

NATIONAL RURAL ROADS PROGRAM - SECOND STAGE

(PR-0104)

EXECUTIVE SUMMARY

Borrower:	Republic of Paraguay		
Executing agency:	Ministry of Public Works and Communications (MOPC), acting through the Local Roads Office (DCV) and the Environment Office (DMA).		
Amount and source:		Phase 1	Phase 2
	IDB: (OC)	US\$67.0 million	US\$ 80.0 million
	Local:	US\$22.5 million	US\$ 26.0 million
	Total:	US\$89.5 million	US\$106.0 million
Financial terms and conditions:	Amortization period:	20 years	
	Disbursement period:	5½ years	
	Grace period:	5 years	
	Interest rate:	variable	
	Inspection and supervision:	1%	
	Credit fee:	0.75%	
	Currency:	Currency basket	
Objectives:	The objective of the program is to enhance the competitiveness of national production and raise living standards among the rural population, by upgrading and maintaining the level of service on a substantial part of the priority local roads network.		
Description:	<p>The National Rural Roads Program - Second Stage (NRRP-2) aims to consolidate and develop the progress achieved during execution of the National Rural Roads Program - First Stage (NRRP-1), in terms of physical infrastructure and institutionally. This second stage of the program would be executed under the multiphase project modality, with two phases of execution lasting five years each, in which the present operation covers the first five years.</p> <p>The program will support improvements and maintenance activities on local roads in 17 zones classified as priority in terms of their potential for production – mainly agricultural – in the eastern part of the country, where most of the population and economic activity are concentrated.</p>		

The program will also cover a priority network of local roads with an approximate length of 6,000 km, of which 1,900 km are major local roads and the remaining 4,100 km secondary. Improvements will be made to about 730 km of major local roads in phase 1 and about 820 km in phase 2. Upon completion of the works, the condition of these roads will have been raised to an acceptable level of performance that ensures year-round serviceability and proper road safety, and will have environmental mitigation measures.

The program also envisages the implementation of a Maintenance Management Plan (MMP) covering the entire priority network. This plan will make it possible to lay the foundations for efficient local road maintenance, by introducing new management modalities as follows: (i) decentralization of maintenance to involve participation by users and local governments; (ii) outsourcing of maintenance; and (iii) improvements in the planning and control of the physical and financial execution of maintenance undertaken by the Local Roads Office (DCV).

The program also includes activities to strengthen management of the DCV and the DMA. Elements will be included in the projects to afford greater safety to vehicles and pedestrians as well as direct and indirect environmental impact mitigations measures. To complement actions already begun with NRRP-1, funding will be provided for the purchase of lands in the project area and various activities to protect and develop indigenous communities.

**The Bank's
country and
sector strategy:**

The Bank's actions in Paraguay are concentrated in five strategic areas: (i) the financial sector, to help improve the workings of the system and support capital market development; (ii) reform of the State, to enhance the efficiency of public services delivery and strengthen governance; (iii) modernization of the productive system, to promote economic efficiency; (iv) support for social sectors, to promote their development; and (v) poverty reduction, to improve living standards among low-income populations.

In the transport sector the Bank funds improvements and paving projects on the most important arterial road, as well as the development of local road networks, to establish a basic network allowing adequate and reliable connections between areas of production, marketing and commerce. The development of physical infrastructure in the rural sector is seen as a basic condition for modernizing the agricultural sector, in the context of overcoming extreme rural poverty and promoting development in social sectors. The proposed strategy also assumes the continuation of efforts to implement a sustainable highway maintenance system to keep the road network in a satisfactory condition.

Execution of the second stage of the National Rural Roads Program would continue and be consistent with the strategy the Bank has been implementing in the transport sector.

**Environmental
and social
review:**

The Environment and Social Impact Report puts forward measures to eliminate or mitigate the socioenvironmental impacts arising from the execution of NRRP-2, or reduce them to acceptable levels. These measures were considered economically viable and feasible to implement under the general terms and conditions established in the Plan for Environmental Management and Protection and Assistance to Indigenous Communities, and in the Operating Regulations for the Environment. In addition, an attempt has been made to maximize the benefits of the program through measures such as the purchase and regularization of indigenous lands in the area of the road projects (paragraphs 3.13 to 3.17).

Benefits:

By improving the rural roads network and its maintenance and conservation system, the proposed program will help to: (i) facilitate the integration, development and mobility of rural populations in the areas to be benefited; (ii) support productive sector development, especially livestock breeding, agriculture and agroindustry; (iii) improve the management of rural road maintenance and make road conservation sustainable in the long-term; (iv) facilitate the implementation of protection services and measures to ensure efficient monitoring of natural resource use in ecologically sensitive areas; and (v) improve living standards among the rural populations and indigenous communities located in the program's areas of influence.

Risks:

The main risk of the program relates to its long-term sustainability, which will depend mainly on setting up an adequate system for managing local road maintenance, and on the timely availability of resources. As part of the program, a Maintenance Management Plan will be implemented to address the different aspects involved in the sustainability of this sector. The program will contribute directly to the success of the strategy adopted, by disseminating successful experiences with community participation in maintenance of local roads.

Another risk of the program is that the decentralization of road sector management will gather pace without giving time to develop the necessary financial and executive capacity locally. On this issue, the possibility of obtaining a new loan in the future, in keeping with the multiphase operation concept, is a powerful incentive for sustaining the program's approach and ensuring that its targets are met. The Bank is also trying to support the authorities in the road sector and the different political powers in studying the best alternatives for successful decentralization.

Special contractual clauses:

Conditions precedent to first disbursement: the hiring of consulting services to assist the Local Roads Office in managing the program, and to support implementation of the Maintenance Management Plan (paragraph 2.32).

Detailed proposal for execution of the Maintenance Management Plan (paragraph 2.18).

Evidence that the Environmental Operating Regulations have been enacted and implemented (paragraph 3.14)

Presentation of the methodology for monitoring and evaluating the program (paragraph 3.26).

Presentation of the multi-year maintenance program for the first year of the program (paragraph 3.29).

Other special conditions are:**Environmental and social aspects:**

Presentation of plans for regularizing title and purchasing land for indigenous communities (paragraph 5.20).

New investments and maintenance:

Restrictions on starting new investments (paragraph 3.30).

Procurement of equipment and activation of Maintenance Arrangements with local organizations, municipalities and departments (paragraph 2.26).

Works by force account:

For rehabilitation works in critical areas, financing of up to US\$1.8 million will be provided for the purchase of supplies, spare parts, and fuel for execution of specific works by the DCV (paragraph 3.19).

Poverty-targeting and social sector classification:

This operation classifies as a social equity enhancing project, as described in the indicative targets mandated by the Bank's Eighth Replenishment (document AB-1704). The operation also qualifies as a poverty-targeted investment (PTI) (paragraph 5.11). The borrowing country will not be using the 10 percentage points in additional financing to which it is entitled (paragraph 2.38).

**Exceptions to
Bank policy:**

No exceptions to Bank policies are envisaged.

Procurement:

Bank procedures will be used in hiring services and contracting civil works, and in the procurement of goods to be financed with the proceeds of the IDB loan. International notices will be used in the bidding for consulting services contracts valued at over US\$200,000, for the procurement of goods valued at US\$250,000 or more, and for contracts for civil works valued at US\$2 million or more (paragraph 3.19).

I. REFERENCE FRAMEWORK

A. The supply of transport infrastructure and road transport in Paraguay

- 1.1 Paraguay, whose economy is based on agriculture, requires adequate transport infrastructure and efficient systems to contribute, through lower transport costs, to the country's economic integration and competitive access to international markets. This need is accentuated by Paraguay's landlocked geographical position. The country's current transport infrastructure, however, is still insufficient to cope efficiently with existing freight and passenger demand.
- 1.2 The internal movement of people and freight in Paraguay takes place almost exclusively by road, and the automobile fleet has grown significantly over the last decade. Although it has expanded since the end of the 1980s, Paraguay's road network is still underdeveloped. The total length of the inventoried national road network, administered by the Ministry of Public Works and Communication (MOPC), amounts to just under 25,000 km. Of this total, some 5,200 km are national highways, 5,100 are departmental, and the rest are local roads.¹ With slightly over 3,100 km of paved road, Paraguay's paved ratio, at 7.7 km for every 1000 km² of land area, is among the continent's lowest (the ratio is 42 in Uruguay and 34 in Argentina – countries with relatively similar topographical characteristics and population densities).

B. The highway sector in Paraguay: institutional structure and management

- 1.3 The MOPC sets transport sector policies and is responsible for construction and conservation of the highway network, as well as for carrying out studies. Although the MOPC executes, administers and oversees about 80% of the investments in the transport sector, there are also other agencies that have varying degrees of competence. Air transport infrastructure and services come under the jurisdiction of the Ministry of National Defense, which also has a role in road building projects in the western region and in the north of the country. Apart from this, the Itaipú and Yacyretá binational entities, departmental governments, municipalities and the Ministry of Agriculture (the latter using the MOPC as executing agency) all build and maintain roads in the areas under their jurisdiction and in integrated rural development projects.
- 1.4 The management of the road network in Paraguay is basically the responsibility of the MOPC, which acts through the Highways Directorate on national and departmental routes, and through the Local Roads Office (DCV) in the case of rural roads. Maintenance is carried out through eight Maintenance Units (DC) which cover the country's entire road network and report at an operational level to the Highways Directorate. In maintenance tasks on rural roads, however, the DCs

¹ Throughout this document, the terms "local roads" and "rural roads" are used synonymously.

coordinate with 14 Regional Highway Boards (RHB), which are DCV dependencies corresponding to Paraguay's administrative departments.

- 1.5 The RHBs are made up of local government and private-sector representatives with a stake in the development of the transport system and its infrastructure. They are responsible for drawing up work programs for submission to the DCV, and have Local Highway Agencies (LHB) dependent upon them, set up in the municipal districts within their jurisdiction. These are also comprised of representatives from the local government and private sectors. Although RHB management experience has varied across the different departments, the establishment of these agencies has played a positive role as a participation mechanism and in bringing the DCV closer to users; it is also an important basis for involving users in rural road management.
- 1.6 The policy of the MOPC in managing the road network is consistent with the administrative decentralization process initiated in Paraguay in recent years. The MOPC is taking steps to hand over the road network to departmental governments and municipalities in an orderly and gradual fashion. The MOPC will be left in charge of running the national highway network, as well as defining sectoral policies, investment planning, granting and overseeing concessions, as well as coordination and technical assistance for the management and maintenance of the road network. An inventory is being made of the national and departmental road network in the framework of Loan 933/OC-PR, and the technical assistance arrangements agreed by the Highway Directorate and DCV with departmental governments and municipalities are being expanded. In addition, part of Route 7 (the stretch between Caaguazú and Ciudad del Este) has been handed over in concession, and other segments of the highway network with significant traffic volumes are also expected to be put out to tender. A start has also been made in implementing a third-party maintenance system for road conservation through contracts with private companies.
- 1.7 In 1991, the MOPC's Integrated Transport Planning and Coordination Office, in conjunction with the Japan International Cooperation Agency (JICA), drew up a National Transport Plan, which was used to define priorities for investment and external funding. The plan, which was updated in 1994, defined the following objectives for the highway sector: (i) carry out restoration work on the paved road network and establish priorities for rehabilitation; (ii) increase road safety through design and signposting improvements; (iii) expand the capacity of some of the access roads to Asunción and other important urban centers; (iv) expand the road network where justified; (v) increase the total length of all-weather roads and improve existing maintenance services; (vi) improve trunk system feeder roads and access to the main markets, and develop the rural road network into areas of agricultural production; (vii) establish an economical, safe and comfortable system of passenger transport; (viii) consolidate an efficient and reliable freight transport system that encourages domestic and international trade; and (ix) contribute to the physical integration of the Southern Cone region.

C. Rural roads and productive sector

- 1.8 Most of Paraguay's rural roads are located in the eastern region of the country, where population and production are both concentrated. About 70% of inventoried rural roads are dirt tracks with an average width of 4.5m. Most of them have been built very precariously using soil from the site, with no drainage systems, for which reason they are not passable all year round. This has a direct effect on agricultural production and seriously hampers the delivery of services to rural communities. About one half of the freight traffic circulating on trunk roads originates in areas served by rural roads; moreover, during the past decade some crops have expanded considerably, for example soybeans which have increased from 650,000 to 1.6 million tons per year.
- 1.9 The DCV carries out annual maintenance or improvement works on about 12,000 km of rural roads. In the eastern region, however, a priority network of local roads has been defined, with a total length of about 6,000 km, based on the roads' functional importance (location in areas of high production) and on their connectivity with the national and departmental road network. The roads in this priority network are divided into main (1,900 km) and secondary local roads (4,100 km) depending on their importance.

D. National Rural Roads Program - First Stage (NRRP-1)

- 1.10 The National Transport Plan included among its priority projects the upgrading and rehabilitation of rural roads, with a view to developing a basic rural road network nationwide. This gave rise to the National Rural Roads Program (NRRP), for which the Bank granted loans 744/OC and 745/OC to Paraguay in 1993, to support implementation of the program's first stage. NRRP-1 involves improvements to 820 km of roads and is now in its final phase; contracts still being executed are on average 90% complete. The environmental component, which includes mitigation of direct and indirect impacts together with protection for indigenous communities, is also at an advanced stage. All activities are expected to be completed within the disbursement period of the two loans mentioned above, which is set to expire on August 31st 2000. All other components of the program have been executed.
- 1.11 Once complete, NRRP-1 will mean a significant improvement in Paraguay's productive rural road infrastructure. In addition, during the program's execution the DCV and the new Environment Office (DMA) – formerly the Environment Unit of the MOPC² – were amalgamated institutionally and technically, to lay the foundations for a more efficient and sustainable management of local road infrastructure. The second stage of the NRRP (NRRP-2), will make it possible to continue these efforts and build on the lessons learned in the execution of NRRP-1.

