: (i) transportation costs being much higher than anticipated; and (ii) the value of time for passenger travel being almost twice as high as expected. Both of these resulted from the strong growth of the Peruvian economy over the last decade, which raised living standards and increased the prices of resources. This gave the improvements in transportation costs and speeds predicted by the RED model higher benefits than expected: basic transportation infrastructure was valued more. This effect was strong enough that it more than compensated for the increase in the investment costs of the interventions. In other words, the reasons that led the Project to cost more in fact also caused its benefits to society to be valued more.

14. For the low-volume roads, the CEA also assumed a planning horizon of 10 years. It considered the net present value of costs relating to: road rehabilitations; periodic maintenance; and routine maintenance. The number of beneficiaries was also estimated from pre-investment studies. The cost effectiveness was calculated at US\$30.20/person.

15. Table 4-6 shows a sensitivity analysis on project costs and benefits. For the most unfavorable scenario, the Project would still have a satisfactory ERR.

Table 4-6: Ex-Post Sensitivity Analysis Results

Road Class	Base ERR (km)	ERR Sensitivity Analysis (%)		
		A: Costs+20%	B: Benefits-20%	A+B
Rural Road with AADT < 15	N/A	N/A	N/A	
Rural Road with AADT 15 < AADT < 50	47.5%	44.89%	38.65%	35.4%
Rural Road with AADT > 50	61.2%	54.47%	55.43%	47.3%
NMT Tracks	66.9%	66.90%	49.23%	49.2%
Total	54.0%	49.44%	46.62%	41.0%

Bank Lending and Implementation Support/Supervision Processes

(a) Task Team members

Names	Title	Unit	Responsibility/ Specialty
Lending			
Nicolas Peltier-Thiberge	Asst. to the President -TTL	EXC	
Alonso Zarzar Casis	Sr Social Scientist	LCSSO	
Demetrios Papathanasiou	Sector Leader	AFTSN	
Evelyn Villatoro	Senior Procurement Specialist	EASR1	
Isabella Micali Drossos	Senior Counsel	LEGAM	
Juan D. Quintero	Consultant Environmental	EASDE	
Keisgner De Jesus Alfaro	Senior Procurement Specialist	LCSPT	
Luis M. Schwarz	Senior Finance Officer	CTRLA	
Luis Tineo	Senior Operations Officer	GFDRR	
Luz A. Zeron	Financial Management Specialis	LCSFM	
Maria Angelica Sotomayor	Sector Leader	LCSSD	
Maria Elizabeth Dasso	Consultant Social Development	LCSTR	
Maria Luz Caballero Alonso	Consultant	SEGES	
Marco Zambrano	Consultant Environmental	AFTG1	
Melanie Glass	Consultant	LCSTR	
Nicolas Drossos	Consultant Financial Management	AFTSW	
Nicolas Serrie	Junior Professional Associate	LCSTR	
Pedro Olinto	Senior Economist	PRMPR	
Rodrigo Archondo-Callao	Sr Highway Engineer	ECSTR	
Rossana Polastri	Senior Economist	PRMVP	
Susan Bogash	Consultant Energy Economist	LCSEG	
Tomas Socias	Senior Procurement Specialist	LCSPT	
Xiomara A. Morel	Sr Financial Management Specialist	LCSFM	
Supervision/ICR			
Maria Margarita Nunez	Sr Highway Engineer -TTL	LCSTR	
Nicolas Peltier-Thiberge	Asst. to the President -TTL	EXC	
Ana Lucia Jimenez Nieto	Financial Management Specialist	LCSFM	
Andrea Monje Silva	Consultant Gender	LCSTR	
Alonso Zarzar Casis	Sr Social Scientist	LCSSO	
Anna R. Okola	Transport. Engineer	LCSTR	
Aracelly Woodall	Sr. Program Assistant	LCSTR	
Elizabeth Huaman	Team Asistant	LCC6C	
Francisco Rodriguez	Procurement Specialist	LCSPT	

Julie Chretien	Temporary	LCSTR	
Licette Moncayo	Program Assitant	LCSTR	
Mara La Rosa	Program Asistant	LCC6C	
Maria Elizabeth Dasso	Consultant	LCSTR	
Maria Jose Sala Pelufo	Consultant	EASIS	
Marco Zambrano	Consultant Environmental	AFTG1	
Omar Wahab	E T Consultant	MNSTI	
Oswaldo Patino	Consultant	LCSTR	
Pablo Riestra	Temporary	ECSTR	
Pierre-Antoine Picand	Temporary	LCSTR	
Rafael Bernardo Romeo	Temporary	ECSTR	
Raul Tolmos	Environmental Specialist	LCSSEN	
Sebastian Elias Guerrero	Consultant	LCSTR	
Selene La Vera	Procurement Specialist	LCSPT	

(b) Staff Time and Cost

Stage of Project Cycle	Staff Time and Cost (Bank Budget Only)	
	No. of staff weeks	USD Thousands (including travel and consultant costs)
Lending		
FY06	16.18	74.35
FY07	28.27	129.05
FY08	1.80	10.43
FY09	1.33	5.08
FY10	1.10	4.40
Total:	48.68	223.31
Supervision/ICR		
FY07	1.36	8.53
FY08	16.96	90.40
FY09	15.71	68.38
FY10	24.12	114.91
FY11	17.03	117.29
FY12	22.78	143.80
FY13	11.13	109.29
FY14	7.13	110.27
Total:	116.22	762.87

Beneficiary Survey Results

1. A study was conducted in 2013 to evaluate the impacts of the Decentralized Rural Transport Project (DRTP). Previously, three similar studies were conducted to assess the First Rural Roads Project (FRRP) and the Second Rural Roads Project (SRRP). This section discusses the results of the 2013 study in the context of these earlier findings. It also provides a brief overview of the research literature on the impacts of rural road interventions throughout the world. Details of this impact evaluation are found in the Final Report “Elaboración de la Evaluación de Impacto y Ampliación de la Línea Base del Programa de Transporte Rural Descentralizado – Informe Final”, prepared in 2014 by Macroconsult-Cuanto.

Literature Review

2. **Impact on Transportation Conditions.** Road improvement programs have the most direct impacts on transportation conditions: travel costs, travel times, safety, and reliability. These direct impacts represent the main channels through which higher levels of social and economic objectives can be achieved, leading their thorough estimation to be fundamental to the correct interpretation of the results. Indeed, there is vast evidence that transportation conditions improve after the rehabilitation or improvement of rural roads (Lucas, Davis and Rikard, 1996; Guimares and Uhl, 1997; Bakht, 2000; Levy, 2004; Khandker et al, 2011). However, their impact on safety is inconclusive, as few studies have considered this variable, and there is the potential for increases in speed-related accidents to offset the benefits of having more predictable roadways. To better understand this, more research is needed in this area.

3. **Impact on Access to Public Services.** There is also substantial evidence that improvements to the transportation conditions of rural communities increase their accessibility to public services. This effect has been observed to be significant for access to education centers in a variety of circumstances. Levy (2004) found increases in school attendance and improvements in the quality of education in rural Morocco, especially for girls. This finding was echoed by Khandker et al (2006) for the paving of rural roads in Bangladesh, although in this case, older girls benefited more. Similarly, Mu and Van de Walle (2007) observed increases in graduation rates in Vietnam, and Bell and Van Dillen (2012) observed reductions in school absences in eastern India.

4. Improving rural roads has also been observed to increase health accessibility in: Ghana (Porter, 2002), Georgia (Lokshin and Yemtsov, 2005), Malaysia (Windle and Cramb, 1996), and other Asian countries (Hettige, 2006). However, just as in schooling, there is evidence that benefits accrue differently across gender (Bravo, 2002).

5. Another dimension where road improvement projects have had positive impacts has been the improvement of public service quality, especially in attracting better teachers and doctors to work in rural areas (Levy 2004).

6. **Impact on Production Activities.** Both the improvement of transportation conditions and the increased access to public services should affect rural productivity positively. For one, there is strong evidence (Liu, 2000; Escobal, 2000; Iguñiz and Francke, 2006) that improving transportation conditions reduces the bargaining power of the intermediaries who commercialize the products of small rural farmers, decreasing the share of these intermediaries’ revenues, to the

benefit of the farmers. Also, farmed area where agriculture may be profitable was observed to increase (Van de Walle, 2008). Devres Inc. (1980) and Gannon and Liu (1997) found that improving roads also incentivized the industrialization of agriculture, which resonates with Binswanger et al (1993), who found that the improved profitability of agriculture, including from the reduction of post-harvest losses in transportation, leads to greater use of modern technologies and processes. Despite this positive evidence for some of the factors of rural productivity, estimates of the impact of road rehabilitations on aggregate productivity have been relatively weak, with many studies showing no improvements at all, or mixed results at best.

7. **Impact on Employment.** Road improvement projects have a small but important direct effect on rural employment (Howe, 2005; COWIS, 2008), and can have a broader indirect effect by increasing labor supply, through improved education and health care; and labor demand, through improved productivity (Jacoby, 2000; Smith et al, 2001; Lanjouw et al, 2001; Quizón and Sparrow, 2001; de Janvry and Sadoulet, 2001). There is also evidence of employment diversification toward more skilled jobs (Hine and Riverson, 1982; Rand, 2011).

8. **Impact on Income and Expenditures.** The empirical evidence on the effect of rural road interventions on incomes, expenditures, and poverty is largely inconclusive. One hypothesis for this is that it is likely necessary to also make complementary territorial development investments in order to achieve significant impacts on these key indicators (Escobal and Torero, 2005). Having an adequate transportation system might be required for meaningful rural development, but this alone may not be enough—there are other constraints holding back the improvement of incomes and expenditures (Hettige, 2006). A second explanation could be that these fundamental impacts occur over time horizons that are long and that the econometric methodologies commonly used to estimate them are inadequate. There are simply too many confounding variables that change over time, obfuscating any potential structural improvement in income and expenditures. The data requirements for the proper estimation of these impacts are probably unrealistically high, or alternatively, the assumptions required to interpret the results are too optimistic.

9. The estimation of impacts on incomes and expenditures is further complicated by the great heterogeneity of such impacts observed in some studies (Ahmed and Hossain, 1990; Jacoby, 2000; COWIS, 2008; Khander and Koolwal, 2011). Different segments of rural populations have been affected very differently, especially across different levels of human and physical capital. This requires the estimation to be more detailed, and makes results more difficult to interpret. Even if these impacts are accurately measured, there would still be significant distributional considerations that would be hard to assess and translate into policy recommendations.

10. **Evaluation Methodologies.** Most these studies have used the difference-in-differences methodology for estimating impacts of interest (unless the lack of panel data only permitted a simple cross-sectional comparison instead). In brief, this involves comparing how an impact variable changed after a road improvement in a treated group to how it changed in a control group. The adequacy of this methodology depends critically on how well the control group represents the counter-factual changes that would have taken place in the treated group without the road improvement. Recently, there have been several studies (Lokshin and Yemtsov, 2005; Rand 2011; Mu and Van de Walle, 2011) that have used matching techniques to statistically select the best controls based on their observable characteristics. This approach has generally led to a more robust estimation of impacts. Instrumental variables estimators have been used less frequently because of the inherent difficulties in finding adequate exogenous instruments in these circumstances (Dercon, 2009).

Evaluation of Peru Rural Roads Projects

11. The Peru Rural Roads Projects have dedicated considerable resources and effort to evaluating their progress toward their development objectives. As shown in Table 6-1, about 6,000 households have been surveyed since the year 2000, asking them a variety of questions about how their living conditions and opinions have changed over time. These surveys followed the difference-in-differences methodology, where half were conducted near areas intervened by the projects and the rest in control areas that had no scheduled interventions (except for the first Impact Evaluation study conducted in 2000 because of the lack of ex-ante data). These controls were selected based on qualitative criteria that sought an adequate counter-factual for the intervened areas. Households were asked about their transportation habits, employment, assets, expenses, quality of life, and access to public services (schools and healthcare institutions), among other information. Both households near rural roads and Non-Motorized Transport (NMT) tracks were surveyed.

Table 6-1: Household Surveys and Impact Evaluation Studies

	2000	2004	2006	2013
FRRP	IE ₂₀₀₀ BL (1,218)	IE ₂₀₀₀	IE ₂₀₀₄	
SRRP		BL (1,965)	IE ₂₀₀₄	IE ₂₀₀₄
D RTP			BL (1,432)	IE ₂₀₀₆ BL (1,290)

BL: Baseline Survey, with the number of households in parentheses

IE: Impact Evaluation study, with the baseline year in subscript

12. Based on the review of the literature above, these studies attempted to quantify the various mechanisms through which road improvements potentially lead to successively higher-level impacts. The direct improvements in transportation conditions expected in the short term would serve as the main channels for improving the accessibility of rural communities to public services and economic opportunities in the medium term. This could be represented in terms of health consultations, school attendance, and employment. Finally, these improvements would be expected to have long-term impacts on incomes and poverty. The objective of the studies was to estimate this progressive chain of impacts, as illustrated in **Error! Reference source not found.** 6-2.

