Peru: Rehabilitation of Olmos - Corral Quemado & Corral Quemado- Río Nieva Highways

Ex-Post Evaluation

OECD sector	21020/Road transport	
BMZ project number	1) 1997 66 056 (Olmos - Corral Quemado) and 2) 1995 66 696 (Corral Quemado - Río Nieva)	
Project executing agency	Provías Nacional (Ministerio de Transportes y Comunicación)	
Consultant	Various local companies	
Year of ex-post evaluation	**2007**	
	Project appraisal (planned)	**Ex-post evaluation (actual)**
Start of implementation	1) 3rd quarter 1998 2) 1st quarter 1996	2nd quarter 2001 3rd quarter 1996
Period of implementation	1) 12 months 2) 20 months	18 months 36 months
Investment costs	1) 14.6 million 2) 60.3 million	20.5 million 72.1 million
Counterpart contribution	1) 4.4 million 2) 17.9 million	10.3 million 29.7 million
Finance, of which FC funds	1) 10.2 million 2) 42.4 million	10.2 million 42.4 million
Other institutions/donors involved	None	None
Performance rating	3	
• Effectiveness	3	
• Relevance	2	
• Impact	3	
• Efficiency	3	
• Sustainability	2	

Brief Description, Overall Objective and Project Objectives with Indicators

Both projects entailed the rehabilitation of altogether 250 km of the Transandean Highway 5 between Olmos and Tarapoto (altogether about 605 km and termed ‘project road’ in the following) linking the North Peruvian ports of Paita and Chiclayo with the Amazon Basin. The overall objective of the projects was to promote the exchange of goods between the economic area east of the Andes situated in the Cajamarca, Amazon and San Martín Departementos and the coastal markets by reducing transport costs and with that make a contribution to securing economic growth in Peru. The overall objective indicators were defined as volume of traffic and/or freight volumes on the project road. Since the projects were aimed at making a positive contribution to growth, their macroeconomic rate of return as an approximate indicator for economic growth must be taken as a major evaluation criterion today, supplemented by changes in the

socio-economic situation of the population (target group) living in the project region that can be plausibly attributed to road rehabilitation. The project objective was the adequate utilization of the project road, measured by volume of traffic (project objective indicator).

Project Design/Major Deviations from Original Planning and Main Causes

The project measures comprised upgrading and rehabilitating the damaged and worn road surface, building works to improve drainage and slope stability, the construction of bridges, providing safety precautions, such as crash-barriers, signposts, road markings and reflectors, as well as the assignment of consultants for building supervision. The projects formed part of the World Bank's Road Rehabilitation Programme (parallel finance) and complemented the rehabilitation of other stretches of the project road cofinanced by the Cooperación Andina de Fomento (CAF) and the Japan Bank for International Cooperation (JBIC). The project executing agency was the Ministerio de Transportes y Comunicación, most recently the unit responsible for national highways, the Provías Nacional.

The actual implementation deviated from the original planning as follows: Planning at project appraisal envisaged selective improvements to be carried out at particularly critical points on 176 km of roadway between Olmos and Corral Quemado in the western part of the project road. In fact, 79 km of roadway was completely rehabilitated; the rehabilitation of the remaining 100 km was carried out with finance from CAF and JBIC. In the middle of the Corral Quemado - Río Nieva section further east, a 40 km-long stretch was damaged so severely during construction by unusually heavy rainfall in the rainy seasons of 1997/98 and 1998/99 (climatic impact of El Niño and La Niña) that it was removed from the contract with a view to devising a new engineering scheme. Only makeshift repairs were initially made to this section; its complete rehabilitation is part of a franchise agreement concluded in 2005 with the Brazilian-Peruvian enterprise, IRSA NORTE S.A. This contract comprises the operation and maintenance of the 955 km-long transport corridor, Paita - Olmos - Tarapoto - Yurimaguas, of which the project road makes up the central segment, as well as upgrading and rehabilitation measures on specified stretches.

Since all sections of the project road could be rehabilitated with funds from the Peruvian government and other donors, the changes to the original project plans would appear appropriate in hindsight. Unlike the situation before project start, the overall condition of the project road is good and it is trafficable continuously throughout and year.