² By MPWC Resolution 716/99, June 1999, a new organizational structure was approved for the environmental unit, raising it to the status of Environment Department.

E. National Rural Roads Program - Second Stage

- 1.12 NRRP-2 aims to consolidate and build on the progress achieved in executing NRRP-1, both in terms of physical infrastructure and institutionally. This second stage will be executed under the multiphase project modality, with two phases of execution lasting five years each; the present operation covers the first five-year period.
- 1.13 NRRP-2 contains some new elements compared to the previous operation, including the following: (i) it will cover the entire priority local road network with a variety of rehabilitation, improvement and maintenance activities; (ii) rehabilitation work will focus on the main rural roads, and aim to raise all of them to a service standard that ensures road serviceability in all weather conditions throughout the year; (iii) it introduces a Maintenance Management Plan (MMP) that includes three alternative modalities – maintenance by arrangement with local governments and communities, maintenance by contract (outsourcing), and maintenance by direct management; and (iv) it includes, as a product of the MMP, the implementation of a Multi-year Maintenance program (MYMP) for local roads, and the monitoring thereof during execution of NRRP-2. In all these cases, targets have been set for the 10-year duration of NRRP-2.
- 1.14 NRRP-2 has features that favor its being approached as a multiphase operation. The combination of upgrading and consolidation work on the main and secondary rural roads network with higher levels of service, together with the delegation of maintenance activities to local governments or outsourcing to private enterprises, and implementation of the MMP as a network management tool, requires a lot of time. It is therefore convenient to have a ten-year horizon for planning and carrying out the physical work, and implementing new maintenance practices. The multiphase approach therefore has advantages from the program sustainability standpoint, as it ought to allow better conditions to achieve successful implementation of mechanisms – through the MMP – to ensure adequate conservation of rural roads.
- 1.15 During execution of this first phase, the necessary studies would be carried out to develop the next phase of NRRP-2. Approval of the second phase would be subject to satisfactory execution of the present operation and to fulfillment of its physical, financial, maintenance management and institutional strengthening targets, as set out in detail in Annex I-1. The program includes monitoring activities and periodical oversight meetings to accompany the execution of the activities and assess fulfillment of intermediate targets.

F. The experience of the Bank and other financing agencies

1. The Bank's participation in the roads sector

- 1.16 Paraguay relies heavily on external funding to develop its transport infrastructure, and the Bank is the main source. So far it has granted 15 loans to finance 11 transport projects, all in the highway sector, for a total of US\$238.8 million.
- 1.17 Operations currently being executed are as follows: (i) Loans 744/OC-PR and 745/OC-PR (1993) which finance NRRP-1; (ii) Loans 891/SF-PR and 694/OC-PR (1992), the Rural Colonies Consolidation Project (RCCP), which includes funding for the reconstruction and rehabilitation of rural roads in agricultural areas other than those covered by the NRRP; (iii) Loan 933/OC-PR (1997) which finances construction, rehabilitation and supervision projects on Route 3 between Emboscada and San Estanislao, consultancy studies on Route 10 between Puerto Rosario and San Estanislao, consultancy studies on Route 8 between Caazapá and Coronel Bogado, and the Highway Conservation Plan - Second Stage; and (iv) Loan 1117/OC-PR (1998) which finances the Infrastructure Emergency and Rehabilitation Program, to alleviate damage caused by "El Niño", and also includes rehabilitation of local roads in the affected areas. The Bank is preparing another operation for the road sector (PR-0114-western region integration corridors) to support highway integration in Paraguay and overland links to neighboring countries.
- 1.18 The Bank's experience in this sector suggests that, in general, the MOPC has demonstrated adequate executive capacity, and project objectives have been or are being achieved. Progress is also being made, under Bank auspices, in organizing highway network maintenance. At the same time, there is evidence that institutional strengthening activities depend largely upon external support.
- 1.19 The main difficulties in executing highway projects in Paraguay relate to the timely availability of sufficient resources for maintenance and counterpart funds for loans. Apart from this, the delays that have occurred in executing projects financed by the Bank have been due to the time taken for loan contracts to be ratified by Congress, for the precedent conditions to be fulfilled, and for hiring services and contracting civil works.
- 1.20 In the case of NRRP-1, the delays and rescheduling of construction work and in the consulting services for environmental and indigenous community programs, mainly resulted from the El Niño weather disturbance between October 1996 and May 1998. The problems caused by El Niño affected local roads especially, as well as disrupting the timely flow of local contributions and causing delays in bidding processes. It was therefore necessary to extend the disbursement period that had originally been established in order to achieve the program's objectives.

- 1.21 The design of NRRP-2 took account of lessons learned in executing the projects mentioned above, by speeding up activities for complying with the precedent conditions and for preparing the bidding tranches on construction work and consulting services. The government will clearly have the capacity to make good on the local counterpart contribution, since the amount required during execution is unlikely to exceed the budget recently allocated to the DCV.

2. Participation by other institutions in the transport sector

- 1.22 The World Bank has helped fund the construction, improvement and maintenance of highways and rural roads in Paraguay, granting seven loans for a total amount of US\$148.1 million, as well as several rural development loans with road components. It also provided US\$2.8 million to finance the construction and development of the Port of Asunción. The World Bank is currently funding improvements and paving on the north and south accesses to the city of Asunción, and repaving on Route 6 (Encarnación - Ciudad del Este). This includes a component for institutional strengthening of the MOPC. In addition, as a highway component of the Alto Paraná-Itapúa Norte Natural Resources Administration Project, rehabilitation and improvement works are being carried out on local roads under DCV responsibility.
- 1.23 The Japanese International Cooperation Agency (JICA) has made two loans to Paraguay, the second of which (Highway Rehabilitation and Maintenance Project, worth US\$78.0 million), is currently being executed. In addition, the Agricultural Sector Strengthening Program II is at the implementation stage, and includes a highway component under DCV responsibility. The JICA is also funding a feasibility study for improvements to the highway between Paraguari and Villarica and its connection with La Colmena.
- 1.24 The United States Agency for International Development has participated in the construction and improvement of local roads and in the reconstruction and paving of the Asunción-Ciudad del Este highway. Other agencies that have financed highway projects in Paraguay, all concluded, include Banco Exterior de España, FONPLATA, Banco do Brasil and the Government of Taiwan.

G. Strategy and basis for the Bank's participation

- 1.25 The Bank's actions in Paraguay are concentrated in five strategic areas: (i) the financial sector, to help improve the workings of the system and support capital market development; (ii) reform of the State, to enhance the efficiency of public services provision and strengthen governance; (iii) modernization of the productive system, to promote economic efficiency; (iv) support for social sectors, to promote their development; and (v) the reduction of poverty, to improve living standards among low-income populations.

- 1.26 In the transport sector the Bank funds improvement and paving projects on the most important road arteries, and the development of local road systems, to establish a basic network allowing adequate and reliable connections between areas of production, marketing and commerce. The development of physical infrastructure in the rural sector is seen as a basic condition for modernizing the agricultural sector, as part of the fight against extreme rural poverty and social sector development. The proposed strategy also assumes the continuation of efforts to implement a sustainable system of road maintenance, to keep the road network in a satisfactory condition.
- 1.27 Execution of NRRP-2 would be a consistent continuation of the strategy the Bank has been implementing in the transport sector. By improving the rural roads network and its maintenance and conservation system, the proposed program will help to: (i) facilitate the integration, development and mobility of rural populations in the areas to be benefited; (ii) support the development of productive sectors, especially livestock breeding, agriculture and agroindustry; (iii) improve the management of rural road maintenance and make road conservation sustainable in the long-term; (iv) facilitate the implementation of protection services and measures to ensure efficient monitoring of natural resource use in ecologically sensitive areas; and (v) improve living standards among the rural population and indigenous communities located in the program's areas of influence.

H. Sustainability of the program and local roads in the long run

- 1.28 During preparation of the program, lessons learned from the execution of NRRP-1 and other highway sector loans in Paraguay were taken into account. This is reflected firstly in a concern to ensure adequate execution of the program, and secondly, to contribute to the sustainability of its long-term objectives.
- 1.29 As regards the first aspect, the program design took account of the need to strengthen executive capacity in both the DCV and the DMA. For that reason it includes: (i) hiring advisory services for managing the program and the formation of a Maintenance Management Unit (MMU); (ii) outsourcing the executive design as well as the technical supervision and oversight of the anticipated construction work; (iii) the inclusion of technical assistance activities in aspects of planning and maintenance management, and for strengthening the DCs; (iv) the provision of resources needed for implementing the Plan for Environmental Management and Protection and Assistance to Indigenous Communities (PEM); (v) strengthening the human resources and materials of the DCV and DMA; and (vi) the inclusion of specific activities for monitoring and evaluating the program. By complementing the DCV and DMA structures with these supporting measures, all projects will tend to have the appropriate quality and be executed in accordance with their timetable and budget, minimizing the risk of delays and cost overruns. During the preparation of the operation, agreements were also reached on substantive aspects of procurement processes, which will contribute to the timely execution of program.

- 1.30 As regards the long-run sustainability of rural roads, the program will make a positive contribution in a number of ways: (i) it will deal with a priority network of local roads, which will be raised to adequate standards of service and maintenance, at a reasonable financial cost that the Treasury can afford; (ii) it will incorporate appropriate technical, economic, environmental and road safety criteria more systematically into network planning and management; (iii) it will help improve the quality of basic construction work on local roads by incorporating more effective materials and construction procedures, and this will result in longer road life and lower maintenance requirements; (iv) more efficient maintenance activities will be carried out, and new network conservation modalities will be implemented, with a start being made to transferring responsibility for highway maintenance operations to the private sector and beneficiary communities themselves; and (v) the program will continue the process of strengthening the DCV and the DMA, the key agencies involved in planning and management of the local roads network.
- 1.31 In the long run, as the local roads network expands in capacity and level of service, the way to ensure acceptable conservation levels is by progressively decentralizing its operation and maintenance, with the MOPC reserving aspects of planning, coordination and technical assistance. This process would also make it possible to incorporate contributions from local governments and road users themselves in funding their conservation. The Maintenance Management Plan (MMP) includes activities to help decentralize the management of rural roads in a gradual and orderly way, while also strengthening DCV management.
- 1.32 Simultaneously with development of the MMP, preparation and implementation of a multi-year maintenance program (MYMP) by the MOPC is envisaged with a ten-year horizon. The MYMP will make it possible to integrate all investment and maintenance in a consistent fashion, and materialize initiatives for the decentralization of maintenance activities and their transfer to the private sector (outsourcing). It will provide the MOPC with guidelines for action to translate policies adopted into reasonable targets, and will serve as an instrument for monitoring their fulfillment. Managerial continuity should lead to greater efficiency in the allocation of sectoral resources, sustain adequate levels of maintenance and initiate an upward trend in spending on long-term conservation, avoiding unnecessary investments.
- 1.33 One of the characteristics of investments in rural roads in Paraguay is the coexistence of programs funded from a variety of sources, both external and local. Consequently, another important aspect in the long run is to ensure consistency in the treatment given to investments, maintenance management, environmental aspects and highway safety, independently of the source of funding. This would be achieved through systematic planning and the application of common evaluation, selection and conservation criteria – items that have been included as important activities within the DCV strengthening component.

II. THE PROGRAM

A. Objectives

- 2.1 The objective of the program is to help increase the competitiveness of national production and raise living standards among the rural population, by improving and maintaining the level of service on a substantial part of the priority local roads network.

B. Description of the Program

- 2.2 The program will support improvement work and highway maintenance activities on local roads in 17 zones classified as priority in terms of their potential for productive growth – mainly agricultural – in the eastern region of Paraguay. In these areas a priority network of local roads has been defined, based on the roads' functional importance and connectivity with the national and departmental highway network. This priority network, which has a total length of approximately 6,000 km, is divided into main and secondary local roads. Main local roads, totaling some 1,900 km, are chosen because they connect to the national highway network and because they serve traffic moving from production zones to those of consumption or export. In view of their importance in terms of traffic flow (an average of about 150 vehicles per day), it was decided that these roads maintain a standard that permitted vehicle circulation in all weathers.
- 2.3 Secondary roads, which make up the remaining 4,100 km of the priority network, are feeders to the main roads, linking specific areas of production with the main local road, or connecting directly to the national or departmental highway. These roads, which have less traffic (under 50 vehicles per day), would be maintained to dry weather standards, which means they will be closed off by in periods of intense rainfall. The program also envisages the implementation of a Maintenance Management Plan (MMP) covering the entire priority network. The MMP will make it possible to lay the foundations for efficient local road management, by introducing new management modalities as follows: (i) decentralization of maintenance to involve participation by users and local governments; (ii) outsourcing of maintenance; and (iii) improvements in the planning and control of the physical and financial execution of maintenance undertaken by the Local Roads Office (DCV).
- 2.4 The program will help strengthen the DCV's highway maintenance planning. The road inventory will be updated to cover the entire local roads network, with the priority network being covered in greater detail. On the basis of this inventory, a model for planning, management, oversight and monitoring of the physical and financial execution of the resources allocated to investment and maintenance will be introduced. Elements will be included in the design of road improvement

projects to afford greater safety to vehicles and pedestrians, which amount on average to about 4% of investment costs. On environmental issues, the program will support a strengthening of the DMA in its capacity as co-executing agency of the PEM, as well as activities for mitigating direct and indirect environmental impacts, and the supervision needed to ensure adequate execution thereof.