13. The first Impact Evaluation study was conducted in 2000 using a cross-sectional methodology that only compared households near control roads and treated roads after the interventions, because ex-ante data had not been collected (Instituto Cuánto 2000). While keeping in mind the potential biases that could result in this type of study, it was found that transportation conditions had indeed improved considerably after the FRRP (travel times, costs, safety, reliability, etc.), and that this had likely led to improvements in the accessibility of healthcare and education. An opinion poll that was also conducted reinforced these findings. The households surveyed in 2000 were surveyed again in 2004 in an attempt to quantify longer-term effects of the FRRP. These results generally echoed the findings of the earlier Impact Evaluation, and it was not possible to observe changes in income or poverty, perhaps due to the relatively short observation window. One main limitation of these two early studies was that they did not report the standard errors of the parameter estimates, which made it impossible to determine the

statistical significance of these findings. For this reason, the results of these two studies are not discussed further.

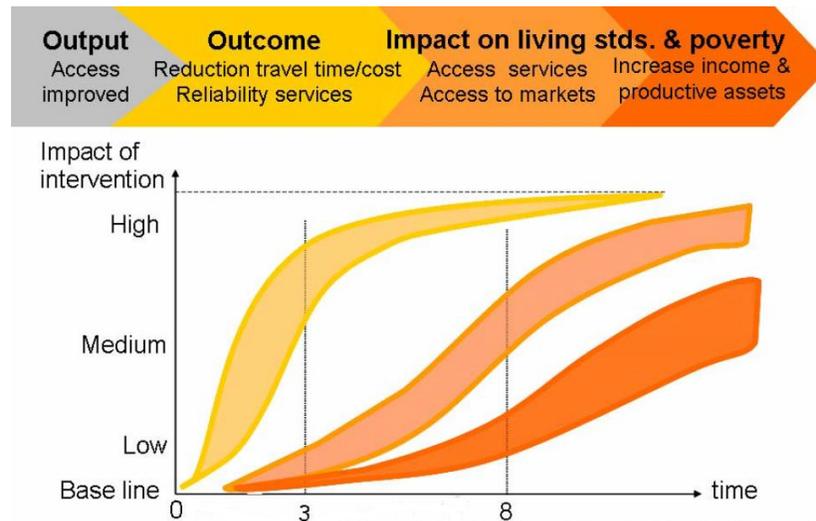


Figure 6-1: Hypothesis of Impacts from Rural Roads Projects (from SRRP ICR)

Summary of 2006 Impact Evaluation Study

14. The Impact Evaluation study performed in 2006 by GRADE (2007) had the following two objectives: (i) use new ex-ante household data collected in 2004 and ex-post data collected in 2006 to evaluate the short-term impacts of the SRRP; and (ii) resurvey the households that took part in the 2004 Impact Evaluation study of the FRRP (households first surveyed in 2000) to assess the sustainability of these earlier results. This summary focuses on the results of the former analysis, because it represents a clean evaluation of a road intervention program; the latter analysis is difficult to interpret without delving into the results of the 2004 Impact Evaluation study, which are inconclusive in any case due to the lack of estimation of standard errors.

15. A difference-in-differences methodology was used in the evaluation of the SRRP, and in this case the statistical significance of the results was reported. Of the households surveyed in 2004, 82 percent were successfully found in 2006. The results of this analysis primarily showed that there is a wide heterogeneity in the accrual of benefits, depending on the characteristics of particular interventions and the different population segments affected. Keeping this in mind, a couple of common threads in the results indicated that the SRRP had the following short-term impacts:

- (i) A large improvement in transportation conditions, especially for NMT tracks;
- (ii) An improvement in school enrollment and attendance where rural roads were intervened, with important gender-specific responses;
- (iii) A large improvement in health access where NMT tracks were improved, also with important gender-specific responses;
- (iv) An increase in unpaid family-related work (in agriculture and forestry) where NMT tracks were improved, and a general transition from informal employment to formal employment where rural roads were improved;
- (v) Mixed impacts on agricultural productivity (cultivated area, livestock production, mechanization, and access to credit services);

- (vi) A significant increase in income where NMT tracks were improved, with a sharp diversification of income sources, but little improvement in income where rural roads were intervened; and
- (vii) A significant reduction in poverty where NMT tracks were improved, but no reduction in poverty where rural roads were intervened.

16. In addition to these specific findings, there were three broad key conclusions that could be drawn from these results:

- Improving NMT tracks can have substantial short-term impacts on the communities that depend on them, including on their income and poverty levels. On the other hand, the rehabilitation of rural roads might not be enough to fully catalyze rural development, requiring complementary investments under a broader territorial development program to achieve these higher-level impacts. However, it is also possible that the observation window of this study (from 2004 to 2006) was too short to capture these types of impacts.
- There is significant heterogeneity in the incidence of benefits from rural roads projects, which has important policy implications. For example, women/girls and men/boys benefited differently in access to healthcare and education, households transitioned between different income and employment sources, and fares and freight tariffs responded differently for different vehicle types. Observing impacts at the aggregate level would miss important details about the mechanisms and incidence of benefit accrual.
- It is important to establish a clear outcome chain that differentiates between short-term and long-term impacts to adequately interpret the results. Additionally, it is likely that longer observation windows are needed to quantify the entirety of this outcome chain.

Methodology of the 2013 Impact Evaluation Study

17. At the end of the DRTP in 2013, another Impact Evaluation study was conducted by Macroconsult-Cuanto (2014). It consisted of resurveying households that had originally been surveyed in 2004 and 2006 (and collecting village-level data), and seeing how control groups differed in various socioeconomic indicators from groups that lived near road rehabilitations. The households in the 2004 survey were intervened by the SRRP (from 2004 to 2006), while those in the 2006 survey were intervened in the DRTP (from 2006 onward). However, the intervention strategy was essentially the same for these two projects, so the impact results are presented jointly in this summary (this helped deal with the loss of data from certain inadequate controls). The original evaluation design involved using a simple difference-in-differences estimator to compare changes in control groups to those in intervened groups, similarly to what had been done in the 2006 Impact Evaluation study. However, this approach faced the following methodological issues:

- **Household Attrition:** One of the main strengths of this study was that it had an observation window of 8-10 years, which was much longer than for the 2006 Impact Evaluation study (or other similar studies elsewhere). This promised to allow the estimation of long-term effects on key development indicators. However, this long observation window significantly increased the proportion of households from the baseline years that could not be found in the 2013 survey. Around 47 percent and 40 percent of the households from the 2004 and 2006 surveys were not found, respectively. If the causes of this attrition are similar between control groups and intervened groups, then the difference-in-differences methodology would control for this. However, there was some compelling evidence that a significant proportion of this attrition was systematic, in that those households that benefited the most from the rural roads projects

had a higher tendency to move, negatively biasing the results. Also, if either the control group or treated group had a higher initial concentration of people that were more likely to move, biased results would also be obtained.

- **Confounding Variables:** Rural Peru has undergone an unprecedented transformation in the last decade, with large government investments in public services and infrastructure contributing to rapid improvements in income and poverty. Since the observation window of this study was relatively long, it was likely that these exogenous time-dependent variations would bias the results. Future projects should weigh the benefits of using long-term studies to capture impacts on key development metrics with the downside of having to control for more and more factors and potentially not find robust impacts at all.
- **Inadequate Controls:** The most critical step in the difference-in-differences analysis is selecting control groups that properly represent the counterfactual of the intervened groups. The roads corresponding to the control and treated groups were selected when the surveys were first conducted in 2004 and 2006, using a subjective comparison of several characteristics that were thought to be important, such as: length, having no intersecting roads, being in the same region, etc. This approach led to the following two problems. First, it assumed that control roads were not going to be intervened outside of the program, which ended up being a poor assumption. An engineering survey of half of the “control roads” found that 8 had been improved (better than rehabilitation), 10 had been rehabilitated, 3 had other lesser interventions, and only 21 had not been intervened at all. Therefore, using all of these roads as controls in the difference-in-differences analysis would have led to odd results—with considerable uncertainty—that would have been hard to interpret. A second issue with this approach was that the simple subjective analysis used to select control groups was likely missing important characteristics correlated with the impact results.

18. Initial difference-in-differences estimates indeed indicated that these three issues were negatively impacting the results. To mitigate the inadequate controls issue, which was arguably the most critical, it was decided to drop control groups that had been intervened outside of the program (21) or that had not been part of the engineering survey (42). This left 21 control groups/roads that had not been intervened. These were used to represent the counterfactual scenario in the analysis. In order to make the most out of the remaining information, and correct for biases in the assignment of controls, a Propensity Score Matching (PSM) methodology was used to find the most adequate controls in the difference-in-differences framework. Similar approaches have been used by recent studies (Lokshin and Yemtsov, 2005; Rand, 2011; Mu and Van de Walle, 2011) that have obtained better results than earlier studies that just used difference-in-differences. Briefly, this approach consisted of assigning each observation (control and treated) with a probability of having been intervened that is modeled based on observable characteristics (the propensity score), and weighting the control group using these probabilities following Hirano et al (2003).²¹ The end result is that the analysis assigned a greater weight to those controls that are the most similar to the treated group (higher propensity score), and forced those in the control or treated groups with very high or very low probabilities of treatment to be dropped from the dataset (keeping only those with “common support”). In the end, 18 roads were identified to control for 79 roads that were treated.

²¹ This approach is described in the Impact Evaluation Handbook of the World Bank (Khandker et al, 2010).

19. The propensity score was modeled using a logit formulation and included explanatory variables that described the characteristics of the households, public expenditures per district, and climate factors, among others. Using this to weight the difference-in-differences greatly improved the quality of the results, with most of the impacts being significant and having interpretable signs. However, there were a few impact variables that showed interpretable changes, but were still insignificant because of the relatively small size of the sample that remained after inappropriate control groups were removed.

20. One source of bias that was not directly corrected by PSM was the systematic attrition of households. PSM helps control for this to the extent that attrition is correlated with observable factors in the baseline year. By matching households along income and other factors, PSM ensures that the baseline causes of migration are similar across treated and control groups. However, PSM does not correct for those causes of attrition that might be correlated with the treatment. The predominant hypothesis is that those households that benefited the most in accumulating human and physical capital from the road interventions are the ones that are most likely to move in search of better opportunities, because they will be better able to participate in labor and goods markets. To the extent that this hypothesis represents reality—which cannot be tested because of the inability to have data from the households that moved—it will bias impact results negatively. The households that stayed in intervened groups would be poorer and worse off in many aspects. Therefore, while the evaluation methodology does not correct for this potentially important source of bias, its effect would only be to decrease the positive impacts found. This, combined with the truncation of the dataset, implies that the results obtained represent conservative estimates of the impacts, which would likely be even greater and more significant if a more robust evaluation had been performed.

Results of 2013 Impact Evaluation Study: Rural Road Rehabilitation and Maintenance

21. A summary of the key results found after the Impact Evaluation Study is shown in Table 6-2. Note that indicators not included in this table showed no significant impact.

Table 6-2: Summary of Key Results of 2013 Impact Evaluation Study

Impacts of Rural Road Rehabilitations	% Change to Counterfactual	Impacts of NMT Track Improvements	% Change to Counterfactual
<i>Transportation Conditions on Rural Roads</i>			
Travel time to health centers	8.8	Travel time to paved road - village level	-17.5
Travel time to health centers, by vehicle	-26.6	Travel time to regional market - village level	-17.5
Travel time to schools	-24.2*	Travel time to district capital - village level	-37.9**
Travel time to schools, by vehicle	-12.8	Travel time to provincial capital - village level	-20.4**
Travel time to workplace	-3.9	Travel time to regional capital - village level	-4.9
Travel time to workplace, by vehicle	29.4	Travel time to workplace	-35.3**
Travel time to point of sale for agro. prods.	-26.2***	Travel time to markets	13.6
Travel time to market for selling agro. prods.	-6.1	Travel time to consolidation centers	-32.8
Travel time to consolidation center for agro. prods.	-151.4***	Travel time to schools	70.9***
Automobile traffic per week	58.5**	Travel time to health centers	-55.2**
Passenger fares on automobile (PEN)	205.9		
Passenger fares on microbus (PEN)	-307.3***		
Passenger fares on truck (PEN)	100.2*		
Number of days of road closure per year	-55.6*		
<i>Access to Public Services</i>			
People with health consultations given illness (%)	17.8*	People with health consultations given illness (%)	70.0***

Men with health consultations given illness (%)	16.8	Men with health consultations given illness (%)	86.8***
Women with health consultations given illness (%)	18.2	Women with health consultations given illness (%)	56.5***
School attendance (12-18 yrs.)	19.2***	School attendance (12-18 yrs.)	2.4
School attendance (12-18 yrs.) - boys	21.4***	School attendance (12-18 yrs.) - boys	-9.1
School attendance (12-18 yrs.) - girls	19.3***	School attendance (12-18 yrs.) - girls	3.6
Rural Production			
Hours worked per week	8.5*	Number of commercial establishments	18.0**
HH with a member as an employed worker (%)	-80.2***	Number of public institutions	30.0**
HH with a member as an independent worker (%)	-3.1	Number of private institutions	31.3**
HH with a member doing unpaid family work (%)	2.8	Percent with health centers	68.0***
HH with a member working in private sector (%)	-145.6***	Percent with radio station	55.1***
HH with a member working for farmer (%)	-6.1	Percent with TV channel	97.1**
Land surface for cultivation (Ha)	33.8***		0.0
Land surface for cultivation (%)	6.3	Land surface for cultivation (%)	21.7***
Land surface fallow (%)	-93.0***	Land surface fallow (%)	-94.8**
Land surface for natural grass (%)	62.5**	Land surface for natural grass (%)	-80.7
Land surface for forest (%)	136.1**	Land surface for forest (%)	-67.5*
Land surface for other use (%)	-94.5**	Land surface for other use (%)	0.0
Percentage of production sold	-5.4*		
Percentage of production sold in market	-14.5***		
Percentage of production sold to consolidation center	10.1*		
Livestock cattle (units per all households)	27.5***		
Livestock pigs (units per all households)	8.1*		
Livestock goats (units per all households)	12.1**		
Livestock horses (units per all households)	12.0**		
Livestock chickens (units per all households)	18.1***		
Livestock rabbits (units per all households)	15.9***		
Quality of Life			
Expenditures per capita (PEN/month)	7.3		
Logarithm of expenditures per capita (PEN/month)	3.7**		
Extreme poverty (proportion)	-13.8***		
Total poverty (proportion)	1.6		
Not poor (proportion)	-1.6		
Structural poverty (UBN)	-7.5*		

*10% significance, **5% significance, and ***1% significance

22. The impact on transportation conditions of rehabilitating and maintaining roads can be found in Table 6-3. Foremost, travel times were observed to decrease consistently, although for some trip purposes the magnitude of these changes was not statistically significant. Travel times decreased for students to reach schools and for farmers to reach points of sale for their products, especially for selling at consolidation centers. Little to no change was observed for travel to workplaces or health centers, which could reflect people accessing better jobs or health centers farther away, potentially in nearby urban centers. These travel time estimates were obtained using household surveys. Travel time data was also collected at the village level, but it was not statistically useful (contained a lot of unexplained variation). The number of days of road closures was observed to decrease. No impact was found on transportation prices for passenger or freight, with the exception of a large decrease in bus fares. Even though it is plausible to have reductions greater than 100 percent because the comparisons are relative to a counterfactual scenario, in this case the change in bus fares is too large to be interpretable. However, these estimations also came from data collected at the village level, which had been proven unreliable in the travel time estimations. No changes in accident rates were found. Finally, these improvements in transportation conditions induced a significant increase only in automobile traffic.

