

**PHYSICAL INTEGRATION OF MERCOSUR-BOLIVIA-CHILE-PERU:  
THE POTENTIAL CONTRIBUTION OF THE RAILWAY SYSTEMS**

**This edition of the Bulletin highlights sections of a recent study carried out by the Transport Unit of ECLAC on behalf of the Institute for Latin American Integration (INTAL) entitled Physical Integration of Mercosur-Bolivia- Chile-Peru: the potential contribution of the railway systems. One of the conclusions stresses the need for the railway and other companies involved in the construction of any major project to sign formal agreements relating to the allocation of freight, track utilization fees and other factors on which operation of the railway to be constructed will depend.**

**THE ROLE OF THE RAILWAY IN INTERNATIONAL TRANSPORT WITHIN**

**THE SOUTHERN CONE**

**Background**

In most cases, South American railways were planned not with any thought for their potential contribution to transport to and from neighbouring countries but rather for the purpose of conveying a country's mining or agricultural production to ports in the same country. Clearly, there were exceptions as in the case of the

landlocked countries, that is Bolivia and Paraguay, where, from the outset, the railways were responsible for carrying exports to ports in transit countries, and bringing back semi-manufactures or end products.

**Table I**

<b>EXTENT OF INTERNATIONAL TRADE IN THE OPERATIONS OF THE BOLIVIAN STATE-OWNED RAILWAY COMPANY</b>		
<b>Year</b>	<b>Total trade (ton-km en 10<sup>6</sup>)</b>	<b>International trade (%)</b>
1965	275.86	61
1970	318.04	57
1975	465.45	81
1980	641.84	77
1985	490.81	73
1990	540.92	90
1994	761.91	90

**Source:** ECLAC, on the basis of statistics taken from tables 8, 9, 10 y 11 from the draft 1994 Statistical Report of the Empresa Nacional de Ferrocarriles, La Paz, 1995.

To fulfil this objective, the promoters of railway connections linking Bolivia and Paraguay with ocean ports took pains to ascertain that differences in technical standards would not interfere with transport efficiency. In both cases, the gauge of the first railway was different from that of the connecting railway to the port, and thus, in both instances, the gauge was standardized to ensure that the trains could continue to run directly between the mining or agricultural production centres and the ports of Antofagasta and Buenos Aires respectively, without the need to trans-ship cargo or passengers. Furthermore, in the case of the Paraguay Central Railway Company, there was coordination at the level of the board of directors with the railway firm taking over responsibility for the consignment in Pacú-Cua, for the onward journey to Buenos Aires, thus ensuring close collaboration between the two companies. In the case of Bolivia, the situation was even better, since the Antofagasta (Chile) and Bolivia Railway Co. Ltd. operated the entire line, between the Chilean coast and La Paz. Between the Peruvian coast and La Paz, the Peruvian Corporation was owner of all the railways from Mollendo/Matarani, in addition to the steamboats plying Lake Titicaca, which represented the other link in this transportation system.

In terms of tonnages, international transport continues to be relatively important in these two railway systems, both in Bolivia and Paraguay. See tables I and II.

**Table II**

**INTERNATIONAL TRAFFIC AS A PERCENTAGE OF TOTAL**

**TRANSPORT IN SOUTHERN CONE RAILWAYS, 1987**

COUNTRY	PERCENTAGE
Argentina	6.0
Bolivia	87.6
Brazil	0.5
Chile	1.8
Paraguay	61.8
Uruguay	21.9
Perú (estimated 1994)	7.2

Source: Proyecto Libertadores, table 7, and ECLAC estimates.

N.B.: In 1987, the Viacha-Guaqui railway, which connects with the Peruvian company, Ferrocarril del Sur, using the Lake Titicaca ferry, was out of service on account of flooding at the Guaqui port.

Furthermore, in the case of Bolivia, the railway continues to play an important role compared with other means of transport in the area of international transport. In 1980, in terms of weight, the railway transported 62% of goods traded between Bolivia and the other countries of the Southern Cone. The Bolivian railway system has connections with the systems in Argentina (Villazón/La Quiaca and Yacuiba/Pocitos), Brazil (Quijarro/Corumbá) and Chile (Charaña/Visviri and Abaroa/Ollague) and in all cases, there is a standardized gauge.

In addition to experiencing difficulties caused by the different administrations on either side of the border, international rail transport suffers from complications arising from differences in technical standards. The Argentine and Brazilian rail systems meet in Uruguiana/Paso de los Libres, but the first uses standard gauge (1,435 mm.) while the second uses the metric gauge. At Livramento/Rivera, the Brazilian and Uruguayan systems meet and the same gauge differences apply. In addition, Bolivia has rail links with Peru although the two systems never actually meet as transport between the two rail terminuses (Guaqui and Puno) is provided by ferry across Lake Titicaca.