- 2.5 To complement actions already begun with NRRP-1, funding will be provided for various activities aimed at protecting and developing indigenous communities. These include the acquisition of land plots in areas located within the projects' areas of influence, and comprehensive assistance to benefited communities through small-scale projects to provide them with them basic service infrastructure, including potable water and sanitation.
- 2.6 As indicated above, the NRRP-2 will be executed in accordance with a multiphase modality. The aggregate cost of the two phases is set out in the following table:

Table II-1
Preliminary costs of the two phases of NRRP-2
(in US\$ million)

Phase	Engineering and Administration	Civil Construction Work	Institutional Strengthening	Concurrent Costs	Financial Expenses	Total
Phase 1	6.0	65.1	4.2	2.5	11.7	89.5
Phase 2	6.0	83.0	2.0	1.0	14.0	106.0
TOTAL	12.0	148.1	6.2	3.5	25.7	195.5

- 2.7 The components of phase-1 are described below:

1. Engineering and administration (US\$5.95 million)

- 2.8 This component accounts for 6.6% of the program's direct costs, which is consistent with other similar programs, and includes the following subcategories:

a. Engineering (US\$2.35 million)

- 2.9 This includes the definitive designs of phase 1 civil works and the corresponding feasibility studies (475 km not included in the sample analyzed), and those for the first year of phase 2 (225 km); finalization of the design for implementing the MMP (US\$1.75 million); designs for rehabilitation work in critical areas (US\$30,000); and environmental impact assessments on the improvement work corresponding to phase 1 (US\$570,000).

b. Supervision (US\$3.1 million)

- 2.10 This represents 5.0% of the cost of the program's improvement and rehabilitation work, and includes the costs of environmental supervision (US\$200,000).

c. Administration (US\$500,000)

- 2.11 This corresponds to additional DCV and DMA expenses incurred in executing the program, estimated at around US\$100,000 per year.

2. Civil construction work (US\$65.1 million)

- 2.12 This category represents 72.7% of the total cost of program and includes:

a. Upgrading of main local roads (US\$55 million)

- 2.13 The purpose of the project will be to upgrade about 730 km of main local roads, which will be raised to a standard ensuring acceptable conditions of road serviceability throughout the year, together with adequate levels of highway safety and environmental mitigation measures.
- 2.14 The main roads to be improved were chosen on the basis of their economic, social and environmental characteristics. During execution of the program it will be verified, as a criterion of eligibility for upgrade, that the main roads to be improved satisfy the requirements set out in Table II-2:

Table II-2
Criteria of eligibility for improvement work

Requirement	Criterion	Condition
Technical	With respect to the road's inclusion in other programs	Not having been upgraded, and not figuring in other investment plans.
	With respect to its relation to the national or departmental highway network	Not forming part of it, but being connected to it at one or more of its end points.
	With respect to its connectivity	That it connects with roads of a higher or similar standard to the road to be improved.
	With respect to the costs of upgrading dirt roads to all-weather gravel surfaces.	Costs may not exceed US\$91,000/km including bridges and VAT.

Economic and social (at least one of these conditions)	With respect to the transport of export products or those of mass domestic consumption	Over 80% of its traffic flow relates to the transport of export products or those of mass domestic consumption.
	With respect to the road's area of influence	Road serves zones with used areas greater than 5,000 hectares per km of road.
	With respect to its use	Road affords access to health or education centers in the area, or serves populations of over 10,000 inhabitants, connecting them to national transport routes.
Profitability	With respect to its economic value	Improvement yields an internal rate of return greater than 12%.
Environmental	With respect to its indirect impact on environmentally fragile areas	Road is located over 10 km from priority areas for national conservation or areas included in the National System of Protected Areas, or areas of native forest.
	With respect to its direct impact on environmentally fragile areas	Road does not cross areas of unstable soil or wetlands.

2.15 The improvement work on these roads includes building an embankment of stony material with a height of approximately 50 cm above the level of the surrounding land, or above the maximum water level in flood-prone areas; the placement of a wearing surface made of stabilized natural material 15 cm thick, consisting of an on-site mixture of pebbles and natural soil. The road surface will be 7 m wide. Side curbs with gradients greater 3% will be protected or will contain erosion reducers. In the case of stretches with gradients greater than 5%, intersections with centers of population, or school zones, the gravel surface layer will be replaced by a cobblestone pavement if suitable material is available in the area. In all cases environmental mitigation and highway safety measures will be considered, especially in urban areas.³

2.16 On main roads, wooden bridges will be replaced by bridges made of reinforced concrete, in continuation of the process initiated in NRRP-1.

2.17 Phase 2 envisages improvements to a further 820 km of main roads, whereby the entire 1,900 km of main local roads in the priority network would attain a service level allowing all-weather circulation.

b. Maintenance management plan (US\$10.1 million)

2.18 The goal of the MMP is to improve maintenance management on the 6,000 km of roads in the priority network serving the most productive areas. The MMP involves

³ Average costs vary between US\$91,000 per km for upgrading dirt roads to all-weather gravel roads, and US\$28,000 per km for upgrading dry weather roads to all-weather gravel roads.

gradually implementing more efficient modes of management, as well as preventing the deterioration of investments already undertaken and facilitating access to the country's most productive rural areas, mainly at times of greatest transport demand. These management modalities include outsourcing maintenance to the private sector; making arrangements with departmental governments, municipalities and local communities; and enhancing the efficiency of maintenance by direct management. The MMP strategy is to enable the DCV to optimize the use of its resources in a smaller physical network, thereby improving the quality of maintenance carried out, and in certain areas decentralize maintenance operations and make them the responsibility of the beneficiary communities themselves. In areas where the network is sufficiently dense, maintenance would be contracted out to the private sector. Precedent to the first disbursement of the loan, the executing agency must present detailed proposals to the Bank for executing the MMP, including the rules, contracting procedures, arrangements for supervising maintenance contracts with private companies, and the detailed proposal for maintenance agreements in specified areas.

- 2.19 Maintenance activities will depend on the characteristics of the roads and their functional classification in the local network. In the case of main roads, the average cost of maintenance, including the routine and periodic type, is estimated at about US\$1,400 per km-year, and about US\$900 per km-year in the case of secondary roads. Expenses for routine maintenance incurred by the DCV will be financed by the local counterpart funding and a small portion of the Bank financing (under 2%) would be used to supplement the amounts contributed by local agencies for implementation of maintenance agreements under their responsibility.
- 2.20 The MMP will cover the two phases of NRRP-2 execution, and will help provide the priority local roads network with effective and sustainable maintenance. Maintenance work considered in the MMP for phase 1 would be as follows:

(i) Road maintenance by contract (US\$2.25 million)

- 2.21 At the present time the private sector is not involved in local road maintenance because suitable mechanisms do not exist – basically contracts that encourage private sector participation – and there are insufficient funds earmarked for maintenance tasks. The program envisages the outsourcing of maintenance insofar as is reasonable given the limited capacity of contracting firms; it also recognizes the need to group civil works together so as to obtain economies of scale to make outsourcing worthwhile, and it takes into account the availability of financial resources. Phase 1 will finance maintenance associated with improvement contracts on main roads. Contracts for improvement work on main roads will also include their maintenance, and that of their secondary feeder network, for a renewable four-year period. Work will be contracted under the unit price modality, by volume of work carried out, and will be supervised by independent companies. This setup has the advantage of making it possible to gradually involve construction companies in

maintenance activities under relatively simple contracts, before moving to more sophisticated forms of contract, such as according to level of service.

- 2.22 Two zones have been singled out for execution of this phase 1 sub-component: (i) Caaguazú, with a total network of about 425 km, located in the center of the eastern region of Paraguay; and (ii) Itapúa Norte with a network of 385 km in the southeast of the country, along the bank of the Paraná River. These two contracts will cover approximately 800 km of roads each year. Phase 2 envisages two further contracts totaling about 500 km. The component will finance maintenance activities exclusively by contract.

(ii) Road maintenance by arrangement with local governments and communities (US\$2.75 million)

- 2.23 Based on experience already gained by the DCV in maintaining roads in conjunction with departmental governments and municipalities,⁴ the program will make a significant contribution to the institutionalization of administrative schemes of community participation in local road maintenance. This framework will include setting the contributions that the central government will transfer to local authorities for maintenance activities; the contributions in resources and in-kind that local government authorities and the community itself will bring to maintenance tasks; the road equipment that the DCV will provide under a commodatum for maintenance activities; joint technical planning of the network maintenance program for each quarter; and supervision and verification of the work carried out by DCV technicians.
- 2.24 The following four zones have been selected for highway maintenance with participation from local governments, municipalities or local communities in phase 1. They were chosen because they are further ahead in terms of organization and experience in the maintenance of rural roads: (i) **Nueva Durango**, in the department of San Pedro, with a 90 km network. Maintenance here will be by arrangement with the local community organized into a Highway Board; (ii) **Eje Itapúa Sur**, located in the south of the eastern region, with a network of 350 km ; (iii) **Alto Paraná Sur**, located in the east of the eastern region, with a local network of 360 km ; and (iv) **Corpus**, in northern part of the eastern region with a network of 260 km. Maintenance in the three latter cases will be provided for under contract with the municipalities of the area and the respective departmental governments. The final form of all these arrangements will be agreed previously with the Bank, as mentioned in paragraph 2.18. The execution of these contracts will cover annual maintenance of approximately 1,050 km of local roads. To support implementation of this maintenance modality, minimum highway equipment modules will be

⁴ At the present time the DCV (acting through the JVR), together with departmental governments and the municipalities, are participating in an experimental way in road maintenance in nine departments: Central, Guairá, Caazapá, Caaguazú, Itapúa, Alto Paraná, Amambay, San Pedro and Canindeyú.

procured for carrying out the work, which will be loaned to local entities for the duration of the contract.

- 2.25 In addition to the equipment to be made available by the DCV for local use, the program will partially finance the cost of materials and necessary spare parts, representing approximately 60% of the direct costs of maintenance activities. Technical assistance will also be funded to ensure adequate execution of the work and monitoring of quality. A multi-year program of activities will be drawn up and agreed in the contracts between the DCV and the departmental governments, municipalities and local communities; this will also regulate the prices of the tasks to be undertaken, the supervision to be carried out by the DCV and the amounts to be transferred for execution of the civil works.
- 2.26 Before awarding the first contract for the procurement of road equipment with the proceeds of the loan, the executing agency will present evidence to the Bank that it has signed and is implementing at least two of the contracts mentioned in paragraph 2.24.

**(iii) Rehabilitation of critical areas by direct administration
(US\$3 million)**

- 2.27 This includes specific rehabilitation work on approximately 400 km of the main network, in zones considered critical because of their effect on highway traffic, and which cannot wait for the more comprehensive upgrading envisaged in phase 2 of the program. This sub-component will make it possible to overcome bottlenecks through actions such as: raising the embankment in flood-prone areas; repairing deteriorated wooden bridges; repairing potholes and replenishing stony material (gravel) in stretches suffering from longitudinal and vertical deformations; and minor construction work on longitudinal drains and gutters. The physical work will be executed by the DCV, for which purpose two minimal sets of highway equipment will be acquired. The average cost of this work is estimated at US\$7,500 per km, for which funding will be provided to cover the cost of material and parts, covering 60% of the total cost of the work.

**(iv) Procurement of highway maintenance equipment
(US\$2.1 million)**

- 2.28 This involves the purchase of three sets of equipment for routine maintenance costing about US\$250,000 each, mainly involving leveling and towable compacting equipment. The equipment will be DCV property and can be handed over on a "commodatum" basis to be used by departmental governments, municipalities or local communities in fulfilling maintenance arrangements. The type of equipment selected is relatively low-cost, adapts adequately to the conditions of terrain, and is suitable for the maintenance purposes for which it is to be acquired. In addition, two sets of equipment will be procured for the execution of work included in the

rehabilitation of critical areas sub-component, costing about US\$700,000 each. These include minimum earth moving, leveling and compacting equipment, as well as engineering and laboratory instruments for monitoring the work that is envisaged.

3. Institutional strengthening (US\$4.18 million)

- 2.29 This consists of four projects: (i) **DCV strengthening** (US\$1.31 million) including funding for the consultants to provide support in managing the program, as well as support to the MMU; strengthening of the DCs, training for DCV professionals and co-executing agencies from local governments and communities and the purchase of specialized vehicles and equipment; (ii) **DMA strengthening and implementation of the PEM** (US\$970,000) including: updating of environmental technical specifications; assistance for government departments with environmental inspection, control, and dissemination; support activities for reforestation in private properties; comprehensive assistance to indigenous communities; strengthening of the operating capacity and human resources of the DMA and of the Institutional Commission for the Coordination of Environmental Impact Assessment (IC); strengthening of forestry supervision; strengthening of local governments in support of indigenous communities; (iii) **Inventory of the local road network and investment planning** (US\$1.6 million) including: inventory of the entire road network of about 15,000 km; adaptation of the Maintenance Administration System (MAS) for local and unpaved roads; procurement and implementation of a module for optimizing the planning of maintenance investments and financial programming; and (iv) **Program monitoring** (US\$300,000) including: consulting services for monitoring road serviceability indicators, evaluation of the program's socioeconomic impact and monitoring of the MMP and PEM.
- 2.30 Phase 1 of NRRP-2 will introduce significant changes aimed at improving maintenance management. To make these changes sustainable, it is considered essential to strengthen the DCV's operational and planning capacity. For this purpose the hiring of three consultants is envisaged (an engineer, an economist and a financial accountant) throughout execution of phase 1, to work exclusively on the various aspects of program execution and to monitor the targets and indicators. Training will be provided for the DCV's professional and managerial teams, and the engineering and computer equipment needed to execute the program will be procured.
- 2.31 For the management of the Maintenance Management Plan (MMP), a Maintenance Management Unit (MMU) will be set up, consisting of two consultants who will advise and train the staff of the DCV's operating department during execution of the program. The MMU will prepare the multi-year maintenance program (MYMP) and the annual report which will be submitted by the DCV for consideration by the Bank (paragraph 3.29). In addition, the MMU will hire six junior engineers, one for each Conservation District (DC), who will have the basic job of supporting each

district in the planning and scheduling of maintenance activities, in supervising those activities, and in the rehabilitation of critical areas. These professionals will monitor the state of the different local roads in the priority network so as to keep the highway inventory up-to-date, and they will also check the quality controls carried out on materials by supervising firms and the execution of maintenance work.