Table 6-3: Impact of Rural Road Interventions on Transportation Conditions from 2004/2006 to 2013

Indicator	PSM Weighted Baseline Values		Diff-in-diffs + PSM	Percent Change
	Control	Intervened		
<i>Transportation Conditions =</i>				
Travel time to health centers (min)	44.26	47.27	4.18 (8.85)	8.8%
Travel time to health centers, by vehicle (min)	47.82	83.47	-22.21 (23.19)	-26.6%
Travel time to schools (min)	13.38	23.13	-5.60 (3.57)*	-24.2%
Travel time to schools, by vehicle (min)	37.15	51.85	-6.63 (14.70)	-12.8%
Travel time to workplace (min)	21.88	18.90	-0.74 (1.97)	-3.9%
Travel time to workplace, by vehicle (min)	123.20	122.29	35.97 (32.26)	29.4%
Travel time to point of sale for agro. prods. (min)	57.70	100.12	-26.27 (10.18)***	-26.2%
Travel time to market for selling agro. prods. (min)	81.13	105.84	-6.49 (10.87)	-6.1%
Travel time to consolidation center for agro. prods. (min)	14.65	52.05	-78.82 (25.87)***	-151.4%
Automobile traffic per week	12.75	30.72	17.97 (8.54)**	58.5%
Microbus traffic per week	11.06	11.99	0.94 (4.92)	7.8%
Bus traffic per week	1.93	1.55	-0.38 (0.58)	-24.3%
Motorcycle traffic per week	47.91	48.41	0.50 (26.16)	1.0%
Truck traffic per week	8.83	7.45	-1.38 (3.49)	-18.6%
Passenger fares on automobile (PEN)	7.55	3.19	6.56 (5.54)	205.9%
Passenger fares on microbus (PEN)	5.02	3.49	-10.72 (2.57)***	-307.3%
Passenger fares on truck (PEN)	10.00	5.53	5.54 (3.25)*	100.2%
Freight prices on automobile (PEN)	4.98	6.17	2.89 (4.95)	46.9%
Freight prices on microbus (PEN)	7.90	6.92	1.05 (5.02)	15.1%
Freight prices on truck (PEN)	3.95	4.02	-0.88 (2.38)	-21.9%
Number of days of road closure per year	14.60	38.18	-21.25 (13.17)*	-55.6%

*10% significance, **5% significance, and ***1% significance

23. The improvement of transportation conditions to schools was found to have caused an increase in school enrollment for boys and girls between 12 and 18 years of age. The impact on the schooling of younger children was not estimated because its initial proportion was very high and did not have much variation—it is the older students who are at a greater risk of dropping out or being pulled out by their parents. The 2006 Impact Evaluation also found that children ages 12 to 18 benefited the most from road rehabilitations in terms of school attendance, with boys benefiting noticeably more. The improvement in transportation conditions also seemed to have increased the number of health consultations given illness, although not in as statistically significant a way as for school enrollment. The 2006 Impact Evaluation did not find any changes in health outcomes.

Table 6-4: Impact of Rural Road Interventions on Access to Public Services from 2004/2006 to 2013

Indicator	PSM Weighted Baseline Values		Diff-in-diffs + PSM	Percent Change
	Control	Intervened		
<i>Access to Public Services</i>				
People with health consultations given illness (%)	0.57	0.55	0.10 (0.06)*	17.8%
Men with health consultations given illness (%)	0.56	0.54	0.09 (0.09)	16.8%

Women with health consultations given illness (%)	0.58	0.56	0.10 (0.09)	18.2%
Proportion of school attendance (12-18 yrs.)	0.85	0.81	0.16 (0.04)***	19.2%
Proportion of school attendance (12-18 yrs.) - boys	0.83	0.83	0.18 (0.06)***	21.4%
Proportion of school attendance (12-18 yrs.) - girls	0.86	0.80	0.15 (0.05)***	19.3%

*10% significance, **5% significance, and ***1% significance

24. The impact of road rehabilitations on employment was generally difficult to assess. There was a decrease in households with someone employed (by someone else), but this was not matched by increases in self-employment or unpaid family work. Similarly, a reduction in service sector employment was observed but without corresponding increases in employment in other sectors. An increase in the number of hours worked per week was found, but without a corresponding increase in incomes. The methodologies for estimating these types of impacts should be reexamined given these mixed results. The 2006 Impact evaluation did find a transition of employment from informal to formal sectors, but this was not sustained in the results of the latest Impact Evaluation.

Table 6-5: Impact of Rural Road Interventions on Employment from 2004/2006 to 2013

Indicator	PSM Weighted Baseline Values		Diff-in-diffs + PSM	Percent Change
	Control	Intervened		
<i>Employment</i>				
Hours worked per week	35.4	33.3	2.83 (1.46)*	8.5%
Households with a member as an employed worker (%)	0.15	0.22	-0.18 (0.04)***	-80.2%
Households with a member as an independent worker (%)	0.90	0.89	-0.03 (0.03)	-3.1%
Households with a member doing unpaid family work (%)	0.56	0.57	0.02 (0.04)	2.8%
Households with a member working in agriculture (%)	0.86	0.86	-0.04 (0.03)	-4.8%
Households with a member working in industry (%)	0.10	0.07	0.02 (0.03)	32.1%
Households with a member working in commerce (%)	0.13	0.20	0.03 (0.03)	17.8%
Households with a member working in services (%)	0.06	0.11	-0.05 (0.03)*	-45.3%
Households with a member working in the public sector (%)	0.05	0.10	0.00 (0.02)	-0.3%
Households with a member working in the private sector (%)	0.11	0.13	-0.19 (0.03)***	-145.6%
Households with a member working for farmer (%)	0.79	0.77	-0.05 (0.04)	-6.1%
Monthly per capita income (PEN)	221.27	188.54	9.46 (18.31)	5.0%
Percent of income from agriculture	0.78	0.73	-0.02 (0.04)	-2.1%
Percent of income from commercial activities	0.08	0.12	0.02 (0.03)	12.5%
Percent of income from industrial activities	0.08	0.06	0.04 (0.02)	61.1%
Percent of income from services activities	0.05	0.08	-0.04 (0.02)*	-44.2%

*10% significance, **5% significance, and ***1% significance

25. Even though large changes in rural employment were not observed, the structure of the rural economy was observed to have changed significantly, as may be seen in Table 6-5. Large increases in the land used for cultivation and forestry were matched by large decreases in the land left fallow. This likely resulted from farmers increasing yields in the short-term to benefit from higher product prices seen in Table 6-7. The higher prices may have been caused by farmers increasing their sales to consolidation centers, which have access to wider markets and can command more favorable prices. One factor contributing to this was the significant decrease in travel times to consolidation centers observed in Table 6-3. Additionally, a large and consistent increase in livestock holdings was observed in intervened groups, which reflects increased investing.

Table 6-6: Impact of Rural Road Interventions on Agricultural Production from 2004/2006 to 2013

Indicator	PSM Weighted Baseline Values		Diff-in-diffs + PSM	Percent Change
	Control	Intervened		
Rural Production				
Land surface (Ha)	6.97	6.06	0.43 (2.46)	7.1%
Land surface for cultivation (Ha)	1.39	1.08	0.36 (0.11)***	33.8%
Land surface fallow (Ha)	0.20	0.59	-0.42 (0.22)*	-71.1%
Land surface for natural grass (Ha)	3.17	2.93	-0.16 (2.07)	-5.5%
Land surface for forest (Ha)	2.21	0.72	1.36 (0.57)**	188.7%
Land surface for other use (Ha)	0.01	0.74	-0.72 (1.01)	-97.1%
Land surface for cultivation (%)	0.61	0.67	0.04 (0.04)	6.3%
Land surface fallow (%)	0.08	0.15	-0.14 (0.02)***	-93.0%
Land surface for natural grass (%)	0.19	0.12	0.07 (0.03)**	62.5%
Land surface for forest (%)	0.11	0.04	0.05 (0.02)**	136.1%
Land surface for other use (%)	0.01	0.02	-0.02 (0.01)**	-94.5%
Percentage of production sold	0.75	0.71	-0.05 (0.03)*	-5.4%
Percentage of production sold in market	0.10	0.24	-0.14 (0.04)***	-14.5%
Percentage of production sold to consolidation center	0.47	0.22	0.10 (0.05)*	10.1%
Livestock cattle (units per all households)	0.69	0.62	0.17 (0.04)***	27.5%
Livestock pigs (units per all households)	0.77	0.73	0.06 (0.04)*	8.1%
Livestock goats (units per all households)	0.75	0.67	0.08 (0.03)**	12.1%
Livestock horses (units per all households)	0.74	0.69	0.08 (0.04)**	12.0%
Livestock chickens (units per all households)	0.75	0.68	0.12 (0.04)***	18.1%
Livestock rabbits (units per all households)	0.71	0.67	0.11 (0.04)***	15.9%
Annual sales from livestock and forests (PEN)	2,163	3,604	337.87 (503.89)	9.4%
Annual sales from agriculture (PEN)	1,589	2,301	379.37 (378.31)	16.5%
Proportion of households with access to credit	0.04	0.08	0.00 (0.02)	3.3%

*10% significance, **5% significance, and ***1% significance

26. Table 6-7 shows that road interventions had a major positive impact on reducing extreme poverty and increasing expenditures. They were also observed to cause reductions in structural poverty (UBN), which is a measure of the proportion of the population that has basic needs met. These results are encouraging, since few past studies have found robust impacts on poverty, even using the same difference-in-differences methodology with PSM. One of the advantages of this study is that it had an observation window of 10 to 8 years, which allowed for the estimation of long-term impacts. The previous Impact Evaluation study did not find any of these impacts, since it had only had an observation window of 2 years.

Table 6-7: Impact of Rural Road Interventions on the Rural Economy from 2004/2006 to 2013

Indicator	PSM Weighted Baseline Values		Diff-in-diffs + PSM	Percent Change
	Control	Intervened		
Rural Economy				
Expenditures per capita (PEN/month)	122.56	128.38	9.34 (12.30)	7.3%
Logarithm of expenditures per capita (PEN/month)	4.41	4.50	0.16 (0.08)**	3.7%
Extreme poverty (proportion)	0.68	0.60	-0.14 (0.04)***	-13.8%

Total poverty (proportion)	0.89	0.86	0.02 (0.04)	1.6%
Not poor (proportion)	0.11	0.14	-0.02 (0.04)	-1.6%
Structural poverty (UBN)	0.72	0.57	-0.07 (0.04)*	-7.5%
Price per kilogram of potatoes produced locally	0.29	0.44	0.03 (0.15)	6.7%
Price per kilogram of corn produced locally	0.40	0.47	1.39 (0.80)*	293.0%
Price per kilogram of wheat produced locally	0.50	0.48	0.56 (0.20)***	115.6%
Price per kilogram of barley produced locally	0.35	0.36	-0.32 (0.19)*	-88.8%
Price per kilogram of broad beans produced locally	0.32	0.41	-0.30 (0.34)	-73.9%
Price per kilogram of <i>olluco</i> produced locally	0.34	0.61	0.35 (0.46)	58.0%
Price per kilogram of peas produced locally	0.50	0.52	0.91 (0.16)***	175.9%
Price per kilogram of <i>oca</i> produced locally	0.37	0.26	0.20 (0.22)	74.4%
Price per kilogram of black beans produced locally	1.24	1.30	2.95 (1.80)*	228.0%
Price per kilogram of plantains produced locally	0.17	0.14	-0.20 (0.49)	-146.9%

*10% significance, **5% significance, and ***1% significance

Results of 2013 Impact Evaluation: NMT Track Improvement

27. The 2013 Impact Evaluation also surveyed control and intervened households to estimate the impacts of improving NMT tracks. Unlike in the analysis of rural roads, where a high proportion of controls had been intervened outside the program, the controls in this analysis were judged to be adequate because local governments do not currently improve NMT tracks on their own. As such, it was decided that a simple difference-in-differences methodology would be sufficient to estimate the corresponding impacts—the PSM technique was not needed in this case. Only a fixed effects parameter was added at the village level to capture the average differences between households associated with different villages. Overall, this analytical methodology did not prove to be as successful as that used for analyzing rural road interventions. Most of the estimates were weak or uninterpretable, especially for higher-level impacts. In hindsight, applying PSM would have likely improved these results considerably by controlling for differences in observable characteristics between control and intervened groups. Nonetheless, there are a couple of conclusions that may be drawn from this analysis. Note that indicators not included in the following tables do not show statistically significant impacts.

