Prointec Inocsa Stereocarto,
Spain

Urban Public Transport Systems Integration and Funding

December 2000

Urban Transport Strategy Review

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ÍNDICE

1. INTRODUCTION

A basic requirement for transportation services quality is the **system's integration**:

- Physical integration: passengers transfer approach, to shorten transfer distances and how they are carried out.
- Image integration: mass transit as a whole to provide a global service to users.
- Operations integration: lines, stops, trains frequency, timetables…
- Tariff integration: it is intended to allow travelling in different transit systems with a single combined ticket to avoid the use of new tickets or, generally, additional cost. This can be achieved in different ways that enclose from combined tickets that allow travelling in different transport systems during a set length of time or multiple tickets and even monthly personal travel passes that authorize any number or type of trips within a specific area.

Mass transit services in metropolitan areas of the more developed countries throughout the world can be mainly supplied by one or two public operators (Berlin, Paris, London), or a few large public in addition to an extended number of private operators (Madrid), by many, mostly public-ownership, operators (Hamburg), or mainly private, or about to be privatised, operators (Cities in North America, Stockholm).

The metropolitan cities or regions in developed countries show the best examples of transit systems integration. The *Syndicat de Transport de Paris* was set up in 1959; the Hamburg Transit systems Federation, the first German *Verkehrsverbund*, was established in 1965. Transportation systems in Toronto were already integrated in 1954 and the buses system was restructured when new stretches of the underground transit were opened for service. For over 30 years now, the *Greater London Council* has co-ordinated *London Transport* with the other transit systems.

This trend is found always in large cities where the growth of motor cars ownership is exponential. These cities realice that they have to meet the needs not only of the traveller bound to use mass transit systems but are also aware that the survival of the city itself requires that such systems are boosted as an alternative to the use of cars.

The option of mass transit systems in large metropolitan areas demands rather significant investments. Besides, since the tariffs of public mass transit systems do not meet the large operating costs, their **funding needs are significant.**

Actually, leaving aside management deficiencies, fares meet only from 50% to 75% of the operating costs. The political decision whereby the public at large, or part of same, contribute funds for the operation and investments in mass transit systems is justified by the external effects of same.

This is why, in developed countries, the Municipal, Regional or Central Governments, in their budgets, allocate funds for public transport and transfer, in most situations, funds from the upper to the lower Government levels. The funds source may be the Central Government budget or raised by specific taxes, either local (The *Versement Transport* of the Paris businesses) or countrywide (Germany's fuel tax). Fuels, vehicles purchasing, their ownership or operation in cities can be taxed to subsidise, depending on the situation, the investments or operating costs of the transportation system.

The Spanish legislation to fund urban transport is not fully defined. Still, both Madrid and Barcelona, as well as some other cities, have clear funding schemes based on multi-annual program contracts.

The transport system cannot be sustained unless adequate integration and clear and secure financial channels are available. If sustained funding of mass transit systems is not ensured the city itself is jeopardised.

In the more advanced countries, the long-term balance is an increasing concern. In Paris, the Clean Air Law of 1996 requires cities over 100.000 population to draw up Mobility Plans (*PDU*) for sustained development. These Plans enclose steps to reduce motor-cars traffic and promote mass transit, bicycles and walking alternatives, and submission to public hearing of five years term actions.

As stated by Jorge M. Rebelo *(Essentials for sustainable urban transport in Brazil's large Metropolitan Areas)*, a number of key elements are required for long-term sustainable urban public transport:

- Transportation authorities responsible for co-ordinating investments and operations, promotion of integration and properly defined strategies to meet costs and processes for sustainable funding.
- Integration of urban transport with land use and environment quality policies.
- Involvement of private industry in investments and operations.

In the less developed countries, mass transit promotion and regulation is a must for development sustainability. Cars ownership and usage are growing at a rather fast pace in Third World countries while mass transit demand is increasingly reduced to those who are bound to use such transportation mode.

The increasing share of public transport modes is tantamount to improved urban life quality. But, in developing countries, their share of passengers that stands around 70-75% of motor-car trips, is not sufficient, in principle, to ensure sustainability, since these are mainly surface transport systems, at times rather polluting, that pose serious safety problems.

Taxis, minibuses, private buses and vans and even tricycles make up most of the public transport available in Third World countries. It is usually uncoordinated, characterized by a high degree of *informality* and illegal practices, in many instances, *predatory* versus the competition that lead to traffic jams, accidents and pollution.

The data about Mexico D.F. (*International Conference CODATU IX, Co-operation for the continuing development of urban and suburban transport. Mexico City, April 2000*) are a source of concern since they show the need for transport integration and cast serious doubts on their sustainability:

- In Mexico City, 75% of the pollutant emissions arise from transport.
- In the last 20 years, the average distance per trip has increased 90%.
- During this period, trips in motor-cars have decreased substantially, from 25% to 17%, trips using cars, but the share of medium and high capacity mass transit systems has decreased from 63% to 25%, in spite of the underground transit system improvement.

But conditions in Mexico, D.F., are not representative of the actual mass transit systems deterioration in the less developed countries. Planning is lacking, competition is extreme (in some Central-American cities we have noticed how buses are pacing their speed, and even the stops, to the number of passengers on board the vehicles and how many are waiting at the stop) and service rather poor from the comfort and safety point of view. Integration is virtually non-existent and transfers between transit systems are rather hard for users due to conditions, time and cost.

Mass transit systems, or at least trunk corridors assigned to mass transit systems, are missing in cities where, due to their size, they should be available: Bombay or Madras, but also Istanbul or Lima. The last mentioned is an example of extremely poor planning: although population growth is one of the largest throughout the continent, a marginal *electric train* line is undergoing trial runs and the works to build the first underground line have been discontinued.

But for Brazil and, now, Bogota, the development of corridors with separate infrastructures for buses or guided systems of intermediate capacity to be seems difficult.

The lack of integration is evident at all levels: such as physical integration, promotion and information about the system, services (routes and timetables) as well as tariffs. This is basically due to the lack of institutional integration that would allow government agencies to perform its Transport Authority role and promote co-ordination between operators under a structure that may be informal and similar to the interesting Brazilian developments. The tough competition between operators makes it actually impossible to bring them together.

Future funding is uncertain: the privatised systems or lines will need some kind of help in the future, like those in the public sector. Investment for fleet renewal by private operators is also significant and, in many instances, beyond their financial capacity.

There are structural problems that require to continue the efforts to overcome poverty started at different government levels and enclosed the multilateral funding agencies. But other transportation problems arise from the countries institutional weakness, since they are unable to plan, regulate and control the complete system.

Actually, some confusion concerning responsibilities and untold number of political problems are compounded with the lack of an organised structure, means and ability. It should not come as a surprise that a Ministry is responsible for part of a city transportation systems (such as the LRT, in India) or that political infighting between the Central Government and some Mayors leads to a lack of support for urban transit systems development.

On the plus side, institutional planning and strengthening, the key for service integration and quality, are currently assisted by international co-operation.

2. PUBLIC TRANSPORT SYSTEMS IN MADRID

2.1. THE TRANSPORT SYSTEM OF MADRID

The 8,002 Km^2 and slightly above 5 million population of the Madrid Community make it one of the largest European metropolitan areas, due not only to the fact that it is the hub of Spain's financial and administration institutions but also the venue where most companies and services in the country are located on account of its strategic geographic position and the traditional radial layout of the Spanish transport systems.

The Madrid Autonomous Community, as provided for in Article 26,5 of its Autonomous Government Statute, has been assigned full legislative powers in the field of transport systems. But, as shown in the following table, both nationwide railways and roads, managed by the Central Government, run across the Community territory.

INSTITUTIONS RESPONSIBLE FOR TRANSPORT SYSTEMS IN THE MADRID COMMUNITY			
	MINISTRY OF PUBLIC WORKS (CENTRAL GOVERNMENT)	**MADRID COMMUNITY (AUTONOMOUS GOVERNMENT)**	**MUNICIPALITIES IN THE MADRID COMMUNITY (LOCAL GOVERNMENTS)**
ROADS SYSTEMS	CENTRAL GOVERNMENT ROADS SYSTEM	REGIONAL ROADS SYSTEM	MUNICIPAL ROADS SYSTEMS.
RAILWAYS SYSTEM	SUBURBAN RAILWAYS SYSTEM	MADRID UNDERGROUND TRANSIT SYSTEM. ARGANDA RAILWAY.	

Source: Own data

The responsibility for scheduled public transport of passengers in the Madrid Community has been assigned to the Madrid Transport Consortium (CTM), whose characteristics and structure will be described in detail later. But, as regards new railways infrastructures to be built by the Community, it has to be highlighted that, although the planning surveys are usually carried out by the Consortium, the projects are drafted and the works controlled by the Public Works, Town Development and Transport Department of the Madrid Autonomous Community.

Mobility within the Autonomous Community shows the following features:

- Motor vehicles are used for 63% of the trips, which amount to 6.3 million trips during a workday (1996), while 52% ride mass transit systems.
- The destination of 80% of the trips using mechanical means is the Central City, where 75% of the Region's jobs are located.

The Madrid transport system consists of three large operators:

- The Madrid Metro (underground rail transit system) owned by the Madrid Transport Consortium
- The EMT (Madrid Municipal bus services) owned by the Madrid Municipality.
- Renfe-Cercanías (suburban railways) owned 100% by RENFE, the Spanish National Railways System, a Government-owned Company.

in addition to the above, there are a number of concession-holders for interurban coaches services and the Transportes Ferroviarios de Madrid, (TFM) a railways transport, system. This is a private consortium, where the Madrid underground transit Metro holds an interest, that operates the Arganda Railway.

The overall supply and demand, broken down by the different transport operators in the Autonomous Community, can be seen in the following tables.

PUBLIC TRANSPORT SYSTEM IN THE MADRID AUTONOMOUS COMMUNITY DURING 1998						
OPERATORS	**System length (km)**	**Number of lines**	**Number of stations/ Stops**	**Rolling stock**	**Rail Cars km (10^6)**	**Seats available-km (10^6)**
METRO (1998)	135.2	11	182	1.214	98.1	17,168
METRO (1999)	171.4[1]	11	201	1.322	117,0	19,524
EMT	1,386	182	8.280	1.814	94.6	7,568
RENFE Suburban Services	279.5	11	78	649	87.2	21,900
Interurban services	3,199	309	12.995	1.287	118.9	8,157

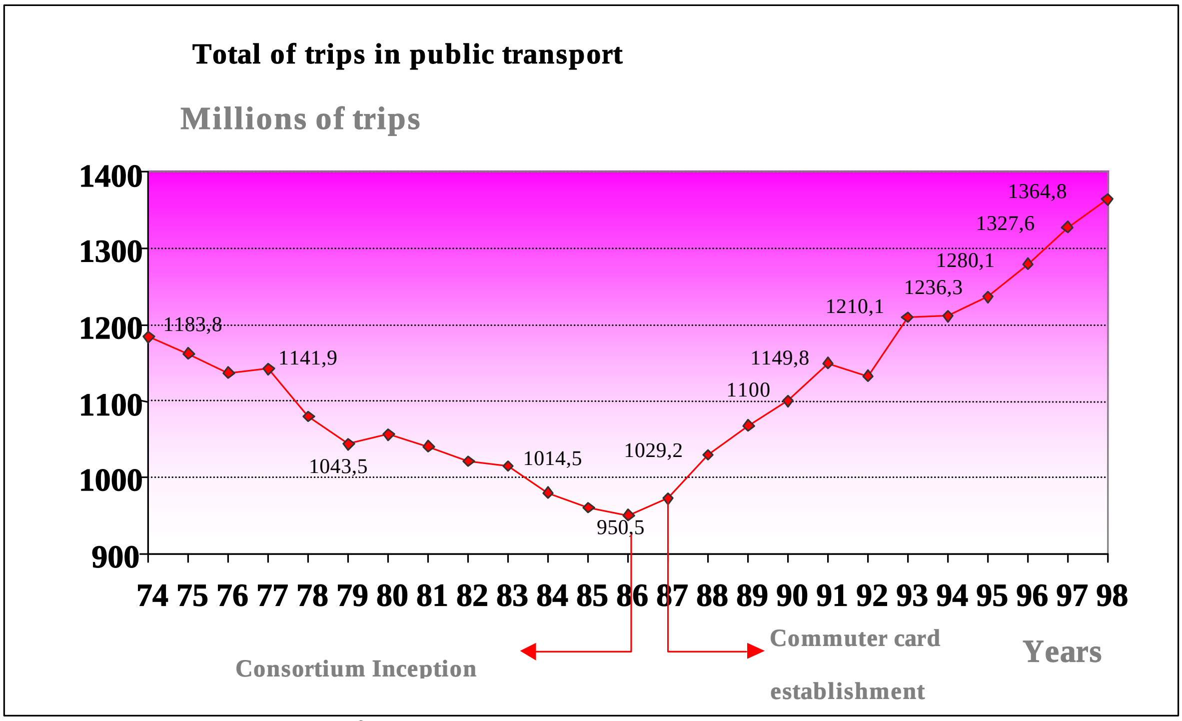
Source: Reports from the Madrid Transport Consortium, 1998. Annual Report 1999. Madrid Underground (Metro) System

[1] The Arganda Railway is enclosed (19 km).

DEMAND MET BY THE MADRID AUTONOMOUS COMMUNITY PUBLIC TRANSPORT SYSTEM (in millions)				
MODE	**TICKETS**	**TRIPS**	**STAGES**	**TRIPS-KM**
METRO (1998)	437.0	437.0	655.6	2,329.2
METRO (1999)	480.0	480.0	730.0	
MUNICIPAL BUSES (EMT)	547.7	471.7	547.7	1,916.9
Suburban Railways (RENFE)	143.5	143.5	171.9	2,138.2
Interurbans	236.6	224.5	236.6	2,200.4
TOTAL 1998	1,364.8	1.276.7	1,611.8	8,584.7

Source: Report from the Madrid Transport Consortium, 1998. Annual Report 1999. Madrid (Metro) Underground System.

Trends of public transport trips during the last few years are shown in the following graph which highlights the significant improvement in public transport number of passengers since the Transportation Consortium was set up in 1986 and a transit multi-mode “Commuter card" became available in 1987.



Source: Report of the Madrid Transport Consortium. Annual Report 1999. CTM.

2.2. THE MADRID TRANSPORT CONSORTIUM. (CTM)

2.2.1. Establishment and organisation of the Madrid Transport Consortium

The Madrid Transport Consortium issues from a political decision to build an integrated transport system in the Autonomous Community aimed to improve the technical, administrative and management co-ordination between the different transport modes. This step implies an overall approach to transportation and is intended to improve services and optimise use of the available resources, avoid unwanted competition between the different public transport modes, while jointly striving to capture passengers away from using private vehicles.

The Consortium was aimed to centralise in a single agency responsibilities of different government levels (autonomous and municipal) that, as an autonomous institution, would be the sole authority in the field of scheduled public transport passengers services, while avoiding any encroachment in the management area for which operators are responsible.

The Madrid Transport Consortium (CTM), established by Law 5/85 of 16th May of the Madrid Assembly (Madrid Autonomous Community), was set up to co-ordinate the different transport modes and operating companies that make up the Madrid Public Transport System.

CTM has been legally registered as an autonomous trading, industrial and financial institution of the Madrid Community and governed by its own Inception Law and, colaterally, by the Institutional Administrative Law of the Community.

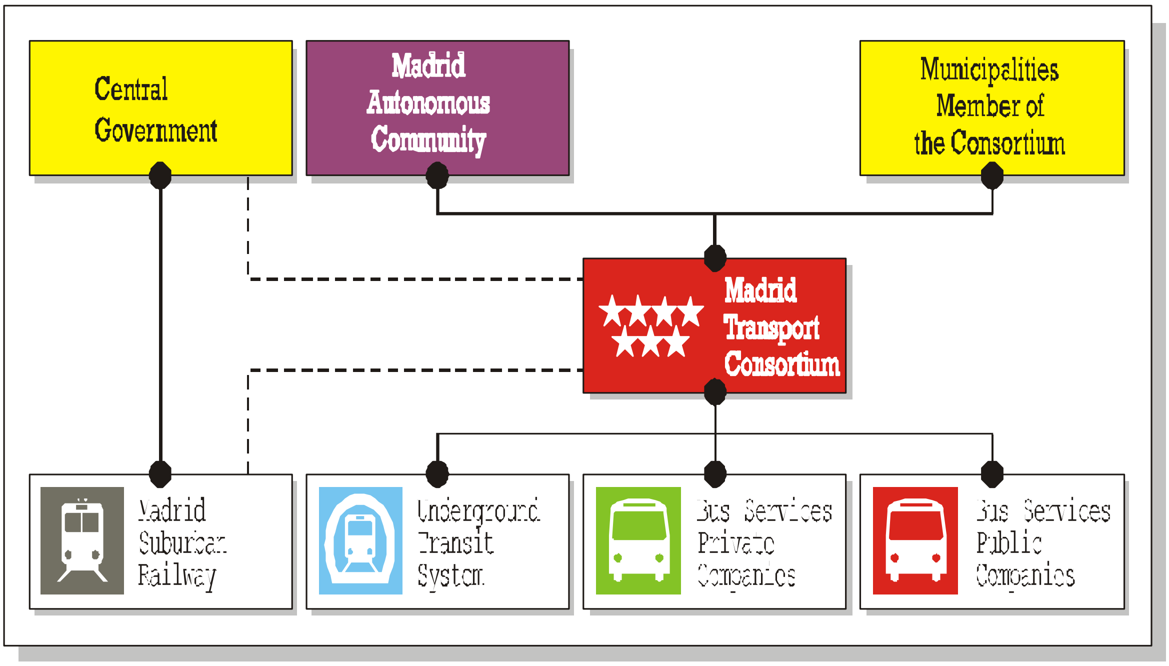
CTM is a legal entity with its own capital and Inception Law that provides for co-operation between the Madrid Autonomous Community and Municipalities of same, for joint management of the scheduled public transport of passengers.

As established by the Inception Law, the management and services will be performed by the existing, or any that can be set up, municipal or supra-municipal companies as well as private businesses.

The Madrid Transport Consortium (CTM) geographical scope is the Madrid Autonomous Community territory.

The CTM will centralise all the public transport responsibilities of the Autonomous Community and those of the Municipalities that decide voluntary to joint it. It provides currently service to over 97% of the Community's population and 100% of the passengers scheduled transport in same.

Institutional setup of the Public Transport System



Source: Madrid Transport Consortium

CTM has to plan, control and regulate transport companies, whether public or private, within its scope, but their capital, legal condition and self-management are kept in effect. Self-management subject obviously to the guidelines issued by the Consortium concerning the service provided and tariffs.

According to its Bylaws, the Consortium (CTM) is the sole authority in questions related to passengers, notwithstanding the Central Government empowerments regarding services operated by RENFE (National Railways Company) in the national railways system. As the institution responsible for passengers transport in general, CTM has to perform the following:

- overall planning of passengers transport infrastructures;
- definition of co-ordinated operations programmes for all modes of transport;
- provision of an integrated tariff scheme for the system, through the establishment of tickets or cards valid for all the companies, according to a funding policy that defines up to what point the total expenses have to be met by the fares income;
- processing and decisions on permits and concessions
- collection of fares income from public companies subject to the Transport Consortium (CTM) and multimode ticketing,

- distribution between public companies subject to CTM of fares income and operations subsidies,
- allowances distribution to all the companies arising from commuter travel-cards or any other possible mix transport modes ticketing arrangement,
- setting up an overall image of the transport systems and acting as the spokesman versus users,
- co-ordination of investments from agencies in the different levels of Government, if their responsibilities in the transport area have not been handed over to the Transport Consortium,
- co-ordination with agencies whose decisions may affect transport, and
- drawing up proposals for signing agreements with other Autonomous Communities.

The Transport Consortium (CTM) is headed by the Board of Directors, responsible for the Consortium's joint management, and the Technical Committee, in charge of co-ordination and support.

CTM's deciding powers are vested on the Board of Directors, which endeavours to enclose all public and private institutions responsible for public transport systems. The Board of Directors consists of 20 members broken down as follows:

- 5 from the Madrid Autonomous Community,
- 5 from the Madrid Municipality,
- 3 from other municipalities,
- 5 from trade unions, business and citizens associations, and
- 2 from the Central Government.

and encloses a Deputy Committee of 4 members.

The rather limited involvement of the Central Government has to be highlighted since the Consortium is an agency reporting directly to the Madrid Autonomous Community. Dealings with the Central Government, as will be shown later, are materialised through specific agreements that can be extended when the term expires.

Although CTM's Inception Law states, as a future aim, the inclusion of passengers unscheduled transport in iterative runs, such as school buses, up to now, the initial transport system has not been extended.

CTM's payroll totals 123 employees. The agency is structured in 3 Directorates that report to a Managing Director as listed below:

- Technical Directorate
- Economic-Financial Directorate, and
- Quality Directorate

The Technical Directorate encloses 5 areas:

- Mobility and accessibility
- Studies and planning.
- Suburban railways-RENFE.
- METRO-EMT (underground transit and municipal buses system).
- Interurban buses.

The Economic-Financial Directorate consists of 4 areas:

- Economic-Financial.
- Commercial.
- Management and economic control of companies.
- New technologies.

The Quality Directorate consists of three areas:

- Data processing.
- Institutional relations
- Quality.

A Secretary General and two departments which do not rank as areas: Press and Advertising, are also enclosed.

The scattering of administrative responsibilities for scheduled passengers transport, within the Madrid Community territory, which were handled by both the Community and Municipalities, has come to an end as the first consequence when the Madrid Transport Consortium (CTM) was set up. The Municipalities hand over those responsibilities upon voluntarily joining the Consortium. The establishment of coordinating arrangements with the Central Government, as shown by the Program-Contracts, and the agreements signed with different institutions and operators, are an additional and significant outcome of the Consortium being set up.

Concerning the main obstacles met in setting up the Consortium, it is worth mentioning that Madrid took advantage of the time when the same political party controlled the three levels of Government (differences between the Municipal, Regional and Central Governments have hindered the establishment of transport authorities in Barcelona or Valencia). In spite of that and to overcome its reservations, the Madrid Municipality had to be granted a standing similar to that of the Madrid Community in the Consortium's Board of Directors. Also the negotiations with the Madrid Municipal Buses Company, EMT, that had to waive the high degree of self-government it had enjoyed up to that time, required determined efforts.

Since just two single and powerful transport associations acted as representatives of the industry was an advantage in the Madrid situation, that most likely will not be found in developing cities. Those associations were mainly concerned with payment for the use of commuter cards. Once this extreme was cleared up, they supported the Consortium establishment and were actively involved in its governing bodies. The Law that established the Consortium was passed by a unanimous vote.

2.2.2. CTM links to transport operators

LINKUP WITH PUBLIC COMPANIES THAT RENDER SERVICES

The links between the Consortium and the public companies that render services are governed by Article 11 of the Law for the Consortium Inception. The Law main requirements are as follows:

- (public companies rendering services) will be independent legal entities with their own capital and self-management, but subject to the planning drafted by the Consortium, as regards programs, tariffs and any other service that might be implemented;
- the company’s share capital (public company rendering services) will be owned by the respective government, even if the ways and means to render the service are subject only to the Consortium decisions. As regards the Madrid underground transit system (Metro), the Madrid Transport Consortium itself owns the shares and, concerning the municipal bus company, EMT, the Madrid Municipality owns the shares;
- Notwithstanding the above, the Consortium may purchase shares or hold an interest in companies (public companies that render services), if previously approved by the respective Government that owns the shares.

The links between CTM and the underground transit system (Metro) and those of CTM with the Madrid municipal bus company (EMT) are defined by the respective Program-Contracts, signed by both parties, where the agreements that specify the companies duties for the provision of services and the financial allowances that CTM engages to provide are described.

LINKS BETWEEN THE CONSORTIUM AND THE NATIONAL RAILWAYS (RENFE)

Since the Madrid suburban railways are owned by RENFE, which is a fully owned government company, the links between the Consortium and Renfe are regulated by a contract-program for rendering services related exclusively with the Madrid Community. The contract program sets the cost of the services rendered, the level and types of fares and the arrangements to compensate any deficits that arise from the types of fares established by CTM.

From the above follows that the suburban railways are directly responsible for tariffs implementing and timetables. There is just an agreement whereby the suburban railways are committed to let holders of commuter cards use the railways system, while CTM engages to pay to RENFE for those passengers using the railway system.

LINKS BETWEEN THE CONSORTIUM AND PRIVATE COMPANIES

The links between CTM and private companies, holders of a concession, are defined by Article 13 of the Inception Law. According to that Article, the Consortium may apply mix modes commuter tariffs, introduce changes in the concessions and, eventually, unify the different concessions to ensure that the programs are duly met. On the other hand, any changes that may affect the economic-financial balance of the concessions have to be duly compensated. To all effects and purposes, the Consortium may sign Program-Contracts with those companies to define the aims.

Concessions of transport lines are granted for a minimum of eight and a maximum of twenty years. For existing concessions, there are a number of possible ways that can be applied for continuing and matching up to the new conditions, although, most often, replacement of the concession for one that meets the new regulations has been selected.

