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COMPETITION AND COMPLEMENTARITY BETWEEN ROAD AND RAIL TRANSPORT IN THE CARRIAGE OF FREIGHT

A seminar on competition and complementarity between road and rail transport in the carriage of freight was conducted at ECLAC Headquarters on 6-7 November 2001. The seminar was attended by experts on transport matters from a range of countries, and their presentations covered the current state of integration of transport in countries like Argentina, Brazil, Chile and Mexico. Also in attendance was an expert from Central America, who spoke about modal integration of freight transport in that region. Three round-table discussions were held with the participation of representatives of the trucking and rail sectors, drawn from both the private and public spheres. For further information, please contact Myriam Echeverría < mecheverria@eclac.cl >, or visit http://www.eclac.cl/transporte/ .

In Latin America, most railways are currently owned by private interests, who have focused on large-volume cargoes, where they enjoy a clear comparative advantage over road transport. As a result, today only large-tonnage trucks are in a position to compete with rail transport. In this respect, the presentation by Mr Ian Thomson, Chief of the Transport Unit, addressed the distortion of toll charges created by the use of trucks, which tends to favour trucks of higher gross weight. The actual charges levied on various types of vehicles on some of the roads administered under concessions in Argentina, Brazil and Chile clearly demonstrates the situation of trucks with a high tonnage per axle, which do not pay a toll proportionate to the extent of the damage they cause to the road, when compared with the amount paid by other vehicles.

However, with the advent of concessions in the provision of road infrastructure services, this panorama is changing somewhat, insofar as road haulage companies have become

customers of the concessionaires. Mr Francisco Ghisolfo of Chile, putting forward the viewpoint of concessionaires who provide road services, described the bargaining that goes on between users of these services and those who provide them; if large-tonnage trucks wish to use roads that are not designed to bear cargo, the concessionaire will consider the option of upgrading the road by, for example, applying a new surface, in return for levying a higher toll to cover its outlay. One aspect that has yet to be studied is whether, after road upgrading, the increase in tolls should be borne solely by large-tonnage trucks or should be incurred by all users to a lesser or greater extent.

In his presentation, Mr Hugo Rizzo, of the Secretariat of Transport of Argentina, stressed the need for a policy that shapes and promotes long-term investment, for example in cargo transfer stations, which provide a fillip to complementarity between road and rail transport. Mr Rizzo also pointed out that currently different methodologies are used to evaluate road and rail transport projects. In the case of rail transport, applying a traditional approach to evaluate projects would indicate a very low internal rate of return; on the other hand, if externalities were factored in, this rate would start to rise immediately. Consequently, it is very important to come up with a common methodology for use in relation to road and rail projects.

Professor Suzana Ribeiro of Brazil broached environmental issues in her presentation. Environmental impact is defined as *any alteration to the physical, chemical, biological, cultural or socio-economic environment that can be attributed to human activities in relation with the alternatives studied in order to satisfy the needs of a project* (Canter, 1997 in Moreira, 1990). Viewed in this context, all transport projects have an environmental impact, caused both by the physical infrastructure, which produces spatial segregation, a visual impact and changes in land use, and by their operation, which impacts on the community's quality of life in terms of the noises, vibrations, accidents and air and water pollution generated. In light of the fact that vehicles have combustion engines, the impact of atmospheric pollution at both the local and global levels and its effect on climate change is the most important impact produced by transportation. Atmospheric pollution is caused because combustion of fossil fuels is incomplete, releasing into the atmosphere carbon monoxide and pollutants that cause the population respiratory problems such as asthma, bronchitis and so-called "acid rain", which acidifies lakes and soils. In 1973, the transport sector consumed 43% of the world's oil production, a figure that had increased to 55% by 1997. Projections indicate that consumption will continue to increase.

The earth is ringed by a layer of gases at a height of around 15 kilometres; these gases ensure that the earth maintains an average temperature of approximately 15°C, and without them the temperature would be -18°C. Solar radiation containing a huge quantity of energy passes through this layer to the earth's surface, which captures the energy necessary and returns the rays to the atmosphere. These rays contain less energy and are transformed into infrared radiation, but as the layer of gases has been altered by the carbon dioxide emitted, the rays do not pass quickly through it; instead, some of the rays are sent back to the earth, raising its average temperature and leading to very serious consequences, such as floods and changes

in the direction and intensity of the winds and rain, etc., thereby drastically altering the ecosystem. The current concentration of CO_2 is 360 ppm (parts per million) and if measures are not taken to reduce emissions, concentration will attain 700 ppm by 2100.

The transport sector is responsible for substantially more of the increase in CO_2 emissions than any other sector; hence the importance of studying measures to mitigate this phenomenon. In Brazil, figures for the different modes of transport show that road transport is responsible for 90% of CO_2 emissions, while rail transport accounts for barely 0.4% of the total, even though 21% of cargo is transported by rail versus 64% by road. Lastly, it should be noted that rail transport consumes a third of the energy of the road option to transport a tonne of cargo. Stated differently, rail transport is three times more efficient in energy usage.

Mr José San Martín of Mexico made a presentation outlining the changes to logistics and transport brought about by globalization of the economy. Currently, in Mexico, foreign trade accounts for 59% of GDP; 83% of foreign trade is conducted with Mexico's partners in the North American Free Trade Agreement (NAFTA). Accelerating globalization of the economic, financial and trade sectors has led to globalization of transport and logistics, and intermodal transport has made great strides, especially in North America. In the United States, rail had emerged from a very depressed state 20 years ago to become one of the most competitive forms of transport, responsible for more kilometres-tonnes than road transport.