28. The improvement of NMT tracks did indeed cause reductions in travel times to most destinations for the data collected at the village level and the household level (the 2006 Impact Evaluation did not find significant reductions in travel times). The largest reductions were found in travel times to reach district and provincial capitals, saving over an hour for communities that use these tracks. The percent changes in this indicator are comparable to those found for rural roads, but because travel on these tracks is much slower, it represents much larger savings of time in absolute terms. This analysis also found that travel times to schools increased, perhaps because students are increasingly accessing better school in nearby towns.

Table 6-8: Impact of Improving NMT Tracks on Transportation Conditions from 2006 to 2013

Indicator	Baseline Values		Diff-in-diffs + Fixed Effects	Percent Change
	Control	Intervened		
<i>Transportation Conditions</i>				
Travel time to paved road (min) - village level	301.8	419.3	-73.5 (74.5)	-17.5%
Travel time to regional market (min) - village level	205.5	352.1	-61.6 (58.7)	-17.5%
Travel time to district capital (min) - village level	127.0	232.7	-88.1 (38.1)**	-37.9%

Travel time to provincial capital (min) - village level	264.7	379.6	-77.5 (36.7)**	-20.4%
Travel time to regional capital (min) - village level	383.8	501.4	-24.6 (30.7)	-4.9%
Travel time to workplace (min) - household level	52.3	60.1	-21.2 (10.2)**	-35.3%
Travel time to markets - household level	129.9	146.3	19.9 (41.6)	13.6%
Travel time to consolidation centers - household level	46.1	81.7	-26.8 (67.3)	-32.8%
Travel time to schools - household level	71.2	30.6	21.7 (8.2)***	70.9%
Travel time to health centers - household level	14.2	15.4	-8.5 (4.0)**	-55.2%

*10% significance, **5% significance, and ***1% significance

29. The significant reduction in travel times to healthcare centers likely contributed to the sharp increase in health consultations observed in Table 6-9 (similar to the 2006 Impact Evaluation). Another factor that probably contributed to this was the increasing availability of health centers in these rural villages. Overall, men tended to benefit more than women in health access. On the other hand, no improvement in school enrollment was observed, also similar to the 2006 Impact Evaluation. In terms of access to private services, these communities benefited from greater availability of local radio stations and TV channels, and from a greater number of commercial establishments. This last benefit may have been caused by the improvement of NMT tracks, expanding the markets that local commercial establishments could reach and leading them to become more profitable.

Table 6-9: Impact of Improving NMT Tracks on Access to Public and Private Services from 2006 to 2013

Indicator	Baseline Values		Diff-in-diffs + Fixed Effects	Percent Change
	Control	Intervened		
<i>Access to Public and Private Services</i>				
People with health consultations given illness (%)	0.71	0.50	0.35 (0.06)***	70.0%
Men with health consultations given illness (%)	0.76	0.53	0.46 (0.10)***	86.8%
Women with health consultations given illness (%)	0.68	0.46	0.26 (0.09)***	56.5%
Proportion of school attendance (12-18 yrs.)	0.85	0.85	0.02 (0.06)	2.4%
Proportion of school attendance (12-18 yrs.) - boys	0.85	0.88	-0.08 (0.08)	-9.1%
Proportion of school attendance (12-18 yrs.) - girls	0.85	0.83	0.03 (0.09)	3.6%
Number of commercial establishments	1.00	1.00	0.18 (0.09)**	18.0%
Number of public institutions	2.20	2.00	0.60 (0.25)**	30.0%
Number of private institutions	1.70	1.60	0.50 (0.27)**	31.3%
Percent with health centers	0.40	0.29	0.20 (0.07)***	68.0%
Percent with radio station	0.67	0.54	0.30 (0.11)***	55.1%
Percent with TV channel	0.42	0.31	0.30 (0.11)**	97.1%

*10% significance, **5% significance, and ***1% significance

30. The 2006 Impact Evaluation found significant increases in incomes and reductions in poverty from NMT track improvements. However, this was not the case in the latest Impact Evaluation. In fact, this evaluation found no substantive changes in any economic indicator, including agricultural productivity and employment. This may have been caused by deficiencies in the control group, similar to what initially occurred in the analysis of rural roads. This strongly suggests that future Impact Evaluations should combine the difference-in-differences methodology with PSM to mitigate these types of issues and provide better results. Another factor that could have caused these results is that NMT tracks have not received adequate maintenance following their improvement, which was originally a point of emphasis in the DRTP but was

dropped because it proved very difficult to achieve. This inevitably left most tracks to degrade quickly, such that by 2013, their conditions resembled those of control tracks.

Table 6-10: Impact of Improving NMT Tracks on Rural Production from 2006 to 2013

Indicator	Baseline Values		Diff-in-diffs + Fixed Effects	Percent Change
	Control	Intervened		
Rural Production				
Land surface for cultivation (%)	0.80	0.79	0.17 (0.06)***	21.7%
Land surface fallow (%)	0.08	0.08	-0.07 (0.03)**	-94.8%
Land surface for natural grass (%)	0.10	0.09	-0.07 (0.05)	-80.7%
Land surface for forest (%)	0.02	0.04	-0.03 (0.02)*	-67.5%
Land surface for other use (%)	0.00	0.01	0.00 (0.01)	0.0%

*10% significance, **5% significance, and ***1% significance

Conclusions of Impact Evaluation Study

31. The rehabilitation and maintenance of rural roads had the following impacts relative to the counterfactual scenario:

- (i) A reduction in travel times to some reference points, but not all. Household-level data was considerably more reliable than village-level data. The 2006 Impact Evaluation observed a larger and more consistent reduction in travel times, probably because these surveys were conducted just 1-2 years after road rehabilitations.
- (ii) No increase in bus and truck traffic (similar to 2006 Impact Evaluation), both for data collected from vehicle counts and from surveys of village leaders. This could be the result of the demand for these modes being relatively inelastic. However, a large increase in automobile traffic was observed.
- (iii) A large increase in school enrollment for boys and girls between 12 and 18 years of age (similar to 2006 Impact Evaluation). This was associated with decreases in travel times to schools for this group.
- (iv) Some improvement in health accessibility in the long-term (the 2006 Impact Evaluation found no impact in the short-term), although less noticeable than for schools.
- (v) A large decrease in travel times to consolidation centers led farmers to increasingly sell their products at these locations, since they can command higher prices through access to wider markets.
- (vi) A large increase in cultivated land area (similar to 2006 Impact Evaluation) and livestock holdings.
- (vii) A mixed impact on employment (similar to 2006 Impact Evaluation).
- (viii) A large impact on reducing extreme poverty and structural poverty (UBN), and increasing per capita expenditures. These are the types of long-term impacts that could not have been captured by the earlier Impact Evaluations.

32. The improvement of NMT tracks had the following impacts relative to the counterfactual scenario:

- (i) A large reduction in travel times, especially in absolute terms, for reaching most destinations, with the exception of schools. The 2006 Impact Evaluation did not observe these impacts.
- (ii) A large increase in accessibility to healthcare centers, with no improvement in accessibility to schools (similar to 2006 Impact Evaluation).
- (iii) A large increase in the availability of private and public services, including commercial establishments.
- (iv) A shift of land used from fallow to cultivation, similar to the effect witnessed in rural road interventions.
- (v) No impact on incomes, poverty, rural productivity, and employment (unlike the 2006 Impact Evaluation, which found improvements in these, including poverty).

Stakeholders Workshop on Institutional Lessons

1. **Background.** On May 23, a Workshop on Institutional Lessons from the Rural Roads Projects was carried out as part of a WB and IDB supervision mission, and attended by key members of the Executive Director's Office and other management units of Provias Descentralizado and the banks' team.
2. **Objective.** The objective of the workshop was to: (i) draw lessons learned from the implementation of the Decentralized Rural Transport Project - P095570 (DTRP), and Regional Transport Decentralization Project - P078813 (RTDP); (ii) identify institutional risks in the operation and management of Provias in order to provide sustainability to rural roads programs in the medium and long term; (iii) propose mitigation measures to reduce, prevent, monitor, and address potential risks during the design, implementation, operation, and supervision of potential projects with decentralized implementation funded by the Government of Peru.
3. **Methodology.** The workshop's methodology was to divide it into two parts, the first for the identification of the lessons learned and the second for the identification of risks and mitigation measures applicable to future operations. The participants were requested to perform hands-on work. A summary of the methodologies are briefly explained below.
4. **First Part: Lessons Learned.** As a first step toward identifying and organizing the lessons learned, the following areas of analysis were established for the three basic stages of a project's life: design, implementation, and operation.
 - **Design Stage:** (i) decentralized project implementation arrangements; (ii) road network management and planning model; (iii) governance; and (iv) institutional strengthening of subnational governments.
 - **Implementation Stage:** (i) performance management, systems, and processes; (ii) financial resources; (iii) institutional strengthening at national, regional, and provincial levels; (iv) evaluation of the Provincial Road Institutes (PRIs); (v) maintenance with microenterprises; (vi) monitoring and accountability; (vii) fiduciary aspects; and (viii) social, environmental, and gender areas.
 - **Operating Stage:** (i) the relationship between the Ministry of Transports and Communications (MTC) and Provias; (ii) impact evaluation; (iii) financing for routine maintenance – microenterprises; (iv) laws on rural microenterprises; (iv) duties of the zonal offices; and (v) the role and sustainability of PRIs.
5. **Second Part: Risk Identification and Mitigation Measures.** The second part of the workshop consisted of the identification of risks and mitigation measures. This part was divided into the following three modules: (i) identification of risks applicable to future operations or investment projects, based on previously identified lessons; (ii) assessment and prioritization of risks; and (iii) identification of mitigation proposals for those risks with greater impact and probability.
6. **Results. Lessons Learned.** The main lessons from the DRTP and RTDP projects, as perceived by the participants, were as follows:

Areas in the design phase:

7. **Decentralized project implementation arrangements (regional and local governments).** Lesson learned: Develop appropriate management tools for the preparation of terms of reference, preliminary and final studies, training in bidding processes, and hiring under national law and Bank rules. This knowledge should be transferred through training sessions and manuals.

8. **Road network management and planning model.** Lesson learned: Develop a decentralized management model, incorporating: (i) new management indicators such as logistic corridors, border development; and (ii) transfer of knowledge to regional and local governments to eventually allow them to handle the entire management process, from the preparation and updating of their own road plans in the short and medium term, to outsourcing the performance of works and maintenance.

9. **Governance.** Lesson learned: Strengthen Provias' strategic vision, develop a marketing campaign, and promote institutional image (results, accomplishments).

10. **Institutional strengthening of subnational governments.** Lesson learned: (i) design a new institutional strengthening model articulated with the outsourced management model; (ii) assess the real technical capacity of the municipal and regional governments; and (iv) propose technical assistance programs in relation to the level of development or performance of regional and local governments.

Areas in the implementation stage:

11. **Financial resources (centralized or decentralized).** Lesson learned: (i) maintain the initial objective of decentralization: budget execution by regional and municipal governments with the oversight of Provias; and (ii) establish and institutionalize a decentralized road management model.

12. **Institutional strengthening (national, regional, and provincial).** Lesson learned: Discourage staff turnover in PRIs and seek new ways to retain trained and experienced technical staff. Review and evaluate how to improve implementation of the agreements signed between Provias and municipal governments.

13. **Performance an evaluation of the PRIs.** Lesson learned: (i) development of a legal framework to establish PRIs as a permanent institution sustainable over time; (ii) greater dissemination of the decentralized road management model through PRIs; and (iii) development of a communication strategy with the strategic vision and active participation of the governing entity (MTC).

Areas in the sustainability stage:

14. **Relationship between MTC and Provias (future vision of Provias).** Lesson learned: (i) strengthen coordination among institutions at the national level (MTC and Provias) and decentralized level (Provias and local governments) to define the management model and the institutionalization of Provias; and (ii) develop a communication strategy and disseminate results achieved during the last few years.

15. **Impact evaluation.** Lessons learned: (i) carry out studies on road conditions (serviceability of rural roads rehabilitated since 1995) and geo-reference the roads; and (ii) evaluate the impact methodology compared to control roads.

16. **Financing of routine maintenance with microenterprises.** Lesson learned: (i) encourage routine maintenance through rural microenterprises; and (ii) change the Procurement Law to include the community-based nature of rural microenterprises for road maintenance.