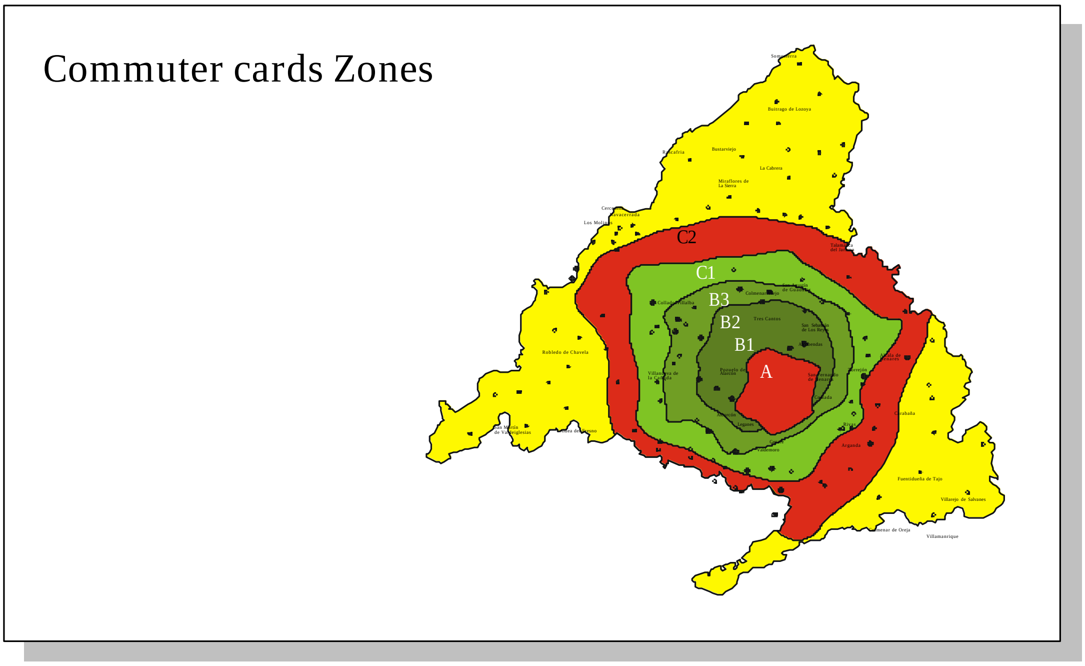
Inspection is performed by the Consortium, that processes and decides all questions related to the concessions-holder companies within its scope of responsibility.

2.2.3. Tariff system established by the Consortium (CTM)

In tune with the principle “not only users benefit from the transport system” established by the Inception Law for the Madrid Transport Consortium, tariffs are not required to meet in full the expenses and the Consortium itself has to define the extent covered by tariffs and collect the respective income.

An integrated tariffs framework for all services and operators has been a prime target for CTM since this type of scenario homogeneous in its structure and typology, projects a unified and integrated outlook of the transports system that matches the Consortium's aims.

The Madrid Community has been geographically broken down in what are named “transport zones”, as shown in the graphic below, to establish a multimode tariff system.



Source: Madrid Transport Consortium

The transport zones are concentric to the Madrid Municipality.

There are three main serviced zones:

- Zone A: encloses the Madrid Municipality.
- Zone B: encloses the Madrid Metropolitan Area (and covers most of the Municipalities above 50,000 population) as well as some towns in the Madrid Community's Sierra area. It is broken down also in three subzones (B1, B2 and B3).

- Zone C: encloses towns located further away in the Madrid Community and is divided also in two zones: C1 and C2.

In each of the previously defined geographical zones, the transport fare is based on the respective zones and independent from the operator's expenses or the transport mode being used. Nowadays, the tariff scheme shows a fully integrated structure in the central city and a break down by zones in the balance of the Community territory. Tickets of the following types are used:

- single tickets, depending on the transport company and zone connections, focused mostly on the occasional traveller and sold at the time the service is used.

- 10-trip tickets for inter-zones connections addressed to intermediate frequency passengers and sold in advance. This is an integrated or mix mode ticket for zone A operators (Metrobus ticket that entitles passengers to ride on the underground transit system (Metro) and Madrid Municipal Buses-EMT). The ticket is individualised by companies for use in interurban road transport and Renfe Suburban Railways service.

- Commuter cards, a multimode-type ticket that allows unlimited use while in effect (monthly or annual seasons), targeted on the more frequent passengers and sold also in advance.

The principle that has governed always the tariffs system established in the Madrid Community requires that the Consortium is not intended to act as an agency for income redistribution. Therefore, the reduced fare commuter cards are addressed to the elderly instead of social groups.

Income from all multimode tickets accrues to the Consortium. The full income from Metrobus, the latest mix mode ticket established (10-trips ticket that allows travelling in the underground transit (Metro) and/or municipal buses system) is shared by the two transport operators, to keep the situation as it was before this mix mode ticket was established, when each operator offered its own 10-trips ticket.

Tariffs cannot be established by any operator, save for Renfe.

The demand, in 1999, stated as a percentage and broken down by transport mode and type of ticket can be seen in the following table.

<table>
<tr><th colspan="5">DEMAND BROKEN DOWN BY TICKETS IN DIFFERENT TRANSPORT MODES
1999</th></tr>
<tr><th>TYPE OF TICKET</th><th>METRO (Underground rail)</th><th>EMT (Municipal buses)</th><th>RENFE Suburban railway</th><th>Interurban</th></tr>
<tr><td>Single ticket</td><td>4%</td><td>4%</td><td rowspan="2">27%</td><td>21%</td></tr>
<tr><td>10-trips ticket</td><td>-</td><td>5[2]%</td><td>13%</td></tr>
<tr><td>Metrobus (Underground/bus)</td><td>38%</td><td>25%</td><td>-</td><td>-</td></tr>
<tr><td>Commuter card</td><td>58%</td><td>66%</td><td>73%</td><td>66%</td></tr>
</table>

Source: Public mass transit demand in 1999. Transport Consortium.

COMMUTER CARDS

Commuter cards, established in 1987, were intended to achieve two basic aims:

- rationalise the price of mass public transport services.
- boost their use by granting access to the complete transport system.

Commuter cards are personalised passes, with photograph and coupon, that may be either monthly or annual, and fitted with a magnetic strip that defines the zones where the card is accepted.

Commuter cards have been diversified and coverage extended since they were first established to make them more attractive and meet different users requirements, but always in line with the same basic idea. The following cards are available currently:

- normal commuter card which is intended to boost public transport use amongst usual passengers,
- young people card focused on population subject to high mobility needs and sold at a price matched to their purchasing power while future demand is promoted to induce changes in transport habits.

[2] Reduced fare special ticket for Municipal Buses (EMT). The normal 10-trips ticket for underground (Metro) and municipal buses (EMT) systems is equivalent to Metrobus (underground and municipal buses).

- the Senior Citizens card addressed to those over 65 years old, that offers a single price for all the Madrid Community and is, therefore, rather subsidised to promote riding the transport system in off-peak hours.
- Annual commuter card intended for both Normal ticket users, who arrange their own transport expenses, and large companies and institutions willing to take care of their employees transport means.

In 1998, the total number of current commuter cards (and enclosed the annual payable on a monthly basis) amounted to 10.97 million, that shows a 5% increase versus 1997, while, in 1999, it had exceeded 11.5 million. The break down by type of commuter cards, in 1999, is similar to the previous years patterns, and shows young people cards have decreased, while annual tickets remain stable and the normal and senior citizens tickets have increased above the average. If tickets are broken down based on sales changes by transport zones, the more significant comparative growth is experienced by commuter cards in effect for trips to the farthest zones (C ring sector). Due to this trend, the share of cards for Zone A have progressively decreased and, in 1999, they amounted to 34% of the total.

In the last few years, the percentage break down by type of commuter card has been as follows:

PERCENTAGE BREAK DOWN OF COMMUTER CARDS BY CATEGORY			
	1997	**1998**	**1999**
Normal card	52.13%	53.1%	54.4%
Young people card	21.54%	19.9%	18.4%
Senior citizen's card	19.66%	20.5%	21.1%
Annual card	6.68%	6.5%	6.1%

Source: Annual report of the Madrid Transport Consortium for 1998. Annual report for 1999. CTM.

The zones break down shows the following amounts:

BREAK DOWN IN PERCENTAGES OF COMMUTER CARDS BY ZONE			
	1997	**1998**	**1999**
Zone A	36,6%	35,3%	34%
Zone B	40,9%	41,3%	41,9%
Zone C	2,8%	2,9%	3%
Senior citizens	19,7%	20,5%	21,1%

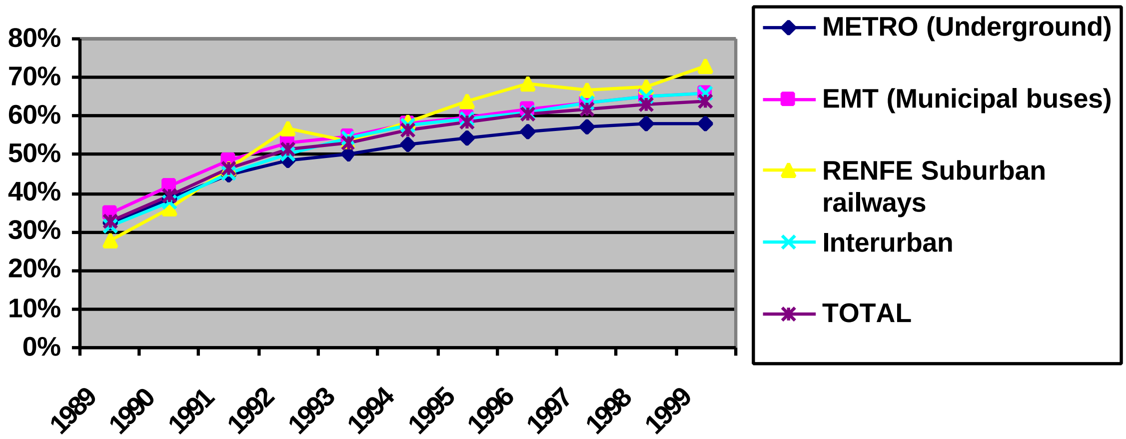
Source: Annual report of the Madrid Transport Consortium for 1998. Annual report for 1999. CTM.

The cards break down, since they have been available, versus the trips total is as follows:

BREAK DOWN OF COMMUTER CARDS TRENDS, SINCE THEY WERE ESTABLISHED, VERSUS TRIPS TOTAL					
YEAR	**METRO (Underground)**	**EMT (Municipal buses)**	**RENFE Suburban railways**	**Interurban**	**TOTAL**
1989	32.4%	34.7%	27.6%	31.6%	32.9%
1990	38.6%	41.7%	36.1%	37.9%	39.5%
1991	44.7%	48.6%	46.3%	45.4%	46.6%
1992	48.4%	53.0%	56.7%	50.1%	51.3%
1993	50.4%	54.9%	53.4%	54.2%	53.2%
1994	52.7%	57.9%	58.4%	57.8%	56.3%
1995	54.2%	59.8%	64.0%	59.4%	58.3%
1996	56.1%	61.7%	68.4%	60.9%	60.5%
1997	57.3%	63.2%	66.6%	63.5%	61.8%
1998	57.9%	65.0%	67.5%	65.3%	63.1%
1999	57.9%	66.0%	73.0%	66.1%	64.0%

Source: Annual report of the Madrid Transport Consortium for 1998..Annual report for 1999. CTM.

BREAK DOWN OF COMMUTER CARDS TRENDS SINCE THEY WERE ESTABLISHED VERSUS TRIPS TOTAL



TARIFFS TRENDS IN THE MADRID TRANSPORT CONSORTIUM (CTM)

Any trend to diversify commuter card types in the near future is non-existent. The next steps to be implemented are intended to:

- expand the travel cards to zones adjoining the Madrid Autonomous Community
- it is planned that the time term of a monthly card will not start necessarily on the first day of the month in question.
- efforts to provide cross-mobility between peripheral locations of the metropolitan region without going through the city of Madrid itself.
- offer cards effective for 1 to 3 days terms, intended mainly for tourists.

As regards fares increases, the trend is to let them increase proportional to the CPI and expand to a larger extent the more subsidised cards.

2.3. FUNDING TRANSPORT SYSTEMS IN THE MADRID AUTONOMOUS COMMUNITY

2.3.1. Funding of the Madrid Transport Consortium

Funding of the Madrid Transport Consortium for the overall system operation is based on the fares income and contributions from government agencies members of the Consortium. That is to say, there are two funding sources:

- fares paid directly by users,
- contributions paid indirectly by all the taxpayers through subsidies allocated per passenger, which are justified by the benefits that a strong public transport system implies for the population at large.

The Madrid Transport Consortium (CTM) receives also the income from fines, levies, transport and other institutional services rendered, as provided for in the Community legislation, although the total amount is not significant.

Summing up, besides the income from fares, the CTM benefits also from the Central, Autonomous and Local Governments contributions.

Those resources are used by the Consortium to pay for:

- its own operating internal expenses
- payments to compensate operators for the use of multimode travel cards
- subsidies for operation and some investments (related directly to operations) funded by the public companies in CTM
- subsidies for renewal of fleets and ticket-cancelling machines owned by companies operating interurban buses, and
- subsidies for operation of interurban buses services by companies that have signed a Program-Contract.

The Central Government has contributed 130 million US dollars, in 1998, for funding operations of the transport system controlled by the Consortium. The additional contributions required to balance the system, amounting to almost 200 million US dollars are contributed on a 50-50 basis by the Madrid Municipality and Community Government in Zone A Underground transit (metro) and municipal (EMT) buses, while the Madrid Community is the sole contributor for Zones B and C (RENFE suburban railways and concession holding companies). Some municipal governments contribute funds to their municipal transport systems.

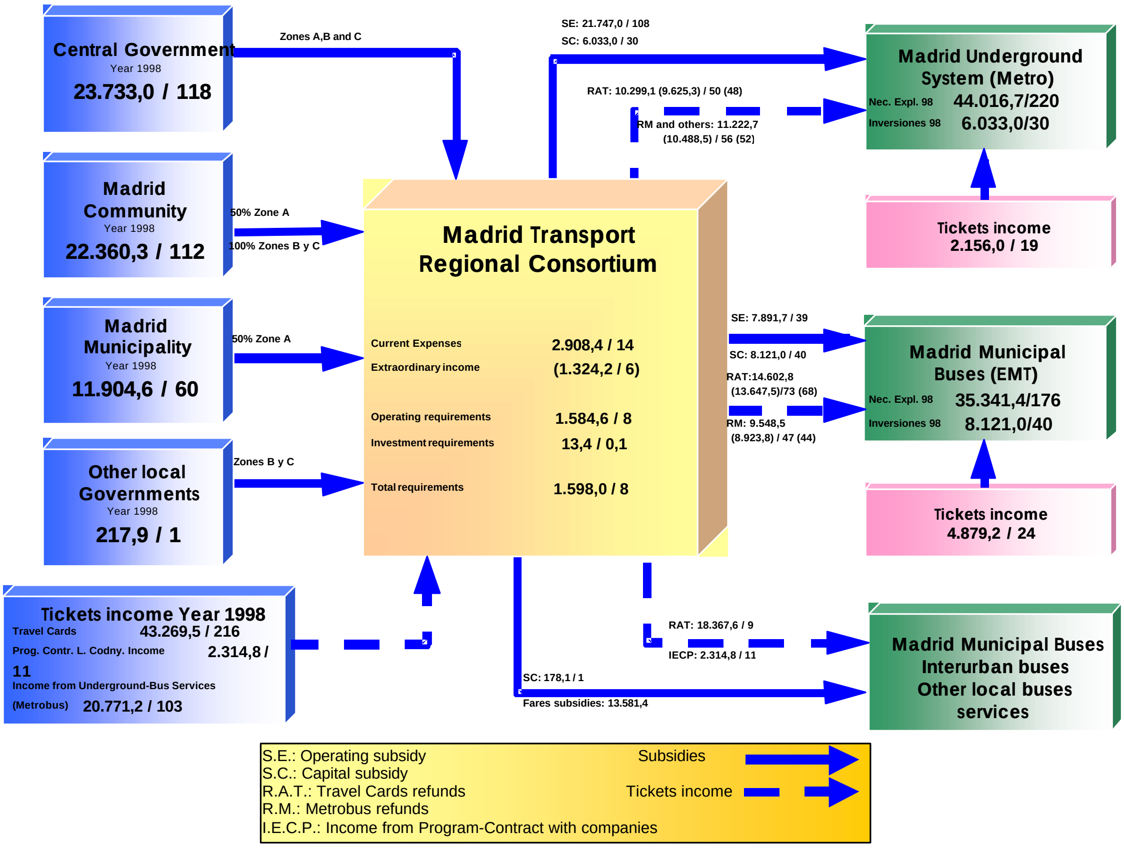
The break down of the CTM income, in 1998, is shown by the table below:

CONTRIBUTIONS TO THE MADRID TRANSPORT SYSTEM. 1998		
	Millions Ptas.	Millions US Dollars
CENTRAL GOVERNMENT	23,733	118
MADRID AUTONOMOUS COMMUNITY	22,360.3	112
MADRID MUNICIPALITY	11,904.6	60
OTHER LOCAL GOVERNMENTS	217,9	1
CONTRIBUTIONS TOTAL	58,215.8	289
FARES INCOME	66,355.5	331
TOTAL	124,571.3	620

Source: Report of the Madrid Transport Consortium. 1998

The above shows that income from fares amounted to 53% of the total expenses (coverage ratio)

Funding flowchart of the Transport System during 1998 (in million Ptas./US Dollars)



Source: Report by the Madrid Transport Consortium. 1998.

CONTRIBUTIONS FROM CENTRAL GOVERNMENT

As an agency of the Madrid Autonomous Community, the Central Government lacks any decision rights in the Consortium, save for two Government representatives in the Board of Directors. The relationship between the Consortium and Central Government is implemented therefore through Program-Contracts.

Generally speaking, a contribution for current expenses and investments is made by the Central Government through two different agreements. An annual amount is allocated under the first agreement to fund the operations and investments accounts, which are related directly with the two public operators, Metro (underground system and EMT (municipal buses). Through the second one, the Central Government cooperates with the Madrid Community for expanding the underground (Metro) lines network.

The Consortium has signed up to this time four Program-Contracts with the Central Government. The first was signed to transfer to CTM the Central Government commitments to the Metro underground system. The two following ones were intended to keep separate operating losses from aid for investments and were allocated for the Metro underground system and EMT municipal buses, i.e., were limited to the Madrid Municipality. The last one, dealing with operations, was signed in 1999, to be in effect during the 1998-201 period (retroactive to 1998) and, contrary to the previous ones, it encloses the complete interurban metropolitan area, save for the Renfe suburban railways. The contribution is established through the agreement based on the coverage level instead of the number of passengers.

The last Program-Contract, known as "Program-Contract between the Central Government and the Madrid Transport Regional Consortium 1999-2001", provides the following contributions to be allocated from the Central Government General Budget:

CONTRIBUTIONS TO BE ALLOCATED IN THE CENTRAL GOVERNMENT GENERAL BUDGETS 1998-2001				
	1998	**1999**	**2000**	**2001**
Millions of Ptas.	20,189	21,977	21,537	21,306
Millions of US Dollars	10	10.9	10.7	10.6

Source: Madrid Transport Consortium.

The above amounts have been computed as required for the Central Government to meet the following items of the overall transport systems in the Madrid Autonomous Community:

- 45% of the operating losses
- 45% of the maintenance investments
- 33% of investments for enlargement.

The maintenance investments are limited by the yearly depreciation amount. Commercial terms borrowings are assessed each year by the Central Government and their amount is deducted from depreciation.

Besides the above, there is an agreement for funding the enlargement of the Madrid underground transit system: "Agreement between both the Central Government and Madrid Community for funding metropolitan transport infrastructures in Madrid". Contrary to the previous agreements, the Madrid Transport Consortium is not a party to this one.

The contributions provided by the mentioned agreement for investment in the underground transit system infrastructures, based on the previous Program-Contract, are shown in the next table:

CONTRIBUTIONS TO BE ALLOCATED IN THE CENTRAL GOVERNMENT GENERAL BUDGETS				
Millions of Ptas.	**1995-1998 Agreement**	**1999-2005 Agreement**		**TOTAL**
		1999	2000-2005	
Millions of Ptas.	14,750	7,009	34,241	56,000
Millions of US Dollars	73,8	35	171,2	280

Source: Agreement between the Central Government and the Madrid Community for the Madrid metropolitan transport infrastructures funding.

LINKUP TO THE MADRID AUTONOMOUS COMMUNITY

The Consortium is a trading, industrial and financial Autonomous Institution of the Madrid Community Government, as provided for by Article 4,2 in Law 1/1984 of 19th January, that governs Institutional Administrative Processes in the Madrid Community. The Consortium reports to the Territorial Policy Department (now, the Public Works and Transport Department).

The Madrid Transport Consortium is, therefore, a legal entity with its own capital that handles engagement and cooperation between the Autonomous Community and Municipalities in its territory for the joint management of scheduled passengers public transport services.

LINKUP WITH THE MADRID MUNICIPALITY

In principle, the Madrid Municipality is just one of local governments entitled to join voluntarily the Consortium. But its membership is highlighted by its special demographic, financial and administrative conditions. It is, obviously, by far the one that boasts the largest population and generates more trips (within its municipal boundaries as well as from and to other municipalities). Jointly with the Madrid Autonomous Community, it is the Municipality that holds more power on the Consortium's Board of Directors. Due to the foregoing, its share of transport funding is high.

Funding requirements in Zone A (the Madrid Municipality itself) amount to 85% of the total funding required to operate the Madrid Community Public Transport System. The required funding, once the Central Government allocations are deducted, is contributed by the Community and the Madrid Municipality on a 50-50 basis.

Up to 1992, the Madrid Municipality contributed 50% to fund the internal operation expenses of the Transport Consortium. In the mentioned year, the Municipality demanded that the break down was reviewed and, starting in 1993, it was decided that a 40-60 contribution would be more favourable to the Municipality.

LINKS WITH OTHER MUNICIPALITIES IN THE CONSORTIUM

As regards the remaining municipalities, members of the Consortium, that have to provide passengers transport services, it can be seen that:

- in 1998, the local governments contributed 217.9 million Ptas., (1.1 million US Dollars) to the Consortium for funding transport within the respective municipalities boundaries;
- these municipalities are excluded from any assistance to surface mass transport systems allocated, in the Central Government General Budgets, to other Spanish cities, since it is deemed that they are subsidised through the Central Government contribution to the Consortium;
- the first three Program-Contracts with the Central Government do not subsidise those passengers services, since they are limited to the Madrid Municipality. This has been modified in the last Program-Contract where subsidies are provided for the complete transport system in the Madrid metropolitan region.

OPERATIONS FINANCIAL COVERAGE

Based on the CTM's profit and loss account balances, fares income meets currently 60% of the total expenses, which is equivalent to 70% of the operating costs. For the next few years, the aim is to increase operating costs coverage from 70% to 75%.

The coverage ratio is determined as follows: the fares income is shown in the numerator and the operating costs in the denominator.

The operatings costs are found deducting the total costs from the operating and exceptional income, the employees pensions fund, taxes and royalties, financial expenses and depreciations.

2.3.2. Transport operators funding

FARES COMPENSATION

The operators as a whole are compensated by the Consortium based on the travel cards use and other multimode tickets sold by their systems.

Fares compensation paid to each operator is defined based on the number of trips performed using a travel card in the different transport modes - the amount is determined through regular door to door surveys to establish mobility in a typical week, during the month of November, as well as different counts- and the found amount is multiplied by the unit price. This unit price is computed as follows based on the following transport modes:

- Metro underground system and EMT municipal buses: price of a single trip, in a ten trips Metrobus (underground combined with bus transport) ticket
- RENFE suburban railways: price of a single trip, when a ten trips (bonotren) ticket is used.
- Private bus companies: price of a single trip, in a ten trips ticket issued by each bus service operator.

The compensation is based, therefore, on the number of trips performed using the travel card multiplied by the single ticket compensation price of each transport mode.

As concerns the Metro underground rail transit and EMT municipal buses systems, all the trips using a travel card are carried out within a single zone, Zone A, while as regards the Renfe suburban railways and interurban buses, the travel cards may be issued for different zones. The trips matrix, when travel cards are used, has to be weighted to take into account the existing overall transfers between systems and prices.

FUNDING OF THE METRO (UNDERGROUND TRANSIT) AND EMT (MUNICIPAL BUSES) SYSTEMS

Programs--Contracts were signed by the Consortium with the Metro and EMT systems for funding both operators during the 1990-1993 period. From temporary yearly contracts have been signed since the large impact arising from this year on, the Madrid underground system expansion did not allow short or medium term planning. In the future, for the Metro underground system, funding broken down in three areas of service will be established: Zone A Metro, Metrosur underground system, to the south of the city, and the Arganda railway service.

Under the contracts signed with Metro and EMT the operator is responsible for management. Responsibilities are established as follows:

- CTM. Schedules services rendered. Fares, objective quality and productivity are also set.
- Metro and EMT. Services are rendered as established by the Consortium.

For investments in operations, 4 years investment plans have been signed with Metro and EMT. The investment proposals are submitted by the operators to the Consortium for approval.

RENFE SUBURBAN RAILWAYS

Funding of suburban railways, due to their special relationship with CTM, is not provided by that agency, but by the Central Government itself through Program-Contracts. The profit and loss balances from the 11 centres that make up the suburban railway system are enclosed in the general balance for this business unit. As regards the Madrid centre it is worth mentioning that, in 1995, the mentioned balances amounted to 44.5% of the income per passenger or 14,086 million Ptas., (70.4 million US Dollars).

The amounts to be paid by CTM to suburban railways is currently computed based on "passengers using suburban railways" at a prices that is the proportional share of the 10 trips ticket that Renfe has established. The number of passengers that use a travel card in suburban railways is computed the same as for other modes of mass transit systems.

Since Renfe sets the commuter travel card price (Bonotren), the yearly compensation for the use of the commuter travel card that the Consortium has to pay is agreed between both agencies. At this time, the Consortium has proposed that the annual increase in the compensation paid to Renfe would be the higher of the two following ratios: CPI or the travel card price increase.

CONCESSION HOLDING COMPANIES THAT PROVIDE INTERURBAN BUS SERVICE

The conditions of the 33 private companies that operate 250 interurban lines are homogenised based on the data reported by the operators and those from the Consortium. A follow-up committee has been setup by the Consortium jointly with the two operators associations: ASINTRA and FENEBUS (the transport services are supplied by both associations nearly on a 50-50 basis).

When the Consortium (CTM) was setup, a number of interurban concessions for buses services had been granted in the Madrid Community. Contrary to the previous Law (1947), the new one, LOTT, issued in 1987, set a maximum of 20 years terms for the concessions. Companies that had been granted a previous concession could voluntarily join the new setup. All companies have been granted a 25 years term concession by the validation procedure currently applied in Madrid (the term is extended an additional 5 years, if companies waived during two years the right to review fares).

The merger of companies has been promoted by the Consortium. In 2012, a competitive system for all interurban Madrid transport concessions will be in effect.

Operating subsidies are not paid by the Consortium to private companies that operate interurban buses services, since concession holders are operating generally for their own account.