- 2.32 Precedent to the first loan disbursement, the executing agency will present evidence to the Bank that: (i) the professionals who will assist the DCV in the management of the program have been hired, as agreed with the Bank; and (ii) the same is true regarding the professionals to be drafted into the MMU for implementation of the Maintenance Management Plan.
- 2.33 A essential tool for the enhanced management intended by the program is to have available an up-to-date and computerized inventory of the 6,000 km of roads in the priority local network, and relevant information on the rest of the local roads administered by the DCV; a specialist firm will be engaged for this purpose. This inventory process will be complemented by hiring additional consultants for: (i) extending the MAS executed under the Highway Corridor Program (993/OC-UR) to the local roads network; and (ii) incorporating a maintenance planning and financial programming module.
- 2.34 Regarding environmental supervision and monitoring activities, and those of indigenous community development, the Environment Office (DMA) will be the co-executing agency of actions envisaged in the PEM. It will be provided with transport equipment, staff training and specialized staff support for this purpose.

4. Concurrent costs (US\$2.55 million)

- 2.35 This includes the acquisition of plots of land for indigenous communities in the area of the program's influence. This item will be financed by the Government of Paraguay out of the country's general budget, except for the specialized consulting services that will assist the DMA.

5. Financial costs (US\$11.72 million)

- 2.36 This category accounts for 13.0% of the total cost of the program and includes: (i) loan interest during program execution; (ii) credit fee charges; and (iii) expenses relating to the Inspection and Supervision Fund.

C. Total cost of the program

- 2.37 The total cost of the program amounts to US\$89.5 million, distributed by category and funding source as shown in Table II-3.

Table II-3
Total Cost of the Program and its Financing
(in US\$ thousands)

Components and categories of investment	BANK OC	LOCAL COUNTERPART FUNDING	TOTAL	%
1. Engineering and administration	4,900	1,050	5,950	6.6
1.1 Engineering	2,100	250	2,350	
1.2 Supervision	2,800	300	3,100	
1.3 Administration	--	500	500	
2. Civil construction work	57,400	7,700	65,100	72.7
2.1 Improvements to main local roads network	50,000	5,000	55,000	
2.2 Maintenance management plan	7,400	2,700	10,100	
2.2.1 Road maintenance by contract	2,050	200	2,250	
2.2.2 Road maintenance by arrangement	1,650	1,100	2,750	
2.2.3 Rehabilitation of critical areas	1,800	1,200	3,000	
2.2.4 Procurement of road maintenance equipment	1,900	200	2,100	
3. Institutional strengthening	3,980	200	4,180	4.7
3.1 Institutional strengthening DCV	1,290	20	1,310	
3.2 Institutional strengthening DMA and implementation of PEM	940	30	970	
3.3 Inventory of local roads network and investment planning	1,450	150	1,600	
3.4 Monitoring of program	300	0	300	
4. Concurrent costs	50	2,500	2,550	3.0
4.1 Acquisition of land for indigenous communities	50	2,500	2,550	
5. Financial costs	670	11,050	11,720	13.0
5.1 Interest		9,800	9,800	
5.2 Credit fee		1,250	1,250	
5.3 Inspection and supervision fund	670	0	670	
TOTAL	67,000	22,500	89,500	100.0
Percentages	75%	25%	100%	

D. Financing

- 2.38 The program will be partly financed with a loan for US\$67.0 million from the Bank's ordinary capital, denominated in a basket of currencies. This will cover 75% of the total cost of the program and will be disbursed over a five-year period. The local counterpart of US\$22.5 million will be funded out of the national budget. The borrower will not be using the 10 percentage points in additional financing to which

it would be entitled as this is a PTI project, whereby interest during execution and taxes will be financed out of local counterpart funding.

E. Targets and indicators

2.39 The objectives and targets of NRRP-2 are summarized in table II-4 (see annex II-1 for a detailed presentation of the program logical framework for phase 1).

Table II-4
Summary of Components of NRRP-2: Targets and Indicators

OBJECTIVES	DESCRIPTION	TARGETS	
Improvements to productive rural roads		Phase 1	Phase 2
Upgrading of main local roads in the eastern region, to a level of service that ensures conditions of road serviceability, adequate road safety and environmental mitigation measures.	In the two phases of program all the main local roads making up the priority network in the eastern region (1,900 km) will be upgraded.	By the end of phase 1, major local roads that are passable the year round will have increased by 730 km , from 350 km (1999) to 1,080 km, equivalent to 60% of the total network.	By the end of phase 2, major local roads that are passable the year round will have increased by 820 km to 1,900 km , equivalent to 100% of the total.
Maintenance management plan (MMP)			
More efficient modalities for the maintenance management of local roads to be progressively implemented.	The MMP will serve about 6,000 km of main and secondary local roads	By the end of phase 1, priority local roads in good and regular condition will have increased from about 1,200 km (20% of total) to some 2,400 km (40%).	By the end of phase 2, priority local roads in good condition will amount to some 4,800 km (80% of the total).
	Road maintenance by contract		
	Maintenance will be outsourced in areas with conditions that lend themselves to this modality	By end of phase 1 outsourced maintenance will cover about 800 km of the priority network (13% of the total).	By end of phase 2, outsourced maintenance will cover about 1,500 km of the priority local roads network (25% of the total).
	Maintenance by arrangement with local governments and communities		
	Maintenance will be handed over to the direct beneficiaries, through arrangements with departmental governments, municipalities and communities.	By end of phase 1, maintenance under contract will cover about 1,060 km of the priority network (18% of the total).	By end of phase 2, maintenance by arrangement will cover about 1,900 km of the priority network (30% of the total).
	Rehabilitation of critical areas		
	Traffic restrictions will be eliminated on different stretches of the main network.	By end of phase 1 specific rehabilitation work will have been executed on some 400 km of main roads which will be upgraded in phase 2.	

Institutional strengthening		
Implementation of institutional strengthening measures aimed at increasing sector efficiency, in a socioenvironmentally sustainable way.	Strengthening of the DCV/local roads network inventory and investment planning	
	The capacity of the DCV will be strengthened in the tasks of planning, execution and supervision of local road rehabilitation, improvement and maintenance.	By end of phase 1: (i) the DCV will have a technical team at the central level and in the districts, trained and large enough to deal with the network under its jurisdiction; (ii) there will be an inventory of the entire local roads network; (iii) most of the DCV professionals will have been trained; (iv) the DCV will be using the MAS for network administration; and (v) the DCV will have incorporated a maintenance planning and financial management module.
	DMA strengthening and implementation of the PEM/land acquisition for indigenous communities	
	The DMA and the Inter-agency Commission will be strengthened for monitoring direct and indirect impacts and for inspecting environmental and social management plans. Development plans will be finalized for indigenous communities indirectly affected by the program.	By end of phase 1: (i) the DMA will have an adequate technical team for the supervision of environmental plans, and the Inter-agency Commission will have been strengthened; (ii) the General Technical Environmental Specifications will have been updated; (iii) program dissemination activities will have been completed; (iv) support for environmental monitoring will have been provided to departmental governments; (v) a contribution will have been made to reforestation projects on private property; (vi) forestry supervision will have been strengthened; (vii) some 3,000 hectares of land will have been acquired for indigenous communities; and (viii) assistance projects for some 39 indigenous communities will have been concluded.

III. EXECUTION OF THE PROGRAM

A. Executing Agency

- 3.1 The program will be executed by the Ministry of Public Works and Communications (MOPC) acting through the Local Roads Office (DCV) and the Environment Office (DMA). The DCV will have the basic responsibility for execution, and will be in charge of revising project designs, preparing the bidding documents, adjudicating and contracting civil works, and managing their execution. It will be supported in these tasks by consulting firms and individual consultants. The DCV will also be responsible for contracting the consulting services needed for the program's execution. For execution of the Maintenance Management Plan (MMP), the DCV will make arrangements with departmental governments, municipalities and local communities, in accordance with models agreed with the Bank, and will sign maintenance contracts with construction companies chosen through public bidding processes. In the execution of the environmental component, the DCV will act as coordinator and DMA will be the co-executing agency responsible for selecting, hiring and overseeing consulting firms; it will also be responsible for providing assistance to indigenous communities, and for coordinating the acquisition of land destined for indigenous communities to be purchased by the National Institute of Indigenous Development.
- 3.2 The DCV will execute all the road improvement and bridge construction work included in the program, through construction companies to be engaged for this purpose. The supervision of the work done by these firms will be placed with specialist engineering companies, to be hired for this specific purpose and checked by the DCV. Agreed terms of reference exist for these consulting services. Part of the maintenance work will be executed by local organizations or communities, and also by direct management.
- 3.3 The systems for managing the execution of the program have been studied by the Bank and meet its requirements, and are compatible with the installed capacity of the MOPC and the requirements imposed for the program's execution.

B. Engineering designs and construction plans

- 3.4 The general guidelines for the definitive engineering designs were discussed and reviewed during the preparation of the program. Technical studies have already been made for the projects in the representative sample; and engineering designs exist for the improvement work to be carried out on main local roads and for the construction of permanent bridges. In preparing these technical documents, topographical, hydrological, geotechnical, environmental and other studies were carried out as required for the satisfactory execution of this type of work. The general and particular technical construction specifications, and the forms required

for the bidding process and for execution of the respective work were also drawn up. The Bank has checked all these studies and technical documents for the sample, as well as model bidding documents, and has classified them as adequate and sufficient.

- 3.5 The studies carried out include replacement of wooden bridges by bridges made of a combination of reinforced concrete beams and pre-stressed concrete. The mitigation of direct environmental impacts and the incorporation of new guidelines for road safety are included in the costs of the work.

C. Representative sample

- 3.6 The representative sample chosen consists of 20 stretches of road, grouped into seven projects with a length of 338 km (approximately 46% of the target for phase 1 and 22% for the two phases together), located in the Departments of Alto Paraná, Canindeyú, Cordillera, Paraguarí, Itapúa and San Pedro. The evaluation of the sample roads included feasibility studies, socioenvironmental studies and economic evaluation, final designs, definitive budgets, technical-environmental specifications, and both general and special bidding documents.
- 3.7 In the case of drainage works and improvements to dry-weather roads that already have an embankment, the work will consist of the construction of a wearing surface layer of granular material with the same characteristics as that of the roads which are to be more comprehensively upgraded.
- 3.8 The final amounts of work, unit prices, construction and maintenance budgets, technical environmental and constructional specifications, General and Particular Provisions and Instructions to Bidders were prepared by specialist consultants and are complete.
- 3.9 The projects for the remaining main local roads to be improved in phase 1 will be drawn up using the criteria established while preparing the sample. The bidding process for studies and designs relating to this new lot will be convened in the second quarter of 2000, and is expected to conclude in the third quarter of 2001.
- 3.10 The work described in the Technical Specifications for the execution of the program's projects stipulate construction procedures using technology known to the contractors. Labor, equipment, materials, transport, and taxes are included in the unit price of each work item. Studies were made of critical factors for road building, such as available working days, construction deadlines, and the technical, economic and financial capacity that are required of the contractor, for which reason there are satisfactory prospects for successful execution of the work.

D. Rights of way

- 3.11 The civil works to be carried out in NRRP-2 mainly involve improvements to existing transport routes and seek, wherever possible, to maintain the course of the roads within the currently owned strip of land. All the work in the representative sample was inside this 20 meter strip. It is possible, however, that some of the other roads to be upgraded in the program may need realignment implying land purchase. Should this be the case, the purchase of the land will be charged to the borrower.
- 3.12 In order to avoid difficulties that might arise during execution of the program in relation to the purchase of land linked to rights of way, the loan contract will make it the government's obligation, before calling for bids, to provide the Bank with proof of legal ownership of the land where the work is to be carried out, or proof of the relevant rights of way.

E. Environmental and social impact

- 3.13 The environmental impact assessment was published in the nationwide press and in the Bank's public information center, on August 13, 1999. The Environmental and Social Impact Report was approved by the Committee on Environment and Social Impact (CESI) on October 8th 1999.
- 3.14 Execution of the environmental component of the program centers on two main and interrelated themes: the Plan for Environmental Management (PEM) and the Environmental Operating Regulations. While the PEM presents the measures that have to be included during installation and operation of the civil works, to eliminate or mitigate environmental impacts or reduce them to acceptable levels, the Regulations define the operational details under which these measures will be carried out in NRRP-2. In addition, the Regulations also define the socioenvironmental eligibility criteria for roads not included in the sample. Precedent to the first loan disbursement, the MOPC must present evidence to the Bank that the Environmental Operating Regulations have been promulgated and are currently in force.
- 3.15 The PEM consists of the following projects: (i) updating the general technical environmental specifications; (ii) environmental diffusion and strengthening of local governments, by providing environmental training for staff in municipalities, departmental governments and the community; (iii) complementation of NRRP-2 by preparing the corresponding technical-environmental records, and supplementary environmental studies to establish the eligibility of road stretches, or groups thereof, which do not form part of the representative sample; (iv) strengthening of operating capacity and human resources of the DMA and the Inter-agency Commission for Coordination and Environmental Impact Studies, which includes the MAG, INDI, and other agencies through training for officials at

all levels, supply of office equipment, and miscellaneous inputs; and procurement of vehicles to achieve a greater supervisory and managerial presence in the field.

