3) International physical distribution

Table 19 shows the transport from/to final import origin or export destination, based on the above forecast.

Regarding the origin of imports, Brazil and Argentina will increase their share. The proportion of imports from Central and South America is increasing because Colombia is considered as the import origin of oil and crude oil. As for exports, the proportion to Europe and North America will increase slightly, but Brazil and Argentina are the main destinations.

Table 19 Export Destination and Import Origin

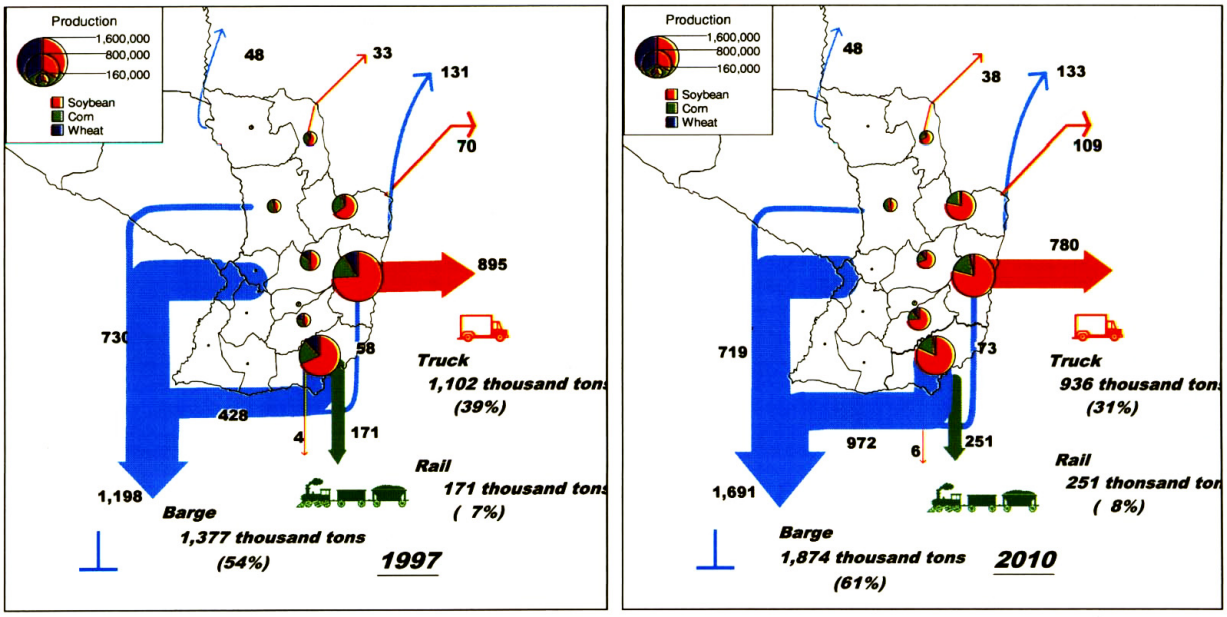
	1997				2010			
	Import origin		Export destination		Import origin		Export destination	
	(1000t)	(%)	(1000t)	(%)	(1000t)	(%)	(1000t)	(%)
Brazil	737	27.1%	1,903	43.1%	1,706	27.3%	2,012	40.0%
Argentina	1,058	38.8%	612	1.9%	2,755	44.1%	621	12.3%
Uruguay	75	2.7%	42	1.0%	119	1.9%	28	0.6%
Chile	40	1.5%	27	0.6%	73	1.2%	44	0.9%
Bolivia/Peru	1	0.0%	65	1.5%	1	0.0%	89	1.8%
Central and South America	131	4.8%	279	6.3%	351	5.6%	361	7.2%
North America	135	5.0%	141	3.2%	335	5.4%	142	2.8%
Europe	164	6.0%	1,255	28.4%	313	5.0%	1,654	32.9%
Asia/Australia	277	10.2%	85	1.9%	539	8.6%	64	1.3%
Africa/Middle East	20	0.7%	5	0.1%	49	0.8%	11	0.2%
Not clear	87	3.2%	0	0.0%		0.0%		0.0%
Total	2,725	100.0%	4,416	100.0%	6,241	100.0%	5,026	100.0%

a) Transport method

Regarding transport method, it is estimated that there will be little change.