The companies income can be broken down in the following items:

- Aid supplied by the Consortium (CTM) to promote investment and renewal of vehicles. During 1996, that aid amounted to 89 millions Ptas. (0.4 million US Dollars) and exceeded 700 million Ptas., (3.5 million US Dollars) during the past seven years.
- Fares compensation to companies for travel cards holders that use their services.
- Direct income from tickets sold on board buses.
- The companies share in the proceeds from selling commuter travel cards. This is regulated in the “agreements between CTM and the companies holding concessions for scheduled transport services, that regulates the use of travel cards in those companies and the financial compensation arising from the Consortium decisions as regards

tariffs". An overall financial compensation is established for all the companies and each valid ring sector where the travel cards can be used. Inside each ring sector, the financial compensation is in turn broken down between the companies.

Point 2 of the approved motion that modifies the CTM –Concession Holding Companies Agreement offers the possibility for signing Program-Contracts directly with the Consortium. This possibility has been claimed so far by seven companies.

A completely different compensation system is applied that quantifies the kilometres run instead of passengers carried by kilometre.

Program-Contracts are signed with concession holders of interurban bus services, if required by rather special conditions, such as low traffic in a line that the authorities want to keep in service or construction of an underground rail line that encroaches in the area serviced by a specific concession.

A plan for renewal of the buses fleet is set by the concession contract that establishes the maximum and average useful life of the vehicles. The significant fleet renewal of interurban buses in the Madrid Community has to be highlighted. At the time the Consortium was set up, the approximate average life of the vehicles fleet reached 11 years and, since that time, the average has been reduce to 5/ 6 years, which is regarded adequate for the service performed. The financial aid from the Consortium that has been subsidising 3 to 4 points of the interest rates, when the program was started, and 5% of the vehicle cost, later on, has made possible that reduction.

The mentioned financial aid has been granted yearly to the companies that have filed application. Since 1999, the vehicles have to meet the Law that requires the removal of obstacles for handicapped passengers to qualify for subsidies. The mentioned financial aid has been granted also for other required operating equipment such as ticket-cancelling machines. The amount is not set per vehicle since the Consortium contributes a total figure which, for the year 2000, will be 200 million Ptas., (1.0 million US Dollars) additional to 100 millions Ptas., (0.5 millions US Dollars) contributed by the Social Services Institute part of the Health and Consumers Ministry, and the Social Security System. Renewal of 150 units will be possible through that financial assistance.

Allocations are summarised in the following table:

FINANCIAL AID FOR FLEET RENEWAL. PRIVATE OPERATING COMPANIES				
	SUBSIDISED VEHICLES / MATERIAL	RECIPIENT COMPANIES	SUBSIDIES (Thousands of PTAS)	SUBSIDIES (Thousands of US Dollars)
1989	21 Vehicles	5	36,963.6	184,8
1990	66 Vehicles	11	131,521.4	657,6
1991	100 Vehicles	19	225,979.4	1129,9
1992	45 Vehicles	12	100,843.1	504,2
1993	72 Vehicles	14	115,394.5	577
1994	57 Vehicles	12	49,379.2	246,9
1995	83 Vehicles	17	77,148.5	385,7
1996	87 Vehicles 149 Tickets-cancelling machines	19	89,043.1	445,2

Source: Report from the Madrid Transport Consortium 1996

2.3.3. Investments funding. Funding of new infrastructures. The Madrid Underground Transit System (Metro).

BACKGROUND

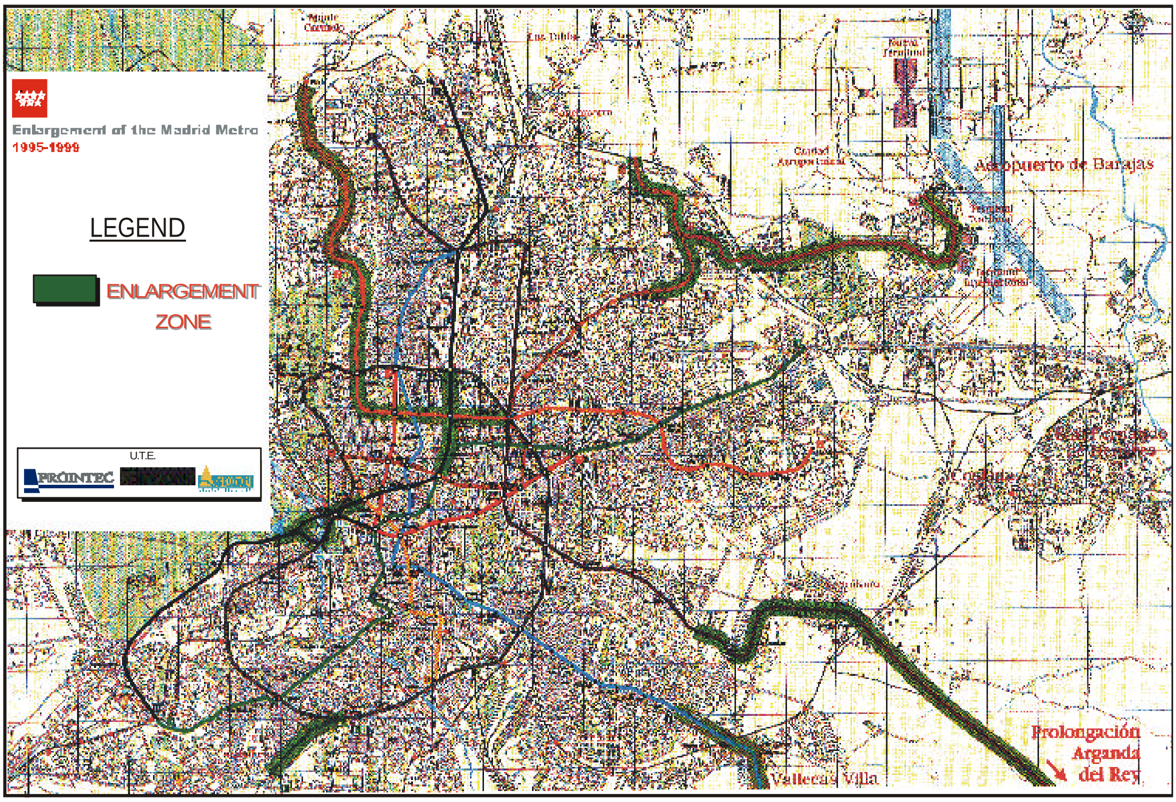
One of the main electoral commitments that the current Government of the Madrid Autonomous Community has vowed to implement, as stated already during its first term –it is now in the second one- was the construction of 20 Km, on new Metro lines in four years within the Madrid Municipality. The investment required for this significant civil works project was estimated to exceed 110.000 million PTAS., (550 million US Dollars), an amount hard to get through the usual budgetary funding allocations.

The ordinary budget for the Infrastructures General Directorate of the Transport Department in the Madrid Community, which is responsible for public works of this type, stands around 12 to 14.000 million PTAS., (60 to 70 million US Dollars) per year. In view of the significant investment required, the need to resort to financing channels different from the common ones that would meet only half of the total investment required, was clearly obvious.

To meet that deficit, two different extra budgetary funding arrangements have been applied by the Madrid Autonomous Community: one was funding through a corporation owned by the Community itself, while the Law to Regulate Land Transport Systems was applied for granting public service concessions.

Before both systems are described in detail, it should be kept in mind the convergency criteria of the Maastrich Treaty that limit public debt, government departments of the EU countries, should be mentioned, since they have been a decisive factor for drawing up those arrangements.

ARPEGIO S.A. ENLARGEMENT OF THE MADRID METRO 1995-1999.



Construction of 40 Km of new infrastructures in 8 years was envisioned by the earlier plan for enlargement of the Metro underground rail system. The Central Government, through the Ministry of the Treasury, was committed to invest 6,000 million PTAS., (30 million US Dollars) yearly, provided the Autonomous Community would invest 12.000 million PTAS., (60 million US Dollars) within the same year.

The plan for enlargement of the Metro was redrafted by the new Madrid Community Government and more ambitious targets, when compared to the previous ones, were set. This implied 200.000 million PTAS., (1,000 million US Dollars) funding was required in a four years term. Arpegio was the means used to meet those requirements.

The Madrid Metro enlargement plan , running from 1995 to 1999, envisions construction of 38 Km of underground lines with 37 new stations and four interchange passengers facilities, to be completed within 48 months, at a cost of some 200,000 million PTAS., (1,000 million US Dollars). The cost per kilometre has been therefore about 5.500 million PTAS., (27.5 million US Dollars). In addition, 226 new passengers cars have been purchased at a cost exceeding 37.000 million PTAS., (185 million US Dollars).

Construction of the new Arganda del Rey suburban railway line, 18 Km long with 4 stations, is described in detail later, since it has been funded through a concession. The extent of the Metro underground system enlargement, between 1995 and 1999, is summarised in the following table:

EXTENT OF THE METRO ENLARGEMENT BETWEEN 1995 AND 1999			
	BEFORE	**ENLARGEMENT**	**TOTAL**
ESCALATORS	713	229	942
TRAVELATORS	7	8	15
LIFTS	24	122	146
LENGHT OF SYSTEM	120	56,3	176
STATIONS	164	37	202

Source: Madrid Underground enlargement 1995-1999. Madrid Community. Public Works, Town Development and Transport Department.

The Madrid Community besides the Autonomous Housing Authority of Madrid and the Sociedad Pública Tres Cantos, S.A., hold an interest in ARPEGIO, S.A., a trading company setup in 1981 to develop and market industrial plots. But, Arpegio was used to avoid that the funds required for the Metro enlargement plan of 1995-1999, were computed as part of the Madrid Autonomous Community public debt. However, Arpegio is continuing its initial land development operations.

Arpegio is intended to perform, besides other functions, the design, development, construction, maintenance and operation, by itself or through third parties, on its own account or on behalf of the Madrid Community, of any public works and services that might be related to infrastructures which are deemed necessary for the public good within the Madrid Community boundaries. The operations to draw up and implement Town Development projects and related actions are also enclosed as well as the promotion and management of housing developments, construction of infrastructural works, and fitting of utilities in specific areas, and the funding, management and operation of works and services required by housing developments.

Since Arpegio owns sizeable properties, that enclose several million square metres of land, which are sufficient to guarantee the loans requested to fund the underground lines construction sureties provided by the Madrid Community are not required. Arpegio's responsibility is limited to the works funding (which encloses competitive bidding, contracts award and payment of the certified completed works but not their completion). To provide the necessary funds, Arpegio borrows in the market and pays the certified works of the underground lines, as they are completed. In turn, the amounts required to compensate Arpegio are allocated in the annual budgets of the Madrid Community.

Besides the credit line available through this procedure, the quick processing of the different contracts is an additional and rather positive factor. Although Arpegio has to meet the Central Government Contracts Law, since the loans, contracts, payments and financing procedures are managed by a limited number of individuals, the time required to award and formalise a contract has been substantially shortened.

Borrowing by Arpegio for these investments is controlled by the Treasury Department of the Madrid Community, through the so-called Economic Financial Plan (PEF), that ensures borrowing from private sources using this channel will be kept within reasonable limits and in proper balance to the basic amounts of the Madrid Community's income.

Through the agreement signed on 14th March, 1996, between the Madrid Community and the public owned company, Arpegio, the latter was commissioned to contract the works and facilities required for the 20 Km extension of the underground rail system. The project had to be completed within a 4 years maximum term and the agreement provided also that the Madrid Community would pay all the expenses experienced by Arpegio arising from the mentioned assignment, as well as, besides other, the funding expenses arising from the infrastructures construction.

According to the Economic-Financial Plan approved by the Government of the Madrid Community, the project's programmed funding and the Community budgetary allocations payable to Arpegio have to be updated every year. In 1996, for the underground rail lines extension, Arpegio was authorised to borrow 43.500 million PTAS., (217 million US Dollars), and 3.000 million PTAS., (175 million US Dollars) charged to the 1997 budget. To those amounts, an additional 31.312 million PTAS., (156 million US Dollars) will be contributed during the next 3 years by the Madrid Community to pay the full investment in the works, as specified in the Budget Laws of the following years.

A syndicate consisting of Argentaria and Caja de Ahorros de Madrid, a trust and savings bank, was selected and the loans were subject to the following conditions:

- maturity: year 2008
- 19 half-year payments, three years grace period for the principal, and an annual interest rate of MIBOR+0.2%
- the Madrid Community does not guarantee the loan
- firm commitment that the agreement will not be modified neither payments deferred.

Arpegio is only a financial tool and the construction process is carried out as if it had been funded by a budget allocation. The project and works management will be handled by a small-sized team from the Public Works, Town Development and Transport Department of the Madrid Community. The transport planning surveys are carried out by the Madrid Transport Consortium while technical consultants are outsourced to draw up the projects, provide works control and supervision, and quality control.

The Instructions to Bidders from the Public Works Department are supplied to Arpegio, which will setup the contract-awarding commission. The proposals must be submitted for their study to the General Directorate for Transports of the Madrid Autonomous Community. Once the works are awarded, the whole process is handled by the General Directorate for Transports which will forward the certificates of completed works to Arpegio for payment.

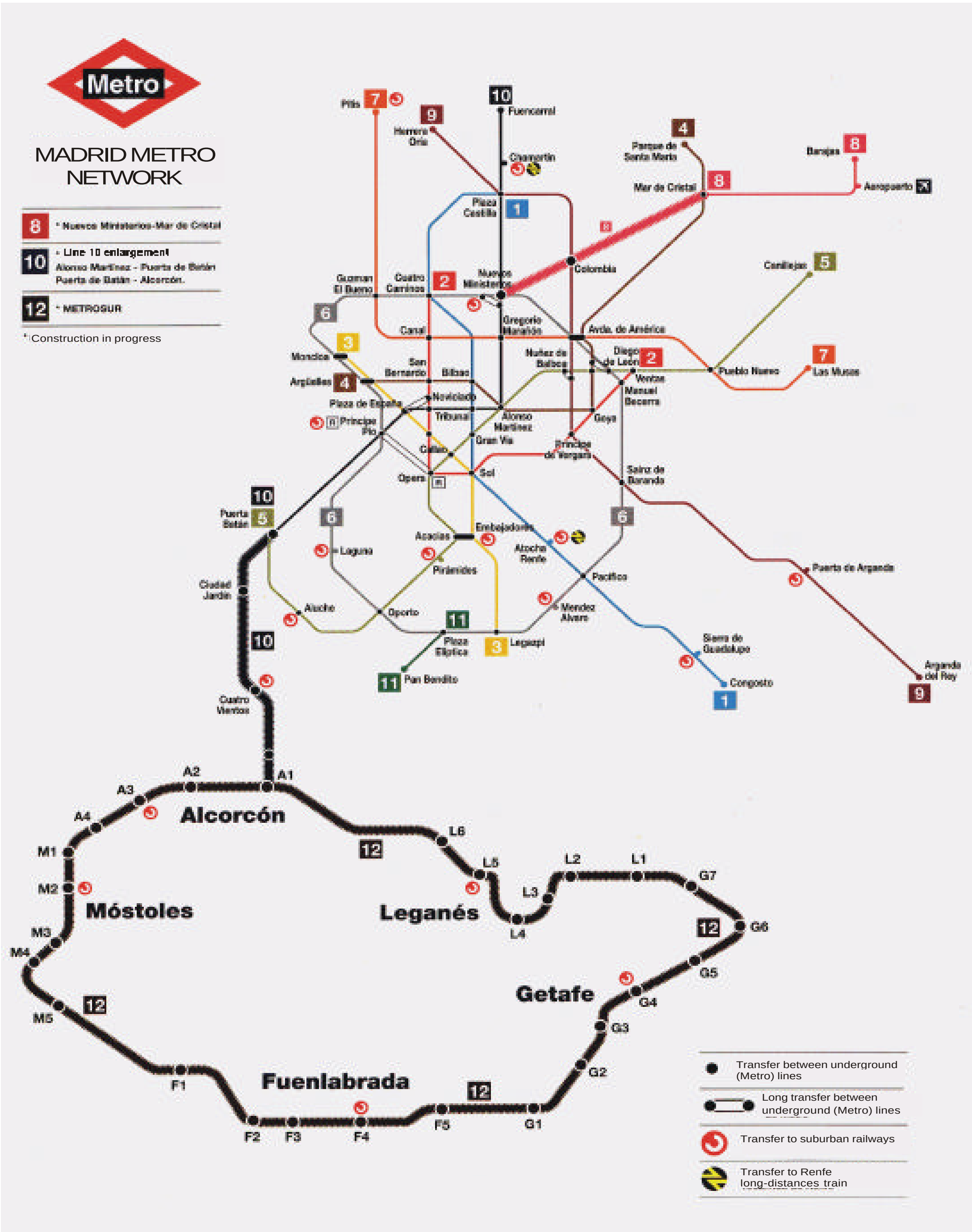
In actual fact, the planned 20 Km of underground rail lines were increased to 37.8 Km, between 1995 and 1999, and the funding requirements have increased accordingly. The works cost[1]has been funded as follows:

- Central Government: 24.000 million PTAS., (120 million US Dollars) that have been paid already and a similar amount will be paid also during the next four years.
- European Union, through the Cohesion Funds: 18.700 million PTAS., 93.5 millions US Dollars), or 85% of the investment in the underground rail line to access Barajas Airport.
- Extraordinary budget allocations, through Arpegio: 157.678 million PTAS., (788.3 million US Dollars)

[1] J.I. García Iturbe. Managing Director of the Madrid Transport Regional Consortium. Funding of the Madrid Underground Transit System. Enlargement plan 1995-1999. 1999

MINTRA. MADRID UNDERGROUND (METRO) TRANSIT ENLARGEMENT 1999-2003

Construction works that enclose 54.7 Km of tunnel, 26 new stations and 8 passengers transfer stations are planned for the Madrid underground transit enlargement between 1999 and 2003.



The planned sections enclose:

- METROSUR. This is a new underground ring line that will link population centres located in the first and second metropolitan ring sectors, southwest of Madrid. The alignment runs through built up areas where 27 stations will be set to allow the line being used as an underground transit system within each municipality.

  The underground ring line of Metrosur is 40.5 Km long and will be linked up to the existing Madrid underground system through the extension of line 10 up to Alcorcón where passengers transfer between both lines will be possible. Stations that allow passengers transfer between the RENFE suburban railways system and the new line will be provided in all the serviced population centres.

  Stations are located taking into account not only the largest population coverage possible but, also, that all main facilities for public use in the zone are accessible.

  The number of users expected during the first year of operation is estimated at 140.000 passengers/day. Service will be supplied initially by 24 new design “worm-type trains” consisting of three articulated passenger cars, operating at 1.500 V instead of the 600 V usual in the Madrid underground system, leading to higher performance and lower energy consumption.

- Updating and extending Metro underground line 10 up to Alcorcón. Line 10 runs currently North to Southwest through Madrid and will link up Madrid to the Metrosur system. The line capacity has to be increased to meet the new demand by the operation of wider and longer trains. The tunnel and stations have to be thus enlarged and the cross sections and length of the platforms increased. Significant works are required in 5 existing stations and 4 new ones have to be built. A stretch of the line about 8.6 Km long will be updated.

- Line 8 from Mar de Cristal to Nuevos Ministerios will be also extended. The 5.9 Km long extension will connect the Madrid-Barajas Airport to the commercial, administrative and business zone of Nuevos Ministerios. A new passengers transfer station will be built at this location to link up to Metro underground lines (6 and 10) and RENFE suburban railways lines. Luggage check in to the airport will be also possible in this transfer station.

PLAN FOR THE MADRID UNDERGROUND SYSTEM ENLARGEMENT. 1999-2003. SECTIONS							
SECTIONS	**LINE**	**KM**	**STATIONS**	**TRANSFER STATIONS**	**TERM (months)**	**BUDGET[1] (million PTAs)**	**BUDGET (in million US Dollars)**
Metrosur	12	40.5	21	6	32	195,600	978,0
Alonso Martínez-Puerta Batán (Tunnel clearance enlargement)	10	1.2	1	-	30	12,900	64,5
Puerta Batán-Alcorcón.	10	7.1	3	1	30	30,300	151,5
Nuevos Ministerios-Mar de Cristal.	8	5.9	1	1	28	35,400	177,0
Rolling stock	-	-	-	-	-	70,000	350,0
TOTAL	-	54.7	26	8	-	344,200	1721,0

Source: Madrid Underground Enlargement 1999-2003. Madrid Community. Public Works, Town Development and Transport Department.

PLAN FOR THE MADRID UNDERGROUND SYSTEM ENLARGEMENT. 1999-2003. BREAK DOWN BY STAGES							
	LINE	**KM**	**STATIONS**	**TRANSFER STATIONS**	**TERM (months)**	**BUDGET1 (million PTAs)**	**BUDGET (IN MILLION US DOLLARS)**
1995-1999.	-	56.31	37	4	-	270,000	1350
1999-2003	-	54.70	26	8	-	344,200	1721
TOTAL	-	111.01	63	12	96	614,200	3071

Source: Madrid Underground Enlargement 1999-2003. Madrid Community. Public Works, Town Development and Transport Department.

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[1] Encloses design, construction and rolling stock

As established by the European Union regulations, starting 1999, the amounts borrowed by Arpegio are computed as public debt. For this reason, and to fund the planned enlargement of the underground system, from that date on, a different funding approach has been applied by the Madrid Community.

MINTRA, Madrid Infraestructuras de Transporte, was set up as a public institution to perform the functions defined by its Inception Law 22/1999 of 21st December.

Since MINTRA has been registered to perform business operations, it will have its own income, but, as a Public Institution, it will subject to financial and parliamentary control. According to its Inception Law, the institution is a basic tool for defence and protection of transport infrastructures as public properties assigned to render a public service. But MINTRA operations are subject to private law, whenever administrative powers are not implemented by the institution.

MINTRA was setup for a 25 years term to provide out the mass transit infrastructures required by the Madrid Community within the framework and overall transport policy of the Madrid Region. It is also required to manage and carry out maintenance of those infrastructures meeting efficiency and productivity criteria.

MINTRA is intended to:

- Construction of railway infrastructures and any other mass transit facilities required by the Madrid Community, and enclosed:
    - design of infrastructures, ranging from investments scheduling to surveys and projects implementing.
    - purchase of land, through eminent domain procedures claimed by the Madrid Community Government and temporary occupation, when necessary.
    - award of contracts for construction works, supplies and services intended for infrastructures and facilities, and
    - supervision and management of the works
- Management and maintenance of any infrastructures that were built by MINTRA, or management and maintenance of any other already existing mass transit infrastructures that might be assigned to the former by the Madrid Community Government and, specifically

- outsourcing maintenance or any other services required by the infrastructures, facilities or properties.

- assignment of the infrastructures use to companies or institutions responsible, at the time, for the services operation according to the Madrid Transport Regional Consortium responsibilities. The mentioned companies or institutions have to pay MINTRA the due financial consideration,

- maintenance and operation of the land, facilities and installations enclosed in the infrastructures for auxiliary operations or any other compatible with transport services function,

- protection and policing of the transport infrastructure

➢ Any other functions or actions that might be required or convenient to meet its inception purpose, such as:

- setting up or holding an interest in businesses or companies

- signing contracts and agreements of any kind

- purchase, barter, selling, leasing and assigning properties of every description and enclosed railway rolling stock.

Ownership of the previously existing infrastructures can be assigned by the Madrid Community Government to MINTRA and the latter will be responsible for any refurbishing or maintenance works and their management.

The legislation that regulates the Madrid Transport Consortium shall be met by the transport services operations that use MINTRA managed infrastructures.

MINTRA is governed by a Board of Directors, Chairman, Deputy Chairman and Managing Director and has a payroll of executives, clerks and workmen.

Summing up, it can be stated that MINTRA will be the owner of any transport infrastructures which are funded by or assigned to this institution, that will be leased in turn to the respective operator. MINTRA is granted by its Inception Law extensive responsibilities ranging from carrying out studies to transport lines operation. Up to 80% of the staff in the General Directorate Infrastructures Staff will be transferred to MINTRA. The Treasury Department of the Madrid Autonomous Community (CAM) is currently negotiating with the European Investments Bank, EIB, a loan for MINTRA that will be guaranteed, in the first place, by the Madrid Autonomous Community.

VICALVARO-ARGANDA SUBURBAN RAILWAY LINE

Additional to the significant enlargement of the Madrid underground (Metro) system, funded through Arpegio and MINTRA, as described in the previous points, another main railway project has been initiated by the Madrid Community for linking the city to two municipalities in the Southeast metropolitan area. This is the Madrid-Vicálvaro-Arganda suburban railway line which has been funded outside the budget.

Problems arised to meet through the budget the required investment, that was estimated initially to exceed 15.000 million PTAs (75 million US Dollars). To build the subject infrastructure, the Madrid Autonomous Community Government decided, on May 1996, to resort to private funding. As a result, an invitation to tender for the concession of the line design, construction and operation was issued.

A European competitive tender was called for the award of a "public works concession, that encloses drawing up the project, construction and management of a public service operation". Two groups submitted their proposals and the project was awarded to that made up by Metro de Madrid underground system, a financial institution, Caja de Madrid, a savings and trust bank, and several first-rate building contractors.

Concession contract

The Madrid Community signed a concession contract with Transportes Ferroviarios de Madrid on 18th April 1997.

The main financial features of the project are as follows:

- Concession term: from 1.999 to 2.029
- Commissioning: 1.999
- Investment: 19.130 million PTAs. (95 million US Dollars).
- Cost of the civil works: 15.000 millions PTAs. (75 million US Dollars).
- Cost of rolling stock: 3.000 million PTAs. (15 millions US Dollars).
- Cost of condemned land and start-up expenses: 1.130 million PTAs. (5.6 million US Dollars).
- Investment funding:
  - Partners contribution: 4.000 million PTAs (20 million US Dollars, or 20% of the required investment to start operations). Up to the year 2005, or that date when the line enlargements are implemented, the partners are required to increase the capital, as far as necessary, to keep the cumulative losses from exceeding 50% of the share capital and are

committed also to increase in 2.000 million PTAs (10 million US Dollars) the share capital, if needed to meet the investments for the system enlargement to meet the demand.