- 3.16 Regarding indirect environmental and social impacts, the PEM includes: (i) promoting the establishment of private reserves, for which the necessary studies will be funded in departments affected by the program that still possess significant masses of Interior Atlantic Forest. Ecological studies of forest fragments will be carried out, with the aim of establishing at least eight reserves totaling about 20,000 ha under this scheme; and (ii) the strengthening of forestry supervision, through the National Forestry Support Service, to carry out monitoring activities in the areas of NRRP-2 execution; this will include procuring inspection vehicles and field equipment, obtaining satellite images and supporting the analysis of forestry management plans. During the program's execution, the rate of deforestation will be monitored on annual basis, and an analysis will be undertaken to determine the correlation between deforestation and the upgrading of rural roads.
- 3.17 The PEM also includes support for indigenous communities, through the following projects: (i) acquisition of some 3,000 ha of land for indigenous communities that are not benefited by other projects in the areas affected by the program; (ii) strengthening of local governments through education and training to involve local government institutions in the protection of communities; and (iii) comprehensive assistance for indigenous communities, through small-scale projects in the areas of health, education, potable water provision and sanitation. A productive assistance program will also be included, involving the introduction of appropriate technologies to increase productivity; and appropriate land management and natural resource conservation, including reforestation with native trees. Table III-1-4 in Annex III-1 summarizes the different projects in the environmental component.

F. Road safety

- 3.18 Road safety elements have been taken into consideration in order to reduce vehicle speed and prevent accidents in critical road sectors, or in the proximity of urban areas, schools and health centers, in zones with gradients steeper than 20%, on horizontal curves with angles of deflection greater than 70°, in areas of bends and counter curves without minimum visibility for overtaking, in bridge areas, etc. Design elements include vertical signposting, cobblestone road surfaces and defenses at bridge accesses. In urbanized areas, the density of preventive and informative signaling has been increased, and cobble stone road surfaces include extensions to the width of the road surface on either side with a cordon of concrete. In addition, parking lots have been designed in areas around schools and health centers, together with cobble stone pedestrian walkways and humps placed before and after the safety zone.

G. Bidding processes and execution

- 3.19 Standard Bank procedures will be used in hiring services and contracting construction work, and in the procurement of goods to be financed with Bank funding. International bidding will be required for consulting services costing US\$200,000, as well as in the procurement of goods whose value is greater than or equal to US\$250,000, and in contracting physical work costing US\$2 million or more. These limits are justified in the light of other similar projects in the country. Bidding processes for civil works or services costing less than these amounts, and those relating to construction work and services financed exclusively with local counterpart funds, will proceed in accordance with national legislation, always provided that this does not conflict with the Bank's procurement policies. For rehabilitation works in critical areas, financing of up to US\$1.8 million will be provided for the purchase of materials, spare parts, and fuel for specific works carried out by the DCV.
- 3.20 Before convening each public bidding process for the acquisition of goods and services, the DCV will present the general plans, specifications, budgets and other documents needed, including the technical and environmental specifications, if necessary, for the Bank's approval and authorization.
- 3.21 For the execution of construction works and maintenance by contract, prequalification will be the norm, with bidders being able to pre-qualify for one or more tranche, always providing they demonstrate technical and financial capacity. The procurement plan is set out in Annex III-1.

H. Institutional strengthening of the DCV

- 3.22 The scheme of activities for DCV strengthening was described in Chapter II. Table A-III-1-4 in Annex III-1 provides a summary of these activities, for which preliminary terms of reference are available.

I. Period of execution and timetable of investments

- 3.23 The execution period for phase 1 of the program will be five years. The deadline for effective commencement of all construction work in phase 1 has been set at three years. Table III-1 provides a summary of the investment timetable.

Table III-1
Summary investment timetable, phase 1
(in US\$ thousands)

SOURCE	2000	2001	2002	2003	2004	TOTAL
Bank	3,500	14,000	21,000	19,000	9,500	67,000
Government	900	4,800	7,100	6,500	3,200	22,500
TOTAL	4,400	18,800	28,100	25,500	12,700	89,500
% of Cumulative Total	4.9	25.9	57.4	85.8	100.0	----

J. Monitoring

- 3.24 A launch mission is expected to be undertaken once the loan has been declared eligible. Later, for monitoring the general progress of the program and the evolution of sectoral policy on rural roads, periodic consultancy meetings may be held between sectoral authorities, the DCV and the Bank, when the latter so requires. The first of these meetings would probably be held at the end of the first half of the year following the effective date of the loan contract. Three months before each meeting the borrower will propose to the Bank the topics to be dealt with at the meeting, on the basis of which the agenda will be agreed, together with the preparatory measures needed, including those relating to information requirements.
- 3.25 The topics to be addressed at these meetings are set out in Annex I-1. In principle they would cover: (i) policy for the rural roads subsector, including aspects relating to financing, decentralization and private-sector participation; (ii) review of the multi-year maintenance program (MYMP) and its relation to the fulfillment of the program's objectives and targets; (iii) progress in the execution of the investment projects that make up the program; (iv) implementation of actions associated with the MMP; and (v) progress of the PEM and activities related to indigenous communities, and the results of applying the Environmental Operating Regulations; (vi) progress in institutional strengthening activities, the results obtained and plans for acting on recommendations; (vii) analysis of the results of monitoring activities; (viii) progress towards meeting the preconditions for processing phase 2; and (ix) other issues considered relevant by the parties for achieving the program's objectives. In principle, meetings will be yearly, although the parties can agree on a different frequency as they see fit.
- 3.26 Prior to the first loan disbursement, the executing agency will present, to the Bank's satisfaction, the methodology for monitoring and evaluating the results of the program.

K. Eligibility for the second phase of the program

- 3.27 Authorization to process the second phase of NRRP-2, will require evidence that the objectives of phase 1, and the following conditions, have been substantially fulfilled (see Annex I-1 for greater detail). Progress towards meeting these conditions will be monitored through the periodic consultation meetings mentioned in paragraph 3.24.
- a. Levels of commitment relating to funding and disbursement on the five contracted groups for improvement work covering approximately 730 km of main local roads, conform to the Bank's normal practices for authorizing the approval of new operations in the same sector;
 - b. It has been verified that execution of the DCV's specific budgetary allocations is compatible with execution of the program's civil works, as well as other investments and the MYMP, and includes funds for maintenance amounting to at least US\$5 million per year;
 - c. Two maintenance contracts with private firms are in force, covering about 800 km of main and secondary local roads;
 - d. Four contracts are currently in effect with departmental governments, municipalities and communities for decentralizing the management of maintenance on approximately 1,000 km of main and secondary local roads, and the funds needed for execution have been received, including contributions from local counterpart agencies.
 - e. It has been verified that execution of the MYMP is being carried out in accordance with the physical and financial standards and targets agreed in the program.
 - f. It has been verified that execution of the specific budgetary allocations to the DMA allow the satisfactory execution of activities included in the PEM, as well as effective application of the Environmental Operating Regulations; and
 - g. Commitments have been met with regard to the acquisition of land for indigenous communities, and the comprehensive assistance plans for indigenous communities are being satisfactorily carried out.
- 3.28 Once the conditions stipulated in the previous paragraph have been substantially met, an evaluation and oversight mission would be carried out. The memorandum of this mission would be submitted to the Bank's Board of Executive Directors for their approval of phase 2.

L. Maintenance of local roads

- 3.29 Every year, the executing agency will submit to the Bank, for consideration during the final quarter, the following year's MYMP together within an appraisal of the execution of MYMPs corresponding to the current and preceding years, and any additional or corrective measures that prove necessary. Precedent to the first disbursement, the executing agency will submit to the Bank, the MYMP for the first year of the program's execution, which will contain formal approval by the MOPC.
- 3.30 Before undertaking new investments in rural roads other than those included in the present program, the executing agency shall demonstrate to the Bank that: (i) any such investments would not affect the development of the program's work or the fulfillment of MYMP targets, in conformity with the objectives established in the present operation; and (ii) that it has financial resources available to undertake them. All investments in local roads to be made by the executing agency shall be included in the MMP.

M. Ex-post evaluation

- 3.31 In accordance with Bank policy, and in consultation with the borrower, the latter decided not to include an ex-post evaluation in the program's activities. This was because, being a multiphase operation, the program contains specific activities to monitor its physical and financial targets and evaluate its socioeconomic impact (including gender aspects). However, in the event of deciding to carry out an ex-post evaluation of the program in the future, the information required to do so would be available.

IV. THE BORROWER AND THE EXECUTING AGENCY

A. The Borrower and the Executing agency

- 4.1 The borrower will be the Republic of Paraguay. The technical executing agency of the program will be the MOPC acting through the DCV and the DMA. The MOPC has four subsecretariats: Public Works and Communications, to which the Highways Directorate and the DCV report; Transport; Mining and Energy; and Administration and Finance. Its organizational structure is completed by a Legal Affairs Office, a General Secretariat and a Technical Unit.
- 4.2 The MOPC engaged a specialized consulting firm to improve its organization and administrative procedures. Assisted by this consultancy, manuals were prepared for overseeing the system for managing internal resources, physical investment, procedures relating to the integrated accounting system, the organization and functions of the subsecretariats mentioned above, and the organization, functions and procedures of internal audit, all of which are considered to be adequate.

B. Structure and functioning of the DCV

1. Legal basis

- 4.3 The DCV, a dependent agency of the MOPC, was created by Law No. 100/93, of January 5, 1993. Its primary objectives are project planning, programming and development, and the construction and maintenance of local roads. The consolidation of this agency has meant a qualitative change in dealing with the problem of rural roads. Continuity in the work of the DCV and its strengthening are fundamental to making sure the long-term goals of the NRRP-2 are achieved.

2. Organization

- 4.4 The structure of the DCV includes a Projects and Planning Department (DPP), a Project Execution Office (PEO), the Road Council Operating Department, and an Administrative Accounting Unit. The DPP is responsible for preparing forecasts, plans, programs and projects, and setting technical standards for local roads. It is also responsible for preparing the ground rules and conditions for contracting construction work and procuring goods and services. The PEO is responsible for everything to do with the construction, rehabilitation and upgrading of local roads. The Road Council is in charge of directing and coordinating the administrative and technical activities of the regional and local highways boards (RHB and LHB respectively).

3. Information systems and resource administration

- 4.5 The DCV's budget comes out of the annual budget of the MOPC, and uses the budget-by-program concept. The computerized budgetary system is adequate. In 1997 the Government approved a new integrated accounting system intended to provide budgetary, financial and asset management information that would be useful for decision-making by authorities in charge of the different levels of public administration, and in supervision and government audit activities. The new system integrates budgetary systems with those of treasury, public credit and other aspects involved in financial administration, and ensures that the information obtained is timely and reliable, facilitates the control of operations and simplifies administrative and accounting procedures. The implementation of the new system began as a pilot project in 1998, and its application has been made official in 1999.
- 4.6 The current budgetary information system does not make it possible to clearly identify the different expenses associated with road conservation activities carried out by the DCV. This is extremely important for evaluating the targets to be achieved within objectives outlined for the present operation. For this reason it has been considered important to give the DCV and the MOPC a complementary information system to provide timely information on the different outlays made in the maintenance area. Accordingly, as part of the implementation of the Maintenance Administration System (MAS), the program includes specific activities to develop and implement this financial information system (paragraph 2.33).
- 4.7 The DCV has an administrative unit which reports to the Director, which is responsible for processing, supervising and certifying the completion of construction work for presentation to the Bank. The processing of certificates requires 30 to 40 days from the moment they are presented to the DCV until their payment. The approval process includes technical verification by the DE and DCV, recording in the integrated accounting system by the MOPC accounting office, and subsequent revision by the Bank. The administrative unit has a chief and three assistants. The unit needs to be strengthened by an accounting expert with experience in applying and developing information systems (paragraph 2.30). The unit also needs to have suitable computer equipment for carrying out its tasks, and the cost of purchasing such equipment has been included in the program's institutional strengthening component.
- 4.8 The resources available to the program, both those arising from Bank funding and the local counterpart funds, would be deposited in separate bank accounts, in the name of the program. The management of the proceeds of Bank funding would be carried out through the revolving fund mechanism for up to 5% of the total amount of funding. The DCV will submit to the Bank semi-annual reports on the status of the revolving fund in its possession, within 60 days from the end of June and December each year.

4. Staffing

- 4.9 On December 31, 1998, the DCV had 268 employees, of whom 45 were professional, technical or administrative staff carrying out functions in the DCV in Asunción. Field staff totaled 75, of whom 65 were working with the Regional Highways Board (RHB) and 10 were temporary. The balance of 140 corresponds to staff engaged for fixed periods to deal with specific local road development needs. Although the pattern of staff turnover reflects adjustments in line with the DCV's operating needs, it is worth mentioning that low wage levels do not make it easy for the DCV to maintain a permanent staff with the necessary qualifications. Within these constraints, the program includes training activities for professional staff of the DCV and for program management support (paragraph 3.22).

5. Internal and external control

- 4.10 In 1992, World Bank funds were used to hire a consulting firm to study the MOPC's administrative and accounting procedures. This consultancy recommended setting up an Internal Audit Department within the MOPC's Administration and Finance Secretariat. When processing NRRP-1, a recommendation was made to strengthen the DCV's internal control mechanism, so in 1993 the new department was set up with functions and internal procedures to monitor the financial and physical operations carried out by the MOPC. The functioning of the new structure was updated in 1998 and 1999. Although the Internal Audit Department draws up an annual plan of audit work, the activities it in fact undertakes are subject to budgetary constraints. The Comptroller General of the Republic of Paraguay is responsible for supervising the economic and financial activities of the State, and one of its functions is to undertake financial, administrative, operational and/or managerial audits of public institutions. In recent years the work of the Comptroller has focused on financial audits and on monitoring the results of bidding processes and price contests.

6. Audit of the program

- 4.11 The borrower will present the annual financial accounts of the program during execution, within 120 days following the end of each accounting period. These accounts should be submitted with the seal of approval of an independent firm of auditors acceptable to the Bank, and in conformity with the Bank's external audit requirements.