17. **Law on rural microenterprises.** Lesson learned: Continue with the policy of conditional and programmatic transfers (Provias must approve the Provincial Plan and make sure the PRI is involved in supervising the works and expenditures) for maintenance of rural roads, developing a new law that would authorize the creation and contracting of routine maintenance through microenterprises.

18. **Role and sustainability of PRIs.** Lesson learned: (i) regulate the PRI functions and develop manuals for procurement, operations, and processes (creation of systems); (ii) enhance collaboration for a concerted effort among the PRIs, local governments and Provias; and (iii) institutional restructuring of Provias is required.

Probable Risks in Future Operations Co-Financed by the Banks

19. The Risks Workshop concluded that the risks with the greatest impact and probability of occurrence in future operations, along with their respective mitigation measures, are as follows:

Stages	Area of Risk	Risks	Mitigation
Design	Institutional Framework	R1. There is a possibility that PVN also covers the management of the local road network, if Provias is not empowered, doesn't show its achievements, and doesn't improve its communication with the Sector.	Prepare a solid communication strategy (Provias, OPP, MTC).
		R2. Weak institutional capacity of Provias and lack of organizational design aligning the long-term strategy with a decentralized management model.	Develop a strategic vision of Provias and a holistic institutional framework with a decentralized management model.
	Decentralized Implementation (Regional and Local Governments) – total or Gradual	R3. Limited capacity to prepare studies.	Standardized manuals for the management cycle of works, from terms of reference to settlement of works (preparation and establishment of systems).
		R4. Difficulties in hiring processes only with international standards.	Diversify training on procurement rules, training not only on Bank rules but also on national procurement law.
		R6. Limited financing from the MEF (by policy)	Raise awareness and coordinate with OPP, MTC, and MEF.
		R8. Road management model is not defined according to experience gained.	Propose a management model with relevant instruments, including a reorganization of Provias, its internal manuals, Operations Manual, etc.

Stages	Area of Risk	Risks	Mitigation
Implementation	Institutional Strengthening (National, Regional, and Provincial)	R9. High incidence in road management by staff turnover in local governments – PRIs.	Discourage staff turnover (local governments) in framework agreements or other institutional mechanisms.
		R10. Authorities with authoritarian styles of government limit the correct decentralization process.	Training of authorities (mayors), more technical assistance in areas such as planning, bidding, management and development of information services.
	Execution Capacity	R11. Limited execution capacity of PVD considering budget increase.	Institutional diagnosis to identify mitigation measures.
	Financing Resources (Centralized or Decentralized)	R12. Profile of professionals in zonal offices is not adequate for purposes of the decentralization process.	Ongoing training program.
	PRI Evaluation	R14. High turnover of trained staff at the PRIs, usually due to political reasons or changes in local authorities.	Permanent training of PRI staff. Alliance between Provias and MEF to include the conditional transfer model in road management, based on the experience of the PRI and improvement of the PRI performance evaluation model.
Sustainability	PRIs	R20. High turnover of management and technical staff of PRIs.	Updating the rules and functions of the organization with instruments that protect job stability.
		R21. Preparation and approval of a law that allows for the institutionalization and sustainability of PRIs (including budget code and SIAF).	Propose a bill to create a sustainable, permanent institution - PRIs.
	Environmental	R 22. The environmental authority is sectorial and is not present in the subnational governments, since it is centralized in the MTC.	Transfer the environmental competency to subnational governments with their own technical assistance.
		R23. MTC does not have the capacity to address all environmental studies, thus delaying the approval of studies.	If the transfer of the environmental competency to the subnational governments is achieved, this risk will be mitigated.
	Microenterprises	R25. The conditional programmatic transfer is eliminated (CPT).	Institutionalize the CPT strategy and include it in the decentralized road management model.

Recommendations for Provias

20. Based on the analysis of the results conducted in the workshop, we may infer the following **key lessons learned**, as well as actions to be taken by Provias:

- (i) Continue, expand or improve and/or adjust the decentralized road management model in order to continue supporting the subnational and local governments, through the PRIs, and allow for the sustainability of the rural transport system at a national level;
- (ii) Maintain the supervisory role of Provias and the executing role of PRIs and routine maintenance microenterprises;
- (iii) Continue with the transfer of knowledge on rural transport to regional and local governments, especially in terms of developing provincial road plans, works execution, maintenance, and monitoring and evaluation through training programs and development of policy instruments, protocols;

- (iv) Provide technical assistance on the preparation of terms of reference and definitive studies for both works and periodic maintenance;
- (v) Continue with the mechanism for the conditional transfers of routine maintenance of rural roads through rural microenterprises;
- (vi) Develop a communication strategy and disseminate the results achieved, both internally and externally, to strengthen the role of Provias as a catalyst for the development of the rural transport sector.

21. From the analysis of risks and mitigation measures proposed by the Provias team at the workshop, a **process of institutional strengthening and change** should be implemented in order to tackle the challenges of decentralization at the district and provincial levels, within a framework of competitiveness and logistic corridors. Among the aspects that arose during the workshop and which should be developed by Provias, the following are the most relevant actions:

- (i) Develop a vision, mission, and a strategic plan for the medium and long term, aligned with the current or improved decentralized road management model, including an institutional reorganization in accordance with the model.
- (ii) Draft a ministerial decree that establishes Provias as a permanent institution, giving it sustainability over time and changing it from a project execution unit to a decentralized public organization, providing greater stability to its staff, maintaining its human resources, and providing social benefits;
- (iii) Develop a communication plan, both internal and external, in accordance with the proposed strategic long-term vision;
- (iv) Develop a law for conditional transfers for routine maintenance of rural roads through community rural microenterprises, changing this activity from annual budgets to multiannual budgets for a more permanent flow of resources;
- (v) Develop a law that permits the direct contracting of the community microenterprises in charge of the routine maintenance of rural roads;
- (vi) Prepare and implement training programs for provincial and local governments, including standard civil works bidding documents, manuals, and protocols that will foster and improve technical capacities in local governments and provide sustainability to the decentralized road management model.

Gender Assessment

Impacts of Including Women in Income-Generating Activities

1. Women living in rural areas of Peru have more limited access to economic and decision-making opportunities than their male counterparts. This is often caused by their lower education levels, but also by a conservative vision of gender roles in rural areas, where women are confined to reproduction and keeping up with household work. In addition to these responsibilities, most women also work on their family farms, although this work is generally invisible and not remunerated, creating total dependence on their spouses. The Decentralized Rural Transport Project (DRTP), like the Second Rural Road Project (SRRP), developed a Gender Action Plan with the objective of reducing these gender gaps by enhancing the participation of women in income-generating activities in the areas of influence of the Project.

2. The Gender Action Plan included a 10 percent gender quota in the routine maintenance microenterprises, measures to promote women's participation in the Local Development Window (LDW), and training sessions and workshops for the women and men benefiting from these two programs in order to facilitate women's inclusion and ensure the respectful interaction between genders. The support and commitment of Provias, the Provincial Road Institutes (PRIs), the municipal and district governments, and contractors was extremely important to ensure the effectiveness of the aforementioned activities. Employees at these agencies participated in several gender awareness and mainstreaming workshops.

3. **Economic Independence.** As mentioned previously, rural women in Peru generally work on their family farms without receiving remuneration for such work. For most of the 1,587 women who participated in the 857 microenterprises distributed across the country (28 percent of all members), this was the first time they had received a salary and were able to make a decision on how to use these earnings. As for the women who participated in the LDW, this program enabled them to turn their small businesses into bigger ones, allowing them to expand their production and income.

4. Several studies have shown that women spend a greater proportion of their earnings than men on their children's nutrition and education. In fact, when female members of microenterprises were interviewed, several stated that thanks to these earnings, they were able to send their children to secondary school and to university in other areas of the country. Others said that this additional income was invested in materials for their farms and to buy more livestock. Additionally, supplemental income can help households save money that they can later invest in small businesses, home improvements (helping reduce diseases and vulnerability to natural catastrophes), or use it as a guarantee to gain access to formal financial services such as microcredits. Through economic empowerment, women can ensure a better quality of life for themselves and their families, which translates into poverty reduction and shared prosperity.

5. **Increased Knowledge and Skills.** Before the Project, most women had never received any kind of training that would allow them to learn new skills, expand their knowledge, and build their capacities. The training provided to women in the microenterprises strengthened their planning, project management, and monitoring capabilities. For the first time, women were implementing and monitoring civil works. The training provided to women members of LDW

strengthened their planning and management skills, and also taught them how to develop more sustainable business plans that helped them expand production.

6. **Self-Esteem and Empowerment.** Women’s self-perception and lack of confidence is often their biggest constraint when seeking out economic opportunities and participating in decision-making processes. Women members of the microenterprises and LDW have increased their self-esteem and are more empowered. During interviews, they said they feel confident working next to men, and realize that they are capable of learning new skills and carrying out difficult activities. Moreover, thanks to these experiences, women gain a voice and are more involved in decision-making processes in their communities. The impact on agency and empowerment will be further analyzed through the study “Advancing Gender Agency in LAC: Experiences from the Transport Sector.”²²

7. **Increased Male Awareness of the Importance of Gender Inclusion.** In rural areas, men are generally not used to working alongside women who are not part of their families, and husbands are reluctant to allow their wives to work outside the home because men are traditionally the breadwinners. According to social norms, it is not appropriate for women to carry out such activities alongside men who are not part of their family. Moreover, road work is considered to be a male job, since it requires physical strength. In this respect, the project made sure that both women and men participated in workshops that would help them overcome these cultural barriers and facilitate women’s inclusion in order to ensure the success of the project.

8. After the workshops, men understood the importance of including women in the workplace, and even appreciated having them around. In fact, men declared that women are more organized at work than men, and since women are more careful and detail-oriented, the quality of the work was higher. Additionally, by working with women, men become more open-minded about the idea of allowing—and even encouraging—their wives to work outside the home.

9. **Negative Effects.** While including women in microenterprises and LDW had several positive impacts, some aspects were negative. In fact, with women working all day outside their homes, the responsibility of taking care of younger children and house chores fell to the eldest daughters or grandmothers, which had repercussions on school attendance for daughters and health issues for the elderly. To avoid these issues, work schedules at the microenterprises were generally flexible, but it is still recommended to set up free kindergartens for younger children near the workplace or in the communities so that women can work without leaving their daughters or other women in charge of their children.

²² The study is being financed by the Umbrella Facility for Gender Equality and is expected to be completed by September 2014.

Summary of Borrower's ICR and/or Comments on Draft ICR

Objetivo

10. El objetivo general del PTRD fue contribuir al desarrollo rural y a la superación de la pobreza rural del país, a través de la mejora del acceso a bienes, servicios y oportunidades generadoras de ingresos, la integración de la población rural y reducción de los costos de transporte, dado por la mejora de la dotación y calidad de la provisión pública descentralizada de la infraestructura de transporte rural.

Descripción de la Intervención

11. Para el logro de sus objetivos, el PTRD contempló la ejecución de actividades enmarcadas en 8 componentes:

- Infraestructura de transporte rural.
- Desarrollo de capacidades locales.
- Desarrollo de políticas, regulación e institucionalidad.
- Transporte y desarrollo rural.
- Monitoreo, seguimiento y evaluación de impacto.
- Gestión y administración del Programa.
- Auditoría financiera y operativa.
- Imprevistos.

12. La propuesta del PTRD pretendió beneficiar a la población del ámbito rural actuando en varios: (i) consolidar y expandir la propuesta técnica, financiera e institucional y el modelo de gestión vial descentralizado de los caminos rurales; (ii) desarrollar el encuentro de la infraestructura de transporte con otros tipos de infraestructuras económicas y el desarrollo de iniciativas productivas en el medio rural; (iii) regular el uso de la infraestructura y el transporte rural; (iv) actuar de ventanilla financiera, canalizando recursos a través del Programa hacia los gobiernos locales para el desarrollo fundamentalmente de la infraestructura del transporte rural y el fortalecimiento de la gestión local en materia de infraestructura de transporte rural, no sólo del BID y el Banco Mundial, sino también de la cooperación internacional, del sector privado y del propio gobierno nacional; (v) asesorar y fortalecer las capacidades de gestión de los gobiernos locales fundamentalmente en materia de infraestructura de transporte rural, no sólo para que capturen mayores recursos financieros, sino de manera importante a usar mejor sus recursos.

13. Los gobiernos locales tanto provinciales como los distritales, en el PTRD, tuvieron un rol protagónico. Las municipalidades de la provincia: (i) conformaron el Instituto Vial Provincial (IVP) como órgano de gestión especializado de las municipalidades en materia de infraestructura de transporte rural y sus representantes, los alcaldes distritales forman parte del Comité Directivo del IVP, presididos por el Alcalde Provincial; (ii) participaron directamente en la gestión de la infraestructura de transporte rural a través del IVP; (iii) determinaron las prioridades de inversión a través de la formulación de los Planes Viales Provinciales Participativos; y, (iv) financiarán el costo de mantenimiento de los caminos vecinales rehabilitados por el Programa.