- Loans from Caja Madrid (savings bank) and Instituto de Crédito Oficial, ICO (Government credit institution): 17.000 million PTAs (35 million US Dollars). To this end, the European Investments Bank has made available to co-insurers a financing line amounting to 9.600 million PTAs (48 million US Dollars)

➢ Income: Income from the Project is proportional to the number of passengers and has three different sources:

- Direct income. The amounts collected by Transportes Ferroviarios de Madrid (TFM) from direct sales of the respective passenger tickets.
- Indirect income. The amounts to be received from CTM based on passengers riding the line with tickets issued by the Consortium.
- Compensation income. The amounts contributed by the Madrid Autonomous Community through the Madrid Transport Consortium (CTM) to ensure the concession financial balance. The compensation is proportional to the overall number of passengers carried up to the maximum limit of the planned nominal demand. This allows the Madrid Community to know beforehand the maximum annual amount it might have to pay.

➢ Costs: Two type of costs according to the source can be identified in the project:

- Costs arising from the Operation Plan to be implemented by Metro de Madrid (underground transit system) for which a maximum price is set based on the service rendered requirements.
- Maintenance costs of Transportes Ferroviarios de Madrid (TFM) business structure, which will be few since the size is rather small.

➢ Long-term funding to minimise the current compensation.

➢ A reversion fund equal to 20% of the yearly compensations during the last 5 years of the concession term is established, and the minimum annual amount has been set at 25 million PTAs.

➢ Financial soundness: 1.38 average cover ratio of the borrowed amounts, ranging from 1.16 to 1.77 maximum ratio, and applying 4.5% and 5.5% interest rates as reference for the short and long-term, respectively.

➢ The possible contract cancellation, for reasons attachable to the concession holder, or service redemption due to public interest reasons are stated (indemnity for future profits being paid based on the operations results and the works depreciated value).

In spite of the "losses compensation", the concession holder is exposed to some risk since the automatic compensation of all the expenses is not assured. Although a tariff rates table and proposed compensations are enclosed in the concession holder bid, a government guarantee is not available, in the event actual traffic is less than planned.

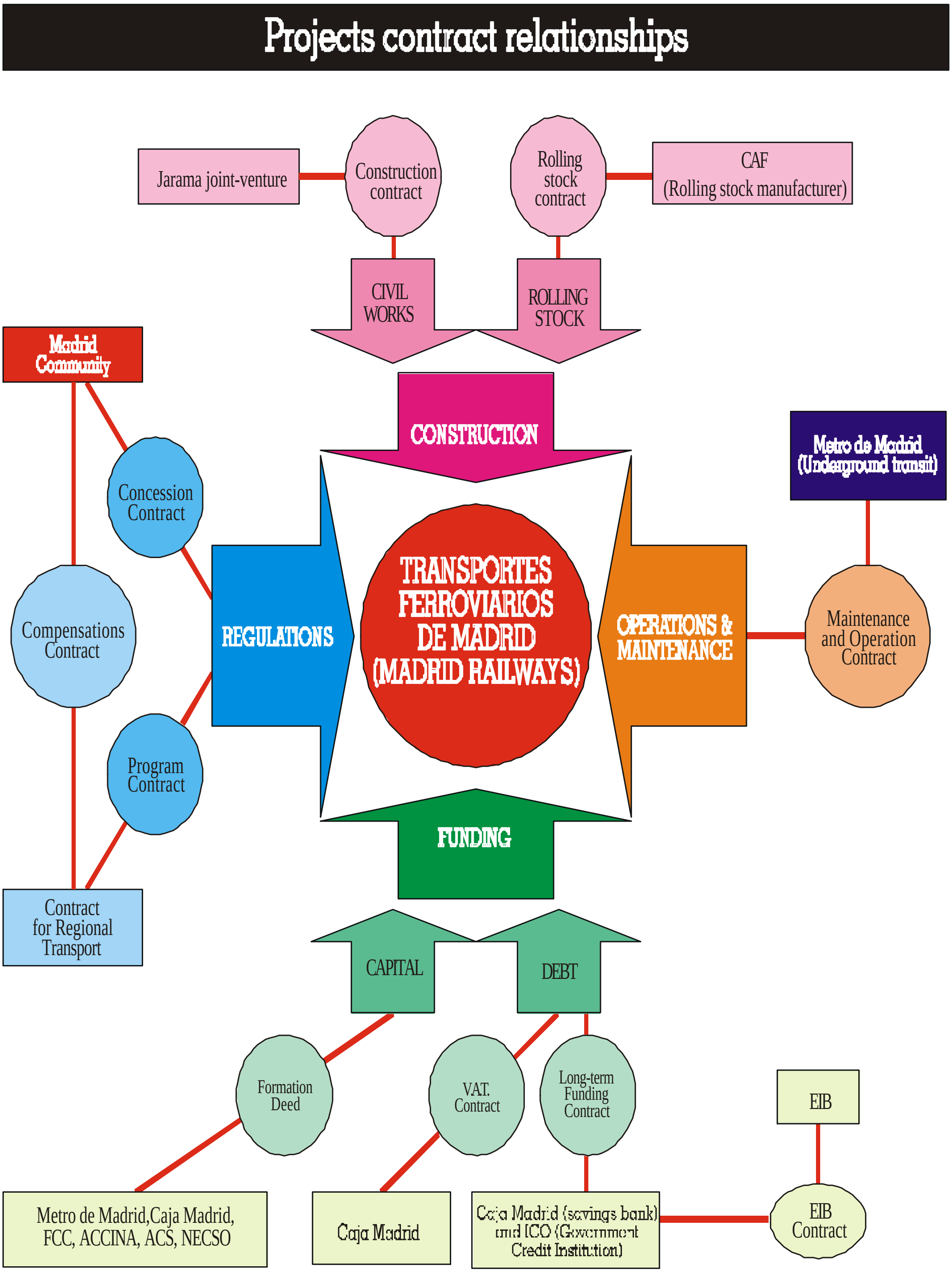
The average compensation per passenger is multiplied by the number of passengers/day that use the train service, to determine how much compensation will be added to the income. The maximum will the number of trips estimated by the concession holder for each year of the concession which, in 1999, amounted to 19,200 passengers/day. This avoids, on the one hand, that the concession holder's profits might be out of proportion and, on the other, it allows the operations account to be balanced by the addition of a reasonable profit.

The Madrid Community Government Cabinet approved the compensation amount on 13th May 1997 and established the maximum annual payment.

MAXIMUM AMOUNT OF ANNUAL SUBSIDY TO ALLOCATED MADRID RAILWAY TRANSPORT (TFM)			
YEARS	**AMOUNT/GROWTH RATE**	**MAXIMUM SUBSIDY (MILLION PTAS OF 1997)**	**MAXIMUM SUBSIDY (MILLION US DOLLARS 1997)**
1999	247 PTAs 97/Passenger	1.399	6.9
2000-2002	2.5% annual growth	1.537-1.818	7.6-9.1
2003-2009	0% annual growth	1.961-2.405	9.8-12.0
2010-2012	2% annual growth	2.401-2.310	12.0-11.5
2013-2029	3% annual growth	2.243-1.178	11.2-5.8

The concession holder, "Transportes Ferroviarios de Madrid", payroll is virtually negligible, limited to a Manager and Clerk, since technical consultants are outsourced to perform the work required.

The contract relationships of the project are shown in the following diagram



Construction

Once the Concession-holding Company had been established, a Joint-venture was setup to carry out the works at a firm price. Technical assistance was outsourced to draw up the Project. Although the concession-holder was responsible for the Project construction, the Community Government appointed a Technical Manager to inspect, check and monitor the works proper completion.

The construction contract price was set at 15,400 million PTAs (77 million US Dollars) and this amount enclosed compulsory purchase of civil liability, all risks construction and expected loss of profit insurance. The contract is intended to build 18.3 Km, and save for 2 Km of a cut-and-cover tunnel, the balance is outdoors, and encloses construction of 4 stations.

Trains construction and fitting the traffic control equipment required for the Project operation was performed by the following companies: CAF, ALSTON, ABB Daimler-Benz, Siemens and Dimetronic. To meet rolling stock requirements, 7 units of series 6000 were purchased from CAF, while 26 units of series 5000 have been retrofitted and are operating currently in Line 9. These units are compatible for underground transit operation but can perform also other services.

The line was built in 2 years and started service on 7th April 1999. Once the construction was completed, the project itself became the surety (Project financing)

Operation

An operation contract was signed with Metro de Madrid (underground transit system) which specified: service requirements, train intervals and procedures to collect and feedback data to the concession holder. The operation has been fully integrated in the Metro underground system.

The Instructions to Tender specified that the line had to uphold the integration image of the scheduled transport system in the Madrid Autonomous Community.

Payment to the Metro system by the Madrid Railways Transport (TFM) is based on the number of Km run, number of trains/Km and number of stations (ticket dispensing clerks and security personnel are in duty at every station). For quality control, Metro supplies a daily report of incidents to TFM as well as a monthly report on the Metro program quality, as well as daily and fortnightly information on passengers going through the control turnstiles.

The following table shows the initial costs structure and that following the increase in the number of stations and service capacity.

COSTS STRUCTURE OF TFM OPERATIONS				
ITEM	**INITIAL COSTS (MILLION PTAS 99/YEAR)**	**PHASE II COSTS (MILLION PTAS 99/YEAR)**	**INITIAL COSTS (MILLION DOLLARS 99/YEAR)**	**PHASE II COSTS (MILLION DOLLARS 99/YEAR)**
Cost per station	394	515	1.9	2.5
Cost per rail car-Km	344	461	1.7	2.3
Cost per Km of system	182	182	0.9	0.9
Total cost	920	1158	4.6	5.8

The following items are enclosed in the tariff: Travel cards (70% of the trips), single tickets, 10 trips for railway use only or mix mode tickets for use also in the underground (metro) system.

First results

Once the new line started operations, the Madrid Autonomous Community transfers the concession control to the Madrid Transport Consortium through a cooperation agreement signed on 4th November 1996 between both institutions: “Funding of financial compensations to the concession holder of passengers public railway line, that owns its infrastructure, running between Madrid, Rivas-Vaciamadrid and Arganda del Rey Municipalities”.

Through the mentioned agreement, the Madrid Autonomous Community (CAM) allocates yearly to the Madrid Transport Consortium (CTM) the maximum annual amounts for payment to the concession holder based on the demand trends.

Payment by CTM to Transportes Ferroviarios de Madrid (TFM) is broken down in two items:

- compensation per passenger established in the Concession Contract
- compensation for use of travel cards, equal to the single trip value of a 10 trips ticket issued by TFM. This item is handled the same as for the remaining operators in the Madrid Community.

Two origin-destination matrixes are processed for payment: one for the total trips and the other for trips carried out using travel cards. Since entry and exit turnstiles are used, the movements total is controlled.

The current demand of 12,400 passengers in an average workday is quite far from the expected numbers (65% of the 19,200 daily passengers planned for 1999). On different instances the demand has been estimated: in the feasibility study; in the bidders proposals, and when the financial study was drafted. Each time values above 20,000 daily users, in 1999, were found.

The concession holder has experienced a comparatively large deficit due to the low demand. The shareholders had to increase the capital for bailing out the concession, til the new financial plan will allow continuing operations through 2003-2005. After that date, the number of passengers is expected to increase and it is planned to sell the rolling stock to the underground system (Metro) which would provide a significant capital inflow that would ensure the concession holder company survival until the demand is fully consolidated.

PASSENGERS TRANSFER STATION IN AVDA. DE AMÉRICA (MADRID)

As required by the Agreement signed by the Madrid Community, Madrid Municipality and the Consorcio Regional de Transportes (Regional Transport Consortium), the latter issued an invitation to tender for the construction, funding and operation of a passengers transfer station and underground parking lot at Avda. de América. The project is located in a critical intersection of the city streets network and public transit systems, East of the central city districts and adjoining one of the busiest underground (Metro) system stations.

The passengers transfer station consists of four underground levels housing, respectively, a medium and long-haul bus lines in one level; short-haul buses in the second one; a rotation parking in the third and a parking lot for neighbourhood residents in the fourth level.

Two large construction contractors, an electric services and installation company and two transport companies, an engineering consultant and a banking group make up the concession winner venture.

It is worth mentioning that the two operators, members of the association, share virtually between both all the buses traffic in the routes serviced by the transfer station.

The investment of the private companies in the venture amounts to some 3.500 million PTAs (about 18 million US Dollars). The works, recently completed, lasted 15 months and the passengers transfer station and rotation parking lot concession has been granted for a 25 years term, and the neighbourhood residents parking spaces for 50 years. Once those terms expire, title to the premises reverts to the Government.

The concession holder income is broken down as follows:

- 10 PTAs. (0.05 US Dollars) per passenger boarding or alighting from vehicles at the transfer station, who ride on lines dependent from the Transport Consortium.

- 1200 PTAs.(6 US Dollars) per bus of lines which are not dependent from the Transport Consortium, that comes in or goes out the transfer station.

- Tariffs charged by the rotation parking lot. Charges similar to other public parking lots in the same area have been established: 245 PTAs., for the first hour, (equivalent to 1.4 US $)

- Income from selling parking spaces to neighbourhood residents. A maximum price of 1.600.000 PTAS./space (9,200 US Dollars) has been authorised.

- Any other business income, unrelated to traffic, that may arise from the passengers transfer station operation.

Passengers using lines dependent from the Consortium, that board or alight at the transfer station during the first year, according to that Agency estimates will be 22.4 million passengers/year. The Consortium is committed to enforce the use of the transfer station by all the transport lines subject to its control but has not accepted the concession-holder group request to ensure any future growth of that demand.

3. SOME EUROPEAN EXPERIENCES

3.1. ILE DE FRANCE

3.1.1. Ile de France Transport System

Paris and the surrounding area are by far France's most populated zone (in 1999, some 11 million people lived in the Ile de France Region).

The predominant position of in the Region of such high population area that encloses a large number of municipalities prompted the Government to establish a regional single "Transport Organising Authority": the Syndicat des Transports Parisiens, STP, since, contrary to what happens in other parts of the country, the municipalities and their associations are not directly responsible for that service.

Paris is different from other french cities due to the large number of companies that operate transport services. The main ones are two national companies:

- The Régie Autonome des Transports Parisiens, RATP, is the main operator. Although it is known as "régie"[5], the RATP is a self-financing trading and industrial public entity.

  RATP is not only responsible for the operation of lines assigned to its care, but carries out, as well, feasibility studies and preliminary projects for new lines or extension of the existing ones. Those projects are submitted to STP for approval. It also studies and implements approved projects and decides the construction and operation requirements of systems assigned to RATP.

- The Société Nationale des Chemins de Fer, SNCF, the national railway system, is a Government-owned company (industrial and trading public institution), restructured by law of 30th December 1982, that provides passengers and goods rail transport services on a monopoly basis. One of the Directorates is aimed specially to provide passengers service in the Ile de France region under conditions similar to those of RATP.

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[5] A "regie" is defined as a company managed directly by Government at any level.

The role of the remaining operating companies, although increasingly significant, is rather limited relative to that of RATP and SCNF, since they only provide 7.5% of the total transport total volume in Ile de France. There are two associations of private companies: APTR, which lists 53 members and 1,500 vehicles, and ADATRIF, with 30 members and 1,500 vehicles.

THE TRANSPORT SYSTEM

In spite of the large number of operators, transport operations are integrated in the Region. The buses systems are geared to the railways which provide generally park and ride facilities at the Stations for private vehicles. The suburban railway systems are interconnected and the same trains roll on lines owned either by RATP or SNCF and are operated subject to a common fares tariff, the “carte orange”, that allows access to the complete rail system. The orange card is the most often used by passengers (above 60% of the total traffic for any type of public transport).

The rate of mass transit systems use in the Ile de France, that tops 300 trips in public transport systems per year and inhabitant, is rather higher than that in any other provincial city and public transport offer is individually larger than that in other population centres of the provinces.

TRANSPORT OFFER

MASS TRANSIT SYSTEM						
	SYSTEM LENGHT (km)		NUMBER OF LINES		STOPPING POINTS	
	1997	1998	1997	1998	1997	1998
SNCF Ile de france	1286.0	1286.0	-	-	397	397
RATP						
RER (A-B)	115.1	115.1	2	2	66	66
Metro	201.5	211.3	15	16	372	380
Tramcar	20.4	20.4	2	2	34	34
TVM	12.3	12.3	1	1	22	22
Paris municipal buses	893.6	905.3	76	77	1800	1826
Metropolitan zone buses	2128.1	2128.7	189	197	5146	5333
ADATRIF	6419.0	-	396	-	9134	-
APTR	8700.0	-	529	-	9273	-

Source: Passengers mobility in the Ile de France. Edition 1999. STP.

SERVICES OFFERED BY THE MASS TRANSIT SYSTEM				
	SEATS-KM (in thousands)		RAILCARS-KM (millions)	
	1997	1998	1997	1998
SNCF Ile de France	77.93	75.58	373.3	342.0
RATP				
RER (A-B)	17.6	18.2	84.6	87.0
Metro	23.0	23.4	199.4	203.1
Tramcar	0.2	0.3	1.3	2.2
TVM	0.1	0.1	1.1	0.8
Paris municipal buses	2.7	2.8	41.7	42.9
Metropolitan zone buses	6.2	6.3	100.2	98.9
ADATRIF	3.94	-	56.36	-
APTR	4.21	-	-62.2	-

Source: Passengers mobility in the Ile de France. Edition 1999. STP.

TRANSPORT DEMAND

TRAFFIC TRENDS IN THE TRANSPORT SYSTEMS. TRIPS (MILLIONS)				
	1995	1996	1997	1998
SNCF Ile de France	487.00	510.30	518.80	527.80
RATP				
RER (A-B)	323.38	350.60	354.10	367.20
Metro	1029.13	1091.60	1115.90	1115.70
Tramcar	15.67	16.90	19.80	24.70
TVM	7.58	8.60	9.30	9.90
Paris municipal buses	314.18	367.70	349.20	350.90
Metropolitan zone buses	423.11	482.40	491.50	500.10
ADATRIF	130.90	131.00	131.10	-
APTR	115	115	116.98	-
ORLYVAL	1.59	1.80	1.80	1.90

Source: Passengers mobility in the Ile de France. Edition 1999. STP.

3.1.2. The "Syndicat des Transports de Paris", STP

Since 1959, STP is the authority responsible for organising public transport systems in the “transport systems of Paris Region”, which matches since 1991 the Ile de France Region boundaries.

The STP is responsible for the type of service, selection of operators, technical operating mode, tariffs, operating budgets approval and control (although local governments may reach agreements with the operators for services improvement).

STP is not responsible for investments in new infrastructures. The projects are carried out under an inter-ministerial agency, the Social and Economic Development Fund, FDES, jointly with the Regional Authorities, although the projects need STP approval.

The largest share of STP budget, amounting to 12 millions francs yearly (60 million US Dollars yearly), is raised by the “versement transport” tax.

The mass transit systems in Ile de France have been reformed in depth during 1999 (as stated by the Minister of Transports, Jean-Claude Gayssot, on 11th February). The reform was focused on two main points:

- an institutional reform, since the Ile de France Region has become a member of the STP Board of Directors (which enclosed formerly only representatives from the Central Government and the territorial subdivisions known as Departments). The Board will be known from now on as STIDF, Syndicat des Transports de Ile de France. A Committee has been setup where the different agencies rendering transport services are represented and a new funding route to channel all financial contributions for transport systems through STIDF, that will operate as a centralising agency.

- relations between STP (STIDF) and the main transport operators, RATP and SNCF, based on a public service contract.

  The Central Government holds still a majority interest in STIDF, but drops from the current 70% to 51.4%, while the Region holds an 18.6%. The City of Paris and the Departments (territorial subdivisions) keep the same percentages, 18.6% and 11,4%, respectively.

The most significant advantages from these changes in the Region's transport system are listed below:

- The main agents responsible for mass transit systems in the Ile de France region are members of STIDF.
- STIDF is the single spokesman on behalf of transport operators for contracts negotiations.
- Proper management of the companies is boosted since they share any financial profits arising from the systems operations.

TARIFFS

A variety of tariffs are applied by the transit system in Ile de France. The price of the different tickets is based in the transport zone where the ticket was issued to the passenger. Concentric transport zones have been established.

The main tickets available are single, 10-trips tickets and multiple trips travel cards, the weekly, monthly or annual "orange card" being the most significant.

An effort has been implemented lately to offer specific travel cards to senior citizens and young people (See annex).

TRANSPORT TICKETS. TRIPS BREAK DOWN BY TYPE OF TICKET (ANNUAL AVERAGE VALUES. % OF TOTAL)

	SNCF		RER A-B		METRO		BUS	
	1997	1998	1997	1998	1997	1998	1997	1998
Monthly or annual orange card	67.5	65.8	61.3	60.1	55.1	53.7	65.4	66.7
Weekly orange card	8.4	7.7	7.6	7.0	6.0	5.7	7.5	7.1
Weekly travel cards for commuters	2.5	2.0	1.2	0.9	0.6	0.4	-	-
Tickets	14.5	14.0	25.5	25.8	33.1	33.6	19.3	17.9
Other	7.0	10.5	4.4	6.2	5.2	6.6	7.8	8.3

Source: Passengers mobility in the Ile de France. Edition 1999. STP.

3.1.3. Transport systems funding in Ile de France

TARIFFS SHARING APPROACH. RATP AND SNCF IN THE ILE DE FRANCE REGION

Since 1989, the passengers share in the operating expenses of RATP and SNCF mass transit systems, has remained around 38%-39%.

SHARE OF BUSINESSES TO MEET EXPENSES

Transport subsidising tax (“versement transport”)

A system to fund mass transit companies through a specific tax has been established by the French Authorities since 1971 in the Paris region and, after 1973, throughout the country. This tax, named “versement transport”, has been, for about twenty years, one of the main financial sources for mass transit systems and is the main contributor to their development in France.

The tax is established in an urban zone if so decided by the Transport Organising Authority. It is currently applied in all urban areas exceeding 100,000 population, in the area serviced by the transport system, and in 45% of those ranging between 20 and 100,000 population the “versement transport” tax is already in effect.

Ile de France has raised, in 1998, through the “versement transport” tax, 12,682 million francs (1,580 million US Dollars).

The “versement transport” tax has to be paid in the following cases:

- Businesses located inside the area serviced by urban transit if the payroll exceeds 9 employees (Government agencies and public or private businesses). It is based on the salaries gross total. The applicable tax level is decided by the organising authorities, within the limits established by law and the amount has been modified with the passage of time.
- Non-profit foundations or societies of public interest and social purpose are tax exempt.
- The tax is refunded to businesses that provide salaried employees permanent housing at the employment location, or make available complete and free transport between the home and workplace. The tax will be returned to the salaried employees of businesses who have been working less than 5 years within “new cities” areas serviced by the transit system if the refund had been planned at the time the tax was established.

Payment of the home-workplace commuting

Businesses in the Region contribute indirectly, since 1982, to funding operation of mass transit systems. Since the 1st November of that year, employees are refunded by businesses part of the travel cards price for home-workplace commuting.

Since 1st October 1983, 50% of the trip price is refunded. The compulsory refund replaced, at the time it was set up, the transport allowance businesses had to pay to their employees, regardless of the transport mode they were using. The step was aimed to encourage the use of mass transit systems instead of private vehicles.

GOVERNMENT ACTIONS

RATP and SNCF. Operations funding

The operating subsidies ("indemnité compensatrice") granted to RATP and SNCF, following approval by STP (STIDF), have been funded up to the year 2000 by the Central Government and the Departments (territorial subdivisions).

A basic change in the RATP and SNCF funding came about in 2000, through the process known as "updating contract": starting this year, both RATP and SNCF are committed to STP (STIDF) through a three years term contract to render a public service. The extent of services available and quality of same are stated in those contracts based on a number of indicators such as meeting time tables, information, cleanliness, etc.

On the other hand, the offered services trend and funding required to achieve the established targets are defined by STP (STIDF), and payment modes defined based on passengers carried, while premiums and penalties are established based on the results achieved by the different indicators.

The so called "indemnité compensatrice" (operating subsidies), which balances automatically businesses accounts, is deleted once this contract is signed.

RATP and SNCF. Investment funding

Subsidies are granted to RATP and SNCF by the Government authorities for transit system enlargement projects. The remaining investments are either self-financed, funded by borrowings or, eventually, through the "versement transport" (transport subsidising tax, although is used mainly to compensate social-aims tariffs.

Subsidies for the systems enlargement projects are granted usually by the Central Government and Regional Authorities while transport companies are fully responsible for funding all rolling stock both for new lines and fleet renewal.

Under the new transport systems structure in the Ile de France, all subsidies will be channelled through STIDF.

During the past 20 years, the Central Government and Regional subsidies for investments in mass transit systems have progressed at a pace with the large projects for the regional railway, RER, construction and extension of the underground (Metro) transit system. The slowdown in the extension of the systems, at the end of the 80's, has led to a comparative decrease in the Central Government and Regional contributions, although these have again increased later on.

APTR and ADATRIF

Regional assistance to investments in passengers public transit systems, in the larger ring sector (the peripheral area farther away from the Paris centre), was established by the Ile de France Regional Council in February 1984. A similar decision has been enacted by some Departments such as Val de Oise and Essonne.

This regional assistance may be granted to transport companies members of APTR or ADATRIF and to the municipal or departmental "regies", for:

- purchase of vehicles for service improvement
- rearrangement of the stops
- actions for promotion or information, and
- restructuring surveys in a sector that encloses more than one municipality.

OTHER FUNDING MODES: TRAFFIC FINES

Income from unauthorised parking or traffic fines since 1973 is returned to the municipalities, or groups of same, to fund projects that will improve surface transit systems, underground (Metro), suburban railways and street traffic.

The amounts are returned directly to the municipalities, or groups of same, when the population in question exceeds a given limit and, indirectly, through distribution, when the population is less than that limit. The limit is currently set at 10,000 population.

Specifically in the Ile de France Region, 50% of the fines are allocated to STP, 25% to the Region and the remaining 25% to the local governments. STP's share is earmarked to subsidise coordination between the different transport modes (transfer stations, park and ride lots, ...), or the systems operations (improvement of tracks, ...) and access to the systems (improvement of transfer stations, travelators, ...). These subsidies are generally increased two-fold through an equivalent contribution from the Region.