At times, international rail transport has also been hampered by institutional problems. In the second decade of the twentieth century, transport of goods by the now defunct Ferrocarril Transandino, between Argentina and Chile, almost completely disappeared. The Ferrocarril Buenos Aires al Pacifico (Buenos-Aires-Pacific Railway), which owns the line between Mendoza and Buenos Aires (over 1,000 km), in addition to the stretch between Mendoza and the border with Chile (less than 200 km), preferred to send its consignments to the port of Buenos Aires, rather than hand them over to another company at the frontier for transit to the port of Valparaiso. Decades later, low freight rates applied in Argentina in the interests of regional development caused road traffic via Socompa, between the same countries, to fall back to a mere trickle, resulting in consignments being shipped over distances of more than 1,000 km to Buenos Aires instead of just a few hundred km to the border with Chile and thence, to Antofagasta. Generally, the client, instead of making a single payment, had to pay each rail company separately for the portion of freight corresponding to its service.

### **Recent trends in international traffic**

Stimulated by economic growth in the countries of the subregion and by the trend towards trade liberalization

and reform of the railway systems themselves, international rail transport in the Southern Cone has experienced a strong resurgence since the beginning of the 1990s.

Traffic between Argentina and Brazil rose over 60% between 1993 and 1994, attaining 585,216 tons. (See table III). All of this traffic was through the Paso de los Libres/Uruguai border crossing, where transshipment was necessary between cars of different gauges. During the same years, traffic between Bolivia and Brazil rose by 27%, from 121,509 to 154,726 tons, and could have increased further had there been greater capacity or better coordination between the rail companies involved. These figures are taken from the reports of the Federal Railway System in Brazil; the statistics of the Empresa Nacional de Ferrocarriles in Bolivia indicate an even greater volume.

**Table III**

<b>International Rail Traffic between Argentina and Brazil, 1993/1994 (tons)</b>		
<b>Product</b>	<b>1993</b>	<b>1994</b>
Sugar	10 326	141 395
Fertilizer	22 627	24 554
Rice	78 619	85 903
Bauxite	10 216	12 951
Bentonite	7 541	11 869
Beer	-	39 235
Wheat flour	-	33 792
Polyethylene	27 686	27 268
Soya beans	89 032	79 677
Others	115 877	28 572
<b>Total</b>	<b>361 924</b>	<b>585 216</b>

Source: Rede Ferroviária Federal S.A., *Relatório Anual 1994 (Annual Report 1994)*, Rio de Janeiro, 1995.

Table V shows the recent patterns of trade between Bolivia and Chile using the rail service through Visviri. In this case, amounts transported in the early 1990s exceeded the capacity of the Ferrocarril Arica a La Paz (Arica-La Paz railway). As a result of such intensive use, the number of locomotives available for service declined and fleet reinforcements had to be provided in the form of rented equipment from Bolivia and locomotives from the South of Chile.

Another international railway which has seen a spectacular increase in traffic in recent years is the rail link between Argentina and Chile through the Socompa pass. See table IV. In the early 1990s, traffic through this route had declined to less than 20,000 tons. For 1996, it is anticipated that almost 160,000 tons, including not only traditional mining and other products, but also consumer goods and automobiles, will be transported from Iquique to Barranqueras, where they will be loaded onto trucks or launches for the final leg of their journey to Asunción. The Chilean company, Ferronor, which operates the stretch of railway west of Socompa, is also facing problems related to lack of engines and rail cars, partly as a result of the increase in international traffic.

**Table IV**

<b>Rail Traffic between Chile and Argentina through Socompa 1983-1996</b>	
<b>Year</b>	<b>Tonnage</b>
1983	58 012
1984	43 067
1985	68 039
1986	127 300
1987	66 056
1988	70 082
1989	61 997
1990	60 843
1991	35 251
1992	23 498
1993	17 440
1994	15 953
1995	80 000
1996	160 000

**Source:** Ferronor. **N.B.:** Figure for 1995 is an estimated; Figure for 1996 is a projection.

Table V

<b>Traffic on the Arica to La Paz Railway 1984 - 1994 (tons)</b>		
<b>Year</b>	<b>Arica to La Paz</b>	<b>La Paz to Arica</b>
1984	67 784	28 893
1985	55 190	13 724
1986	59 550	27 683
1987	99 665	56 854
1988	94 115	86 096
1989	79 853	123 915
1990	107 727	178 107
1991	131 763	186 242
1992	182 047	143 077
1993	155 212	114 625
1994	108 680	131 995

**Source:** Ferrocarril Arica a La Paz, Operations Division.

International traffic has also grown considerably in recent years on the line connecting Santa Cruz de la Sierra, in Bolivia, with Brazil through Quijarro/Corumbá. Here again, the tonnage transported has been restricted due to lack of locomotives, which has meant, *inter alia*, recommissioning two steam locomotives that had been out of use for twenty years.