14. El PTRD, se sumó al Proceso de Descentralización impulsado por el Gobierno, desarrollando una estrategia que consistió en: i) Desarrollar y crear una institucionalidad especializada en el seno de cada municipalidad provincial que se encargue de la gestión vial de

los caminos rurales: el Instituto Vial Provincial (IVP); ii) la gestión descentralizada pasa por planificar el desarrollo de la infraestructura vial rural a nivel provincial, a través de la formulación de los Planes Viales Provinciales (PVP); iii) Desarrollar mecanismos de financiamiento descentralizados que garanticen la sostenibilidad de la inversión realizada en infraestructura vial rural en el medio local; iv) Gradualidad de la descentralización de la gestión vial de los caminos rurales, sobre todo por la heterogeneidad en las capacidades institucionales y técnicas de los gobiernos locales y regionales; ello significa pasar del piloto de gestión descentralizada de algunos componentes, a la expansión gradual tanto en términos de cobertura como de componentes, v) Tercerización de los servicios en el espacio local y regional; ello implica que las unidades de gestión y las municipalidades asumen la gestión vial de los caminos vecinales ejecutando con terceros, como una manera de apoyar el desarrollo de los mercados locales de contratistas y consultores, y vi) promover la complementariedad e integración con otro tipo de infraestructuras tanto económicas, sociales y productivas para aumentar la eficiencia de tales inversiones sobre el desarrollo rural y la reducción de la pobreza.

Costo, Plazo y Ejecución Financiera

15. El Programa se financió con recursos provenientes de operaciones de endeudamiento sostenidas el BID y el BIRF y con recursos de contrapartida nacional. El Programa tuvo un costo total de US\$ 165.6 millones, de los que US\$ 50 millones fueron financiados por el BIRF (Contrato de préstamo N° 7423-PE suscrito el 16 de abril de 2007), US\$ 50 millones por el BID (Contrato de préstamo N° 1810/OC-PE suscrito el 16 de abril de 2007) y los US\$ 65.6 millones restantes fueron aportados como contrapartida nacional.

16. El Programa entró en efectividad el 12/07/2007 y tuvo una duración de 77 meses (6 años y 4 meses), culminando el 31 de diciembre de 2013.

Costo por componentes

17. A continuación, se detalla los costos vigentes por categorías y componentes del Programa, por cada fuente de financiamiento.

Tabla 9-1: Costo Total Final del Programa por Categorías del Contrato de Préstamo N° 7423-PE (BIRF)

Category	Amount of the Loan Allocated (expressed in USD)	Percentage of Expenditures to be financed
(1) Good, works and consultants services for	43,658,464	85%
(2) goods and consultants' Services for	5,156,106	85%
(3) Goods, Works and consultants' services for:		85%
(a) Component 3.a. of the Project; and	501,063	85%
(b) Component 3.b. of the Project	291,557	85%
(4) Goods and consultants' services for	392,810	85%
(5) Unallocated	0	0%
(6) Front-end Fee	0	Amount payable pursuant to Section 2.04 of this Agreement in accordance whit Section 2.07 (b) of the General Conditions
(7) Premium for Interest Rate Caps and Collars	0	Amount payable pursuant to Section 2.08 (c) of this Agreement in accordance whit Section 4.04 of the General Conditions
TOTAL AMOUNT	50,000,000	

Tabla 9-2: Costo Total Final del Programa por Componentes y Fuentes de Financiamiento

Categorías de Gasto	Costo Total Vigente (US\$)			
	BID	BIRF	GOB	TOTAL
01 Infraestructura de Transporte Rural	43,856,745	43,841,140	46,741,785	134,439,670
01.01 Obras	38,492,696	38,348,058	41,625,182	118,465,936
01.01.01 Rehabilitación de Caminos Vecinales (2,500 km)	23,472,585	23,246,147	26,248,173	72,966,905
01.01.02 Rehabilitación de Caminos Vecinales (500 km)	140,951	182,676	249,813	573,440
01.01.03 Mantenimiento Periódico (11,200 km)	12,932,137	12,963,313	11,810,824	37,706,274
01.01.04 Mejoramiento y Construcción de Puentes (50)	112,280	144,994	51,839	309,113
01.01.06 Mejoramiento de Caminos de Herradura (2,000 km)	1,729,129	1,683,142	2,243,505	5,655,776
01.01.07 Mejoramiento de Caminos de Herradura Turístico (150 km)	105,614	127,786	1,021,028	1,254,428
01.01.08 Estabilización de Taludes y Microcuencas	-	-	-	-
01.02 Estudios y Supervisión	5,364,049	5,493,082	5,116,603	15,973,734
01.02.01 Estudios	2,263,258	2,285,709	1,900,816	6,449,783
01.02.011 Estudios de Caminos Vecinales (Planes Viales)	1,141,499	1,131,815	1,035,568	3,308,882
01.02.013 Estudios Caminos Herradura (2,500 km.)	552,016	575,329	372,655	1,500,000
01.02.014 Estudios Caminos Herradura Turístico (150 km.)	183,920	190,910	147,007	521,837
01.02.015 Estudio de Mantenimiento Periódico (11,200 km)	385,823	387,655	345,586	1,119,064
01.02.016 Estudios de Puentes (50)	-	-	-	-
01.02.02 Supervisión	3,100,791	3,207,373	3,215,787	9,523,951
01.02.021 Supervisión Caminos Vecinales (Planes Viales)	2,030,450	2,029,085	1,988,341	6,047,876
01.02.023 Supervisión de Caminos Mantenimiento Periódico	1,050,035	1,150,052	1,171,487	3,371,574
01.02.024 Supervisión Caminos Herradura Turístico	11,564	10,315	49,125	71,004
01.02.025 Supervisión de Puentes	8,742	17,921	6,834	33,497
02 Desarrollo de Capacidades Locales	4,625,761	4,587,990	2,236,820	11,450,571
02.01.00 Planes Viales (200 Planes)	885,337	897,781	331,984	2,115,102
02.02.00 Planes de Transporte Integrados	-	-	-	-
02.03.00 Desarrollo de Capacidades Locales	1,500,367	1,438,904	814,717	3,753,988
02.04.00 Equipamiento de los Institutos Viales Provinciales	526,447	548,068	439,520	1,514,035
02.05.00 Apoyo al Sistema de Mantenimiento	1,713,610	1,703,237	650,599	4,067,446
03 Desarrollo de Políticas y Regulación	521,697	568,116	463,732	1,553,545
03.01 Institucionalidad	467,583	518,102	415,345	1,401,030
03.01.01 Difusión buenas prácticas	32,214	35,296	17,567	85,077
03.01.02 Promoción de Investigación de Vialidad	29,825	38,868	84,932	153,625
03.01.03 Búsqueda de Financiamiento para Transporte Rural	13,567	13,626	4,511	31,704
03.01.04 Equipamiento de Provias Descentralizado	379,955	417,958	302,109	1,100,022
03.01.05 Fortalecimiento de Capacidad de PVD	12,022	12,354	6,226	30,602
03.02 Desarrollo Polit. Reg. Transporte Rural	54,114	50,014	48,387	152,515
03.02.01 Políticas de Transporte Rural	54,114	50,014	48,387	152,515
03.02.02 Propuesta de Ley de Transporte Rural	-	-	-	-
04 Transporte y Desarrollo Rural	561,144	572,309	435,910	1,569,363
04.01.00 Ventana de Desarrollo Local	493,627	501,063	276,939	1,271,629
04.02.00 Intervenciones Multisectoriales (Planes Transp Integrados)	67,517	71,246	158,971	297,734
05 Monitoreo, Seguimiento y Evaluación de Impacto	169,469	165,261	404,591	739,321
05.01.00 Sistema de Información	-	-	-	-
05.02.00 Línea base y evaluación de impactos socioeconómicos	130,690	127,626	258,620	516,936
05.03.00 Sistema de seguimiento y monitoreo	38,779	37,635	145,971	222,385
05.04.00 Seguimiento de Estudios	-	-	-	-
06 Gestión y Administración del Programa	-	-	15,000,000	15,000,000
06.01.00 Gestion y administracion del programa	-	-	15,000,000	15,000,000
07 Auditoría Financiera y Operativa (4.a)	265,184	265,184	279,015	809,383
07.01.00 Auditoria Financiera y Operativa	265,184	265,184	279,015	809,383
08 Imprevistos	-	-	-	-
08.01.00 Imprevistos	-	-	-	-
TOTAL	50,000,000	50,000,000	65,561,853	165,561,853

Ejecución financiera

18. A diciembre de 2013, se logró ejecutar a nivel de gasto el monto total de US\$ 160,106,348, que representa el 97% del costo total del Programa. A continuación, se muestra el gasto por fuente de financiamiento y componente.

Tabla 9-3: Avance Financiero por Componentes y Fuente de Financiamiento

Categorías de Gasto		Ejecución Financiera (US\$)			
		BID	BIRF	GOB	TOTAL
01	Infraestructura de Transporte Rural	43,793,514	43,851,095	42,768,434	130,413,043
01.01	Obras	38,400,517	38,363,253	38,730,947	115,494,717
01.01.01	Rehabilitación de Caminos Vecinales (2,500 km)	23,472,541	23,246,146	26,137,384	72,856,071
01.01.02	Rehabilitación de Caminos Vecinales (500 km)	140,951	182,675	249,812	573,438
01.01.03	Mantenimiento Periódico (11,200 km)	12,839,996	12,978,511	9,455,527	35,274,034
01.01.04	Mejoramiento y Construcción de Puentes (50)	112,279	144,993	51,838	309,111
01.01.06	Mejoramiento de Caminos de Herradura (2,000 km)	1,729,143	1,683,141	2,449,139	5,861,424
01.01.07	Mejoramiento de Caminos de Herradura Turístico (150 km)	105,606	127,786	387,247	620,639
01.01.08	Estabilización de Taludes y Microcuencas	-	-	-	-
01.02	Estudios y Supervisión	5,392,998	5,487,841	4,037,487	14,918,326
01.02.01	Estudios	2,263,257	2,285,708	1,702,861	6,251,825
01.02.011	Estudios de Caminos Vecinales (Planes Viales)	1,141,499	1,131,815	1,015,177	3,288,491
01.02.013	Estudios Caminos Herradura (2,500 km.)	552,016	575,328	326,395	1,453,740
01.02.014	Estudios Caminos Herradura Turístico (150 km.)	183,919	190,910	94,065	468,894
01.02.015	Estudio de Mantenimiento Periódico (11,200 km)	385,822	387,655	267,223	1,040,700
01.02.016	Estudios de Puentes (50)	-	-	-	-
01.02.02	Supervisión	3,129,741	3,202,134	2,334,626	8,666,501
01.02.021	Supervisión Caminos Vecinales (Planes Viales)	2,031,012	2,029,085	1,550,370	5,610,468
01.02.023	Supervisión de Caminos Mantenimiento Periódico	1,078,425	1,144,813	748,961	2,972,199
01.02.024	Supervisión Caminos Herradura Turístico	11,563	10,315	28,461	50,339
01.02.025	Supervisión de Puentes	8,741	17,921	6,834	33,496
02	Desarrollo de Capacidades Locales	4,700,141	4,628,260	1,499,807	10,828,208
02.01.00	Planes Viales (200 Planes)	885,341	897,781	260,592	2,043,713
02.02.00	Planes de Transporte Integrados	-	-	-	-
02.03.00	Desarrollo de Capacidades Locales	1,500,366	1,438,903	589,783	3,529,053
02.04.00	Equipamiento de los Institutos Viales Provinciales	601,014	550,417	329,571	1,481,002
02.05.00	Apoyo al Sistema de Mantenimiento	1,713,420	1,741,158	319,862	3,774,440
03	Desarrollo de Políticas y Regulación	524,827	568,113	320,569	1,413,509
03.01	Institucionalidad	470,714	518,100	300,214	1,289,028
03.01.01	Difusión buenas prácticas	31,656	35,296	10,994	77,946
03.01.02	Promoción de Investigación de Vialidad	31,818	38,868	77,557	148,242
03.01.03	Búsqueda de Financiamiento para Transporte Rural	13,566	13,625	4,511	31,702
03.01.04	Equipamiento de Provias Descentralizado	379,932	417,958	197,241	995,131
03.01.05	Fortalecimiento de Capacidad de PVD	13,741	12,353	9,912	36,006
03.02	Desarrollo Polit. Reg. Transporte Rural	54,114	50,013	20,354	124,481
03.02.01	Políticas de Transporte Rural	54,114	50,013	20,354	124,481
03.02.02	Propuesta de Ley de Transporte Rural	-	-	-	-
04	Transporte y Desarrollo Rural	563,645	566,955	226,154	1,356,754
04.01.00	Ventana de Desarrollo Local	493,627	501,062	191,611	1,186,300
04.02.00	Intervenciones Multisectoriales (Planes Transp Integrados)	70,019	65,893	34,543	170,454
05	Monitoreo, Seguimiento y Evaluación de Impacto	216,779	103,226	194,750	514,756
05.01.00	Sistema de Información	-	-	-	-
05.02.00	Línea base y evaluación de impactos socioeconómicos	178,001	65,592	168,780	412,373
05.03.00	Sistema de seguimiento y monitoreo	38,778	37,635	25,970	102,383
05.04.00	Seguimiento de Estudios	-	-	-	-
06	Gestión y Administración del Programa	-	-	15,000,000	15,000,000
06.01.00	Gestion y administracion del programa	-	-	15,000,000	15,000,000
07	Auditoría Financiera y Operativa (4.a)	201,093	228,381	150,605	580,079
07.01.00	Auditoría Financiera y Operativa	201,093	228,381	150,605	580,079
08	Imprevistos	-	-	-	-
08.01.00	Imprevistos	-	-	-	-
TOTAL		50,000,000	49,946,029	60,160,319	160,106,348

Nota: Información de avance registrada al 31.12.13

Tabla 9-4: Cumplimiento de la utilización de recursos por Componentes

Categorías de Gasto	Costo Total Vigente (US\$)	Ejecución Financiera (US\$)	% Cumplimiento
01 Infraestructura de Transporte Rural	134,439,670	130,413,043	97%
02 Desarrollo de Capacidades Locales	11,450,571	10,828,208	95%
03 Desarrollo de Políticas y Regulación	1,553,545	1,413,509	91%
04 Transporte y Desarrollo Rural	1,569,363	1,356,754	86%
05 Monitoreo, Seguimiento y Evaluación de Impacto	739,321	514,756	70%
06 Gestión y Administración del Programa	15,000,000	15,000,000	100%
07 Auditoría Financiera y Operativa (4.a)	809,383	580,079	72%
08 Imprevistos	-	-	0%
Total	165,561,853	160,106,348	97%

Metas y logros por componentes

A continuación se resumen, los principales logros por componentes del Programa.