C. The Environment Office

- 4.12 At the present time, the DMA does not have a specific budgetary allocation, which limits its operating capacity and ability to supervise environmental programs. The DMA collaborates closely with the Environmental Management Office of the Ministry of Agriculture and other institutions involved in mitigation plans and

environmental and social management. This coordination is carried out through the Interinstitutional Committee (IC), which is responsible for ensuring effective implementation of the Environmental Program and the Program of Support to Indigenous Communities in NRRP-1. The current operation includes specific actions to: (i) improve the relationships between the MOPC's offices and departments and the DMA, which will help to optimize the coordination of work at all stages of road projects; (ii) ensure the timely availability of sufficient funds for the DMA, for the tasks it has to undertake; and (iii) strengthen its human resources and the equipment required for carrying out its functions.

D. Budgetary execution of the DCV

- 4.13 The historical evolution of the DCV's financial resources for the period 1995/1998 is shown in Table IV-1.

Table IV-1 Historical evolution of DCV financial resources (in US\$ million)				
Item	1995	1996	1997	1998
National Revenue Department	2.50	9.90	16.99	14.41
Other internal resources	0.43	0.72	0.87	0.73
Total internal resources	2.93	10.62	17.86	15.14
IDB	12.96	7.75	10.48	3.13
World Bank and others	0	0	1.55	0.15
Total external resources	12.96	7.75	12.03	3.28
TOTAL SOURCES	15.89	18.37	29.89	18.42

- 4.14 The DCV's internal resources basically consist of transfers from the National Revenue Department. These come from tax revenues and royalties from the Itaipú and Yacyretá binational enterprise. In addition, part of the Revenue Department's contribution comes from funds obtained from bond placements on the local market. The MOPC, meanwhile, earns revenue from toll fees which are assigned to the Highways Directorate and the DCV. External sources correspond to funding negotiated by the Government of Paraguay to cover new investments.
- 4.15 Internal funding sources accounted for 59% of total available resources in the period. Revenue Department contributions accounted for 94% of total available internal resources and 55% of total resources used in the period. External resources accounted for 41% of total available sources. Of this, 39% corresponded to disbursements made by the Bank to finance NRRP-1 and the RCCP, and the balance was made up by a loan from the World Bank for the Alto Paraná-Itapúa Norte Natural Resources Administration project. The yearly pattern of available resources shows a steady increase of internal resources and a relative decline in

external funds. This is partly due to the fact that in 1996 and 1997 investments were made to complete NRRP-1 and RCCP, but without external funding.

- 4.16 The historical evolution of the main items making up the DCV's use of funds is shown in Table IV-2

Table IV-2
Historical evolution of the use of DCV financial resources
(In current US\$ million)

Item	1995	1996	1997	1998
Maintenance	2.00	1.97	6.99	5.43
Administrative	0.45	0.41	0.43	0.32
Total operating expenses	2.45	2.38	7.42	5.75
NRRP-1	4.76	5.25	7.24	4.91
Consolidation of rural colonies	5.26	7.43	6.19	2.31
Other local roads	0.21	2.58	6.88	4.63
Other expenses	3.21	0.73	2.16	0.82
Total investments	13.44	15.99	21.47	12.67
TOTAL USES	15.89	18.37	29.89	18.42

- 4.17 Analysis of the figures shows that total DCV expenses have grown in the period 1995-1997, as a result of the execution of RCCP and NRRP-1. Beginning in 1998, investment declined drastically owing to the conclusion of RCCP civil works and a decrease in investment financed exclusively with internal resources. Maintenance expenses have fluctuated in recent years, owing mainly to variations in procurement of equipment for these tasks. Analysis of DCV administrative expenses shows moderate variations and a downward trend in real terms.

V. VIABILITY OF THE PROJECT

A. Technical viability

- 5.1 Engineering designs already exist for the program's sample of civil works. These designs provide technically adequate solutions and involve reasonable construction costs. The stretches of road that are not included in the sample are similar to those that are, so costs can reasonably be extrapolated.
- 5.2 The sample roads roughly reflect the prevailing characteristics in the eastern region of the country as regards topography, rainfall, types of soil, environmental impacts and distribution of indigenous communities. Three alternative wearing surfaces were evaluated for the road improvement: gravel, cobble-stone and asphalt. The studies in the sample concluded that the least-cost solution was to upgrade roads with gravel, and cobble stone on certain stretches.
- 5.3 The bridges to be built as part of the program are all shorter than 50 m, with an average length of about 20 m. In the sample roads, eight bridges have been designed with a total length of 260 m. The comparative analysis of wooden and concrete bridges came down in favor of concrete, due to its minimal maintenance and a carrying capacity that allows transit by all types of vehicle serving the rural areas of Paraguay. Concrete bridges also produce less environmental impact as they do not require trees to be cut down. Due to their usefulness for building bridges trees are increasingly scarce and only available in large numbers in national parks or reserves.
- 5.4 The DCV has experience of similar work and plans to strengthen its executive capacity. The hiring of consulting services to support the DCV in supervising the execution of projects for upgrading main local roads, as well as in carrying out the MMP, and to support the DMA in executing its environmental components and those in support of indigenous communities, aims to ensure better quality in the work and activities scheduled. The scheme set up for executing the program is considered one of its strengths.

B. Economic viability

- 5.5 To evaluate the program from the economic point of view, a cost-benefit analysis was carried out on the road improvements contained in the seven projects of the representative sample. This evaluation was based on calculating the economic benefits of the project, which consist of increased value-added in agricultural production and savings in terms of vehicle operating costs. These benefits are set against the cost of investment, including the mitigation of direct environmental impacts, plus the costs of routine and periodic road maintenance. Each project's net present value (NPV) is thus obtained, together with its internal rate of economic

return (IRR). This analysis was based on the Rural Roads Model, which is normally used by the Bank in similar projects.

- 5.6 The analysis is based on the assumption that improving the state of roads should lead to a reduction in local freight costs, because of lower operating costs arising from road improvements, and a change in the types of vehicle currently operating leading to an increase in productivity. This cost reduction, given the characteristics of current marketing systems, would be passed on to the producer through a narrowing of the spreads between farm gate and buyer prices. In a complementary way, technical assistance and credit services existing in zones where the projects are carried out are expected to improve qualitatively in an adequate and timely way. These benefits have not been included in the evaluation, however, as they are hard to quantify.
- 5.7 The estimated economic costs of the projects, took account of investments including the costs of mitigating direct environmental impacts, and the annual costs of road maintenance, but excluded all transfers. Road maintenance costs were calculated using NRRP-1 values, and by estimating the cost of the work that would otherwise be required to keep roads in their current operating state, in the absence of new investments.

Table V-1					
Indicators of the economic valuation of the sample projects					
ROAD	NPV (million Gs at 12%)	IRR (%)	Sensitivity IRR (%)		
			Construction +15%	Agricultural benefit -20%	Without savings in operating costs
Streams and marshland	16,181	48.4	44.1	40.7	43.9
Route 1, km 85	2,538	18.2	15.2	15.8	3.3
Ojopoi Valenzuela	2,606	27.8	24.1	23.7	12.0
R° San Pedro Nueva Durango	4,416	36.9	32.8	31.8	22.5
Nueva Esperanza	9,206	26.8	23.5	20.6	20.6
Santa Rosa	25,322	47.2	42.8	40.5	37.2
Colonia Mbareté	17,875	31.9	28.4	26.6	26.6

- 5.8 Economic rate of return indicators were calculated for each of the projects in the representative sample, based on the costs and benefits mentioned above, using a discount rate of 12%. The results are presented in Table V-1.

- 5.9 Analysis shows that all sample projects have rates of return above 12%, and in some cases returns are considerably higher due to the fact that they serve productive zones with high potential for agricultural and livestock use.
- 5.10 Sensitivity analysis considered scenarios with changes that were unfavorable to the projects, based on the following: (i) increase in total costs; (ii) reduction in benefits; (iii) increase in total costs and reduction in benefits; and (iv) elimination of benefits from lower vehicle operating costs. In most of the projects the IRR proves to be robust with respect to a reduction in agricultural benefits and savings on vehicle operating costs. However, the Route 1 - km 85 and Ojopoi-Valenzuela projects are highly sensitive to any decrease in the savings on vehicle operating costs. This would suggest that benefits in these areas occur to a greater degree as a result of vehicle traffic rather than from the added benefits of agricultural production, for which reason these road stretches do not adequately match the objectives of the program. As these projects also have a relatively low NPV/investment cost ratio, they were excluded from the program.

C. Social equity and poverty reduction classification (PTI)

- 5.11 The justification for the program's PTI classification uses the geographical criterion, based on Paraguay's Atlas of Unsatisfied Basic Needs (UBN). The corresponding analysis was carried out for the departments covered by the program, which make up the aggregate analytical units and serve as a basis for comparison within the national context. In addition, in certain cases the districts where each of the projects is located have been taken as the basic analytical unit. The percentage of the rural population with unsatisfied basic needs has been used as the indicator in all cases.
- 5.12 Based on available information, average UBN indicators were established for districts covering the nearly 6,000 km roads in the NRRP-2 universe. Districts benefited by the program report average UBN indicators for the rural population of 79%, with a minimum of 61.4% and a maximum of 90.0%. In the case of districts covered by the sample projects, the average UBN indicator is 74.5%, ranging from 65.6% to 82.4%. The program does not specify explicit performance indicators to measure poverty reduction and improvements in social equity.

D. Financial Viability

- 5.13 The financial viability of the operation has been assessed in terms of the DCV's capacity to obtain the counterpart resources needed for executing the different components of program. The counterpart of the loan, which would be met out of resources assigned to the DCV by the National Treasury, amounts to US\$22.5 million, of which US\$11 million is earmarked for paying the interest and financial expenses on the loan. This amount represents approximately 25% of the

total internal resources the DCV would obtain if the contribution levels of recent years were maintained throughout the execution of the program.

- 5.14 Based on this assumption, the DCV's internal resources would be sufficient to meet current expenditures, contribute to financing the program and generate a surplus to be used in executing the rest of the investment program.
- 5.15 The above, combined with the priority assigned by the Government of Paraguay to executing the program, and the relatively small local contribution required, justify the financial viability of the counterpart funds envisaged.

E. Institutional Viability

- 5.16 The DCV has previously been responsible for several programs funded by the Bank and by other international entities. Despite the specific limitations mentioned above, the DCV has a staff that is familiar with the execution and management of this type of program, and with the procedures and documentation required by the Bank.
- 5.17 Notwithstanding the above, and in order to ensure efficient execution of the program, it was deemed useful to include in the present operation actions to strengthen the operating capacity of the DCV and DMA. The measures proposed, together with the experience that the DCV and the DMA possess in executing projects with the Bank, insure the institutional capacity needed for efficient management of the program.

F. Environmental Viability

- 5.18 The program is considered environmentally viable because measures aimed at mitigating, eliminating or reducing the environmental impacts of road improvement and rehabilitation to acceptable levels, were considered economically feasible and possible to implement under the terms and conditions defined in the PEM and in the Environmental Operating Regulations.
- 5.19 The program anticipates that all the final engineering designs will be prepared on the basis of defined terms of reference and will incorporate measures to mitigate, correct or compensate direct negative environmental impacts. The general technical environmental specifications not only place environmental responsibility with the contractors, but also establish sanctions for cases of non-compliance. The specifications will include an annex with the technical-environmental and legal standards for road works, and will be an integral part of the ground rules and contracts for civil works and monitoring. Resources for the environmental monitoring of civil works, which will be carried out with the DMA's supporting consultants and specialists hired under regular supervision contracts, have been included in the costs of the program.

5.20 Strategies have been drawn up for areas where the program's civil works have indirect impacts. In order to minimize the risks and maximize the benefits of the program, the following precautions were taken:

- a. Prior to starting the work on each road in the program, the executing agency will submit plans for the regularization and purchase of land in favor of indigenous communities, in the area of the corresponding works, in conformity with the PEM; and
- b. For the sample projects, plans have already been drawn up for protecting indigenous communities and the environment. For the remaining projects, the corresponding plans will be prepared in a timely fashion.

G. Risks

5.21 The main risk of the program relates to its long-term sustainability, which will mainly depend on establishing adequate management of local road maintenance, and on the timely availability of resources. The MMP will be drawn up and implemented, as part of the program, to address the different aspects involved in the sustainability of this sector. The program will directly contribute to the success of the strategy adopted by generalizing successful experiences of community participation in the conservation of local roads.

5.22 Another risk of the program is that the decentralization of road sector management will gather pace without giving time to develop the necessary financial and executive capacity locally. On this issue, the possibility of obtaining a new loan in the future, in keeping with the multiphase operation concept, is a powerful incentive for sustaining the program's approach and ensuring its targets are met. In addition, the Bank is also trying to support the authorities in the road sector and the different political powers in studying the best alternatives for successful decentralization.

5.23 In this context, periodical meetings will be held between government authorities with sectoral responsibility, the DCV and the Bank, to monitor the general progress of the program and to oversee the development of sectoral policy and implementation of institutional strengthening measures.

NATIONAL RURAL ROAD PROGRAM (SECOND STAGE) - Phase 1
GENERAL GUIDELINES FOR THE ANNUAL REVIEW OF THE PROGRAM

M	OBJECTIVES	ACTIONS	EXPECTED RESULTS			
			Year 2	Year 3	Year 4	Year 5 Review Period
SUSTAINABILITY OF MAINTENANCE						
Local maintenance	The DCV has the resources to maintain the priority network in accordance with the program standards and other local roads according to minimum standards in accordance with the MYMP.	Verification that specific budgetary allocations for the DCV from the Revenue Department and execution thereof are sufficient to cover MYMP projected annual operating expenses.	A budget of at least US\$5 million per year is being executed.	A budget is being executed that is compatible with the projected MYMP (over US\$5 million per year).	A budget is being executed that is compatible with the projected MYMP (over US\$5 million a year).	A budget is being executed that is compatible with the projected MYMP (over US\$5 million a year).
	Additional local resources are provided as counterpart funding for maintenance contracts.	Agreements with departmental governments, municipalities, and communities are in progress.	Two agreements are in force. Local contributions of at least US\$100,000/year.	Three agreements are in force. Local contributions of at least US\$140,000/year.	Three agreements are in force. Local contributions of at least US\$200,000/year.	Four agreements are in force. Local contributions of at least US\$300,000/year.
Investment in local	The DCV has sufficient budgetary resources for the counterpart, corresponding to NRRP-2, in conformity with the existing civil works timetable.	Verification of specific DCV budgetary allocations.	About US\$3 million will have been allocated to the project.	About US\$6.5 million will have been allocated to project.	About US\$10 million will have been allocated to project.	About US\$11 million will have been allocated to project.
	The new investments executed by the DCV with external funding are consistent with the technical, economic and environmental criteria of the NRRP-2, and compatible with MYMP projections.	Verification of DCV investment plan.	Yearly	Yearly	Yearly	Yearly

Shading of the Year 5 column means that it represents a necessary condition for initiating the processing of the second phase of NRRP-2.

