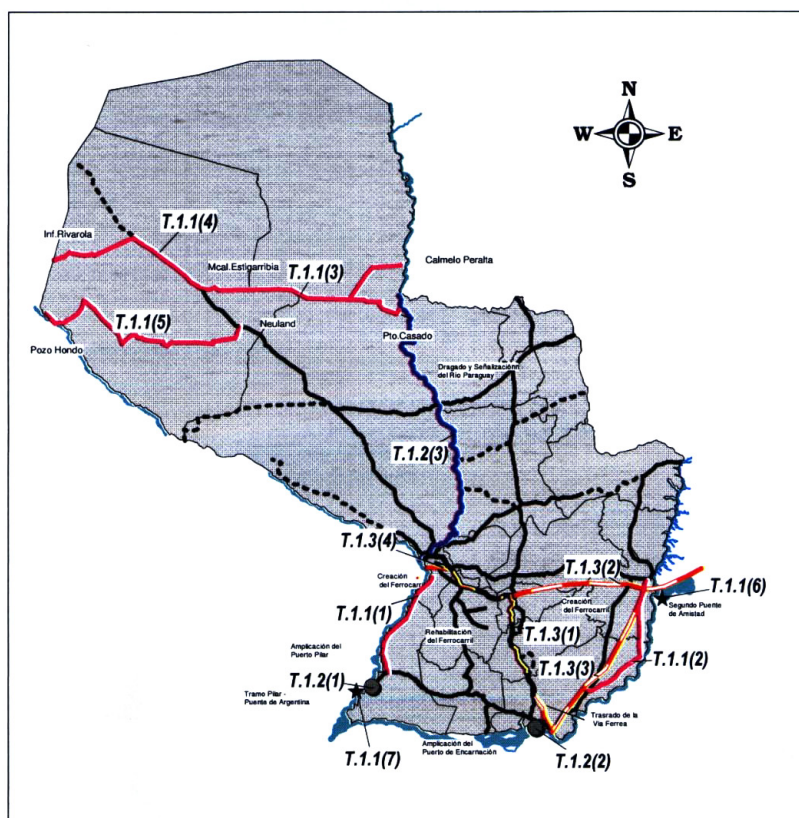


**Figure 8 Locations for Export Corridor Project**



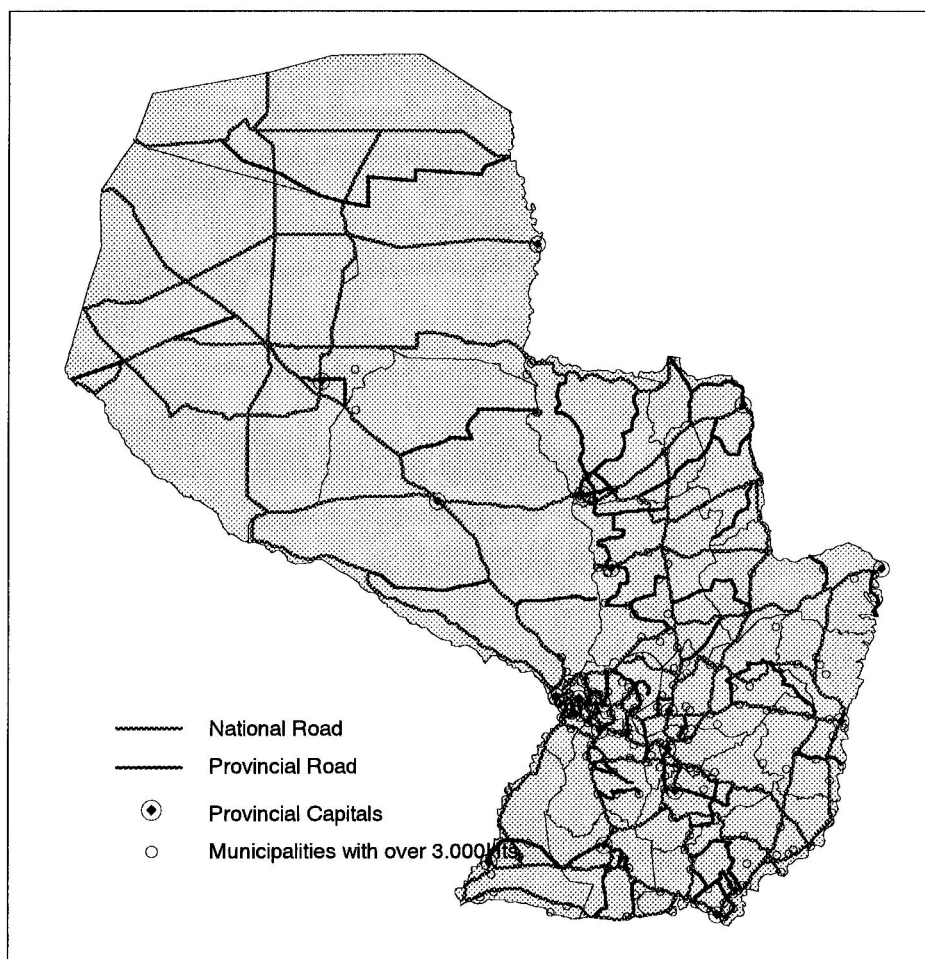
#### b) Improvement of domestic mobility

Besides the improvement of the road network, water passenger transport between Asunción and Concepción, and between Puerto Olimpo and Bahía Negra are proposed, with the objective of improving domestic mobility.