Intervención en Caminos Rurales

19. Originalmente, el diseño del Programa consideraba que a través de este componente se realicen acciones que comprendían las siguientes inversiones en infraestructura vial: mejoramiento, rehabilitación, mantenimiento periódico y mantenimiento de emergencia de los caminos vecinales; mejoramiento y mantenimiento de los caminos de herradura; rehabilitación y mantenimiento de puentes y pontones, y otras infraestructuras de transporte rural (embarcaderos, rehabilitación de puntos críticos, etc.); todas ellas orientadas fundamentalmente a ampliar, mejorar y consolidar la dotación de la infraestructura vial en el medio rural. Sin embargo, finalmente de acuerdo a la reestructuración y reasignaciones del Programa se determinó que las intervenciones a realizar quedarían como siguen:

- Rehabilitación de caminos vecinales (3,310 km)
- Mantenimiento Periódico (7,608 km)
- Mejoramiento y construcción de puentes (1 Puente)
- Mejoramiento de caminos de herradura (2,365 km)
- Mejoramiento de caminos de herradura Turístico (161 km)

Tabla 9-5: Avances Físicos de las Intervenciones del PTRD

Principales Indicadores	Unidad de Medida	Meta total 2da. Reasignación (2013)	Avance acumulado al 15/04/2014 (Obras culminadas)	(*) Avance valorizado acumulado al 15/04/2014 (Obras Inconclusas)	Avance Total Acumulado (incluye avance valorizado)	Avance Total Acumulado (%)
Km de caminos vecinales rehabilitados.	Km	3,310	3,082	195	3,277	99%
Km de caminos vecinales con mantenimiento periódico.	Km	7,608	7,678 (**)	133	7,811	103%
Puentes mejorados o construidos	Puente	1	1	-	1	100%
Km de caminos de herradura mejorados.	Km	2,365	2,281	75	2,356	100%
Km de caminos de herradura de importancia turística mejorados.	Km	161	63	25	88	55%

(*) En acuerdo con los Bancos, se ha venido contabilizando el avance físico valorizado de contratos de obras inconclusas, las mismas que hasta la fecha se encuentran paralizadas o en arbitraje por diversos motivos.

(**) Las obras culminadas consideran actividades de mantenimiento sobre 14 tramos (232.70 Km) que recibieron la segunda intervención de mantenimiento periódico.

20. Considerando las cifras del cuadro anterior, se tiene que a través del Programa se logró el buen estado de transitabilidad de 10,457 Km de caminos de la Red Vial Vecinal y 2,344 Km caminos de herradura.

21. Cabe precisar que el PTRD inició la ejecución descentralizada del mantenimiento periódico en aquellas provincias con IVPs categorizados como de nivel IV y de nivel II, logrando culminar trabajos de mantenimiento periódico para 2,228 Km de caminos vecinales, lo que hace 29% del total de trabajos culminados.

Fortalecimiento y Desarrollo de Capacidades

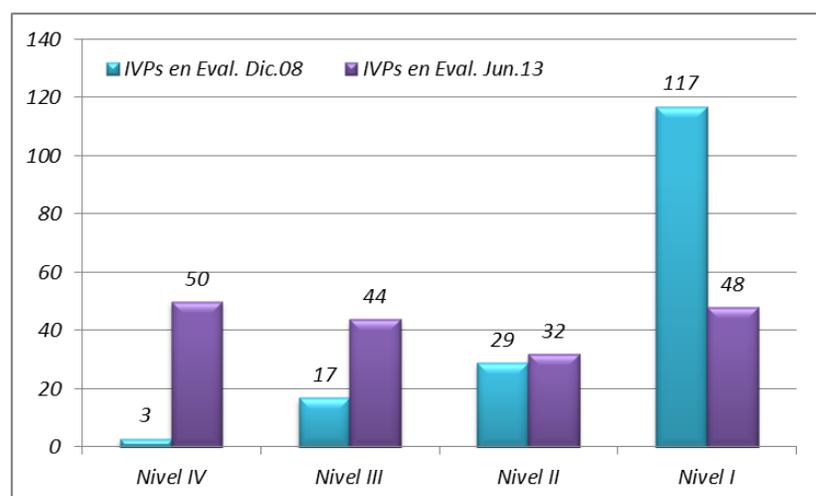
22. **Inventarios Viales Georeferenciados:** como insumo principal de los planes viales, a través del subcomponente se logró la elaboración de los Inventarios Viales Georeferenciados de nivel básico para los caminos vecinales de 192 provincias; es decir, se logró inventariar al 99% de la Red Vial Vecinal encontrándose una longitud total de 107,233 Km (incluyendo caminos en condición de trocha). Dicha información ha venido siendo coordinada con la Dirección General de Caminos y Ferrocarriles del MTC, para su incorporación formal en el Sistema Nacional de Carreteras (SINAC).

23. **Planes Viales Provinciales Participativos:** a través del subcomponente se logró el financiamiento y elaboración de 115 PVPP y 01 Plan Vial Multidistrital en el ámbito del Valle de los Ríos Apurímac, Ene y Mantaro (VRAEM). Asimismo, los gobiernos locales con la asistencia técnica de PVD, se encargaron de financiar la elaboración de 06 PVPP.

24. Si agregamos los planes elaborados durante el PTRD a los Planes elaborados durante el PCR, se tiene que actualmente 192 provincias cuentan con PVPP.

25. **Desarrollo y fortalecimiento de capacidades locales:** la última evaluación de capacidades del PTRD, fue realizada durante el mes de junio de 2013, en la que de los 188 IVPs creados, solo 174 respondieron con la información requerida para la evaluación semestral. De los IVPs evaluados, se pueden estimar algunas métricas:

- 94 IVPs (50%) han logrado alcanzar el nivel III y IV, lo que demuestra una adecuada capacidad de gestión, mostrando principalmente que poseen capacidad para gestionar financiamiento; formular perfiles y expedientes técnicos; ejecutar obras de infraestructura vial y actividades de mantenimiento. Existiendo IVPs en los que incluso llegan a desarrollar acciones en materia de transporte y tránsito rural. Además, estos IVPs se caracterizan por tener un equipo técnico dedicado y estable.
- 128 IVPs (68%), contaron con recursos de sus gobiernos locales para el financiamiento del mantenimiento vial rutinario de caminos vecinales distintos a los que PVD rehabilitó, con lo que se muestra la internalización de la cultura del mantenimiento en los gobiernos locales.
- 53 IVPs (28%) han avanzado en la simplificación administrativa, consolidando su institucionalización al tener acceso directo a Sistema Integrado de Administración Financiera (SIAF) y contar con cuentas corrientes.
- 99 IVPs (53%) reciben transferencias directas del MEF para dar mantenimiento rutinario a caminos vecinales rehabilitados anteriormente. Ello demuestra que el MEF reconoce al IVP como ente especializado en gestión vial a nivel local.
- 131 IVPs (70%) ejecutaron obras viales de construcción y/o rehabilitación con financiamiento de fuentes diferentes a PVD.
- 144 IVPs (77%), lograron financiamiento de proyectos viales del PVPP en el presupuesto participativo.



Fuente: Base de Datos de Tipología 2008 - 2013. Unidad Gerencial de Desarrollo Institucional de Proviás Descentralizado de PVD.

**Figura 9-1: Evolución de los IVPs por Niveles
Periodo 2008 - 2013**

26. Por otro lado el diseño del Programa consideró fomentar los vínculos horizontales entre todos los IVP, dado que las externalidades positivas que se puedan ganar de ello son mayores. En ese sentido, como parte de las acciones de fortalecimiento institucional, se promovió y apoyó la formación de la Red Nacional de IVPs como espacio de intercambio de experiencias y de buenas prácticas.

27. **Equipamiento de los IVP:** al término del PTRD, se logró equipar a 150 IVPs, cada uno con 02 computadoras, 01 motocicleta, 01 Impresora, 01 escáner y 01 GPS tipo I. Asimismo, se equipó a otros 03 IVP, cada uno con 01 motocicleta y 01 GPS, lo que finalmente hace un total de 153 IVPs beneficiados con equipamiento.

28. **Microempresas de Mantenimiento Vial Rutinario:** a través del PTRD se logró promover la creación de 185 MEMV, para el mantenimiento rutinario de un total de 3,595 Km, favoreciendo la generación de 1,398 puestos de trabajo en el ámbito rural, de los que se observa que alrededor del 31% corresponde a la participación de las mujeres.

Tabla 9-6: Microempresas de mantenimiento vial en caminos vecinales a diciembre 2013

Programa	Provincias	Distritos	Caminos Vecinales		Total MEMV	Integrantes MEMV		
			Tramos	Total (Km)		Varones	Mujeres	Total
PCR I y II	116	577	623	11,641	573	2,786	1,010	3,796
PTRD	27	141	181	3,595	185	969	429	1,398
Otras Fuentes	-	34	104	1,630	100	412	148	560
Total Nacional	143	752	908	16,867	858	4,167	1,587	5,754

Transporte y Desarrollo Rural

29. **Ventana de Desarrollo Local (VDL):** los principales resultados obtenidos a través de este subcomponente son:

- Apalancamiento de fondos con un ratio de 3.3%. En VDL se invirtió S/. 7,984,809 y se consiguió movilizar fondos por S/. 26,618,533, para el fomento de proyectos productivos en zonas rurales, principalmente provenientes de los fondos de los mismos gobiernos locales y regionales.
- 30 proyectos financiados por los Gobiernos locales por un monto total de S/. 22,946,719, para la promoción de actividades productivas, mediante los cuales se han implementado principalmente acciones de capacitación, asistencia técnica para el desarrollo de innovaciones tecnológicas de pequeños productores rurales
- 60 medidas de política aprobadas e implementadas por Gobiernos locales (provinciales y distritales). De ellas: 41 Ordenanzas, 13 resoluciones y 6 Acuerdos municipales. Estuvieron orientadas a la adecuación de su normatividad local para facilitar la promoción de proyectos productivos. Mediante esas medidas, por ejemplo, se logró que se cree e implemente 12 oficinas de desarrollo económico, se aprobaron compras municipales a organizaciones de productores; se han priorizado la asignación de fondos para proyectos productivos para la promoción de productos identificados como estratégicos; se aprobaron medidas para el cuidado de recursos como el agua relacionada con el uso productivo; se aplicaron medidas para hacer frente al control fitosanitarios, se institucionalizaron de mesas temáticas a cargo de los las oficinas de desarrollo económico, se reglamentó la comercialización, se normó la preservación de recursos turísticos y promoción del turismo, se institucionalizaron ferias locales, entre otros.
- 21 proyectos priorizados en presupuesto participativo, mediante ellos se promovió la participación de las organizaciones de productores en las decisiones de asignación del presupuesto municipal, aun cuando este mecanismo de participación ciudadana aun no es vinculante.
- 36 Mesas temáticas lideradas por los gobiernos locales y 23 convenios de cooperación con participación de los gobiernos locales. fueron promovidos como parte del fomento redes de cooperación público-privadas.
- Financiamiento de 52 planes de negocios por un monto total de S/. 3, 671,814, logradas por gestión de las Organizaciones de productores logran el, proveniente principalmente de fondos públicos.

Tabla 9-7: Resultados de la VDL al término del PTRD

Variable	Meta	Resultados alcanzados
Cobertura	30 provincias	30 provincias
GLs promueven actividades productivas mediante el financiamiento e implementación de proyectos identificados en el PDCN	De 90 proyectos elaborados, identificados en el PDCN, 50% (45) son financiados e implementados	45 proyectos fueron financiados e implementados con fondos públicos en especial de gobiernos locales
Organizaciones de productos logran el financiamiento de sus planes de negocios	DE 90 planes de negocios elaborados, 50% (45) son financiados	50 planes de negocios fueron financiados en especial con fondos públicos
Gobiernos locales aprueban medidas de políticas para la promoción de proyectos productivos	90 medidas de políticas aprobadas por los gobiernos locales	60 medidas de políticas son aprobadas por gobiernos locales
Apalancamiento de fondos	(Fondos movilizados / inversión VDL)	3.3%

30. **Planes de Infraestructura Económica Provincial (PIEP):** se contrató de 15 consultorías para la elaboración de los PIEPs, de las que se obtuvieron como resultado 15 PIEP elaborados, con lo que se logró el cumplimiento de la meta física del Programa.