Clearly, international rail traffic in the Southern Cone has been progressing at a remarkable rate. Bearing in mind that, in recent decades, very little money has been invested in rail connections within the subregion, it will probably be economically feasible to implement certain investment projects to accommodate effectively these expansions and strengthen subregional trade.

## SUMMARY AND CONCLUSIONS

### Summary

With the exception of the landlocked countries and a few other isolated cases, railways in the countries of the Southern Cone were not constructed with any thought for the possibility of linking them up. Nevertheless, over the last few years, as a result of

- the adoption of economic liberalization policies;
- high economic growth rates in various countries;
- a more dynamic business approach on the part of some railway companies,

trade by rail has risen sometimes dramatically, revealing certain shortcomings in terms of capacity or condition of infrastructure or rolling stock.

Privatization of railways is one of the economic policy reforms currently underway. Private-sector concession holders now operate all but one of the Argentine railway routes in the south and centre of Chile. Concessions for the two Bolivian networks have been awarded and leasing out of the railways in Brazil is in the pipeline, offering the private sector new opportunities for investing in this area.

In view of the changing circumstances, it would be worthwhile to reconsider the economic feasibility of certain investment projects relating to trade between countries of the Southern Cone, and between one or other of such countries and the overseas export market, through the territory of other countries of the subregion. Some of these projects were proposed over 100 years ago and are now generating renewed interest.

This report examines a series of the most important projects including some large-scale projects, such as connecting up the two systems in Bolivia, which, according to the conclusion, deserves further study. Implementation of the *Transandino del Sur* (Southern Trans-Andean Railway), although probably worthwhile, will be difficult to achieve without support from government sectors; moreover, this is one of the cases where the railway companies concerned would be well-advised to sign an agreement on freight and track utilization fees before investing large sums in construction projects.

The most difficult railway to operate in the subregion is the Chilean section of the track between Arica and La Paz which has intrinsic problems linked to lay-out and terrain features. However, to increase its capacity, track renovation and locomotive modernization would be necessary and none of this can be scheduled since it is likely that the railway will be privatized. The international railway which has recorded the most dramatic increase in traffic over the past few years is the Argentine/Chilean link through Socompa; however, investments are needed to make up for a certain amount of neglect in the past and to make necessary improvements to cope with the potential traffic. The strong increase in road traffic between the central zones of these two countries makes it imperative to expand transport capacity. One option would be to recommission the *Ferrocarril Transandino* (Trans-Andean Railways) but this would require construction of a low-altitude tunnel which would be beyond the

means of the rail companies involved.

In Brazil, the most suitable option would be to develop the rail system to transport the huge quantities of grain to ports and consumption centres. There are various lines that are well placed to deal with this; however, to cope with the expected tonnages, significant additional investments would be necessary. A portion of these grains could be exported through the Pacific ports, which means that to optimize investment planning, decisions should be based on in-depth studies with a wide geographical coverage.

### Conclusions

- International rail traffic in the Southern Cone has been showing promising growth with up to a five-fold increase in the volume transported in the first five years of the current decade.
  - This growth is already being restricted by poorly-maintained or inadequate infrastructure and by unavailability of rolling stock.
  - There is increasing need for investments from the private sector to make up for inadequate maintenance in the past decades, and to modernize and expand infrastructure and rolling stock. This could be achieved in various ways as follows:
    - by acquiring concessions for managing infrastructure or operating services for which invitations to tender may be issued in Argentina (Ferrocarril Belgrano), Brazil (Rede Federal y Ferrovia Paulista) and Chile (Arica a La Paz, Ferronor and infrastructure linking Santiago with the south);
    - clients could purchase, rent or lease equipment and pay the appropriate charges to the rail managers;
    - groups of clients could construct certain infrastructural elements such as yards and sidings, etc., and recover the costs by charging their members for use; and
    - financing investments by users, in exchange for reductions in future freight charges.
  - Grain production in the centre of the continent (eastern Bolivia, Mato Grosso, etc) has been soaring dramatically; soya bean exports, in particular, are expected to exceed 10 million tons. It is not yet clear what proportion of this will, for reasons of cost, be channelled through Pacific ports. However, this will determine the feasibility of certain important investments, such as the proposed link between the two Bolivian rail networks.
  - A prerequisite to starting construction of any major projects should be the existence of signed agreements between railway and other companies involved with respect to the allocation of freight, fees for use of tracks, and other factors on which operation of the projected railways will depend.
  - Some prefeasibility studies have not given due consideration to the impact of the project in question on other aspects of the transport system.
  - Given the very high cost of certain construction projects, and the uncertainty surrounding the costs and tonnages to be transported, they could scarcely be implemented without financial support from Governments and the international banking system.
  - Prior to privatization, the tendency among some rail companies was to cut back their investments to the minimum and abandon all but the most short-term plans, and this could aggravate the problem of lack of capacity.
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