Transnational enterprises can be broken down by type as follows: subsidiary companies spread across the globe, producing intermediate goods (60%); small and medium-sized enterprises making up the transnationals' production lines, and subcontracted to them (30%); and companies that assemble parts and components sourced from elsewhere and which are strategically located close to the major centres of trade and consumption (the remaining 10%). One example of this is the concentration of maquiladoras along Mexico's border with the United States; only 5% of the maquiladoras' inputs come from Mexico, with the rest sourced from other countries. The electronics industry was one of the first to develop the logistics necessary to supply its production chain efficiently.

Consequently, intermodal transport has expanded significantly in North America, unlike in Europe, where natural barriers and other factors greatly increase the cost of intermodal transport. Nevertheless, from the policy standpoint, Europe has managed to factor in externalities when evaluating projects; this process has shown the intermodal option in a favourable light in projects which, evaluated on traditional criteria, would have been neither economically nor financially feasible. Both Switzerland and Austria prohibit trailers from using roads frequented by tourists, so companies have had to contract combined rail/road transport services, even though this is a more expensive option.

In Europe, 85% of goods are still transported by road, with rail accounting for just 7% and river transport/shipping 6%. In contrast, in the United States, 40% of kilometre-tonnes go by

rail, compared to 35% by road and around 20% by river transport/shipping and cabotage.

Mr Osvaldo Sepúlveda discussed the transport situation in Chile. The overwhelming priority in 1990 was the construction of road infrastructure, which was in a very poor state, holding back the country's entire modernization drive. The Chilean Government put in place the system of concessions which spurred the dynamic growth of the country's road network. The carriage of freight by road was encouraged due to the fact that trucks did not bear the true costs of their road use; as a result today 92% of freight is transported by road, and only 5% by rail.

Projecting this situation 10 years into the future, we can expect serious congestion and pollution problems. To illustrate this assessment, Mr Sepúlveda presented figures prepared by the European Union detailing the external costs of freight transport in ECUs per 1,000 kilometre-tonnes; freight transport by road scored 58.5, compared to a paltry 7.4 for rail. These figures take into account externalities such as accidents, noise, pollution and CO_2 emissions.

In view of this situation, two challenges lie ahead in the future: first, "the formulation of a transport policy" (with the term "policy" understood to mean the art of acting on a matter in order to attain a goal); and second, modal integration of transport. Transport policy needs to take into account the culture of the third millennium, particularly the requirement to offer a top-quality service, aimed at providing added value for the customer.

Moreover, it is vital that this policy be designed in conjunction with infrastructure and urban development policies and a long-term outlook, with consideration given to mechanisms for accessing financial markets.

Promotion of modal integration of freight transport should encompass issues such as the integration of the functions of production and distribution, innovations in transport technologies and information systems used in tracking transport operations; all these aspects need to be considered in relation to the overall objective, the provision of a comprehensive service of the finest quality and reliability at the least cost and in the shortest possible time. Successfully meeting these challenges requires actions and commitments by users, road transport companies and governments, in the institutional, operating and legal spheres.

Mr Carlos Alberto Wanderley Nóbrega of Brazil gave a presentation on his country's policy regarding modal integration of freight transport. Currently in Brazil, road transport accounts for 62% of carriage of freight and rail transport some 20%, with minerals the main item of freight in this category. Some years ago, the Brazilian Government was the sole provider of transport services, and in a bid to improve the quality of service, it decided to raise the standard of administrative management of companies operating in the sector. The problem with this initiative was that the Government proved to be a very poor manager, since employees had

little respect for the people appointed by the Government and all reviews of management performance were conducted ex-ante rather than ex-post. That is why today Brazil has a huge amount of oversight legislation, making it virtually impossible for the State to provide transport services; consequently, the private sector provides rail, port and air services. So, the State's role has shifted from that of transport provider to that of coordinator, regulator and supervisor, with the overriding aim of ensuring efficiency and reducing transport costs.

Brazil's infrastructure, both road and rail, is characterized by major shortcomings. The Government has decided to upgrade this infrastructure, emphasizing in particular railway lines, waterways and ports. In 1990, a report was commissioned on the Centre-West region, funded by the International Bank for Reconstruction and Development (IBRF); the report focused on strategic development corridors, with the aim of learning about movement of goods and identifying the difficulties faced by users in transporting them. A follow-up study yielded updated information on the Centre-West region and included information on the Southern region. These studies were used as the basis for the formulation of guiding principles of the "Advance Brazil Programme". Calculations were made of the volumes of the 10 products studied, taking 1996 as the base year, and growth projections were formulated through to 2015. Bulk minerals, for instance, are projected to rise from 36,302 (x 10^3) cubic tonnes to 216,911 (x 10^3) cubic tonnes. These figures call attention to the urgent need to provide the necessary infrastructure in these corridors, so that they do not become an obstacle to Brazil's development.

Mr James Mallory from Compañía Minera Zaldívar (CMZ) and Mr Carlos Acuña from the Antofagasta-Bolivia Railway (FCAB) explored the issue of the sustainability of the transport of sulphuric acid and copper cathodes by the mining company. CMZ, which is owned by Canadian interests, a policy entitled "Sustainability Management", which seeks to go beyond general responsibility in terms of environmental impact by incorporating proposals and targets into the company's commercial management policy to enhance the standard of living derived from productive activity. This policy identifies five principles: corporate commitment, public responsibility, social progress, environmental care and economic benefits.