Regarding the road network, it's necessary to improve the National and Departmental roads, which are the main domestic roads. They will be improved by 2010 according to the development plan: National road network 9,400 km (pavement rate 100%) and Departmental road network 12,000 km (pavement rate 20%). Figure 9 shows the proposed main road network. National roads basically follow the conventional ones, but a road network in Chaco area was added, and roads connecting the existing National roads in the south are proposed as new National roads. Table 23 shows the extension of paved roads that will be needed.

**Table 23 Necessary Improvements in the Main Road Network**

|                   | Existing      |                 |         | Plan          |                 |          | Improvement volume |                 |         |
|-------------------|---------------|-----------------|---------|---------------|-----------------|----------|--------------------|-----------------|---------|
|                   | National road | Provincial road | Total   | National road | Provincial road | Total    | National road      | Provincial road | Total   |
| Paved (km)        | 2,584.8       | 788.0           | 3,372.8 | 9,400.0       | 2,400.0         | 11,800.0 | 6,544.5            | 1,894.0         | 8,438.5 |
| Not paved (km)    | 1,904.9       | 4,438.7         | 6,343.6 | 0.0           | 9,600.0         | 9,600.0  |                    |                 |         |
| Total (km)        | 4,489.7       | 5,226.7         | 9,716.4 | 9,400.0       | 12,000.0        | 21,400.0 |                    |                 |         |
| Pavement rate (%) | 57.6          | 15.1            | 34.7    | 100.0         | 20.0            | 55.1     |                    |                 |         |

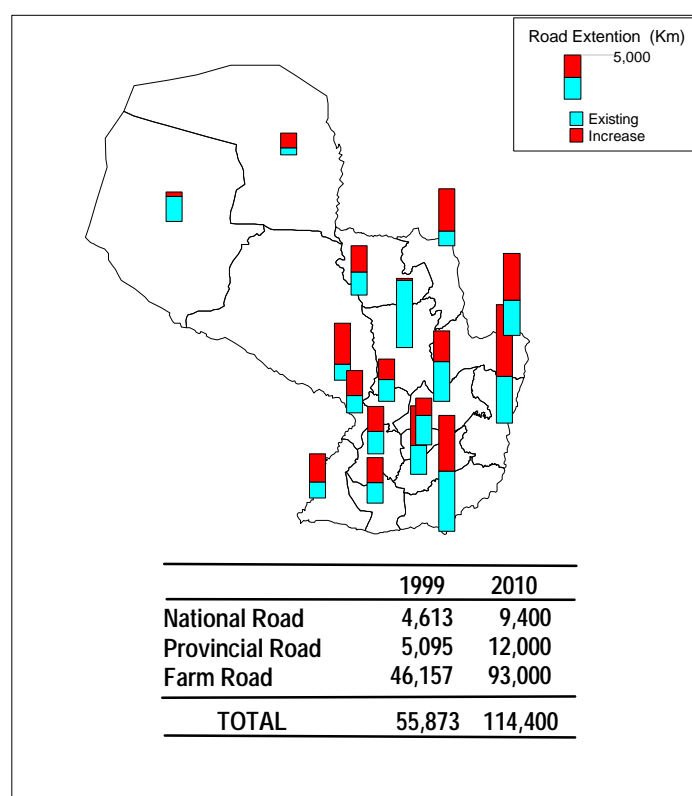
**Figure 9 Proposed Main Road Network**

### c) Improvement of transport infrastructure supporting physical distribution

In order to improve efficiency in physical distribution functions, we propose the construction of truck terminals in Ciudad del Este and Ypacaraí. The functions of these terminals shall be to transship freight, provide simple pavement, provide information on physical distribution, etc. In addition, small size farms, which represent near 80% of the farms in Paraguay, are collecting and transporting their products under an association system, but the installations for collection and storage have limited capacity and thus are restraining the growth of production volume. Expansion of collection installations and silos at the production site are proposed in order to support the increase of production volume.

It will also be necessary to improve rural (farm) roads connecting the producing centers with the main roads, in order to support physical distribution. According to data from MOPC, there are about 46,000 km of roads functioning as farm road, but almost all are unpaved. Our proposal is to improve, for the time being, about 15,000 km as main farm roads. It is almost impossible from a financial viewpoint to improve and pave all these farm roads in a short period. It will be necessary to establish organizations with the objective of preparing systems to obtain labor or provide some percentage of the shipped value for the improvement of farm roads, based on the principle that the beneficiaries should pay for the project.