An exception will be a change in the transport of grain, which will be more shifted to water transport. Figure 3 shows production volume and change in export route of the main grains. The data is for grain only; oil/cake are excluded. As for wheat, export doesn't appear, as imports will surpass exports by 2010. These data indicate that increasing demand for water transport will likely expand the proportion of transport using Paraná River, which is closer to the growing district than Paraguay River.

Figure 6 Production Volume and Main Export Route of Grain



b) Influence of the bi-oceanic road

When the bi-oceanic Road becomes ready for service, trade with Asia and Oceania will be influenced. About 90% of exports to Asia and Oceania are grain such as soybean and wheat; half is transported from Villeta port through Argentina, and half from Ciudad del Este by land to a Brazilian port, and then changing to water transport. Taking into consideration the unit price of grain based on weight, it is not feasible, from the viewpoint of cost, to transport by land across the Andes and export from Antofagasta.

On the other hand, imports from Asia and Oceania include a variety of items, the main ones being electric goods, vehicle-related items (including cars), toys, metal machinery, and fertilizer. Of these products, 62% are transported to Paraguay by land (truck + railway), 27% by water, and 11% by airplane. Regarding land transport, 36% uses the route connecting Ciudad del Este and Brazilian ports, 19% the route connecting Puerto Falcon with ports in Chile, passing through Argentina, and the remaining 7% the route connecting Encarnación with Argentine and Uruguayan ports (by railway and truck). It's estimated that once the bi-oceanic road becomes ready, products whose value based on weight is relatively high, such as electric goods and toys, will use the route through the Andes instead of using the ports on the Atlantic side. The Pacific side has the ports of Iquique and Arica besides Valparaiso and Antofagasta, providing more choices of destination, so the current route through the Andes, Valparaíso – Mendoza – Puerto Falcon, may be changed to a route connecting Asunción with Bolivia, passing through the "Chaco" region.

Table 20 Trade Volume with Asia and Oceania (1997)

Export				Import			
Items	Volume 1000t	Rate %	Price in CIF US$/t	Items	Volume 1000t	Rate %	Price in FOB US$/t
Lumber-related products	42	49.4%	592	Electric goods	56	20.2%	2,419
Oil-stuff seeds	35	41.2%	299	Vehicle-related items	48	17.3%	4,310
Others	8	9.4%	2,067	Machinery	45	16.2%	2,187
				Toys	35	12.6%	2,322
				Metal machinery	11	4.0%	737
				Fertilizer	8	2.9%	1,483
				Others	74	26.7%	2,296
Total	85	100%	501	Total	277	100%	2,566

Table 21 Transport Method for Trade with Asia and Oceania

Customs	Department	Transport method	Export	Import
Asunción,Sajonia,Itá Enramada,PAKSA	Central	River	36.7%	27.3%
Ciudad del Este	AltoParaná	Truck	20.3%	36.1%
Encarnación	Itapua	Truck	0.0%	4.9%
Encarnación	Itapua	River	41.7%	0.1%
Encarnación	Itapua	Railway	0.0%	1.7%
Pedro Juan Caballero	Amanbay	Truck	0.4%	0.1%
Salto del Guairá	Canindeyú	Truck	0.3%	0.0%
Pto.Falcon	Pte.Hayes	Truck	0.6%	18.9%
Aeropuerto International	Central	Aircraft	0.0%	11.0%
TOTAL			100.0%	100.0%

(3) Transport infrastructure repair strategy

1) Basic policies

The role of the transport infrastructure in the revitalization of the Paraguayan economy is to activate the local economy by facilitating the movement of goods and people. Taking into consideration this role, it can be concluded that the basic policies for transport infrastructure repair are: to repair and expand the transport infrastructure now lacking, to maintain and keep good control of the existing installations, and to secure the necessary funds and personnel for the repair of installations, maintenance, and administration. These policies shall be summarized in the following 8 items:

- Repair of the export corridor
- Improvement of mobility in the country
- Repair of farm roads
- Repair of transport infrastructure support distribution
- Strengthening of road maintenance and administration
- Decentralization of power in infrastructure repair
- Securing funds for infrastructure repair