Key Results of Impact Analysis and Performance Rating

Project objectives achievement is as follows: Measured in terms of total vehicle numbers, the forecast volume of traffic on the section Pedro Ruiz - Río Nieva has been surpassed, and 86% has been recorded on the Corral Quemado - Bagua Grande, but the volumes on the other two sections fall well short of target:

Vehicles per day (average) on section	Project start		Forecast for 2007	Actual 2007 (1st half-year)	Quotients	
	Year	Number			Actual/ Forecast	Actual/Project start
Olmos - Corral Quemado	1997	716	1,541	722	47%	101%
Corral Quemado - Bagua Grande	1995	513	990	856	86%	167%
Bagua Grande - Pedro Ruiz G.	1995	599	1,259	514	41%	86%
Pedro Ruiz G. - Río Nieva	1995	164	326	458	140%	279%

The composition of traffic, however, points to a distinct improvement in development: A breakdown of the stagnating total vehicle number on the Olmos - Corral Quemado section, for exam-

ple, reveals a growth of 21% in car, 6% in bus and 10% in truck transport, if the number of axles is counted instead of the number of trucks, which provides a better yardstick, because larger trucks are increasingly used for haulage due to the road improvements so that more goods are transported per vehicle. On the Bagua Grande - Pedro Ruiz stretch, the 14% decline in traffic by vehicle count breaks down as follows: drop in cars by 43% with a concurrent increase in bus traffic of 132%, amounting to a fall in absolute figures of 181 cars and a simultaneous rise of 29 busses a day, which means an increase in passenger transport; increase in lorry transport of 44% by vehicle count and 155% measured by number of axles, indicating a rise in freight traffic by a factor of two to three and even exceeding the anticipated traffic increase of 100%:

Daily volume of traffic (average) on section	Actual/Project start				
	Total vehic-les	Car	Bus	Truck	Truck (axles)
Olmos - Corral Quemado	101%	121%	106%	82%	110%
Corral Quemado - Bagua grandee	167%	154%	279%	174%	255%
Bagua Grande - Pedro Ruiz G.	86%	57%	232%	144%	217%
Pedro Ruiz G. - Río Nieva	279%	419%	276%	144%	255%

The project objective for the segment Corral Quemado - Río Nieva can therefore be deemed as achieved for the most part, and as partly achieved at least for the Olmos - Corral Quemado section.

Cost-benefit analyses carried out at project appraisal on the basis of estimated costs for rehabilitation, maintenance costs for the rehabilitated as compared with the unrehabilitated roadway and savings on vehicle running costs yielded the following macroeconomic return: 21.0% for the Olmos - Corral Quemado section, 20.2% for the Corral Quemado - Bagua Grande section, 22.3% for the Bagua Grande - Pedro Ruiz section and 8.5% for the Pedro Ruiz - Río Nieva section. Based on current traffic figures, investment and upkeep costs as well as vehicle operating costs ascertained in the ex-post evaluation, the macroeconomic return for the FC-funded Olmos - Corral Quemado section (km 0-79) amounts to 18.3% and 10.4% for Corral Quemado - Río Nieva, premised, however on the extremely conservative assumption that traffic will not increase after 2007. These figures are well above the minimum target of 6%. Based on the above assumptions, though, the entire project road Olmos - Tarapoto has not yielded a positive macroeconomic return. The reason for this is that the specific investment costs in the Río Nieva - Tarapoto section are much higher and that trucking traffic (and the attendant vehicle operating cost savings) is considerably lower than on the stretches between Olmos and Río Nieva. A study on cost effectiveness carried out of by the Universidad del Pacífico in 2007 arrives at a much more favourable macroeconomic assessment. It looks at the whole 955 km-long corridor Paita - Olmos - Tarapoto - Yurimaguas and takes into account all costs incurred for road rehabilitation and operation as part of the franchise agreement. The study also assumes an increase in traffic volume and other economic benefits, such as time-saving and improvements for production and trade. Altogether, it arrives at a macroeconomic return of 41.7%, but does not take account of any costs of investment in the project road before 2006. If these (about US$ 255 million) are included, however, the internal rate of return nevertheless comes to 10.1% for the whole corridor, which still exceeds the target of 6%.