**Figure 10 Necessary Road Extensions by Department**



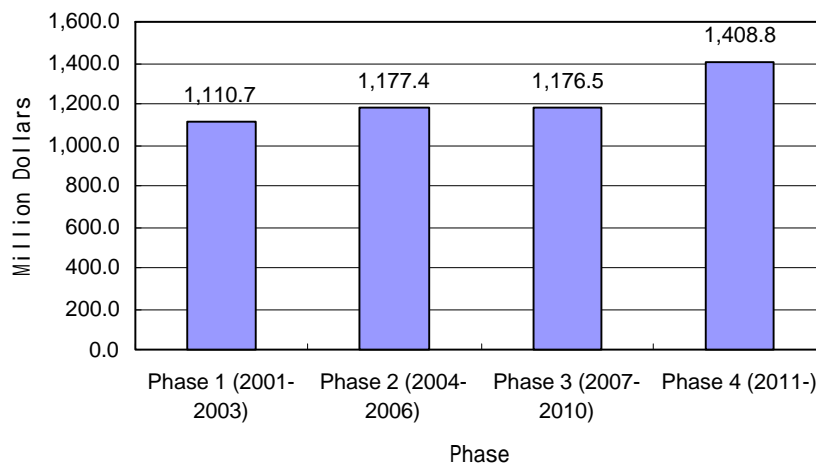
#### d) Investment plan

Figure 11 shows the result of necessary investments. As for the projects already in progress, they follow the schedule. Regarding the other projects, they were established taking into consideration the distribution of investment amount for each phase and their importance.

As explained, according to trial calculations, about US\$4 billion of special resource for transport improvement will be acquired by 2010 through increased fuel taxes and collection of a vehicle acquisition tax and vehicle ownership tax. The necessary investment until 2010 for transport infrastructure was estimated as approximately US\$3.5 billion. The cost for maintenance will be around

US\$70 million per year (US\$700 million in 10 years), so it can be said that the project is balanced as to its financial resources.

**Figure 11 Investment Amount per Phase**



#### **4) Proposal on organization and system**

A proposal regarding the organization and system was made by the National Traffic Plan of 1992, but few things have been realized. Improvement of the transport infrastructure requires a huge amount of cost and time, so it is necessary to have a continuous administration organization and system.

##### **a) Reinforcement of transport infrastructure maintenance and control functions**

With few exceptions, almost all powers related to the construction/maintenance and repair of roads belong to MOPC. However, due to the limitation in financial and human resources, almost nothing is being done about the local roads. Therefore, it shall be impossible for MOPC to control everything related to the transport infrastructure, which is increasing, and a revision of organization is proposed.

In MOPC, the Integral Transport Planning Office (OPIT) is now in charge of planning regarding transport in general, but it is not functioning at a satisfactory level. Nearly 90% of the annual budget is used for roads, making it difficult to realize projects for ports and railways. However, taking into consideration the future role of waterways, and the importance of railways as a mass transport system, it's necessary to expand and improve an organization that can grasp the issues on transportation as a whole and make proposals for the repair of each transport installation under proper role assignment. On the other hand, control of Departmental roads and Rural (farm) roads shall be transferred to local authorities, for more efficient control. In this case, local authorities shall have to establish departments in charge of planning and maintenance of roads.

Besides a review of organization, it is important to prepare technical standards and to keep good control of data. As for technical standards, it's necessary to prepare standards related to geometric structures of roads and standards on maintenance. Moreover, it's necessary to grasp the current situation of roads and transport, in order to elaborate an outstanding plan. Accurate data shall be put in order within a well-arranged organization, and establishment of a data control system is needed in combination with reorganization. It is not sufficient to collect data once; there needs to be regular updating. Regarding important data, it is required to make clear who prepares and who controls the data, and to establish a system for regular updates.

#### b) Financial resources

Transport installations play an important role as a basis of the society, but they require a huge cost. It is very important to secure appropriate funds for their construction and maintenance. There are mainly four types of resource applicable to public investments:

- general resources
- special resources
- aid from abroad
- national bonds: bonds issued by the government

Besides supporting the country's economical growth, improvement of transport infrastructure has the effect of improving people's lives, so any of the above resources has good reason to be applied for this purpose. However, as there is a limitation in the resources, we propose to secure a special resource for the improvement of transport infrastructure, based on the principle that the beneficiaries should pay. In other words, it's appropriate to collect part of the cost, as a utilization fee or fixed property tax, from the users of the road to be repaired and people living along it, and from the users of the ports/waterways to be repaired and private ports. With regard to the sharing of methods, fairness and clearness are indispensable factors.

#### c) Creation of transport companies

Besides creation of the industry for exports, it is indispensable to create transport companies in order to promote exports from Paraguay. There are approximately 800 freight transport companies registered with MOPC, among which 171 are Paraguayan, corresponding to only one-fifth of the total. Taking into consideration that so many foreign companies are operating in Paraguay, it shall be very difficult for Paraguayan companies to compete with foreign companies who have bigger funds, and some preferential treatments (tax, financing system) shall be required in order to encourage Paraguayan companies.