- Effective use of railroads

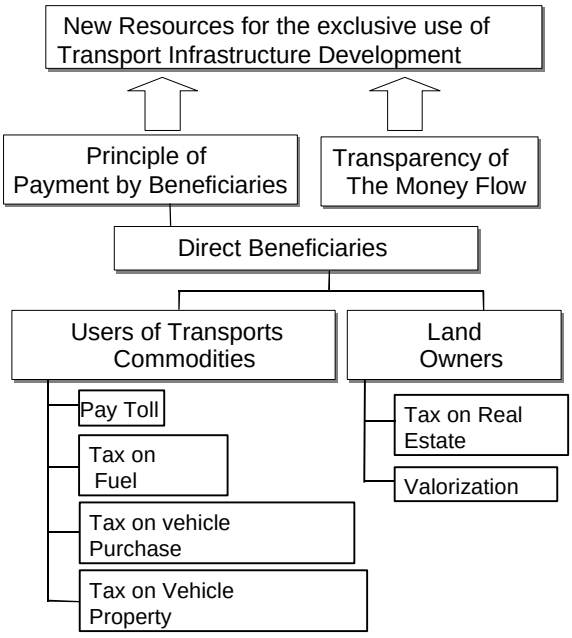
2) Finances

The main reason for the delay in infrastructure development is a lack of financial resources. Therefore, it's necessary to create new financial resources, designated for the exclusive use of transport infrastructure development. There are two principles to be followed when creating such resources. One is "payment by beneficiaries" and the other, especially important in Paraguay, is "transparency of capital flow." In the case of road infrastructure, the direct beneficiaries will be the users of the road and owners of land along it. Part of the benefits will be collected from the former through tolls, a tax on fuel, and a tax on vehicle purchase and vehicle property. As for the latter, part of cost for the infrastructure may be borne by them through a tax on real estate or a valorization system.

The effects of taxation on road users have been studied quantitatively. The new tax explained below should be collected in addition to the existing tax, and it will be necessary to legally approve that the increased amount of tax will be used exclusively for roads development.

The tax on gasoline and gas oil shall be increased by 10% of the retail price (5% for the first 3 years). Regarding vehicles, 10% of the car price shall be collected as an acquisition tax, and 1% per year as an ownership tax. However, buses will be exempted from this tax.

Figure 7 Creation of New Financial Resources for Transport Infrastructure Development



As a result, a total of US$4 billion (Gs14 trillion) through 2010 can be expected as the financial resource for transport infrastructure. Taking into consideration that the current resource has a level of about US$1 billion, the new system will enable investment on a scale 5 times larger than the current one, and the infrastructure can be developed to the same level as in surrounding countries.

Table 22 Creation of New Financial Resources for Transport Infrastructure Development

(US$ Million at 2000 price)

Kind of Objective Tax	2003	2004-2006	2007-2010	Total
Tax on Fuel	33	152	379	564
Tax on Vehicle Acquisition	161	556	944	1,661
Tax on Vehicle Ownership	183	592	909	1,684
Total	377	1,300	2,232	3,909

3) Main projects and cost estimation

a) Improvement of Export Corridor

The promotion of exports is indispensable for the development of the Paraguayan economy, and improvement of transport infrastructure is necessary for that purpose.

Over half (52%) of the volume exported from Paraguay is transported by water, and this percentage is estimated to increase till 61% in 2010. Therefore, improvement of water transport is critical for the promotion of exports, and it is suggested to expand the function of the ports Pilar and Encarnación, and to improve the roads to access them. Paraguay River tends to accumulate sand, so it is also necessary to expand and improve facilities for periodic dredging. Another point is to prepare a Paraguayan transshipment base of grain in the free zones of Rosario port (Argentina) and Nueva Palmira port (Uruguay).

Regarding railways, though a feasibility study is required, our suggestion is a triangular railway net connecting Asunción, Ciudad del Este, and Encarnación. The railway is connected only with Argentina at Encarnación, but its usefulness will increase by connecting it also to Brazil (at Cascavel). It is worth considering the preparation of a freight line that connects to Villeta port. Preparing a port freight line connecting to Villeta shall also be considered as an effective idea.

Regarding export corridor by road, suggestions have been made to enforce the connection with Brazil by preparing the second Amistad bridge and Carmelo Peralta bridge, enforce the connection with Argentina by constructing the Pilar bridge, and enforce the connection with Bolivia by preparing a road to enter Bolivia through Mcal. Estigarribia and Neuland.