Tabla 9-8: Cumplimiento de la meta física de PIEP

Componentes del Proyecto	Principales Indicadores	Unidad de Medida	Meta total vigente	Avance Acumulado a 31.12.13	% de Avance Acumulado
Promover la complementariedad, la integración y la coordinación de la dotación de infraestructura de transporte rural con el desarrollo rural.	Provincias desarrollan planes de infraestructura económica multisectorial provincial.	Planes	15	15	100%

Tabla 9-9: Planes de Infraestructura Económica Provincial elaborados

Provincia	Año de elaboración del PIEP	Vigencia del PIEP (años)	Nro. de Proyectos Multisectoriales Priorizados	Proyectos Viales del PIEP ejecutados
Sihuas	2,008	4	76	5
Cotabambas	2,012	5	23	-
Arequipa	2,007	5	43	-
Huanta	2,007	5	26	7
Vilcashuamán	2,007	5	66	2
San Marcos	2,010	3	17	-
Canchis	2,009	5	5	1
La Convención	2,012	5	82	-
Tayacaja	2,007	5	32	1
Huacaybamba	2,007	5	6	-
Leoncio Prado	2,007	5	127	-
Sánchez Carrión	2,007	5	29	-
Oxapampa	2,008	5	21	1
Huancabamba	2,007	4	27	-
Azángaro	2,007	4	49	2
Total (15 PIEP)			629	19

31. Se debe precisar que de los 3,082 Km de caminos rehabilitados por el PTRD, se tienen 122 Km que pertenecen a caminos priorizados en los PIEPs.

Evaluación de resultados del Programa

Evaluación de Indicadores de Desempeño

32. A continuación se muestran los indicadores del Marco Lógico que fueron cumplidos por el Programa.

Tabla 9-10: Indicadores de desempeño

Indicadores de desempeño	Meta original	Meta Reestructuración 2010	Meta 2da. Reasignación 2013	Resultado obtenido al cierre	% de cumplimiento (respecto a la 2da. Reasignación)
Cantidad de Km de caminos rurales rehabilitados.	3,000	3,358	3,310	3,277	99%
Cantidad de Km de caminos rurales que reciben servicio de mantenimiento periódico según las normas del proyectos.	11,200	7,506	7,608	7,811	103%
Cantidad de Km de sendas mejoradas para vehículos no motorizados.	2,650	2,515	2,526	2,444	97%
Cantidad de puentes rehabilitados o mejorados y que reciben servicio de mantenimiento.	50	1	1	1	100%
Cantidad de Planes de infraestructura rural preparados y aprobados.	15	15	15	15	100%
Cantidad de IIP seleccionados según el Proyecto Piloto de infraestructura rural.	15	15	15	-	0%
Cantidad de Planes participativos de caminos provinciales aprobados.	150	150	150	193	129%
Cantidad de microempresas calificadas que brindan servicio de mantenimiento de rutina de alta calidad cuya creación ha sido promovida a través del Proyecto.	120	120	120	185	154%
Cantidad de puestos permanente de trabajo no calificado equivalentes a un año generados por microempresas.	1,400	1,400	1,400	1,398	100%

Evaluación Económica del Programa

33. Los resultados de la evaluación Ex Post muestran que, a pesar del incremento de los costos de inversión, y más aún del aumento de los costos unitarios por kilómetro, las inversiones del PTRD fueron más rentables que los previstos en la evaluación Ex Ante. Así, en la evaluación Ex Post, se reporta un Valor Actual de US\$ 108.3 millones muy superior US\$ 13.9 millones estimados al inicio de del PTRD; igualmente la Tasa Interna de Retorno de 54.6% es bastante más alta de la tasa de descuentos del 14% y de los resultados de la evaluación ex ante estimado en 29.2%.

Tabla 9-11: Resultado de la Evaluación Económica

Rubros	Ex Ante	Ex Post
Inversiones (M US\$)	52.7	87.8
Inversiones por km (US\$/km)	10.2	26.4
TIR (%)	29.2	54.6
VAN (al 14%)	13.9	108.3

Evaluación de Impactos del Programa

34. A partir de la evaluación de Impacto del Programa, se puede llegar a la conclusión que la rehabilitación de caminos rurales mejoró el acceso a servicios de educación y salud y dinamizó el mercado laboral gracias a una mejora en la producción pecuaria. Por ende, aumento el gasto familiar y se redujo la pobreza extrema. Entre los mayores impactos encontramos los siguientes:

- Una reducción en los tiempos de viaje a las escuelas (-5.6 minutos) y a los puntos de venta de productos agropecuarios (-26.3 minutos)
- Un incremento (en torno al 14%) en la tasa de acceso a la escuela para la población de entre 12 y 18 años.
- Un incremento (10%) del uso de los servicios de salud.
- Un mayor impacto en la reducción de la pobreza extrema (-13.8%) y de la pobreza estructural NBI (-7.5%), y un incremento del gasto per capita (7.3%). Dichos impactos a largo plazo no se podrían haber capturado en evaluaciones de impacto anteriores.

Evaluación del Desempeño de los Organismos Prestatarios

35. Como en las etapas anteriores del PCR, la participación del Banco Interamericano de Desarrollo (BID) y el Banco Internacional de Reconstrucción y Fortalecimiento (BIRF) en el PTRD, resultó ser un factor de éxito para el Programa. Esto no solo por el financiamiento obtenido a través de los contratos de préstamo, sino además por la participación permanente de los funcionarios de los Bancos en el Programa, permitiendo el acompañamiento durante cada etapa del Programa (preparación, ejecución y cierre). Gracias a su continuo asesoramiento, evaluación y supervisión se logró que el Programa cumpla de las metas de cada componente.

En asegurar la calidad al inicio

36. Ambos Bancos, participaron en el diseño del Programa a través de reuniones de trabajo. Estas reuniones y coordinaciones permitieron contar su asesoramiento durante la fase de preparación del Programa hasta la suscripción de los contratos de préstamo.

37. En el asesoramiento recibido, se destaca el intercambio de opiniones y experiencias de otros programas e incluyendo los ejecutados en otros países, en las que viene evolucionando la gestión vial en el ámbito rural. Este asesoramiento, incluyó también recomendaciones que enriquecieron el diseño del Programa en materias que los Bancos impulsan a nivel internacional, como lo son impacto socioambiental, género, desarrollo rural, entre otros.

38. Asimismo, los funcionarios de los Bancos prestaron especial acompañamiento al cumplimiento de las normas, procedimientos y condiciones de los contratos de préstamo, asegurando que estas se vean reflejadas en los instrumentos de gestión del Programa como lo son el Manual de Operaciones, Planes Operativos y los Informes de Progreso. Adicionalmente, desde el inicio y posteriormente durante la ejecución del Programa, los funcionarios mostraron preocupación por fortalecer las capacidades del personal de PVD para que se asegure el cumplimiento de los procedimientos y normativas de los Bancos.

39. Una vez iniciada la operación del Programa, el asesoramiento de los Bancos apoyó en la toma de decisiones y la gestión del Programa. Además, desde el inicio de Programa los desembolsos fueron gestionados oportunamente, lo que permitió afrontar los pagos con los recursos provenientes del endeudamiento sin que se produzcan inconvenientes.

Calidad de la supervisión

40. La supervisión realizada por los equipos de trabajo de los Bancos, se realizó mostrando un alto nivel profesional; así como, un trato cordial y cercano, lo que permitió una comunicación frontal, abierta y honesta de los problemas que se fueron presentando durante la ejecución del Programa. Esta relación de confianza, permitió a PVD, obtener por parte de los Bancos, su comprensión, colaboración y flexibilidad en la solución de los problemas. Al respecto, nos

atrevernos a indicar que los funcionarios participantes se mostraron identificados con el Programa, sin que esto colisione con su representación excepcional de los organismos prestatarios.

41. El permanente asesoramiento se vio reflejado en las continuas visitas de las misiones a la Sede Central, Oficinas de Coordinación Zonal e intervenciones del Programa (camino intervenidos). De esta manera, desde nuestro punto de vista, las misiones de supervisión permitieron comunicar nuestros avances en los indicadores del Programa y constatar in situ la calidad técnica de nuestra intervención; así como, el cumplimiento de los procedimientos y normas. Asimismo, las misiones sirvieron para establecer medidas correctivas para las desviaciones identificadas en la ejecución del Programa; así como para establecer, de manera concordada, metas e hitos que sirvieron para el monitoreo del Programa.

42. Asimismo las respuestas de los Bancos a solicitudes de no objeción han sido oportunas lo que ha permitido un normal desenvolvimiento de las actividades del Programa. Cabe precisar que una gran cantidad (número) de los aportes y recomendaciones, por parte de los Bancos, provinieron de las evaluaciones a estas solicitudes.

43. Por último, se debe resaltar que los Bancos han apoyado y promovido la propia supervisión y la mejora de esta, a través de las coordinaciones y las capacitaciones que realizaron en esta materia.

Comments by Co-Financiers and Other Partners/Stakeholders
Comments on Draft ICR by the Inter-American Development Bank, Project Co-Financer

1. La evaluación realizada por el BID al Programa fue altamente satisfactoria, considerando que logró alcanzar sus objetivos de desarrollo. Ello fue validado por la Evaluación de Impacto realizada recientemente luego de culminado el proyecto.

2. **Evaluación del proyecto.** En términos generales, la implementación del proyecto se considera satisfactoria, más aun considerando la complejidad del proyecto: en el Programa se llevaron a cabo 1,600 procesos de contratación, entre consultores individuales, firma consultores y contratistas. De las evaluaciones periódicas que se realizaban no se identificaron temas críticos de implementación. Adicionalmente debe indicarse que el programa se implementó en un cambio de contexto económico, pero su flexibilidad permitió adecuarse a este nuevo contexto.

3. En cuanto a la evaluación de productos y resultados, el programa logró alcanzar sus objetivos, lo cual fue validado con la evaluación de impacto realizada.

4. **Desempeño del ejecutor.** El Banco considera que la agencia ejecutora ha efectuado una labor muy satisfactoria durante la implementación del proyecto. Durante la ejecución del proyecto adoptó medidas correctivas cuando se presentaron problemas y tuvo la capacidad de adaptar adecuadamente el programa a los cambios de contexto. Los procesos de adquisiciones y contrataciones con recursos de los Bancos fueron llevados a cabo cumpliendo con las políticas de los Bancos, y supervisando y monitoreando el proyecto, a fin que los productos del proyecto sean de calidad. Cabe destacar la complejidad del proyecto, en términos de cantidad de obras de rehabilitación, estudios y consultorías realizadas. A pesar de dicha complejidad, y a pesar que el proyecto tuvo ampliaciones de plazo, éstas no superaron los 24 meses, lo cual resulta bastante adecuado para la complejidad del programa. No obstante, el ejecutor tiene un gran reto por delante puesto que Provias Descentralizado viene recibiendo funciones que escapan a su rol de Unidad Ejecutora. Los encargos que viene recibiendo están vinculados a la supervisión técnica de las transferencias financieras que realizan entidades como el Ministerio de Economía y Finanzas o el Fondo para la Inclusión Económica en Zonas Rurales (FONIE) hacia los gobiernos locales para la mejora o mantenimiento de caminos rurales. En este marco, Provias requerirá revisar su organización, no sólo por las funciones adicionales, sino además incorporando su visión a futuro respecto al tratamiento de la vialidad terciaria, es decir, si se mantiene como una organización que brindará financiamiento y asistencia técnica para la mejora de la red terciaria, o si su visión será la de convertirse en un ente supervisor de toda la vialidad terciaria, generando políticas que permita la mejora del transporte rural.

5. **Desempeño del Banco Mundial.** En opinión del Banco Interamericano de Desarrollo (IDB), el trabajo conjunto y armonizado entre el Banco Mundial y el BID ha sido positivo y ha generado valor agregado para un adecuado monitoreo y supervisión de la implementación del proyecto. Ambos Bancos han identificado las ventajas de cada uno en determinados aspectos del monitoreo, y en diversas etapas del proyecto para poder realizar un monitoreo integral del Programa. Asimismo, el diálogo técnico entre ambos Bancos que incluye el compartir información, identificar debilidades u oportunidades de mejora del programa, ha sido muy fluido, y ha permitido proponer al ejecutor mejoras en la implementación del programa, y monitorear adecuadamente el Programa.

List of Supporting Documents

1. The Decentralized Rural Transport Project; Project Appraisal Document; The World Bank; November 15, 2006; Report No: 36484-PE.
2. Second Rural Roads Project; Implementation Completion and Results Report; The World Bank; June 5, 2007; Report No: ICR0000366.
3. Macroconsult-Cuanto, (2014), “Elaboración de la Evaluación de Impacto y la Ampliación de la Línea de Base del Programa de Transporte Rural Descentralizado (PTRD) - Informe Final”. Abril 2014.
4. GRADE, (2007), “Elaboración de la Evaluación de Impacto Económico, Social, Institucional y Ambiental del Programa de Caminos Rurales, Informe Final Evaluación de Impacto 2006”.
5. Webb, R., (2013), Conexión y Despegue Rural. Instituto del Perú, Universidad San Martín de Porres. Marzo 2013.
6. Instituto Cuanto, (2000), “Evaluación Económica, Social, Ambiental e Institucional del Programa de Caminos Rurales”
7. Nunez, M. M. and Guerrero, S. E. (2014), “Improving Rural Transportation through Decentralization: Experiences of the World Bank in Peru 1995 – 2013”, Work in Progress.

MAP 1

IBRD 40970



MAP 3

IBRD 40971



May 2014