NATIONAL RURAL ROAD PROGRAM (SECOND STAGE) - Phase 1
GENERAL GUIDELINES FOR THE ANNUAL REVIEW OF THE PROGRAM

M	OBJECTIVES	ACTIONS	EXPECTED RESULTS			
			Year 2	Year 3	Year 4	Year Review P
g of e	Carrying out maintenance in various areas of the priority local network, making optimum use of available capacity in the private sector and DCV.	Maintenance contracts with the private sector are in force.			Two contracts	Two contracts
f the	Carrying out maintenance on the local road network to the required standards, as agreed with the Bank.	Verification of execution and review of the MYMP for the following year.	Yearly	Yearly	Yearly	Yearly
ation of network	Transfer of management.	Main and secondary local roads have been handed over under the conditions envisaged in the agreements.	400 km	600 km	800 km	1,000 km
	Transfer of management (continued).	Road equipment handed over in accordance with agreements.	Two groups.		One group.	
	Execution of agreements with local agencies.	The funding provided in the agreements has been disbursed subject to verification of fulfillment of planned maintenance works.	US\$400,000 in the year.	US\$400,000 in the year.	US\$700,000 in the year.	US\$1 million year.
on of s.	Recovery of critical stretches of the main network to be included in phase 2.	Road machinery is procured as envisaged.	Delivery of machinery.			
		Funds are disbursed to cover part of the costs of the civil works.	US\$750,000 in the year.	US\$750,000 in the year.	US\$750,000 in the year.	US\$750,000 i year.

shading of the Year 5 column means that it represents a necessary condition for initiating the processing of the second phase of NRRP-2.

NATIONAL RURAL ROAD PROGRAM (SECOND STAGE) - Phase 1 GENERAL GUIDELINES FOR THE ANNUAL REVIEW OF THE PROGRAM						
M	OBJECTIVES	ACTIONS	EXPECTED RESULTS			
			Year 2	Year 3	Year 4	Year Review P
IMPROVEMENT WORKS						
roads to the reed nk.	Upgrading of approximately 730 km of main roads in the priority local road network in the eastern region of Paraguay.	Contracts signed. Verification of the physical and financial execution of contracts in force.	Two groups contracted. Yearly	Five groups contracted. Yearly	Three groups completed. Yearly	Five groups c Yearly
INSTITUTIONAL STRENGTHENING						
I ng of the e f the	Hiring of a consulting team to advise the Unit.	Contract approved by the Bank.	Start of contract.	During contract.	During contract.	During contra
	Hiring of a consulting team for the Maintenance Management Unit.	Contract approved by the Bank.	Start of contract.	During contract.	During contract.	During contra
	Procurement of specialized equipment to carry out program.	Contract approved by the Bank.	Verification by the Bank.			
ng of the ecution for ntal nt and and co es.	Consultant for updating general technical environmental specifications.	Contract approved by the Bank	Verification by the Bank.			
	Consulting services for environmental training for local communities.	Contract approved by the Bank.		Start of contract.	Contract in progress.	End of contra
	Consulting services to complete environmental studies of program roads not in the representative sample.	Contract approved by the Bank.	Verification by the Bank.			

shading of the Year 5 column means that it represents a necessary condition for initiating the processing of the second phase of NRRP-2.

NATIONAL RURAL ROAD PROGRAM (SECOND STAGE) - Phase 1 GENERAL GUIDELINES FOR THE ANNUAL REVIEW OF THE PROGRAM						
M	OBJECTIVES	ACTIONS	EXPECTED RESULTS			
			Year 2	Year 3	Year 4	Year Review P
	Consulting services for the training of DMA staff and the purchase of computer equipment and vehicles.	Contract approved by the Bank.		Verification by the Bank.		
	Application of the Environmental Operating Regulations.	The DMA applies the Environmental Operating Regulations and has the special budgetary allocations and flexible mechanisms needed for performing its functions.	Yearly	Yearly	Yearly	Yearly
	Consulting services for dissemination in environmental issues.	Contract approved by the Bank.			Verification by the Bank	
	Consulting services for strengthening the operational and human resource capacity of the DMA and Inter-agency Commission.	Contract approved by the Bank.	Verification by the Bank.			
	Consulting services to encourage private forestry reserves.	Contract approved by the Bank.		Verification by the Bank		

shading of the Year 5 column means that it represents a necessary condition for initiating the processing of the second phase of NRRP-2.

NATIONAL RURAL ROAD PROGRAM (SECOND STAGE) - Phase 1 GENERAL GUIDELINES FOR THE ANNUAL REVIEW OF THE PROGRAM						
M	OBJECTIVES	ACTIONS	EXPECTED RESULTS			
			Year 2	Year 3	Year 4	Year Review P
g of the ecution for ntal nt and and o es .	Consulting services to strengthen local governments in support of indigenous communities.	Contract approved by the Bank.	Yearly	Yearly	Yearly	Yearly
	Comprehensive assistance to indigenous communities.	Contract approved by the Bank.	Yearly	Yearly	Yearly	Yearly
	Acquisition of land for indigenous communities	Verification of the corresponding budgetary allocations.	Yearly	Yearly	Yearly	Yearly
f the network g of .	Inventory of 15,000 km of local roads. Adaptation of the MAS for local roads; development and implementation of a financial planning and programming module.	Contracts approved by the Bank.	Start of contract.	Contract in progress.	End of contract.	
of terms of n nt.	Consulting services to monitor road serviceability indicators.	Contract approved by the Bank.	Yearly	Yearly	Yearly	Yearly
	Consulting services to assess socioeconomic impact.	Contract approved by the Bank.	Yearly	Yearly	Yearly	Yearly

shading of the Year 5 column means that it represents a necessary condition for initiating the processing of the second phase of NRRP-2.

LOGICAL FRAMEWORK
NATIONAL RURAL ROAD PROGRAM (SECOND STAGE)
(PR-0104)

PROGRAM	PROJECT FOR THE IMPROVEMENT OF MAIN LOCAL ROADS	MAINTENANCE MANAGEMENT PLAN	INSTITUTIONAL STRENGTHENING PROJECT
<p>ase the ness of national , and raising the f living of the rural t.</p> <p>AIM: nd maintain the f service on a part of the network of local</p> <p>ITS MAKING UP PROGRAM: ding of main local</p> <p>enance ement Plan.</p> <p>ional hening.</p>	<p>AIM: Help increase and maintain the standard of service on a substantial part of the priority local road network.</p> <p>PURPOSE: Main local roads in the eastern region of Paraguay upgraded to a standard of service that ensures year-round use, adequate road safety and environmental mitigation measures.</p> <p>COMPONENTS: 1. Improvements to approximately 730 km of main roads in the priority local road network in the eastern region of Paraguay.</p>	<p>AIM: Help increase and maintain the standard of service on a substantial part of the priority local road network.</p> <p>PURPOSE: Progressive implementation of more efficient modalities for the management of local road maintenance.</p> <p>COMPONENTS: 1. Maintenance of approximately 800 km per year of the priority network of local roads in the eastern region of Paraguay, under contract with the private sector. 2. Annual maintenance of approximately 1,050 km of the priority local road network in the eastern region of Paraguay, under agreement with departmental governments, municipalities and communities.</p>	<p>AIM: Help increase and maintain the standard of service on a substantial part of the priority local road network.</p> <p>PURPOSE: Measures of institutional strengthening implemented to increase sector efficiency in a socioenvironmentally sustainable way.</p> <p>COMPONENTS: 1. Institutional strengthening of the DCV for the execution of the program 2. Strengthening of the DMA for the execution of the Plan for Environmental Management and Protection and Assistance to Indigenous Communities.</p>

Project for the Improvement of Main Local Roads
Maintenance Management Plan
Institutional Strengthening Project

LOGICAL FRAMEWORK
NATIONAL RURAL ROAD PROGRAM (SECOND STAGE)
(PR-0104)

PROGRAM	PROJECT FOR THE IMPROVEMENT OF MAIN LOCAL ROADS	MAINTENANCE MANAGEMENT PLAN	INSTITUTIONAL STRENGTHENING PROJECT
		3. Rehabilitation of approximately 400 km of main local roads in critical areas of the priority local road network in the eastern region of Paraguay. 4. Routine and periodic maintenance equipment procured for delivery to the DCV and local agencies for road maintenance in the priority local road network in the eastern region of Paraguay.	3. Inventory of the local road network and priorities of investments. 4. Monitoring of the goals of the program and development impacts.

Project for the Improvement of Main Local Roads
Maintenance Management Plan
Institutional Strengthening Project

LOGICAL FRAMEWORK
NATIONAL RURAL ROAD PROGRAM (SECOND STAGE)
(PR-0104)

M	PROJECT FOR THE IMPROVEMENT OF MAIN LOCAL ROADS	MAINTENANCE MANAGEMENT PLAN	INSTITUTIONAL STRENGTHENING PROJECT
	ACTIVITIES <ol style="list-style-type: none"> 1. Selection of approximately 475 km of main local roads for upgrading, which do not form part of the representative sample. 2. Detailed designs and preparation of bidding documents. 3. Call for bids. 4. Awarding of contracts. 5. Execution and supervision. 	ACTIVITIES <ol style="list-style-type: none"> 1. Maintenance under contract <ol style="list-style-type: none"> a) Preparation of bidding documents for maintenance under contract. b) Call for bids. c) Awarding of contracts. d) Execution and supervision of contract. 2. Maintenance by agreement with local communities <ol style="list-style-type: none"> a) Signing of agreements. b) Supervision and oversight of annual network maintenance plans. 3. Rehabilitation of critical areas <ol style="list-style-type: none"> a) Selection of approximately 400 km of main local roads. b) Execution of the civil works. c) Evaluation. 4. Acquisition of road maintenance equipment <ol style="list-style-type: none"> a) Completion of bidding documents. b) Call for bids. c) Awarding of contracts. d) Execution and supervision of the contract. 	ACTIVITIES <ol style="list-style-type: none"> 1. DCV strengthening <ol style="list-style-type: none"> a) Hiring of consulting team for management of the project. b) Hiring of consulting team for Maintenance Management Plan. c) Procurement of computer equipment, vehicles and other resources. 2. Strengthening of DMA and implementation of Environmental Management Plan <ol style="list-style-type: none"> a) Consultant to update general technical environmental specifications. b) Consulting services for environmental training in local community. c) Consulting services to conclude environmental studies on roads of the program which are not included in the representative sample. d) Consulting services for training of DMA staff, and procurement of computer equipment and vehicles. e) Consulting services for dissemination of environmental information. f) Consulting services for strengthening the operating and resource capacity of the DMA and the Inter-agency Committee. g) Consulting services to promote private forestry research. h) Consulting services for strengthening forestry monitoring. i) Consulting services for strengthening local government support of indigenous communities. j) Comprehensive assistance to indigenous communities. k) Acquisition of land for indigenous communities.

Project for the Improvement of Main Local Roads
Maintenance Management Plan
Institutional Strengthening Project

LOGICAL FRAMEWORK
NATIONAL RURAL ROAD PROGRAM (SECOND STAGE)
(PR-0104)

M	PROJECT FOR THE IMPROVEMENT OF MAIN LOCAL ROADS	MAINTENANCE MANAGEMENT PLAN	INSTITUTIONAL STRENGTHENING PROJECT
			3. Inventory of local roads a) Preparation of bidding conditions for consulting services b) Call for bids. c) Awarding of contracts. d) Execution and supervision of contract. 4. Monitoring a) Consulting services to monitor road serviceability in b) Consulting services to monitor socioeconomic impact

Project for the Improvement of Main Local Roads
Maintenance Management Plan
Institutional Strengthening Project

LOGICAL FRAMEWORK			
PROJECT FOR THE IMPROVEMENT OF MAIN LOCAL ROADS			
OBJECTIVES	INDICATORS	MEANS OF VERIFICATION	IMPORTANT ASSUMPTIONS
to maintain the standard of substantial part of the priority network.	By the end of the period for executing Phase 1 of the program (2004), the condition of the local roads upgraded to all-weather, and the maintenance of the priority network in the eastern region of Paraguay, should permit normal circulation in the conditions required by producers.	Annual report of the DCV on the year-round serviceability of local roads.	The road freight transport the rural sector of the eastern of Paraguay maintains its competitive edge, enabling rates to be lowered.
roads in the eastern region of upgraded to a standard that ensures road serviceability conditions the year, as well as adequate road environmental mitigation	By 2004, the rehabilitated roads and bridges will have the following characteristics: <u>Roads:</u> Visual inspection; geometric design, minimum width 7m, upgraded to all-weather standard, with a wearing surface of gravel and cobble stone. <u>Bridges:</u> definitive bridges made of reinforced or pre- stressed concrete, 7m wide, designed for loads of 18 tons per axle.	Roads: Visual inspection Periodic reports on road serviceability indicators by independent consultants. Bridges: Visual inspection and, where necessary, structural resistance tests.	There are effective controls maximum loads allowed on local road network. There are no budgetary or constraints to prevent the timely fulfillment of maintenance
NTS to approximately 730 km of the priority local road network region of Paraguay.	By the end of the years indicated below, the following lengths of local roads will have been rehabilitated: 2001 100 km 2002 340 km 2003 640 km 2004 730 km	Certificate of final acceptance of the work.	Adequate maintenance is in
S of the approximately 475 km of l roads to be upgraded, which m part of the representative project and preparation of papers. ids. of contracts. a and supervision.	See detailed project budget.	Program accounting records.	The bidding process is carried under the conditions envisaged