Altogether, the socio-economic situation of the population (target group) living in the project region has improved, which can in large part be attributed to the road rehabilitation. This is evident in a tangible reduction in passenger and goods transportation times, a broader variety of transport services and keener competition, easier transport of perishable goods, such as fruit, fish etc., an increase in trade and commercial business, greater tourism activities and improved

health services. No extensive structural changes in agricultural production or livestock breeding have been recorded in the project region. There are, however, discernible initiatives or smaller changes in production and processing (cultivation of improved grain varieties thanks to more extensive advice to farmers by non-governmental organizations and local traders, expansion of cattle herding and the introduction of improved breeding methods in response to increased demand for milk to make cheese, etc.). The overall objective can therefore be deemed to have been met, altogether. Adverse environmental impacts have been registered in the road catchment area, particularly damage to the rainforest, which, however, appears to be due less to road rehabilitation and more to the original clearance of the project region in the 70s and failure to implement the existing environmental legislation locally.

The FC projects help indirectly to reduce poverty; the target group includes poor sections of the population and the government aims at poverty alleviation in the project region with special programmes, also enabling the active participation of the poor in policy decisions as part of increased decentralization. The projects had very limited basic scope for contributing to improving gender equality. Environmental protection was neither a primary nor secondary project objective. Participatory development/good governance was not a programme objective.

We assess the developmental efficacy of the programme as follows:

- The objective of the projects, the adequate utilization of the rehabilitated roadway and the resultant transport cost savings, has been met for the most part. We therefore judge the effectiveness of the projects as sufficient (Subrating 3).

- The results chain logic of making a contribution to economic development and poverty reduction in the project region by rehabilitating the project road was essentially plausible and addressed a major development constraint. As a central northern part of the three Transandean corridors in Peru (Corredor Vial Amazon Norte from the coastal resort of Paita via Olmos and Tarapoto to Yurimaguas), the project road plays a major potential economic role for the country. Ex-post coordination with other donors has been good; besides FC, the World Bank, CAF and JBIC have participated in rehabilitating the project road. In addition, the projects are also coherent with other concerns, as the project road reinforces measures in rural poverty alleviation. We assess relevance as satisfactory (Subrating 2).

- The overall objective of the projects was to make a contribution to securing economic growth in Peru by promoting the exchange of goods between the economic area east of the Andes in the Cajamarca, Amazon and San Martín Departementos and the coastal markets. Measured in terms of the macroeconomic rate of return of the programme as an approximate indicator for economic growth, the target of 6% on the FC-financed stretches has been well surpassed. Measured by truck axles, trucking has increased considerably. Altogether, the effects of the projects on the socio-economic situation of the population living in the project region (target group) are generally positive, although no large capacity impacts have been achieved. Adverse environmental impacts, primarily due to the illicit settlement in the Departamento San Martín, are attributable to the project road, but largely to the development since the 70s and less to rehabilitation at the end of the 90s. Altogether, we assess the developmental impact as sufficient (Subrating 3).

- The specific investment costs (unit costs) are very high by international standards, which is largely a result of the climatic conditions, the difficult terrain but also of problems during the construction phase; they also exceed the unit costs estimated at project appraisal. The same applies for the costs of upkeep. In view of the acceptable utilization

of the road, particularly in freight traffic, we judge the allocative efficiency and general efficiency of the projects altogether as sufficient (Subrating 3).

- The project road is in good overall condition. The franchise for the Corredor Vial Amazon Norte awarded to IIRSA NORTE S.A. would appear to ensure maintenance for the next 23 years. Sustainability is therefore rated as satisfactory (Subrating 2).

Based on the above subratings, the FC projects are assessed as sufficient overall (Rating 3).

General Conclusions

The environmental hazards in need of remedial action identified in an environmental impact assessment, in this case the illegal settlement in the Alto Mayo nature reserve, should be cited in the appraisal report as risks and the executing agency obliged to report on these. If, as in this case, the executing agency can do little about the risk, the problem should be addressed in intergovernmental consultations.

In parallel finance for a programme whose general success depends on the contribution of all stakeholders, in this case the rehabilitation of the whole highway between Olmos and Tarapoto, their commitment must be credibly assured at project start. If this is not the case, the project should be deferred. (In the present programme, finance for important stretches of road was not yet assured at appraisal, which posed a considerable risk to success.)

If the maintenance of an investment measure poses a high risk - in this case the upkeep of the project road after completion of the rehabilitation measures - depending on the prospects of success, FC should as far as possible help solve this problem (also in parallel financing) by implementing a suitable complementary measure, taking active part in sector dialogue and/or addressing the difficulties in intergovernmental consultations.