FINANCIAL BALANCE OF THE MASS TRANSIT SYSTEM OPERATION IN ILE DE FRANCE (1997)			
	Million of US Dollars before taxes		Share stated in percentage
USERS	1.5	33.60%	Of that amount, 7.9% is funded by businesses that have to refund their salaried employees half of the "orange card" price.
STP	1.3	30.80%	The transport subsidising (versement) tax and traffic fines are the source to compensate operators for the "orange card" use and to reduce depreciations
CENTRAL GOVERNMENT	0.8	17.00%	"Indemnité compensatrice" operations subsidies and tariff compensations
DEPARTMENTS (Political subdivisions)	0.4	9.00%	"Indemnité compensatrice" operations subsidies and tariff compensations
OTHER	0.3	6.60%%	Funding the Plan Contract and Service Quality operations
TOTAL	4.3	100%	

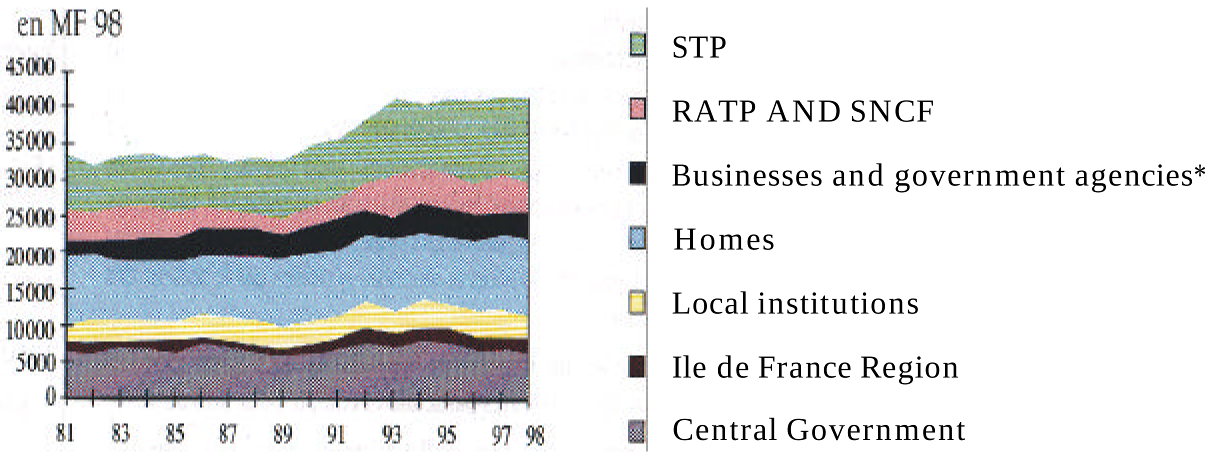
Source: Passengers mobility in the Ile de France. Edition 1999. STP.

FINANCIAL BALANCE OF INVESTMENTS IN ILE DE FRANCE MASS TRANSIT SYSTEM (1997)			
	Million of US Dollars before taxes		Share stated in percentage
CENTRAL GOVERNMENT	0,9	6,80%	Subsidies as required by the Plan Contract
REGION Subsidies Subsidised interest loans	0,31 0,22 0,09	23,50%	Plan Contract (subsidies and loans) and operations to improve the service quality (subsidies)
TRANSPORT COMPANIES Self funding Financial market	0,86 0,46 0,40	63,90%	Funding of rolling stock, and maintenance and updating operations.
OTHER Departments (Political-administrative divisions), STP...	0,09	5,80%	Compensations for tariffs reduction
TOTAL	1,35	100%	

Source: Passengers mobility in the Ile de France. Edition 1999. STP.

Finally, the trends of contributions from different financial institutions to the operations and investments in mass transit systems in Ile de France, between 1981 and 1998, are shown in the following graphic:

CONTRIBUTIONS TO FUNDING PUBLIC MASS TRANSIT SYSTEMS



Source: Passengers transportation and passengers mobility account in the Ile de France 98. STP

* Employees are refunded by businesses half the commuting "orange card" price and, in some instances, employees are supplied transportation (businesses pay also the transport subsidising (versement) tax to fund STP.

3.2. LYON

3.2.1. Transport system in the Lyon urban community

The 55 municipalities that make up the Lyon Urban Community, known also as “The Great Lyon”, located at the centre of the Rhône-Alpes Region, is 50,000 hectares large.

The 1.2 million population (1999 population census) of great Lyon is equivalent to 75% of the Rhône Alpes Department population, but covers just 15% of its area.

In the last few years, the Lyon population is living increasingly farther away from the central city in less populated zones that offer improved life quality. This trend combined with the population growth has increased significantly mobility throughout the Lyon Urban Community.

According to a door to door survey completed in 1995, private vehicles and motorcycles were used for 82% of the trips in the urban area while the trips break down according to purpose was as follows: 20% for work; 30% studies; 33% purchases and leisure, and 70% other.

The number of daily trips in the urban area during 1998 exceeded 4 million and of them 3 millions were performed using private vehicles.

The largest transit system in France, after Paris, is located in the Great Lyon area, based on annual kilometres per inhabitant (46.2) and number of trips per year and inhabitant (195).

The Lyon mass transit system, know as TCL, is characterised for an urban area of its size, by the highly diversified transportation modes:

- an underground transit system consisting of four lines, one of them fully automated (D line, Maggaly)
- 100 bus-lines and 110 school bus services operated by a pool that exceeds 1000 vehicles (buses, minibuses, trolley-buses)
- two aerial cablecars

TRANSIT SYSTEM IN FIGURES			
	Nº of lines	Length (km)	Nº of vehicles
Buses (single and articulated)	84	1,110	789
Minibus	6	26	24
Trolley-bus	8	37	87
School buses	111	1,110	87
Underground transit (enclosed aerial cablecars)	5	28.4	184

Source: SYTRAL. 1998 balance and outlook.

As regards the regional railway system, the responsibilities have been transferred to the Rhône Alpes Region as part of an experimental process that is under way in certain french regions. The Lyon regional rail system is not currently related to the metropolitan transit system, neither the physical facilities (joint transfer stations), nor the tariffs.

In 1998, km run by the Lyon public transport system totalled 53.4 million i.e., 46.2 Km per inhabitant/year, shown broken down by transportation mode as in the following table (buses enclose school buses). As regards the demand, in 1998, the system exceeded one million daily trips broken down by transport modes as shown in the following table.

SUPPLY AND DEMAND OF THE LYON MASS TRANSIT SYSTEM		
	SUPPLY (annual Km)	DEMAND (Passengers/day)
METRO (underground)	13,500,000	520,600 (50%)
AERIAL CABLECARS		11,700 (1%)
BUSES	36,000,000	428,000 (41%)
TROLLEY-BUSES	3,303,000	81,700 (8%)
SERVICES UNDER CONTRACT	662,000	

Source: SYTRAL. 1998 balance and outlook.

3.2.2. SYTRAL

SYTRAL is a self-managed public institution that encloses two local governments: the Lyon Urban Community (Communauté Urbaine de Lyon) and the Rhône General Council (Conseil Général du Rhône) that contribute funding on a 50-50 basis.

The mass transit responsibilities in the Urban Community, as decided by the Rhône General Council have been assigned to SYTRAL.

A Transport Syndicate had been operating since 1941, but SYTRAL had to wait until 1985, to be truly responsible for the Lyon transit system, when the decentralising policy came into effect and the Prefect (Department head) stopped being SYTRAL President.

The "Urban Transit Perimeter", that bounds SYTRAL'S operating zone, encloses 62 municipalities: 55 from the Great Lyon area and 7 adjoining municipalities. All told, 606 Km^2 and 1,220,000, population.

SYTRAL responsibilities enclose:

- Defining the mass transit systems development, services to be supplied and tariffs.
- Funding the transit system and its enlargement, as well as Management, in the event of the works carried out.
- Supervising the public service management, service quality definition, safety, fraud prevention, and maintenance work.
- Control of the operators actions and applicable penalties, if required.
- Performance of traffic controls, demand surveys, etc.

Besides the passengers scheduled public transit systems, SYTRAL is also responsible for school transport services.

The 2.8 million francs (0.3 million US Dollars) of the 1998 budget ranked SYTRAL as one of the main investors in the Lyon Urban Community.

The advantages of a specific Syndicate handling directly the transport systems, instead of the Urban Community itself, are as follows:

- it is a solid political choice, since mass transit systems become the specific commitment of a public agency.
- specific and virtually guaranteed funding for public transit systems is ensured.
- Allows meeting faster and more efficiently the targets set for the different specific actions.

The increased efforts required to ensure that political decisions about streets, parking lots and, generally speaking, any public space subject to other agencies, are in agreement with those related to mass transit operations, can be the main drawback.

THE SYSTEM OPERATOR: SLTC

The TCL system, the mass transit system that depends from SYTRAL, is operated by “Société Lyonnaise des Transports en Commun”, SLTC. This private company with a payroll exceeding 3,500 employees is a subsidiary of the VIA GTI Group, purchased recently by the French National Railroad Company, the SNCF. The SLTC is also responsible for maintenance of the rolling stock and infrastructures related to the mass transit system owned by SYTRAL.

SYTRAL has signed with SLTC a six years term contract (starts on 1st January 1999) to operate the mass transit system. Contracts of this type are based on risks distribution, specially, financial risks, and service involvement of the company operating the transit system.

On the other hand, InterRhône, a subsidiary also of the VIA GTI Group, operates the OPTIBUS system. OPTIBUS is a specialised transport service set up to meet the needs of persons with limited mobility. The contract was signed on 1st December 1998 and expires on 31st December 2002.

Finally, contracts have been signed with specific private companies to operate buses in certain zones which are not serviced by the TCL Transit System.

THE TARIFF SYSTEM

The trend of the main transport tickets available between 1994 and 1999 can be seen in the following table.

TREND OF TRANSPORT TICKETS						
	1994	**1995**	**1996**	**1997**	**1998**	**1999**
Single ticket	7.5	7.5	7.8	8	8	8
10-trips ticket	65	65	66.5	68	68	68
Commuter travel card	265	270	277	282	282	282
Social purpose travel card	-	-	-	50	50	50
Student travel card	220	220	221	221	200	200
School travel card	168	176	182	187	193	150

Source: SYTRAL

3.2.3. Transport systems funding in the Lyon Urban Community

SYTRAL FUNDING

SYTRAL income sources are as follows:

- The “versement transport” subsidising tax contributes over one third of SYTRAL resources and is therefore its main income. Since 1994, income from this tax has been increasing above 10% due to the enlarged taxable base of same, i.e., the salary volume growth within the areas serviced by the transport systems. The current tax rate as 1.63% is lower than the authorised maximum (1.8%)

- Contributions from the member government institutions: the Lyon Urban Community and the Rhône General Council fund SYTRAL through a grant voted annually by the mentioned agencies. This contribution amounts to about one fourth of SYTRAL income, and guarantees SYTRAL stability. Between 1990 and 1994, a significant effort was carried out by the members that led to a 20% annual increase of their contributions and allowed funding part of the investments. Since 1995, contributions from the two local institutions have developed at a pace with the inflation rate.

- Business sources income: these amounts are generated mainly by tariffs, but a small share arises from selling advertising space and business premises. Business income has increased from 22%, in 1993, to 23%, in 1997, when it met 46% of the operating costs.

- Allocations and subsidies from the Central Government and other income: Since the urban mass transit systems have been decentralised, the financial responsibility falls now to local governments. Therefore, the Central Government share in SYTRAL's budget is rather small.

- Loans. Borrowing is indispensable to fund new investments.

SYTRAL expenses enclose:

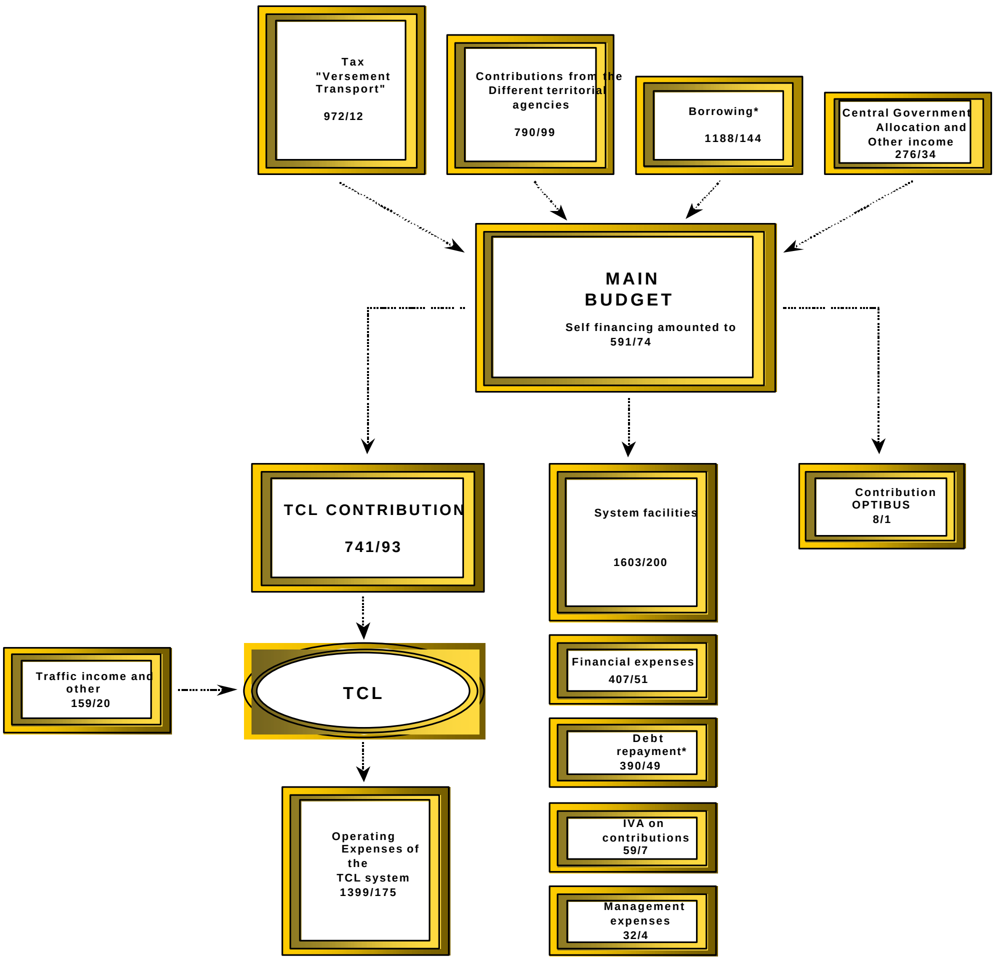
- The system operating expenses: payment to operators, which in 1998 amounted to 53% of SYTRAL expenses. Income from tariffs has increased since 1990 (14%), but not enough to match the growing expenses. Therefore, the operating deficit of the system has increased 22%, since 1994.

- Investments. In 1998, the expenditures assigned to the system have amounted to 19% of SYTRAL's budget.

- Debt interest payment. This item amounts to 25% of SYTRAL's budget and is properly distributed between interest payments and capital repayment. Financial expenses have decreased 35%, since 1994, due to the interest rates drop and the attendant negotiated debt adjustment.

SYTRAL's budget break down for 1999 is shown in the following chart.

BUDGET BREAK DOWN 1999
(in millions of french francs/ millions of US Dollars



* These are total amounts assigned to debt repayment

Source: SYTRAL

SLTC FUNDING

Payment to operators is based on the following items:

- A set amount based on expenses, established for a six years term and subject to the following requirements:
  - annual increase through a ratio based on prices and salaries trends.
  - possible 0.5% decrease due to productivity improvements.

- possible decrease per kilometre that was not run, due to strikes.
- price per kilometre set beforehand for each one of the transport modes.

➢ The target income is preset, prior to the contract start, and provides a third year check of the actual amounts. The contract remains in effect 5 days in the event of strike.

TARGET INCOME OF THE OPERATIONS CONTRACT BETWEEN SLTC AND SYTRAL (millions of francs/millions of US Dollars)					
1999	**2000**	**2001**	**2002**	**2003**	**2004**
617.5	627.5	638	+ 1.3% over 2001	+2.5% over 2001	-3.6% over 2001

Source: SYTRAL

SYTRAL is financially affected by any deviations in the target income since, if its amount exceeds the planned one, a bonus is paid, while, if it is below the contract target, a penalty shall be paid.

Income sharing is established according to the following formula:

FORMULA FOR SHARING BETWEEN SLTC AND SYTRAL THE OPERATING CONTRACT INCOME		
	1999-2001 **PHASE 1**	**2002-2004** **PHASE 2**
2.5%<Income≤ 4%	+25%	+75%
1%<Income≤ 2,5%	+25%	+50%
0%<Income≤ 1%	0%	+25%
-1%<Income≤ 0%	0%	-25%
-2.5%<Income≤ 1%	-25%	-50%
-4%<Income≤ 2.5%	-25%	-75%

Source: SYTRAL

SLTC has to meet also the specific targets for service quality and safety.

After weighing what a contract of this type may offer to organise transport systems in a medium-sized city, it can be stated that:

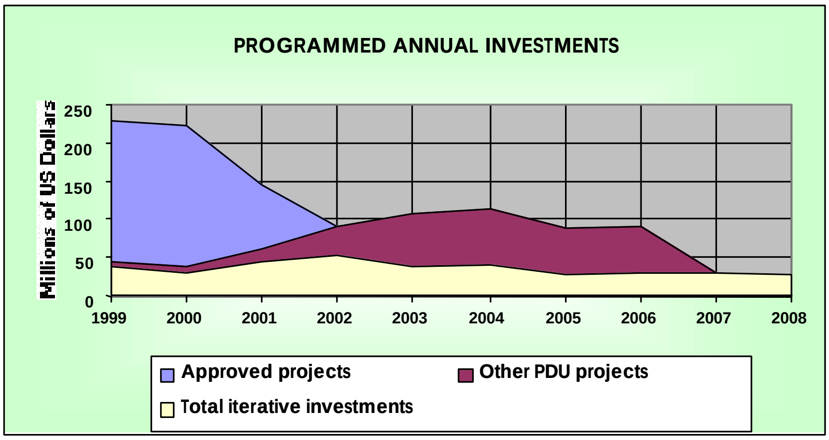
➢ Problems arising from the signed contract enclose:

- In reality, competition is virtually nil and rather limited in somewhat large systems.
- The market is in fact distributed between the larger operators groups.
- Drawing up complete and clear Instructions to Tender that prospective bidders can use to determine the possible margin of negotiation is a complex task for the organising authorities.

It is quite difficult, under these conditions, to ensure financial transparency.

INVESTMENTS FUNDING

SYTRAL investments average 600 million francs (75 millions US Dollars) yearly. In the next ten years, SYTRAL is planning to invest 7,900 million francs (987 million US Dollars) in projects of the Urban Transit Plan (PDU), as shown in the following diagram:



Source: SYTRAL

One third of the above investments is assigned to already approved projects, such as the underground system extension to Gerland (the only planned transit system extension), as well as completion of two tramcar lines already in progress, purchase of modern trolley-buses, commissioning of a real-time information system for users, and establishing non-contact cards. The second third is for operations not approved yet for system quality improvement, such as rolling stock renewal, and the last third is for projects still pending discussion and voting.

Investments are funded by SYTRAL through self-financing, subsidies granted by different government agencies and borrowing. The possible grant of concessions, where private interests hold a share, has been studied, but it was thought neither necessary nor appropriate for the city transit system development.

3.3. SINGULAR FEATURES OF PUBLIC TRANSIT SYSTEMS ORGANISATION IN GERMANY. THE MUNICH, BERLIN AND HAMBURG CASES

As concerns this Study, the German case merits attention for several reasons:

- Tradition of urban transit systems integration. The *Hamburger Verkehrsverbund* (HVV), established in 1965, was the first coordinating agency.

- Service quality. Mass transit systems are integrated as shown explicitly by the target of *a single timetable, ticket, and tariff.*

- The *Verkehrsverbund* (VV), Operators Associations, original approach as flexible and effective co-ordinating bodies.

  In Madrid, just before the Regional Transportation Consortium was setup in 1985, the Regional Government had to sell the idea of a single transit authority to the Transport Operators Federations. Hamburg was suggested actually as a model by the industry worried by the risk of increased public authorities involvement.

  Some organisation features of the Consortium, such as the Technical, Committee or the transportation operators membership in the Board of Directors, hint to that model influence.

But the German organisation model is also worth further attention, at this time, for several reasons.

- The singular process of both Germanys integration:

  - Change in the organisation charts of large metropolitan areas. General application of the Verherhsverbünd model which is autonomous versus the Federal State.

  - Progressively uniform levels of infrastructures and transport services between both Germanys.

- Public transit systems reorganisation and funding (approved by significant laws passed during the 1993-1996), due to:

  - Progress of the deregulation steps enforced by the European Union. The privatising process of railways is started.

  - Policy to transfer responsibilities for metropolitan transit systems to the regional authorities.

3.3.1. Legal and organisation restructuring

The Deutsche Bundesbahn, owned formerly by the Federal Government, has been reorganised as a stock company, the DB AG, that operates as a holding company structured by regions. The restructuring has gone even further and, instead of business units, the DB has been reorganised as federal-owned but independent companies that enjoy a large degree of autonomy as regards management and performance. The *S-Bahn Hamburg GmbH, limited partnership,* is a subsidiary of the new DB AG the same as the *Regionalbahn Schleswig-Holstein GmbH, limited partnership,* or the *DB Regio* subsidiaries, which operate also in the HVV area but service other states (Länder) different from the Hamburg City-State.

Against this restructuring background, the transit systems are handed over to the Regional Authorities according to Law 1994, that came into effect in January 1996. The law transfers to the states (Länder), Districts, (Kreise) and municipalities the urban and regional transit systems are the responsibilities for: planning, organising and funding.

The German Federal Republic consists currently of 16 states (Länder) and of them three are City-States: Berlin, Hamburg and Bremen.

The legal framework is as follows:

- Directives 1107/70 and 1191/69, for public transit systems funding and management, besides the Directives 440/91 and 18/95, being currently amended.
- Law for transfer to Regional Authorities (Regionalisierungsgesetz, RegG).
- General Law for Railways (Allgemeines Eisenbahngesetz, AEG).
- Law for Transport Systems funding (Gemeinde Verkehrs Finanzierung Gesetz, GVFG).
- Law for Passengers Transport (PbefG).
- Transport laws approved by the respective Länder (ÖPNVG), that reassign and share responsibilities between States (Länder) and Districts (Kreise).

The Law for Transfer to the Regions defines public transit systems which are acknowledged as a Government responsibility and transfers that responsibility to the Länder which are, therefore, since 1st January 1996, responsible for planning, organising and funding, and have been empowered to setup a Regional Authority for handling those areas.

The Law for Passengers Transport (PBefG) has been amended to meet the new urban and metropolitan transit systems definition and its transfer to the Regional Authorities.

- The expression Authority responsible for public transport is introduced according to the 1993/91 regulation from the European Commission.
- The concept of a public transit program to be drawn up by the mentioned authorities in cooperation with the operating companies has been defined.
- Increased cooperation with transport companies is regarded advisable.
- The total transport costs have to be met by the operating income plus that from legal compensations.
- To apply for a public transport concession:
    - In profitable services, the concession has to match the transport program of the responsible authority
    - In non-profitable services, it will be granted to the proposal that the organising authority finds is less costly.

A Federal Fund to assist investments is defined by the GVFG Law. The work written by Clara Zamorano, *Funding Systems for urban public transportation. Comparative study of Spain, France, United Kingdom and Germany (*Spain. Ministry of Public Works, 1998), from which the previous paragraphs have been taken, discusses in detail the operations and investments funding before the legislation was changed as well as during the transition and at this time.

The 1996 change in the German Constitution, whereby a new article is added that allocates to the States (Länder) part of the income from fuel taxes for funding transport systems, is described in the mentioned publication. The amount and distribution of those funds are specified in the Law for Transfer to Regions. The Länder, as we were able to check during the interviews carried out, are authorised to distribute those funds as they deem fit amongst the transport systems.

Most Länder use those funds, according to RegG, Art. 1, to meet either the suburban railways operations deficits or those of the remaining transport modes. As provided by Law RegG, Art. 8,2, they are allocated to investments and, often, to meet the coordination costs. The GVFG Law funds have to be used for investments.

The number of private transport companies which are self sufficient is quite low in Germany, and stands at less than 10% of the companies. Most are owned by local or regional groups but their byelaws differ and range from management that owns an interest in the company to stock companies (AG), but most are GmbH, limited partnerships.

Still, the involvement of private operators is growing, either as subcontractors for large public companies (Hamburg...), or through successful tenders for lines concessions. Consortia that enclose both public and private companies (Düsseldorf) have been also setup.

The Basic Law for German Railways Rearrangement services for the merger and restructuring of federal railways, allows investments by private interests, and establishes also the DB AG the German Railways Stock Company.

Based on the two previously existing railways companies, DB and DR, three different companies have been setup:

- DB AG. Registered as a private law stock company, and 100% government owned, renders railways transport services and uses the existing infrastructure.
- A second company was registered to take over the DB and DR properties and transfer those assets to DB AG. This company controls any fixed assets which are not required for the railways operation and has to repay the historical debt of the two fist mentioned companies.
- The Federal Railways Office. This is the new authority for things concerning the railways transport system.

Investments in the German Federation Railways are funded through the last mentioned office and 20% of that investment has to be assigned to suburban railways. DB is responsible for maintenance.

Each year, the Federal Government transfers to the Länder an amount from the tax on oil by-products to fund transport investments. The amount for the whole of Germany is around 5,700 millions US Dollars.

The respective Länder are responsible for approval of tariffs and compensation of public services that have been rendered.