Project for the Improvement of Main Local Roads
Maintenance Management Plan
Institutional Strengthening Project

**LOGICAL FRAMEWORK
MAINTENANCE MANAGEMENT PLAN**

OBJECTIVES	INDICATORS	MEANS OF VERIFICATION	IMPORTANT ASSUMPTIONS
Use and maintain the standard of a substantial part of the priority local road network.	By the end of the period for executing Phase 1 of the program (2004), the condition of the local roads upgraded to all-weather standard, and the maintenance of the priority network in the eastern region of Paraguay, should permit normal circulation in the conditions required by producers.	Annual report of the DCV on the year-round serviceability of local roads.	The road freight transport market in the sector of the eastern region of Paraguay maintains its competitive characteristics, enabling freight rates to be lowered.
Implement more efficient modalities of road maintenance.	By December 2004, the network of priority local roads (6,000 km) in good/regular state will have increased from some 1,200 km (20% of the total) to about 2,400 km (40% of the total)	Periodic reports on road serviceability indicators by independent consultants.	
<p>RESULTS</p> <p>Completion of approximately 800 km per year of priority local road network in the eastern region of Paraguay, under contract with the private sector.</p> <p>Completion of approximately 1,050 km per year of priority local road network in the eastern region of Paraguay, under contract with departments, municipalities and private companies.</p> <p>Completion of approximately 400 km of critical roads in critical zones of the eastern local road network in the eastern region of Paraguay.</p> <p>Acquisition and periodic maintenance equipment transferred to the DCV and local producers for maintaining roads in the priority network in the eastern region of Paraguay.</p>	<p>1.1 By the end of the first half of 2002, two maintenance contracts will have been initiated for maintenance on a network of 800 km of local roads.</p> <p>2.1 By the end of the second half of 2000, two additional maintenance contracts will have been initiated locally, covering about 700 km of local roads.</p> <p>2.2 By the end of 2004, a further two maintenance contracts will have been initiated locally, covering about 330 km of local roads.</p> <p>3.1 By the end of 2004, 400 km of critical stretches of main local roads will have been rehabilitated.</p> <p>4.1 By the end of the first half of 2002, two sets of road equipment will have been acquired for the rehabilitation of critical areas, and three sets of equipment for the municipalities.</p>	Monthly reports from the consultants hired to supervise the project.	

Project for the Improvement of Main Local Roads
Maintenance Management Plan
Institutional Strengthening Project

**LOGICAL FRAMEWORK
MAINTENANCE MANAGEMENT PLAN**

OBJECTIVES	INDICATORS	MEANS OF VERIFICATION	IMPORTANT ASSUMPTIONS
ACTIVITIES Maintenance under contract Preparation of bidding papers for contract maintenance. Call for bids. Awarding of contracts. Execution and supervision of the contract.	See detailed project budget	Program accounting records	The market for contracting firms has conditions needed for carrying out bidding processes in the form envisaged and receiving acceptable bids. Appropriate conditions exist at the departmental, municipal and community level for implementing agreements entered into. Bidding processes take place as envisaged, and acceptable bids are received for the procurement of road equipment.
Maintenance under contract with departments, municipalities and communities Signature of contracts. Supervision and monitoring of annual network maintenance plans.			
Rehabilitation of critical areas Selection of the approximately 400 km of main local roads for rehabilitation. Execution of the civil works. Evaluation.			
Acquisition of road maintenance equipment Completion of bidding papers. Call for bids. Awarding of contracts. Execution and supervision of the contract.			

Project for the Improvement of Main Local Roads
Maintenance Management Plan
Institutional Strengthening Project

**LOGICAL FRAMEWORK
INSTITUTIONAL STRENGTHENING PROJECT**

OBJECTIVES	INDICATORS	MEANS OF VERIFICATION	IMPORTANT ASSUMPTIONS
and maintain the standard of substantial part of the priority local	By the end of the period for executing Phase 1 of the program (2004), the condition of the local roads upgraded to all-weather, and the maintenance of the priority network in the eastern region of Paraguay, should permit normal transit in the conditions that productive demand requires.	Annual report from the DCV on year-round serviceability of local roads.	The road freight transport market in the rural sector of the eastern region of Paraguay maintains its competitive characteristics, enabling freight rates to be lowered.
institutional strengthening measures to efficiency of the sector in a financially sustainable way.	By December 2004, the DCV will have trained staff and efficient planning tools and the DMA will be monitoring projects environmental viability.	Annual consultation meetings with the Bank.	
ITS al strengthening of the DCV for the of the program. ing of the DMA for execution of r Environmental Management and on and Assistance to Indigenous ies. of the local roads network and f investments. g of the program's development	1.1 Consultants have been hired by December 31, 2000. 2.1 Institutional strengthening activities have been implemented by December 2004. 3.1 Inventory completed by December 2003. 4.1 Program monitoring has been carried out from 2001 until 2004.	Periodic progress reports from the consulting firms, and final report including comments by the Ministry of Public Works and Communications.	Targets are met in the institutional strengthening programs carried out with World Bank funding.
gthening g of a team of consultants to advise xecutive Unit. g of a team of consultants for the tenance Management Unit. urement of equipment, computers, les and other items.	See detailed project budget.	Program accounting records.	Acceptable bids received.

Project for the Improvement of Main Local Roads

Maintenance Management Plan

Institutional Strengthening Project

LOGICAL FRAMEWORK			
INSTITUTIONAL STRENGTHENING PROJECT			
INDICATORS	MEANS OF VERIFICATION	IMPORTANT ASSUMPTIONS	
See detailed project budget.	Program accounting records.		<p>ing of DMA, Environmental Management</p> <p>ndigenous Community Development</p> <p>to update general technical environmental</p> <p>ns</p> <p>services for local community environmental</p> <p>services to carry out environmental studies on</p> <p>f the program which are not included in the</p> <p>ive sample.</p> <p>services for training of DMA staff and</p> <p>nt of computer equipment and vehicles.</p> <p>services for dissemination of environmental</p> <p>services for strengthening the operating and</p> <p>sources capacity of the DMA and the Inter-</p> <p>mission.</p> <p>services to promote private forestry reserves.</p> <p>services for strengthening forestry monitoring.</p> <p>services for strengthening local governments</p> <p>of indigenous communities.</p> <p>nsive assistance to indigenous communities.</p> <p>n of land for indigenous communities.</p> <p>y of rural roads</p> <p>n of bidding conditions for consulting services.</p> <p>ds,</p> <p>of contracts</p> <p>and supervision of contract.</p> <p>services to monitor road serviceability</p> <p>services to monitor socioeconomic impact</p>
See detailed project budget.	Program accounting records.		<p>Project for the Improvement of Main Local Roads</p> <p>Maintenance Management Plan</p> <p>Institutional Strengthening Project</p>

TENTATIVE PROCUREMENT PLAN

Table A-III-1-1
National Rural Roads Program (Second Stage)
Civil Works

No.	Group	Projects	Length km	Direct costs (*) (US\$000)	Type of bidding	Date of SPN (quarter/year)	Date of start of contract	Date of end of contract
I	Sample works	P1	29	2,170	ICB	I/2000	IV/2000	III/2002
		P4	70	6,140				
		P5	56	4,200				
		P6-7	100	9,150				
	Subtotal		255	21,660				
II	Itapúa Sur	P8	100	6,580	ICB	I/2001	IV/2001	III/2003
		P9	50	2,220				
	Subtotal		150	8,800				
III	Coronel Oviedo	P14	98	7,060	ICB	II/2001	I/2002	IV/2003
	Subtotal		98	7,060				
IV	Itapúa Norte	P10	64	5,820	ICB	III/2001	II/2002	II/2004
		P12	90	8,180				
	Subtotal		154	14,000				
V	Caaguazú	P13	67	3,400	ICB	III/2001	II/2002	II/2004
	Subtotal		67	3,400				
	Total		724	54,920				

(*) The direct costs are preliminary estimates at September 1999 prices.

ICB = International competitive bidding.

Table A-III-1-2
National Rural Roads Program (Second Stage)
Bidding Program for Consulting Firms

Description	Type of bidding	Prequalification	Direct costs (US\$)	Start (quarter/year)		
				SPN	Contract	End
designs on projects left over from Phase 1 and first-year of Phase 2. (rural groups each > US\$ 200,000)	ICP	YES	1,750,000	II/2000	IV/2000	III/2001
provision of execution of Phase 1 improvement works. (rural groups each > US\$ 200,000)	ICP	YES	2,750,000	II/2000	IV/2000	III/2004
provision of execution of rehabilitation works in critical areas. (rural groups each < US\$ 200,000)	LCP	NO	150,000	II/2001	III/2001	II/2003
inventory of local road network/MAS local roads and planning of investments.	ICP	YES	1,600,000	II/2001	I/2002	IV/2003
on projects in rest of Phase 1 and second year of Phase 2 (rural groups each < US\$ 200,000)	LCP	NO	570,000	II/2002	IV/2000	III/2001
comprehensive assistance to indigenous communities. (rural groups each < US\$ 200,000)	LCP	NO	350,000	I/2001	III/2001	IV/2003
TOTAL			7,170,000			

= international competitive call for proposals

= local competitive call for proposals

= specific procurement notice

Table A-III-1-3
National Rural Roads Program (Second Stage)
Goods Procurement Plan

Description	Type of bidding	Direct costs (US\$)	Date (Quarter/Year)	
			SPN	Contract
Procurement of sets of road machinery for the rehabilitation of critical roads and maintenance by agreement with local communities.	ICB	1,400,000	I/2000	III/2000
Procurement of sets of road equipment for maintenance by agreement with local communities.	ICB	700,000	I/2000	III/2000
Procurement of vehicles, furniture, full station and software for the DCV.	LCB	200,000	II/2000	IV/2000
TOTAL		2,300,000		

Notes to Table A-III-1-4 below:

Type of consultancy: CF (Consulting firm); ILC (Individual Local Consultant); IIC (Individual International Consultant).
Type of procurement: ICP (International competitive call for proposals); LCP (Local competitive call for proposals); ILC (Local Individual Consultant); IIC (International Individual Consultant); LCB (Local competitive bidding); CE (Counterpart Expenses); GP (Goods Procurement).
Cost categories: E & A (Engineering and Administration); IS (Institutional Strengthening); CC (Concurrent Costs).

Table A-III-1-4
National Rural Roads Program (Second Stage)
Summary of institutional strengthening activities and concurrent costs of the program

Component –Category - Activity	Cost of activity	Cost of category	Cost of component	Type of procurement	Type of bidding	c
g and administration			5,450			
g		2,350				
ns of projects left over from Phase 1 and preparation of first tranche of	1,700			CF	ICP	E
of management maintenance plan	50			IIC	IIC	E
of project for rehabilitation of critical areas	30			ILC	ILC	E
jects from rest of Phase 1 and preparation first tranche of Phase 2	570			CF/ILC	LCP/ILC	E
n		3,100				
n of Phase 1 works	2,750			CF	ICP	E
n of rehabilitation work in critical areas	150			CF	LCP	E
of direct/indirect environmental impacts and effects on indigenous es	200			ILC	ILC	E
al strengthening			4,180			
gthening		1,310				
ervice to the program's Executive Unit	480			ILC	ILC	I
ce Management Unit	420			ILC	ILC	I
ng of Conservation Districts	150			ILC	ILC	I
DCV professional staff and local co-executors, and diffusion activities	60			ILC	ILC	I
nt of vehicles, furniture, full station and software	200			GP	LCB	I

Component –Category - Activity	Cost of activity	Cost of category	Cost of component	Type of procurement	Type of bidding	c
Strengthening, Environmental Management Plan and Development of Indigenous Communities		970				
Development of General Technical Environmental Specifications	20			ILC	ILC	
Environmental diffusion and strengthening of local governments on environmental	250			ILC	ILC	
Strengthening of operational and human resource capacity of DMA and Inter-agency	150			ILC	ILC	
Strengthening of forestry monitoring	100			ILC	ILC	
Strengthening of local governments in support of indigenous communities	50			ILC	ILC	
Reforestation projects on private properties	50			ILC	ILC	
Technical assistance to indigenous communities	350			CF	LCP	
Development of local road network and planning of investments		1,600				
Development of local road network/MAS for local roads/planning of investments	1,600			CF	ICP	
Total of the program		300				
Development of the Maintenance Management Plan	100			IIC	IIC	
Development of road serviceability indicators	100			ILC	ILC	
Development of the program's socioeconomic impact	100			ILC	ILC	
Total Costs			2,550			
Development of land for indigenous communities	2,500				CE	C
Technical assistance for land purchase	50			ILC	ILC	C

PROPOSED RESOLUTION

PARAGUAY. LOAN /OC-PR. REPUBLIC OF PARAGUAY
NATIONAL RURAL ROADS PROGRAM- SECOND STAGE (FIRST PHASE)

The Board of Executive Directors

RESOLVES:

That the President of the Bank, or such representative as he shall designate, is authorized, in the name and on behalf of the Bank, to enter into such contract or contracts as may be necessary with the Republic of Paraguay, as Borrower, to grant it a financing to cooperate in the execution of the second stage of a National Rural Roads Program (First Phase). Such financing will be for the amount of up to sixty seven million dollars of the United States of America (US\$67,000,000), or its equivalent in other currencies, except that of the Republic of Paraguay, which are part of the Ordinary Capital resources of the Bank and will be subject to the "Financial Terms and Conditions" and the "Special Contractual Conditions" of the Executive Summary of the Loan Proposal.