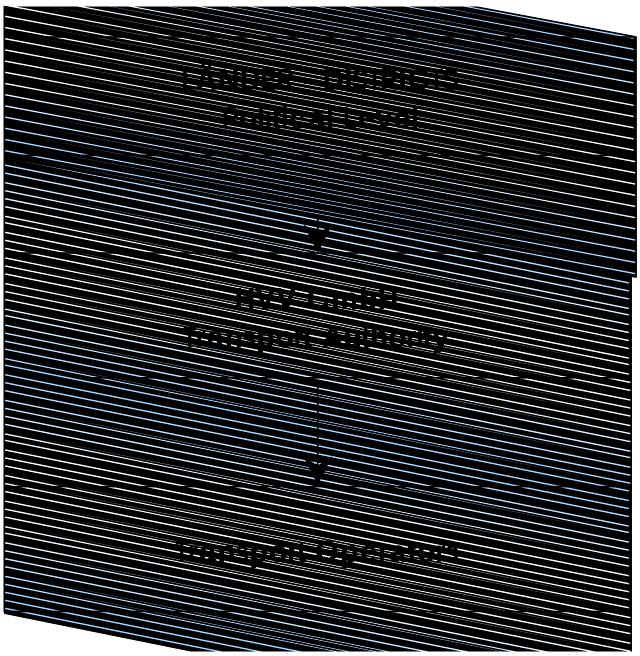
This significant change in the basic regulations approach to funding responsibilities and jurisdictions are shown in the organisation models of the transport systems.

Before the legislation was changed, the Verkehrsverbund (VV) were Transport Companies Federations that coordinated tariffs and services of the member companies, but subject to the Federal Government jurisdiction.

A basic role for coordination of transport systems is still played by the VV, due to their large experience and effective processes but now working at an intermediate tactical level, between the political power and operators. They submit initiatives at the political level based on their experience and, in turn, sign contracts with the operators. They are, in fact, a public transport executive.

This model, that has been generalised currently throughout Germany, allows for different organisation models.

The first one is the *Three levels model* applied in Hamburg and Karlsruhe. In this locations, the Verkehrsverbünd members are political institutions: Länder, Districts and / or Cities. The transport companies operate under contract and, as in Hamburg, they are members of the Advisory Boards, but not the Board of Directors.



In a second model, government agencies and companies are members on a 50-50 basis of the Board. For instance, in Stuttgart, the Land (States), several Districts and the Municipality are members of the Board of Directors jointly with the DB AG and several public and private companies operating in the area. The Transport Program is drafted jointly.

Under a third model, two different communities (VV) are setup: one is made up by the political level institutions and the other by the transport companies, and a cooperation agreement between both is formalised. It is actually a Verkehrsverbund that assigns part of its responsibilities to all the operators in a large city. This is the current situation in Rhein-Mann and applicable, also, with some qualifications, to Berlin.

3.3.2. Transports organisation in Hamburg

Hamburg is a City-State. It has been granted, therefore, the authority and responsibilities for urban transport, as in the other Länder of the country.

The Hamburg transport community (Hamburger Verkehrsverbünd, HVV) was a pioneer in Germany and one of the first, in the European scene, that was set up to coordinate and boost public transport systems.

Although HVV'S status and links to the operators have been modified following the legislation changes, it retains, to a large extent, its characteristics and is the model for public transports systems integration.

The basic data about Hamburg transport systems are shown in Annex 4.

The City of Hamburg and part of the neighbouring Schleswig-Holstein and Lower Saxony Lánder are enclosed in the HVV area that totals 2.6 million population and generates 482 million trips per year in public transport systems.

There are eleven public companies and several private ones operating through cooperation agreements.

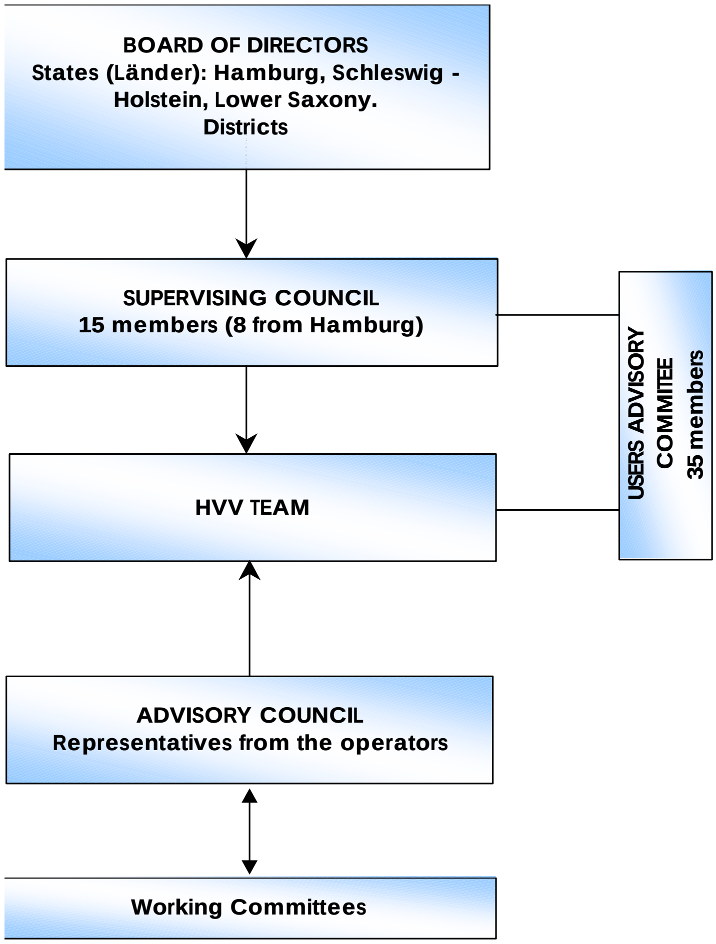
The monthly or annual travel cards are used by 83.3% of HVV'S passengers.

ORGANISATION AND FUNCTIONS OF THE HAMBURGER VERKEHRSVERBUND

The City-State, which holds 83.5% of the shares, is the main partner in HVV. The Schleswig-Holstein and Lower Saxony Länder as well as 5 Districts (Kreise) that hold shares ranging from 0.5% to 3.5% are also partners. HVV is a GmbH, or limited partnership company

The three-levels Model, described earlier, shows how the Public Transport Executive of Hamburg is organised. The model is broken down in the following chart:

HVV COMMITTEES



It can be said that HVV and the political authorities make up jointly the Transport Authority (gesellschaftsvertrag) which is responsible for drafting the transport program, signs the cooperation contracts (EAV Einnahmenaufteilungsverfahren) and funds the companies.

The Advisory Board, that seats operators, representatives, and the Passengers Advisory Board, which comprises users groups, NGO's, trade-unions and, in a single case, just everyday passengers selected through a screening process, are worth highlighting.

The HVV functions are as follows:

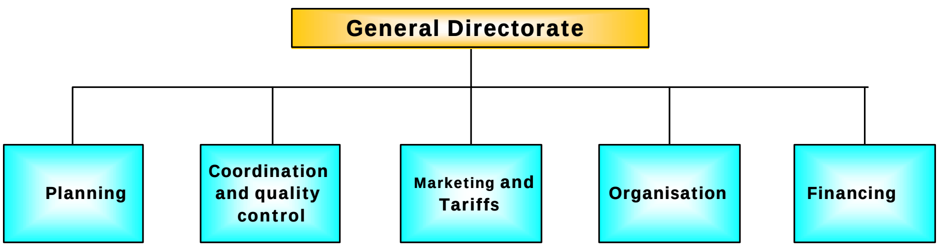
- Representing the common interests of the public transport system
- Draw up the Transport Plan
- Planning of the system: lines, routes, passengers transfer stations, stations and stops.

- Define quality standards.
- Sign contracts for transport services, draw up the tenders and control service performance.
- Distribution of income between companies.
- Estimate contributions by the respective transport authorities to the system's funding.
- Passengers counts
- Draw up plans to enlarge the HVV area
- Cooperate and coordinate operations with adjacent public transport systems.
- Draw up contracts with operators to render transport services.
- Management of claims.

For handling the above tasks, HVV has available slightly over 50 employees, broken down in a Manager, backed up by a small team at Corporate Level and five Directorates, as follows:

- Planning
- Services supplied
- Financing and administration
- Marketing and tariffs
- Organisation and contracts negotiation.

HVV ORGANISATION



The availability of a Staff Directorate known as Competence Centre (Kompetenz-Center Wettbewerb KCW), that has to promote free competition between operators is a significant feature of the HVV organisation.

3.3.3. Berlin

Berlin is nowadays a City-State, a Land, made up by the two parts in which the City was divided for several decades.

The City is ruled by the Berlin House of Representatives, the Parliament, that elects the Mayor and Senators.

Several events stand out in recent years:

- 9th November 1989. The Berlin wall falls down.
- 11th November 1989. Trains stop again in all Berlin stations.
- 1st January 1992. The two transport companies: BVB of East-Berlin and BVG of West-Berlin are merged and the current Berliner Verkhersbetriebe BVG is born.
- 1st January 1994. The BVG byelaws are changed from a city-owned company to a stock company.
- 1st January 1997. The Berlin and Brandenburg Transport Authority, the VBB, starts operations as a GmbH, limited partnership company.

BERLIN-BRANDENBURG AREA

Brandenburg is a Land (State) that surrounds completely the City-State of Berlin, which remains a separate entity since it is a fully independent Land.

The basic data on the Berlin Transport System can be seen in Annex 5.

The area serviced by the VBB is 30,000 Km^2 large and totals 6.1 million population. Berlin covers 889 Km^2 with 3.4 million population, and generates 3.5 million trips in public transport. A variety of transport means are available.

The City of Berlin is serviced by VVG, a powerful public transport operator. Regional trains and the almost 900 bus lines are significant in Brandenburg, a State where population density is low.

VERKEHRSVERBUND BERLIN-BRANDENBURG VBB

As regards organisation, Berlin-Brandenburg has setup the latest of the Verkehrsverbund, the VBB, registered in 1997, and similar to other public transports executives in Germany. Let us mention as special features that it services the largest geographic area of all the VV and is the only one that encloses two complete Länder (States).

It follows the general pattern of a VV where a Transport Authority coexists with a large operator, the BVG, in this case, and a specific cooperation agreement has been signed between both parties. It is a VV similar to the Rhein-Neckar, in Manheim, and the Rhein-Main-Verkehrsverbund.

The public authorities (Länder, Districts and Cities) make up the VV Board of Directors in this model. In turn, the public and private transport companies are members of a Federation, similar to the old VV. Both agencies are organised as GmbH, limited partnership companies, and have signed a cooperation agreement. On the other hand, individual contracts are signed by the *Political VV* with the companies.

In the Berlin case, the model has been conditioned completely by the already existing BVG, the large public company that operates the city transport system, which has both the required expertise and qualified human resources. Also, BVG has been traditionally in direct touch with the City Authorities (the Berlin Senate) and this hinders the planning and control work that the Transport Authority, the VBB, is expected to perform.

But the real situation has been simplified since the VBB'S attention has been focused on coordination and control of the public transports system in the Brandenburg Länder through cooperation agreements signed with: the railways (S-Bahn and Regional lines, since the VBB services a huge area) and with BVG, as operator of all the transport systems available in Berlin, as well as with some 40 bus companies.

The Berlín - Brandenburg Verkehrsverbund has been registered as a GmbH, limited partnership company, subject to private law. The company's shareholders are: the Brandenburg Land (33.3%); the Berlin City-State (33.3%) and the Brandenburg cities or districts (33.3%).

Like the Madrid Transport Consortium, the cities are free to apply for membership in the VBB.

Besides the Board of Directors, the VBB has an Advisory Board where each partner holds one third of the votes.

Thanks to VBB, passengers can purchase a ticket, in any station of the system, that is valid for riding in any transport mode.

A remarkable coordination of timetables has been also achieved. This is significant, specially, for regional railways and buses, since high frequency services are not feasible due to the low population density.

The above has been achieved in a rather short time and had to overcome problems due to the novelty implicit in the coordination of a Land, such as Berlin, serviced by a single transport company, with a larger, but less populated one, where different railways and bus companies operate and coordination was unknown formerly. Although it was setup on 1/1/97, VBB'S Executives mention April 1999 as the integration starting date.

The regional railways demand has increased between 10% and 15% since that date, and S-Bahn passengers 4%. For the mentioned reasons, operations funding has not increased following the integration.

The coordination success is signalled by a striking fact housing prices near, the regional (RE) railway stations, have increased from 5% to 8% during the past year, while they have remained stable in other areas.

VBB Executives highlight a problem described next. While cooperation contracts are negotiated with transport operators, these claim their vested rights to concessions that were granted in the past by local governments. Fortunately for VBB, eight years term concessions were usually granted and, lately, a shorter term has been suggested by the European Union.

A similar situation has been successfully settled in Madrid. The situation was in fact more problematic, since the concession terms were even longer, based on the old Transport Law of 1947. But the opportunity to negotiate again the concessions terms has been offered by the need to validate them.

The above situation is mentioned since it will be brought up when attempts are made to coordinate and control public transport in metropolitan areas of developing countries.

VBB responsibilities are basically the following:

- Planning public transport supply
- Coordinating tariffs between all operators in the area
- Approve tariff increases
- Coordinate timetables
- Control services and up to what point they meet the cooperation contract requirements.
- Funding operators. Save for BVG, which is funded directly by the city of Berlin. Also small bus companies, are not directly funded by VBB, since that responsibility has been assigned to the cities or districts.

As regards tariffs, VBB has launched a new system, which is in effect since 1st April 1999. Basically, a single ticket is used that allows riding any transport mode and number of stages, as long as the time term and geographical boundaries are not exceeded.

Zones are easily identified: Zone A is the area inside of the ring outlined by the S-Bahn; Zone B matches the city of Berlin limits, and Zone C extends about 15 Km outwards.

The tariff structure can be broken down as follows: single tickets; one-day tickets and group tariffs; weekly, monthly and annual travel cards, as well as short-ride tickets.

The monthly and annual travel cards are generally used by 80% of the BVG passengers and this shows how successful the cards are.

Travel cards can be purchased in news stands, tobacco shops, etc. The money collected by this sales points is sent directly to BVG, after a service commission has been discounted (the situation is different from that in Madrid, where the Consortium collects and distributes the income later to the different operators).

Tickets and travel cards are simple, basically, paper or cardboard is used and are cancelled with ink rubber stamps. BVG has started testing, for some months now, a rechargeable plastic card ticket.

Since the two large operators in Berlin East and West merged in 1992, the 15.000 employees on BVG payroll have serviced 3 million passengers/day. BVG has updated its byelaws to match the new regulations and it is currently a public corporation owned by the City.

In all fields of business management, and enclosed productivity, the company is improving its competitive edge and plans to downsize the payroll to 12,000 employees, while the service level remains similar to that provided by the 28,000 employees of 1992. BVG is also outsourcing from private companies (*wet lease*) about 10% of its bus services. At this stage, BVG has signed a contract with the City whereby the latter has waived any right to authorise new operators in an eight years term.

Although just an idea so far, BVG is working to draw up a different model for the Berlin operator. It could be a holding owned by the Länder and DB, which would comprise specific companies to operate the underground rail system, bus lines, tramcars, S-Bahn, and the RE and RB regional trains.

Concerning the Federal Government funding of the Länder (CVFG Law) the funds are sent directly to BVG from the Berlin Land, bypassing VBB, which, on the other hand, manages the S-Bahn and Brandenburg buses funding.

The percentage applicable to public transport of the amount contributed by the Central Government is decided by the City itself. The current allocation is about 140 million US Dollars plus other moneys which are part of the 50 million US Dollars-year assigned, during the next five years, for reconstruction of East Germany.

Discussions about the funds sharing between the different operators is due to the limited experience of the overall integration between the two Länder. Negotiations between the operators and with the authorities are multiple and tough until the sharing criteria are more precisely defined and the demand studies improved.

3.3.4. Munich(*)

MVV AREA

The area serviced by the Munich Transport Authority, *Münchner Verkehrs-und-Tarifverbund*, extends up to a 35 Km radius around the city. The city itself is about 310 Km^2 large and the area totals 5,500 Km^2. Of the 2.4 million population, 1.25 live in Munich itself.

The Munich underground (Metro) transit system, like the S-Bahn, are a good model of integration with the city: accessibility is excellent and shops are available in the stations. Munich transport is part of a règie, the Stadtwerte München Werkbereich Verkehr, SWM, a municipal company that handles the city services.

MVV

Since 1972, the Munich transport systems have been integrated in a transport Community similar to those already described. Transport policy, availability definition, transfers between different transport modes, normal marketing and tariff integration have been assigned to MVV.

Since the legislation was modified, MVV is to all effects and purposes the transport authority and encloses the Bavaria State (Land) and the Munich Municipality. Like other German VV, the limited partnership company formula has been selected. The Mayor of Munich is the Chairman.

DB was one of the MVV partners. But when MVV became a private law stock company, DB was excluded from its capital.

(*) This information has been kindly supplied by P. Grafftieux

Until DB left the company, MVV was somehow like a subsidiary of two large public companies: the German Railways and the Urban Transport Company, and it was, in fact, a Transport Authority. So much so that MVV had actually a dual General Directorate consisting of one Director appointed by the City and the other one by DB.

The political aim of the tariffs set by MVV is to meet about 50% of the operating costs. Tariffs are set by concentric zones.

Some as for the other VV, tariff integration not only favours commuters but also occasional travellers. Tickets and travel cards are aimed also to specific demand segments such as students, pensioners, young people, tourists and groups of passengers that travel together.

Good business and technological integration has been achieved and even the tickets dispensing machines are standardised.

The current tariffs, like those of Berlin or Hamburg, offer one-day tickets, weekly and monthly travel cards, short-ride tickets (less than four stations in total, but never more than two, in the underground system or the S-Bahn), daily tickets for families (five persons and one dog, at the maximum), students tariffs, etc. The off-peak ticket is an interesting offer than can be transferred and used by groups of persons and is intended to win over motor car drivers. MVV is providing also easy access to persons carrying bicycles and dogs.

The current prices of some of the mentioned tickets can be seen in Annex 6.

Social-type tariffs are also available. Handicapped people, for instance, pay only a 33% of the tariff. On the other hand, reduced tariffs are not available for the unemployed, although, some municipalities, such as Munich, purchase travel cards from MVV and resell them at a discount to the unemployed.

As regards **funding**, generally speaking, the infrastructures are funded by the Federal Government, the Bavaria Land and the City of Munich, while the companies are themselves responsible for maintenance, replacements and purchase of rolling stock. The investments break down, between the different governments agencies, is based on the relative significance of the works for each one (Central Government, Regional or Local).

If investments exceed 50 million US Dollars, the break down criterium is generally as follows:

- Underground transit (Metro)
    - 70% Federal Government
    - 20% Bavaria Land
    - 10% City of Munich

- S-Bahn
  - 60% Federal Government
  - 40% Bavarian Government

For investments less than 50 million US Dollars

- Underground (Metro)
  - 75% Federal Government
  - 25% Bavarian Government and the City of Munich
- S-Bahn
  - 100% Bavarian Government

The Federal Government allocations are raised through a special fund based on a fuel tax of 0,03 US Dollars per litre according to GVFG Law.

The fund is distributed by the Federal Government as follows: 80% amongst all the Länder and 20% for specific projects.

In the Bavaria State, a special fund, raised by taxes on private vehicles, provides also resources for the public and private transport system.

Items in the City of Munich budget are allocated to transports systems.

As regards aid for operations, all the transport modes that are dependent from MVV meet 52% of the operating costs, as required by a political decision. Although coverage rates are always difficult to compare since, in each case, specific items are found that might be enclosed or not in the costs (for instance, pension funds), the ratio seems rather low in this case.

To meet the difference, up to 1996, allowances were granted by the Federal Government (for DB); the City (for SWM), and some Districts (for regional bus lines). The fact that the Bavaria State did not contribute any assistance to transport operations has to be highlighted.

After the legislative reform, funds are allocated to each Land based on its responsibility for railways policy. The Bavaria Land share is currently 15% of all Federal funds allocated for railways.

The City, in turn, subsidises the SWM deficit.

As regards indirect benefits accruing to transport systems users, leaving aside the mentioned tax on vehicles, only some companies subsidise, so far, their employees commuting.

Up to 1996 income was distributed by MVV proportionally to the service offered, as measured by seats x Km, and weighted by a unit costs estimate of each transport mode operation. The system was reviewed every five years and could be readjusted every year. The system, in spite of its simplicity, had a drawback since it did not prompt operators to improve productivity.

A new system has been defined currently, although it is still in the discussion stage, that will be based on the number of passengers x Km, for encouraging operators to attract demand. It has been also proposed to weight the passengers x Km according to the unit operating costs of each transport mode.

A rather long transition phase between both models has been applied by MVV. Each year, according to the new demand criterium, only the income differential between that year and the previous one is distributed, while the first mentioned criterium remains in effect for the other years.

4. TRANSPORT SYSTEMS IN DEVELOPING COUNTRIES. LATIN-AMERICA.

4.1. SHARED CHARACTERISTICS OF DEVELOPING COUNTRIES

Infrastructural and service shortages that, in turn, hinder any possible increase of the countries income are inescapably linked to the development level, and transport is no exception.

In this connection, the growing trend of Multilateral Financial Institutions and bilateral Cooperation agencies to enclose urban transport systems in their schemes and emphasise the institutional development questions in this area is rather positive.

4.2. AVAILABILITY OF PUBLIC TRANSPORT SYSTEMS

Mass transit rail systems are barely available in these cities. Underground rail transit is found only in just a few cities and suburban railways were never built or have gradually been discontinued and are currently used only for hauling goods or their infrastructures have been taken over for other services. In Latin-America, only twelve cities have some underground transit facilities and six of them are Brazilian. Tramcars, light rail transit (LRT) or *narrow gauge* railways are operated only in 15 cities throughout the continent (Annex 7).

The mentioned systems amount to slightly over 300 Km, while some 100 million people live in Latin-American cities exceeding two million population.

Wherever mass transit services are not available, most of the demand is channelled to bus lines that operate different types and sizes of vehicles from the 50 to 60 passengers ones down to 18 to 30 seats minibuses or even smaller types. In the less developed countries, taxicabs, besides, tricycles, pick-ups and even lorries complete the transport means available.

In addition to the scheduled transit systems, that service preset routes, with more or less fixed stops, *informal transport* operations that service specific origin-destination runs and depart when the vehicle is full are also quite common.

The expression *informal* is often a cover up for all sorts of illegal routes, stops and, even, the vehicles repair. The lack of safety, service quality and unfair competition implied for scheduled lines are some of the consequences. Any possible coordination of transport services of this type is rather limited.

Service quality is hampered by the deregulated, unplanned and disarrayed service supply. Passengers are dependent almost exclusively from public transport and have to walk long distances to access the bus lines while transfers are hard on passengers since they have to walk long stretches pay more than one fare.

Colectivos, the colourful and medium-sized buses of Buenos Aires, Bogota, Lima or Managua, like the *combis* of Mexico, are convenient for passengers because of their somewhat unscheduled routes and stops, but the speed and even some stops are rearranged as they strive to catch more riders based on the potential demand.

As for the routes, these are established also by the operators based on their convenience. It is striking, for instance, that the average travel distance in a Managua bus (slightly above 8 Km) is longer than the average distance between the actual start and destination. An illustration that to catch more passengers, operators resort to zigzagging routes that penalise most of the other passengers (Japan International Cooperation Agency. *Master Plan for the Municipality of Managua*. 1999).

Transfers are most likely the transport step operators pay less attention and shows the system's lack of integration. As an example, let us mention again Managua where interurban transport terminals are located close to the largest city markets, the last-stop for many people living in other towns. But over 25% of those passengers travel also around Managua, in city buses, minibuses or taxicabs. But the arriving people have to walk at times burdened with bundles over 300 m from the bus terminals to the urban services stops.

4.3. OVERALL LACK OF PLANNING, REGULATION AND INTEGRATION

The lack of integration, even at the most cursory levels, is obvious even in the more developed cities of the continent, where a great deal remains still to be done.

Mexico city has a Transport Master Plan and the authorities have taken drastic steps to limit the use of private cars one day per week due to the air pollution levels. Following that step and the firm decision to promote public transport (in 20 years, the underground rail system has grown from 37 to 178 Km), the transport share of private motor cars has dropped from 25% to just 17%. Management of all public transport systems to channel the demand towards the larger capacity, less polluting ones, to get part of the over 140,000 taxicabs and small buses (*peseros* and *combis*) out of the streets is the current target. Tariff integration is absent. Peripheral buses are allowed access to the underground rail systems terminals to park nearby.

Interesting information about the actions implemented and obstacles met to coordinate public transport systems in Santiago de Chile and Caracas are shown next (several papers submitted during CODATU IX. Mexico D.F. April 2000).

A combined underground and surface bus ticket is available in Santiago since 1987. It was started through an agreement between the underground rail system and individual bus operators that perform feeder services to the underground transit system. But barely 3% of the passengers do transfer between systems.

On the other hand, the underground system and the National Chilean Railways have signed agreements for timetables coordination.

The year 2005 was set as the target horizon for tariffs integration in the 1995-2001 Plan drafted by the Transport Planning Commission of Santiago de Chile (SECTRA). But specific actions were not stated.

The underground transit system in Caracas is subject to the competition of the 18 to 32 seats *buses por puestos (*seated passengers buses) and the *Jeeps* that carry less than 12 passengers operating in the suburban hills area where the poorest neighbourhoods of the City are located. In view of the above, the underground rail system decided to operate feeder services using conventional buses. An interesting experience since this is a *premium service* with a single ticket at a price slightly higher than the underground rail fare.

However, in spite of the efforts for integration, 80% of the trips that have to transfer between systems use the *buses por puestos* (seated passengers buses).

The current integration conditions, in the two mentioned cities, are shown by the following table:

	Santiago de Chile	Caracas
Bus - Bus		
Physical integration	H	H
Tariffs integration	N	N
Institutional integration	N	N
Bus - Rail		
Physical integration	H	H
Tariffs integration	L	M
Institutional integration	L	L
Bus – Other		
Physical integration	L	L
Tariffs integration	N	N
Institutional integration	N	N
Rail – Rail		
Physical integration	M	-
Tariffs integration	H	-
Institutional integration	H	-
Rail – Other		
Physical integration	H	M
Tariffs integration	N	N
Institutional integration	N	N

Integration levels: N = Nil = Low M = Medium H = High

Although a general statement is not appropriate, since Latin-America is a continent, where organisation and income differences between countries are obvious, it can be stated that Metropolitan Transport Authorities are either missing or, else, have not enforced their regulatory powers and lag behind the transport sector demands, and limit themselves to grant the permits and licenses requested.

Brazil is the exception and exhibits some rather interesting experiences.

The basic functions of a *Public Transport Executive*: planning, regulation, control, coordination and funding, are not implemented due to the mentioned institutional weakness.

- Planning a transport system (infrastructures and services); implementing a transport model designed for the cities future (as Curitiba has been doing for the last 20 years, or the current Transmilenium attempt of Bogota); coordination of urban planning.
- Regulation: clear rules and conditions to implement transport services: Laws and Regulations to grant concessions and transport permits; safety standards. Definition of the essential licensing requirements to be met by the concession holder (routes, stops, service frequency, assigned vehicles...).
- Inspection and control of regulations compliance. Penalising authority.
- Coordination: between the different echelons of the Government Transport Authorities (national, regional and local), with the Treasury, Police and Town Development Departments, as well as amongst transport operators for progress towards a transport modes integration.
- Funding opportunities of public transport systems are rather limited, due to the governments lack of resources.
    - As regards investments, since that prevents the development of mass transit systems, construction of new terminals and public transport corridors, establishment of a Light Rail Transit, etc.
    - From the operations view point, since compensations cannot be offered to operators neither through contributions or subsidies, nor to help funding the vehicles fleet renewal, which is an overall priority.

The mentioned absence of funding sources is met mainly through the private initiative and, at times, international cooperation.

In the less developed countries, there are usually many companies, each with its own identity. This might be appealing as happens with the colourful "colectivos" buses that owners exhibit proudly in Buenos Aires, Bogota or Lima, and show a captivating variety which, as mentioned by F. Salvucci, is worth keeping.

In this connection, Curitiba is also an example to be mentioned, since the transport system has been thoroughly restructured.

Transmilenium implementing in Bogota merits close attention in view of the concessions being granted right now for bus lines in trunk corridors which are going to be a key factor for transport structuring in the City, specially, while the already long drawn-out planning, study and competitive tender process for the underground rail system keeps on going.

Managua, for instance, assisted by the Inter-American Development Bank, the Spanish Cooperation and the Japanese Agency for International Cooperation has drafted a Master Plan that provides three reserved carriageway transport corridors where bus lines will be operated. Commissioning of the Northern Highway Corridor, whose geometric design and competitive tender projects will be completed during the next few months, is going to induce a deep restructuring of a significant and extensive bus lines system that has been, historically, poorly controlled.

The Managua Municipality, which has been just granted the urban transport responsibilities, that so far have been assigned to the respective Ministry, has setup a specific regulatory agency, the Transport Regulatory Institute of the Managua Municipality, IRTRAMMA. The Consulting Team that has drafted this Report is currently cooperating in its implementation. IRTRAMMA proposed organisation and functions, drafted recently as part of the mentioned Consulting, are summarised in an Annex. The system integration is emphasised by the proposed functions.

We share the view of Fred Salvucci (ibid) that in the case of Latin-American cities, where the number of operators is rather high, it is not feasible to setup tariff agreements unless they are enforced by an agency independent from the transport companies.

The efforts to setup the Buenos Aires Transport Authority, that have been discontinued, illustrate the obstacles inherent for setting up a single system jurisdiction, if a convergent outlook between the political instances is absent.

As a guideline for transport policy, the present competition between bus *colectivos* and rail transit should be encouraged by the future ATAM for best meeting market needs and promote more efficient railway and suburban services. To this end, the bus lines system should be strengthened by ATAM, since this mode provides basic mobility in Buenos Aires.

The Brazilian case is of special interest. Investments in transport infrastructures have been significant and are by far larger than in the rest of the continent. Bus lines have been also heavily promoted and the possibilities of this transport mode, in a planned and integrated system such as the one in Curitiba, show some paradigmatic and exemplary cases.

Establishment of Transport Authorities and funding arrangements are currently under way in the main Brazilian metropolitan areas which are concerned for and want to ensure the transport systems sustainability: more formally in Recife and less so in Rio de Janeiro, Sao Paulo and Belo Horizonte.

Jorge M. Rebelo already mentioned work studies in detail these cases: when Transport Authorities are mentioned, the author favours a somewhat informal venue to discuss proposals that meet a previously agreed overall strategy. These proposals have to focus on the economic efficiency and financial sustainability from a transport intermodal outlook.

The Regional Commissions for Transport Coordination (CRCT) will be made up by representatives from the State Governor and Mayors of the Metropolitan Region, specially, from the Capital city, as well as representatives from those Agencies responsible for urban transport and municipal and regional planning.

The Recife's CRCT was established in 1981 by both the State Government and Recife Municipality. The Urban Transport Metropolitan Company, EMTU, is responsible for coordination of urban and regional bus lines.

Although it is not authorised, concessions renewal in many Brazilian cities is virtually automatic. But the metropolitan regulations in Recife have set productivity targets to be met for the concessions renewal that condition even the length of the concession. The approach is rather pragmatic.

Both in Rio de Janeiro and Sao Paulo, the respective State and Municipal Governments have setup a meeting point for transport projects and strategies discussion.

Progress has been achieved also by the Commission for common tariffs definition and assistance to transport policy.

In the Sao Paulo metropolitan area, transport policies are discussed by the Commission and an integrated town planning system, that encloses transport, town development and environmental impacts, has been tested. A model for tickets to be used in bus lines, underground rail transit and railway systems has been also agreed.

The CRCT in Belo Horizonte is a tool that helps to decentralise suburban railways from the Federal Government to the State and Regional Authorities as well as for integrated services and tariffs between railways and bus lines.

The Curitiba integrated system is based on a hierarchical net of bus lines along main axis that connect the central city to the surrounding neighbourhoods and run on reserved carriageways which have the required access and transfer facilities. Direct and express services that achieve high commercial speeds are also available.

Since the early 80's, Curitiba has established an integrated tariff that allows transfer between lines on a single ticket. The tariff structure has been designed in a way that the longer runs, patronised usually by the lower income population, are subsidised by the shorter ones.

The success is due to an all out bet on bus transport corridors within a hierarchical scheme that has been planned and coordinated with the town development and implemented by stages. The service operation has required restructuring the already existing systems which has been carried out at all times with outstanding results. The Special Secretariat for Metropolitan Affairs is the advisory agency for the 25 municipalities pool, and of them, 8 are serviced by the integrated transport system. An Association of Municipalities in the Metropolitan Region have been also setup. Significant efforts in health, refuse selective collection and the environment, besides transport and town development planning, have been carried out by the Region.

Brazil's has reached, therefore, a standing rather higher than that of other Latin-American countries as far as the transport systems integration is concerned. The comparative informal nature of the Transport Commissions and the Curitiba exceptional case are a singular characteristic of the Brazilian model.

A rather valuable suggestion raised by Jorge M. Rebelo's paper is that multilateral agencies help to consolidate those Commissions and study exclusively funding of transport projects that have been previously discussed and approved as a priority by the RTCC.

Planning, coordinated with town development and environmental actions, is also performed by the Transport Authorities in Brazil.

Promotion of public transport is another function implemented by the Transport Commissions in Brazil. Due to the higher development level of this country, the RTCC not only study how safety and comfort offered to those bound to use mass transit systems can be improved, but also services that middle class people who own a motor car find attractive. So far, some switch has been achieved already from motor car to bus transport in both Curitiba and Sao Paulo which is by itself a significant success. Consistent to that policy, demand management, that will be a deterrent for private motor cars use, through actions on parking facilities, traffic restrictions, and priority granted to bus service traffic are the next steps to be implemented. Implementing *congestion pricing* policies has been started in several Brazilian cities.

This is possibly the only action that the Madrid Transport Consortium has still pending, since it is neither currently authorised to apply street traffic deterrent and regulating steps nor to plan and design urban thoroughfares. Therefore, the Consortium's demand management powers are quite limited. Besides, the outcome to its brilliant efforts for boosting transport services and infrastructures are less outstanding that what it could be, achieved if a more integrated planning had been applied.

The policy whereby motor car users have to bear the actual travelling costs in congested urban zones has been stated in the 1996 “Green Book” from the European Commission. The document “Vers une tarification équitable et efficace”, (To achieve an equitable and effective tariff system), that studies the options to internalise the urban transport external costs, has been published by the Commission to encourage discussion.

The resort to private initiative for mass transit systems operation is the usual approach in most countries. It is currently applied in Argentina, Chile, Brazil, Colombia, and plans are studied in several Central American countries as a help to remove operation deficiencies and reduce drastically operating subsidies, although the funding problem has not been fully worked out.

As illustrated by the two first recent cases of privatised railways in Spain, funds will be contributed by Government agencies to balance the system and it is just right in the following cases: the Arganda railway (Madrid) through contributions to operations. For building the new tramcar line in Avda. Diagonal, Barcelona, the Region and City will cooperate to fund part of the investment and provide assistance to the operation. The above actions will be obviously performed through outsourcing and rather demanding targets and performance standards will be set.

Returning to Brazil, and according to Jorge M. Rebelo’s paper, an overwhelming majority of bus lines operated by private companies are not subsidised. On the other hand, the operating deficits of underground rail transit and suburban railway systems, save in Sao Paulo, are met by Government allocations.

Tariffs are regulated by the Government to ensure that the lower income users commuting is not hampered. Most transport Government agencies have signed annual program-contracts that set targets for railway and underground rail transit systems, i.e., the volume of passengers carried. As a counterpart for the Government regulated tariff, the differences between income from fares and operating costs are compensated. The infrastructure construction and replacement of equipment as well as capital costs are also funded by the Government.

Since taxation at the source is not constitutional in Brazil, the Federal Government gets the funds required for such attentions from the single treasury tax income of each State.

Although, as pointed out by J. M. Rebelo, the operating allocations have been paid on time by the State of Sao Paulo, the availability of funds for rolling stock and equipment replacement or lines extension have experienced delays. The problem of the financial sustainability of the system has to be therefore discussed. The author finds that the funds sources and application for investments in urban transport have to be studied based on a multiyear investments program.

5. CONCLUSIONS

Since transport integration in the metropolitan areas of the less developed countries is lagging and taking into account the political, financial and legal obstacles, an approach by phases and rather realist proposals are in order.

Clear operating priorities have to be set since so many areas require attention, to avoid the scattering of efforts. The Regional Commissions for Transport Coordination in Brazil, already described, are a potential model to be followed.

Institutional strengthening, is in our view indispensable and implies setting up specific agencies to such purpose which do not have to be necessarily rigid neither provided with large resources, but their functions and responsibilities have to be clearly outlined from the start. A summary of the organisation and functions proposal, that this Advisor has actually drafted to setup a Transport Authority in the City of Managua is attached in Annex 8.

Development of the **regulations** to organise competition and funding of urban transport is also a priority.

Transport plans, coordinated with other planning activities, have to be drafted as a guideline for establishing specific action strategies.

The aim is to continue the work that has been started already by the International Financial Institutions and several International Cooperation agencies, that will be helpful to set up a minimum database for operations, and training of civil servants that will be employed in the Urban Transport Agencies.

The **Specific Cooperation Agreements** signed with similar transport regulation agencies in developed metropolitan areas will be no doubt useful for such training and contribute expertise that has to be obviously fitted to the specific situation in each country and city.

Integration of physical planning is a priority requirement since it is less complex from an institutional point of view: terminals first of all have to be involved in its design through the transport planning and regulation agencies, to ensure that access and transfer and the different services provided to passengers and vehicles are properly addressed.

The coordinated planning of transport corridors is also a requirement and, generally speaking, all things related to transport infrastructures, have to be integrated in the town development, environmental and, obviously, street system planning.

During the first phases of integration, the **joint promotion** of the system can be also approached: improvement of common facilities; information; advertising and identifying of the system’s elements.

Possible actions enclose system's layout maps, opportunities offered by the system showing maps and guides, information displayed in stops and terminals, clear markings of stops and vehicles allocated to the system can be provided through outsourcing or specific agreements.

Services integration: proposals for bus lines restructuring that will be a complement instead of competition to the mass transit systems or the new transport corridors based on reserved carriageways.

Master Plans for Urban Transport have to be drawn up as a reference framework for all the actions and, obviously, the routes restructuring.

Planning the best possible systems is not advisable due to the risk of operating failures in the system and, instead, some redundancy in the services to be provided should be allowed.

Tariff integration will be usually applied jointly with the bus lines system restructuring, as a way to coordinate the services. Implementation will be a complex matter since, right now, integration is virtually inexistent.

Schemes of feeder routes through the new corridors that charge integrated tariffs will be required by the railway systems extension, new light rail transit systems or carriageways reserved exclusively for bus lines.

In the mean time, partial tariff agreements might be proposed to the transports sector at informal meetings to be called up or during the consulting and concerted action processes which are desirable for any regulatory agency.

Where mass transit systems are present, funding needs should be reduced by the general use of concessions granted to private operators. In any event, investments funding will be always required and, in many instances, for balancing the operation costs. The concession contracts should regulate both assumptions (as shown, for instance, in the Rio de Janeiro railways privatising agreements), and the investments program, to be implemented by the respective government department, shall be clearly spelled.

Financial assistance to private companies operating bus lines is not usually granted. But ageing of the vehicles fleet is usually raised, and the attendant effects on service quality, speed, safety and the environment are pointed out.

It seems a priority, in those cases, to renew the vehicles fleet, something that most often is beyond the financial capacity of many companies. The Government’s help would be rather convenient and specific funds should be earmarked to that end.

The assistance provided has to be limited and compensated by regularising their concessions or negotiating again its terms.

The interesting experience of the fleet renewal in Madrid is summarised in Annex 9.

ÍNDICE DE ANEXOS

ANEXO 1. DATOS BÁSICOS DEL SISTEMA DE TRANSPORTE EN MADRID

ÍNDICE

ANEXO 1. DATOS BÁSICOS DEL SISTEMA DE TRANSPORTES DE MADRID

1. LA LEGISLACIÓN ESPAÑOLA EN MATERIA DE TRANSPORTES

En España hay actualmente tres niveles administrativos que influyen directamente sobre el transporte público en las ciudades:

- La Administración Central, garante final de los principios de solidaridad, libertad e igualdad de todos los españoles a través del territorio nacional.
- Las Comunidades Autónomas, que tienen por misión velar por el buen funcionamiento y progreso de sus respectivas regiones.
- Los Municipios, encargados de dar el mejor servicio dentro del límite de su término municipal.

En lo referente a la legislación en vigor que afecta al transporte público, tenemos, por orden de importancia:

- La Constitución Española (1978).
- Ley de Ordenación de los Transportes Terrestres (Ley 16/1987, LOTT).
- Ley Orgánica de Financiación de las Comunidades Autónomas (LOFCA - 1980).
- Ley Reguladora de las Bases de Régimen Local (LRBRL - 1985).
- Ley de Regulación de las Haciendas Locales (LRHL - 1988).

De entre todas estas, la única ley referente al sector transporte es la LOTT, sin ser específica del transporte urbano.

Sólo algunas Comunidades Autónomas han promulgado una legislación específica sobre transporte de viajeros en aglomeraciones urbanas, y cada una de ellas lo ha hecho con distinto alcance. La Ley 5/1985 de la Comunidad de Madrid se refiere a todo el transporte público regular de viajeros en el ámbito territorial de la Comunidad, estableciendo un Consorcio como modo de Autoridad única, el denominado Consorcio de Transportes de Madrid.

2. LA COMUNIDAD AUTÓNOMA DE MADRID (CAM)

De los 5 millones de habitantes de la Comunidad de Madrid, cerca de 2,9 millones pertenecen al municipio de Madrid, la denominada “corona central”. El resto de la población se distribuye en dos coronas funcionales, la “corona metropolitana”, con casi 2 millones de habitantes, y la “corona regional”. En los últimos años se aprecia una baja de la población empadronada en la capital, que se corresponde con un aumento en la corona metropolitana y regional.

La región de Madrid alberga una estructura poblacional y económica compleja. El municipio de Madrid se estructura, administrativamente, en 21 distritos, y funcionalmente, en una zona céntrica y diversos ensanches. El área metropolitana funcional madrileña presenta una diferenciación espacial, la zona sur es la más poblada, con una alta densidad residencial y un nivel de renta medio–bajo, con algunos municipios cercanos a los 200.000 habitantes, el oeste madrileño ha tenido un desarrollo disperso y con población de más alto nivel adquisitivo y finalmente, el norte y el este poseen una estructura mixta, con importantes desarrollos industriales. La Corona regional tiene una población dispersa en pequeños núcleos.

Desde mediados de la década de los 70 se pone de manifiesto un proceso de descentralización. En efecto, si en 1975 la población que habitaba la Corona Central era el 75% de la población total de la región, en 1995 el peso relativo de la misma se había reducido hasta el 58%. Así, aunque la población total de la Comunidad continúa creciendo en torno al 0,8% anual, este crecimiento se distribuye de forma desigual, lo que ha producido un descenso cercano al 3% de la población del municipio de Madrid en los últimos 5 años, mientras que la población del resto de la Comunidad se incrementaba en casi un 13%.

Desde el punto de vista geográfico, la ciudad de Madrid tiene una forma relativamente circular. Está estructurada según un modelo concéntrico, con siete grandes carreteras de acceso. En este sentido cabe destacar las grandes autovías de circunvalación M-30 y M-40 que pretenden descongestionar el centro de la ciudad respecto de trayectos entre zonas del extrarradio. (Se han proyectados dos nuevos anillos, la M-45 y la M-50 de los que ya existen importantes tramos construidos, así como nuevas carreteras radiales de acceso en algunos casos paralelas a las ya existentes).

3. LA MOVILIDAD EN LA COMUNIDAD AUTÓNOMA DE MADRID

Analizando comparativamente las concentraciones de población y de empleo por Coronas en la Comunidad Autónoma de Madrid, se observa que en la Corona Central, a pesar de su continua pérdida de población residente, se ubican cerca del 75% de los puestos de trabajo de la región, concentración que es mucho más importante en la Almendra Central (Zona Centro), ya que con un porcentaje de población residente en el entorno del 20% acoge algo más del 45% del total de los empleos.

La movilidad de personas en la Comunidad Autónoma de Madrid es un fiel reflejo de la distribución de la población y de sus actividades. Así, según se desprende de la última Encuesta Domiciliaria de Movilidad Metropolitana publicada (1996), la distribución modal de los viajes muestra como casi el 37% de los desplazamientos de los madrileños son realizados a pie, ya que se trata de viajes cortos dentro de la ciudad o el barrio donde se reside, mientras que el 63% restante, al tratarse de desplazamientos más largos, son realizados mediante algún medio de transporte mecanizado.

Estos últimos, que suponían, en un día laborable de 1996, casi 6,3 millones de viajes, eran realizados en un 52% de los casos utilizando medios de transporte colectivo, mientras que en el 48% restante se utilizaban medios de transporte particulares.

Igualmente, la encuesta indica que la Corona Central era el destino del 80% de los viajes mecanizados que se producían diariamente en la Comunidad de Madrid, teniendo el 30% de los mismos origen en la propia Corona Central, un 54% en la Corona Metropolitana, y el 16% restante procedía de la Corona Regional.

Por su parte, la Corona Metropolitana recibía el 19% del total de los viajes generados, de los que un 8% procedían de la Corona Central, un 19% de la misma Corona Metropolitana y un 73% de la Corona Regional.

Finalmente, la Corona Regional recibía el 1% del total de los viajes generados, procediendo un 19% de éstos de la Corona Central, un 30% de la Metropolitana y un 51% de su misma área. Por tanto, la Corona Central es la que más viajes motorizados atrae, el 80% del total, sin embargo, la procedencia de los viajeros está menos concentrada, asumiendo la Corona Metropolitana aproximadamente el 50%.

4. METRO DE MADRID

El CTM se convirtió el 31 de diciembre de 1987 en el titular del 100% del capital social de la compañía Metro de Madrid y, consecuentemente, en su propietario único, gracias a la transferencia en esta fecha de las acciones propiedad del Ayuntamiento y de la Comunidad de Madrid.

A 31 de Diciembre de 1998, la red del Ferrocarril Metropolitano de Madrid contaba con un total de 11 líneas en funcionamiento (además del ramal de Opera-Príncipe Pío), con una longitud total de 135,251 kilómetros y 182 estaciones, de las cuales, 105 son sencillas (sin posibilidad de correspondencia), 23 son dobles, 9 triples y 1 cuádruple. Existe, además, correspondencia directa con la Red de Cercanías de RENFE en 9 estaciones. y en otra más con la Estación Sur de Autobuses.

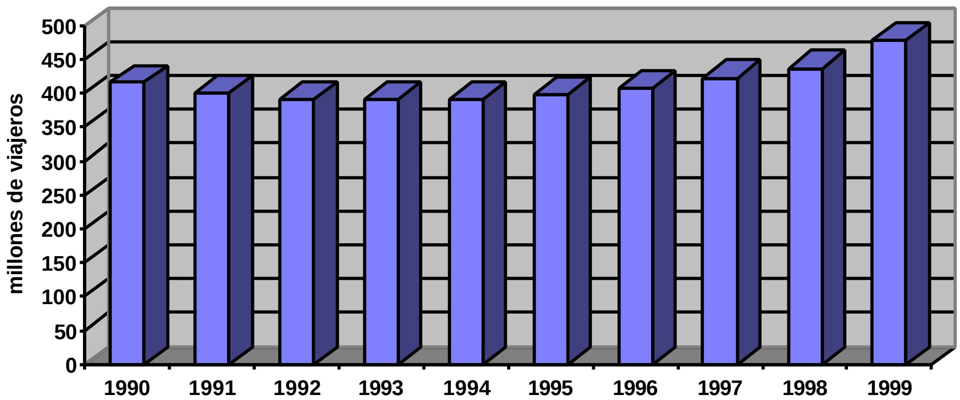
A 31 de Diciembre de 1999, la red de Ferrocarril Metropolitano de Madrid, con la culminación de las obras del Plan de Ampliación de Metro, cuenta con un total de 11 líneas en funcionamiento (además del ramal Opera-Príncipe Pío), con una longitud total de 171,413 kilómetros y 201 estaciones.

Conviene señalar que la longitud citada incluye los fondos de saco de los extremos de las líneas.

En cuanto a la oferta de servicios, en 1998 se produjeron 98.166.659 coches-kilómetro, y en 1999 117 millones, incluyendo maniobras, lo que supuso un incremento entre 1997 y 1998 del 1,75% y del 1,93% entre 1998 y 1999.

En relación a la demanda, el gráfico siguiente establece la evolución del número de viajeros en Metro:

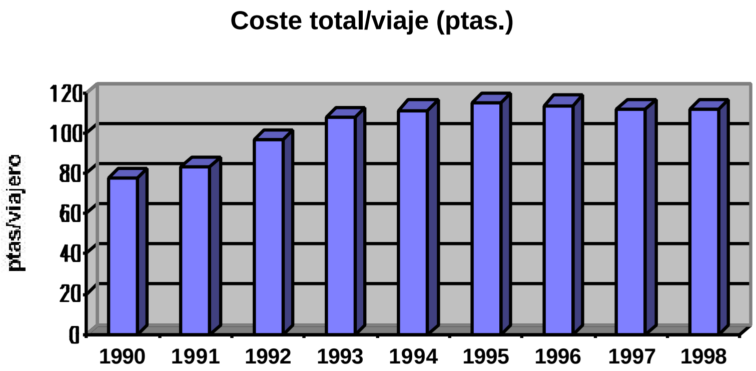
Evolución de los viajeros transportados en la red de Metro



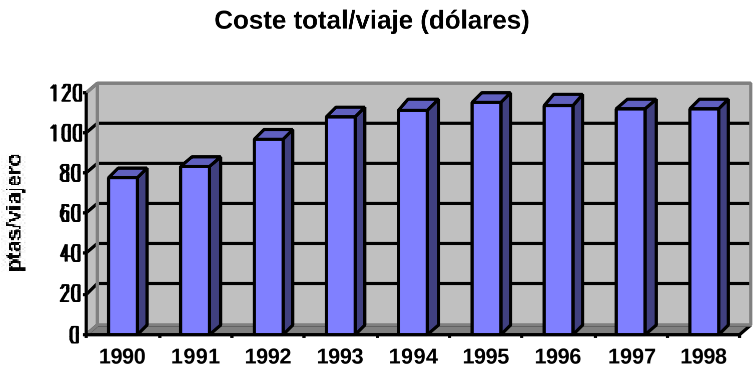
Fuente: Memorias e Información del Consorcio de Transportes de Madrid.

Analizando la demanda puede apreciarse que los años 1992-1993-1994 son malos, debido a la crisis económica. Pero desde entonces el tráfico ha ido aumentando de forma constante, también empujado por la reactivación económica.

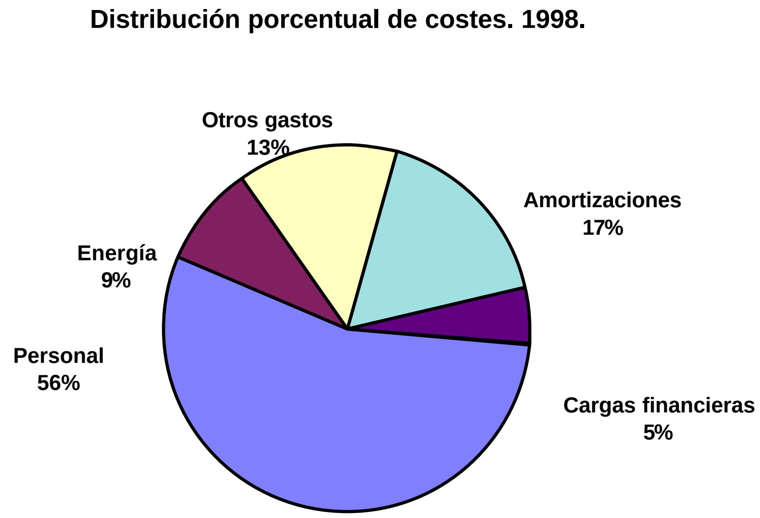
Los costes por viaje (gastos ordinarios) presentan la siguiente evolución, ligeramente en descenso desde 1995 hasta la actualidad. De igual forma han evolucionado los costes por vehículo-km.



Fuente: Memoria del Consorcio de Transportes de Madrid de Madrid (1998)



Mientras que la distribución de costes según partidas tiene la siguiente forma:



Fuente: Memoria del Consorcio de Transportes de Madrid de Madrid (1998)

La proporción de gastos correspondiente a personal ha crecido de forma constante, pasando en los últimos 5 años de 24.691 en 1993 a 27.103 millones de PTA en 1998 (124 a 136 millones de dólares), así como las amortizaciones, de 5.842 en 1993 a 8.393 millones de PTA en 1998 (29 a 42 millones dólares). En cambio, los gastos financieros han disminuido, pasando de 3.286 en 1993 a 2.244 millones de PTA en 1998 (16 a 11 millones de dólares.)

5. LA EMPRESA MUNICIPAL DE TRANSPORTES (EMT)

La red de líneas de la Empresa Municipal de Transportes de Madrid (EMT) contaba al concluir 1998 con 182 líneas, de las cuales 181 forman la Red Integrada de transporte (billete sencillo, Metrobús y Abono Transporte) y una, la línea Plaza de Colón-Aeropuerto de Barajas, presenta características tarifarias especiales. 153 líneas componen la red diurna integrada (RDI).

La red de autobuses de la EMT estaba atendida a 31 de diciembre de 1998 por un parque de 1.814 vehículos, con una antigüedad media de 4,81 años. En el cuadro siguiente se presentan los principales parámetros de la oferta de servicios.

EVOLUCIÓN DE LA OFERTA DE SERVICIO DE LA EMT				
Año	Coches-km en línea (10^6)	Horas-coche en línea (10^6)	Viajes-coche (10^6)	Velocidad comercial (km/h)
1991	86,21	6,05	11,31	14,26
1992	76,95	5,36	10,13	14,35
1993	88,28	6,10	11,43	14,48
1994	88,73	6,09	11,40	14,57
1995	89,54	6,11	11,51	14,65
1996	91,71	6,24	11,77	14,69
1997	93,87	6,40	11,92	14,67
1998	94,65	6,46	11,92	14,65

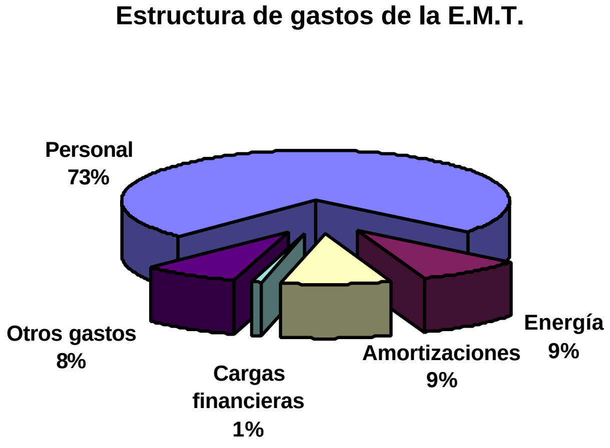
Fuente: Memoria del Consorcio de Transportes de Madrid de Madrid (1998)

Por su parte, la demanda de la EMT superó los 540 millones de viajes (etapas) en 1998, aumentando un 1,8 % con relación a 1997. En 1999 el significativo aumento de la demanda del metro, que prácticamente alcanza el 10%, sin duda propiciado por la prolongación de la red a zonas antes no servidas, ha provocado un trasvase de viajeros de la EMT, los cuales se benefician del acceso directo a la red de metro. El número de viajeros en EMT en 1999 ha sido de 528,6 millones un 3,5% inferior a 1998.

El mayor nivel de servicio ha llevado en 1998 a alcanzar un valor de producción de 6,463 millones de horas-coche en línea, durante las cuales se han realizado 11,92 millones de viajes-coche, desarrollando 94,65 millones de coches-km. Estos valores muestran un crecimiento muy reducido, inferior al 1 por ciento respecto al año anterior en las variables de coches-km y de viajes.

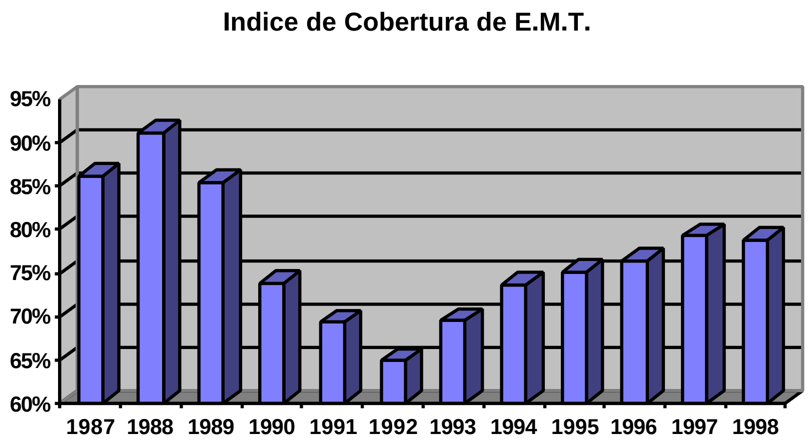
La velocidad de explotación se ha situado en 14,65 kilómetros por hora, permaneciendo prácticamente inalterada.

Por otro lado, la estructura actual de costes de la empresa, desglosada según partidas es:



Fuente : Memoria del Consorcio Regional de Transportes (1998)

En cuanto al índice de cobertura, este ha ido evolucionando como se indica:



Fuente : Memoria del Consorcio Regional de Transportes (1998)

Como se puede comprobar, se produce una bajada constante hasta el 92, debido principalmente a la reducción en el numero de viajeros, tendencia que cambia en los años siguientes.

6. RENFE-CERCANÍAS DE MADRID

Los ferrocarriles de Cercanías de Madrid están incluidos en la UNE de Cercanías, Unidad de Negocio de la Red Nacional de los Ferrocarriles Españoles, RENFE; que engloba al conjunto de las redes metropolitanas del Estado. Su titularidad corresponde, por tanto, a la Administración del Estado.

A finales de 1998, la Red ferroviaria de Cercanías de RENFE en la Comunidad de Madrid contaba con once líneas en funcionamiento y una longitud de 279,5 kilómetros de doble vía, salvo en la línea C-9, de vía única y estrecha, estando toda la red electrificada. El número de estaciones que componen la Red es de 78. Además, la Red de Cercanías de Madrid posee fuera del ámbito territorial de la Comunidad Autónoma un total de 26,1 km y 5 estaciones, correspondientes a las líneas C-2 (Azuqueca y Guadalajara) y C-9 (Dos Castillas, Vaquerizas y Cotos).

La oferta de transporte programada para los servicios de Cercanías de RENFE en el núcleo de Madrid es de 1.223 trenes-día de lunes a viernes laborables y a 754 trenes en sábados y festivos, resultando una oferta total anual en torno a 17 millones de trenes-km. El parque de material móvil de esta red está compuesto por 649 coches, 529 de un piso y 120 de dos pisos. Más del 85 por ciento del parque tiene una antigüedad inferior a seis años, mientras que otro 12 por ciento ha sido recientemente reformado.

La demanda de RENFE en 1998 ha aumentado un 1,9% respecto al año anterior, mientras que en 1999, con 150,3 millones de viajeros, el aumento ha sido del 4,8% con relación a 1997

En el cuadro siguiente se resumen los parámetros más importantes que definen la oferta y demanda de transporte en la red de Cercanías de Renfe del núcleo de Madrid.

RESUMEN DE LA EVOLUCIÓN DE PARÁMETROS DE TRANSPORTE. RED DE CERCANÍAS DEL NÚCLEO DE MADRID					
	1994	**1995**	**1996**	**1997**	**1998**
Evolución de la oferta (Circulaciones diarias)	1.227	1.231	1.215	1.076	1.074
Evolución de ingresos por viajeros (pta./dólares)	12.149	14.086	16.294	17.631	17.989
Viajeros-día	574.698	578.025	622.688	676.804	697.041

7. LAS EMPRESAS INTERURBANAS DE AUTOBUSES

La Red de autobuses interurbanos de la Comunidad de Madrid está integrada, a 31 de Diciembre de 1998 por 257 líneas (309 líneas si se incluyen los servicios urbanos de las coronas B y C), cuyo itinerario discurre por la región. 33 empresas distintas explotan el conjunto de líneas interurbanas al amparo de 48 concesiones administrativas. A su vez existen otras 5 concesiones urbanas y 2 servicios de empresas municipales.

Además de Madrid capital, en 1998 un total de 20 municipios de la Comunidad Autónoma cuentan con una Red específica de líneas urbanas de autobuses, toda ellas dependientes del CTM. La gestión del servicios en estas redes es diferente de unos municipios a otros, existiendo, según los casos:

- Empresas municipales de autobuses o servicios municipales de gestión directa del servicio.
- Empresas privadas de autobuses.
- Empresas privadas de autobuses que tienen contratado con el Ayuntamiento respectivo o disponen de concesión municipal para la realización del servicio.

La oferta de transporte programada para el conjunto de la Red ascendió en 1998 a 17.417 expediciones en un día laborable de invierno, de las cuales 876 corresponden a las realizadas durante una hora punta y en un solo sentido. El parque de autobuses adscrito a las concesiones dependientes del Consorcio, utilizado en las líneas interurbanas de autobuses en 1998 es de 1100 unidades, de las que 973 cuentan con la imagen del Consorcio desde su incorporación.

La edad media del parque es de 5,6 años, cubriendo el objetivo establecido por el Consorcio en cuanto a la edad de los vehículos de la red. Este resultado refleja el esfuerzo económico realizado por el Consorcio para la renovación de la flota, concretado en dos aspectos:

- la subvención, de hasta cinco puntos, en el tipo de interés para la financiación de vehículos nuevos y
- el establecimiento de líneas de crédito preferenciales mediante acuerdos con entidades financieras.

En cuanto a la demanda en este modo de transporte, el total de viajeros transportados por el conjunto de empresas concesionarias en la Comunidad fue en 1998 de 236,6 millones, lo que representa un incremento del 7,2% respecto al año anterior y en 1999 ha sido de 254,4 millones, continuando con la trayectoria ascendente, un 7,5% superior a 1998.

Los mayores crecimientos se han producido en los corredores donde se han puesto en servicio medidas para favorecer la circulación de los autobuses reduciendo el tiempo de los desplazamientos:

- en el norte la N-I, con un aumento del 8%, donde se ha implantado un carril SOLO BUS (carril reservado para autobuses)

- y en el oeste la N-VI, con un aumento del 18%, donde funciona el carril BUS/VAO (carril reversible reservado para los autobuses y para los vehículos privados con dos o más ocupantes).

8. LOS CONTRATOS – PROGRAMA

El Consorcio ha firmado hasta la fecha cuatro Contratos-Programa con la Administración General del Estado. El primero trasladaba los compromisos del Estado con Metro al CTM. Los dos siguientes intentaban separar las pérdidas operativas de las ayudas a la inversión, estando limitados a Metro y EMT, es decir al Municipio de Madrid. El último, relativo a la explotación, firmado en el año 1999, con un período de validez de 1998-2001 (retroactivo para 1998) contempla, a diferencia de los anteriores, la totalidad del ámbito metropolitano interurbano, con la excepción de RENFE y establece su aportación en función del nivel de cobertura en lugar de basarse en el número de pasajeros.

En 1990 se firmó el primer Contrato-Programa1, “Plan de actuación y financiación del transporte público en Madrid 1990-1993”, enmarcado en el “Plan General de las Grandes Ciudades” de la Administración Central y compuesto de dos acuerdos:

- “Contrato-Programa entre la Administración del Estado y el Consorcio Regional de Transportes de Madrid para el período 1990-1993”:

  Se orientaba a la financiación de los gastos de explotación e inversiones en material móvil e instalaciones de las empresas operadoras. Su sistema de funcionamiento estaba basado en la financiación en función del número de viajeros transportados. Dicho Contrato fijó en el año 1990 una subvención de 20 pesetas (10 centavos de dólar) por viajero transportado, actualizable anualmente con el I.P.C. (Indice de Precios al Consumo). Las aportaciones estimadas eran:

DOTACIONES A CONSIGNAR EN LOS PRESUPUESTOS GENERALES DEL ESTADO				
	1990	**1991**	**1992**	**1993**
Millones de PTA.	17.164	18.526	19.787	21.980
Millones de DÓLARES	**86**	**93**	**99**	**110**

Fuente: Plan de actuación y financiación del transporte público en Madrid 1990-1993.

[1] El antecedente fue el Contrato-Programa para el período 1985-1988 firmado entre el Estado, la Comunidad de Madrid y la Compañía Metropolitana de Madrid” que definió un marco de financiación para la Compañía, en un período de cambios relacionados con la misma, al producirse, primero el traspaso a la Comunidad de Madrid de los vienes del Estado afectos al prestación del servicio y, posteriormente, la desintervención de la Compañía por el Estado y el traspaso de acciones de la misma al Ayuntamiento y a la Comunidad de Madrid.

- “Convenio entre el Ministerio de Transportes, Turismo y Comunicaciones, la Comunidad de Madrid y el Consorcio Regional de Transportes de Madrid para desarrollar la construcción de nueva infraestructura de ferrocarril metropolitano de Metro”:

  Contemplaba las inversiones en infraestructura y superestructura de obra nueva en Metro de Madrid. En el siguiente cuadro se presentan las aportaciones del Estado en este capítulo:

APORTACIONES A CARGO DE LA ADMINISTRACIÓN CENTRAL DEL ESTADO				
	1991	**1992**	**1993**	**TOTAL**
Millones de. PTA.	7.000	7.000	6.000	20.000
Millones de DÓLARES	35	35	30	100

Fuente: Plan de actuación y financiación del transporte público en Madrid 1990-1993.

Posteriormente se han firmado dos nuevos convenios, que recogen la filosofía de los anteriores:

- “Contrato-Programa Administración General del Estado-Consorcio Regional de Transportes de Madrid 1995-1997”. La principal diferencia con el relativo a 1990-93 es que asigna 18 pesetas por viajero en lugar de 20 (9 centavos de dólar en lugar de 10) y que añade una aportación de 1/3 de la inversión, vinculada a ampliación de la red (subvenciones de capital), lo que da lugar a la siguiente previsión:

APORTACIONES DE LA ADMINISTRACIÓN CENTRAL DEL ESTADO. (Millones de PTA/Millones de DÓLARES).			
	1995	**1996**	**1997**
Subvenciones de explotación.	17.041/85	17.727/87	18.440/92
Subvenciones de capital.	1.749/ 9	1.749/ 9	1.749/ 9

Fuente: Contrato-Programa Administración General del Estado Consorcio Regional de Transportes de Madrid 1995-1997.

Hay que destacar también que en este Contrato-Programa se regulariza el ejercicio de 1994, para el que se asignan 16.318,8 millones de PTA (82 millones de DÓLARES.)

- "Convenio entre la Administración General del Estado, la Comunidad de Madrid y el Consorcio Regional de Transportes para financiar la nueva infraestructura del metro de Madrid". Cuatrienio 1995-1998. Las aportaciones previstas en este convenio por parte del Estado para financiar las inversiones son:

APORTACIONES A CONSIGNAR EN LOS PRESUPUESTOS GENERALES DEL ESTADO				
	1995	**1996**	**1997**	**1998**
Millones de PTA.	5.500	6.000	6.000	6.500
Millones de DÓLARES	28	30	30	33

Fuente:"Convenio entre la Administración General del Estado, la Comunidad de Madrid y el Consorcio Regional de Transportes para financiar la nueva infraestructura del metro de Madrid". Cuatrienio 1995-1998.

En el último Contrato-Programa, denominado "Contrato-Programa entre la Administración General del Estado y el Consorcio Regional de Transportes de Madrid 1999-2001" las aportaciones a consignar en los Presupuestos Generales del Estado son las siguientes:

APORTACIONES A CONSIGNAR EN LOS PRESUPUESTOS GENERALES DEL ESTADO 1998-2001				
	1998	**1999**	**2000**	**2001**
Millones de PTA.	20.189	21.977	21.537	21.306
Millones de DÓLARES	101	110	108	106,5

Fuente: Consorcio de Transportes de Madrid.

Estas cifras están calculadas en base a que la Administración Central del Estado cubra las siguientes partidas del conjunto de los transportes de la Comunidad Autónoma de Madrid:

- 45% de las pérdidas operativas,
- 45% de las inversiones de mantenimiento,
- 33% de las inversiones de ampliación.

Estando las inversiones en mantenimiento limitadas por la cifra anual de amortización. El Estado mide cada año el endeudamiento comercial y su cifra se reduce de la amortización.

Adicionalmente a este último convenio, la Administración Central del Estado firmó con la Comunidad de Madrid un convenio para la financiación de la extensión del Metro de Madrid: "Convenio entre la Administración General del Estado y la Comunidad de Madrid para la financiación de infraestructuras del transporte metropolitano de Madrid". A diferencia de los anteriores en este no figura el Consorcio de Transportes de Madrid.

Las aportaciones contempladas en dicho convenio para la inversión en infraestructura ferroviaria de Metro en relación con el Contrato-Programa anterior se presentan en el cuadro siguiente:

APORTACIONES A CONSIGNAR EN LOS PRESUPUESTOS GENERALES DEL ESTADO				
	Convenio 1995-1998	Convenio 1999-2005		TOTAL
		1999	2000-2005	
Millones de PTA.	14.750	7.009	34.241	56.000
Millones de DÓLARES	74	35	171	280

Fuente: Convenio entre la Administración Central del Estado y la Comunidad de Madrid para la financiación de infraestructuras del transporte metropolitano de Madrid.

9. LAS SOCIEDADES ESTATALES

En España, en los últimos años, como una medida para seguir construyendo infraestructuras de transporte sin que aumente el endeudamiento de la Administraciones Públicas, se está utilizando una figura jurídica interpuesta, las "agencias estatales", dando origen a lo que se denomina modelo español" de financiación.

El "modelo español" de financiación consiste en la utilización de Sociedades de capital público, creadas por algunas Comunidades Autónomas con el fin de agilizar la realización de infraestructuras y servicios en su ámbito regional. También el Estado dispone de un Ente Gestor de Infraestructuras Ferroviarias, G.I.F.

Estas Sociedades, que actúan en nombre propio y por cuenta y mandato de su correspondiente Administración, se encargan de la construcción y gestión de infraestructuras de transporte. Entre las Sociedades Estatales que funcionan en la actualidad están: ARPEGIO, S.A. (Áreas de Promoción Empresarial, S.A.) en Madrid, GISA (Gestió d´Infrastructures, S.A.) en Cataluña, GIASA en Andalucía y GICAL, S.A. en Castilla-León.

Las características de todas estas Sociedades son similares, tanto en cuanto a Estatuto, como al Convenio en el que se define el marco global de las relaciones entre la Administración y la Sociedad- figuran como mandatarias de la Administración correspondiente- como en las bases que habrán de regir los encargos y el Plan Económico-Financiero en el que se concretan los costes y compromisos económicos de los encargos realizados.

Aunque el objetivo inicial de algunas de ellas no fue el de la construcción de infraestructuras de transporte, lo cierto es que todas han ido aumentando su ámbito de actividad, dedicándose en la actualidad a la promoción de carreteras, metros, etc. En lo que a infraestructuras de transporte se refiere, la actividad de estas Sociedades es la de proyectar, construir, conservar y explotar, por sí mismas o por terceras personas y en nombre propio o por cuenta de la Comunidad Autónoma, según los términos del encargo, las obras públicas de todo tipo y servicios que puedan instalarse o desarrollarse en su ámbito territorial y que sean de interés regional.

Las obras realizadas por la Sociedad no se integran en su patrimonio, ya que se trata de obras públicas de dominio público. En la cuenta de activo circulante sólo se refleja el coste que se produce como consecuencia de las actuaciones derivadas del mandato y la financiación de las mismas, debiendo contabilizarse en el pasivo circulante las aportaciones que reciba de la Comunidad en concepto de gastos para la ejecución del mandato. Sólo en el caso de que la Sociedad gestione también el proyecto y obtenga ingresos por la prestación del servicio, el importe de las inversiones figuraría también en el activo de la Sociedad. Debido a estas circunstancias y al hecho de que la Sociedad no genera ninguna clase de ingresos, la Administración correspondiente suele actuar normalmente como garante de aquélla ante las entidades financieras, aunque éste no ha sido el caso hasta ahora de Madrid.

Para la financiación de las obras a realizar, la Comunidad Autónoma correspondiente determina el importe de las aportaciones anuales que, con cargo a sus consignaciones presupuestarias, deberá desembolsar a la Sociedad con el fin de atender a los gastos en que incurra, incluyendo gastos financieros. Como estas aportaciones no se corresponden con las necesidades financieras del contratista, es necesario que aquélla tenga que acudir al endeudamiento como medida puente para poder desarrollar el proyecto. Para ello, en los presupuestos anuales de la Comunidad, junto con las aportaciones anteriormente mencionadas, se determina el importe máximo de dicho endeudamiento.

Existen dos formas distintas de abordar la operación:

- que sea la sociedad mandataria la que suscriba directamente con la entidad financiera las condiciones del crédito con el que poder atender las certificaciones del contratista, o
- que sea el propio contratista el que, en base a las aportaciones anuales de la Comunidad, monte la operación financiera con las instituciones de crédito.

10. TREN DE CERCANÍAS VICÁLVARO-ARGANDA: ANTECEDENTES Y DESARROLLO DEL CONCURSO DE LICITACIÓN

Antecedentes

En Marzo de 1.996, todos los grandes corredores de acceso a Madrid disponían de una penetración ferroviaria al centro de la ciudad, excepto el de la carretera N-III. Dadas las particulares características de este corredor, el Consorcio de Transportes de Madrid realizó un estudio técnico-económico de viabilidad sobre la implantación de un nuevo sistema ferroviario en el tramo Madrid-Rivas-Arganda del Rey. Dicho estudio presentaba las siguientes conclusiones:

- Es un área poco desarrollada y con un fuerte potencial de crecimiento. Rivas como zona residencial con población que trabaja en Madrid y Arganda como núcleo cerrado e industrial con carácter autónomo.

- Poseía una infraestructura ferroviaria de mercancías obsoleta, un ferrocarril de vía estrecha que transportaba materiales desde unas canteras a una fábrica de cemento. Aunque en un principio se pensó en la posibilidad de utilizar esta plataforma ferroviaria, su empleo fue desestimado debido a sus características técnicas, no aptas para un ferrocarril moderno.

- Las expectativas de crecimiento de la población prevén un aumento de 125.000 habitantes en ocho años, llegando a los 175.000.

- La demanda de transporte media esperada es de 22.700 viajeros / día, difícil de cubrir en la situación actual, al estar las vías de superficie muy saturadas.

- El índice de cobertura de ingresos y gastos del nuevo sistema ferroviario sería del 63%. Con lo que se evidenció la posibilidad de acometer el proyecto vía concesión con la adecuada financiación extrapresupuestaria y la necesidad de establecer compensaciones para mantener el equilibrio económico en el período de vida de la Concesión.

El concurso de licitación

En España, la Ley de Ordenación de los Transportes Terrestres (LOTT) indica que cuando un nuevo recorrido ferroviario se halle íntegramente comprendido en el territorio de una Comunidad Autónoma, la línea puede ser sometida a concesión administrativa por dicha Comunidad Autónoma, teniendo un plazo máximo de concesión de 99 años en el caso de una concesión de construcción y explotación.

El caso de la financiación del Ferrocarril de Arganda no es especialmente relevante si se considera que ya a mediados del siglo XIX gran parte de las primeras líneas de ferrocarril que se construyeron en España se hicieron a través del sistema de concesión. Este sistema, aunque en desuso durante muchos años en la práctica, se mantuvo en la legislación aplicable, hasta el punto de llegar hasta nuestros días incluida en la Ley de Ordenación del Transporte Terrestre (1987) actualmente vigente.

Sobre las conclusiones de viabilidad expuestas anteriormente, el 8 de noviembre de 1996, la Comunidad de Madrid publicó los Pliegos de Condiciones, convocando un concurso europeo de "concesión de obra pública para la redacción de proyecto, ejecución de obra y gestión del servicio público de explotación de la línea ferroviaria de transporte público de viajeros, con infraestructura propia, entre Madrid y los municipios de Rivas Vaciamadrid y Arganda del Rey" al que podían concurrir tanto grupos de empresarios calificados como expertos en explotaciones ferroviarias y construcción de infraestructuras, con un período de concesión de 30 años, al término de los cuales revertirán a la Administración las instalaciones y el material móvil.

El concurso dejaba a cargo de la sociedad concesionaria:

- la redacción del proyecto, que debería ser aprobado por la Consejería de Obras Públicas, Urbanismo y Transportes y acomodarse al correspondiente Estudio de Impacto Ambiental,
- la expropiación de terrenos, que sería realizada por la Comunidad de Madrid pero pagada por el concesionario,
- la ejecución de la obra civil y puesta en servicio del material móvil (que debería ser un sistema ya experimentado y con un elevado nivel de servicio),
- la puesta en explotación del sistema,
- el mantenimiento integral del ferrocarril y sus instalaciones,

- la explotación con niveles de servicio garantizado, incluyendo la necesaria policía de ferrocarriles y las funciones de control e inspección que le sean propias. Cualquier modificación que se pretenda introducir en el servicio deberá ser aprobada por la Administración,
- la financiación del proyecto, construcción, puesta en servicio, explotación y mantenimiento durante el período de concesión, debiendo justificarse todas las inversiones necesarias, así como los costes de explotación y mantenimiento y los costes financieros de la operación,
- la adecuación de la Vía del Ferrocarril del Tajuña, desafectada entre los municipios de Morata de Tajuña y Ambite, para ser utilizada como pista de senderismo y vía ciclable, con una longitud aproximada de unos 30 kilómetros y un coste máximo de 100 millones de PTA (0,6 millones de EURO).

El trazado indicativo propuesto era de aproximadamente 20 km, pudiendo los licitadores plantear modificaciones, tanto en la alineación como en el número y ubicación de las estaciones.

En el Pliego de Condiciones del Concurso se especificaba que la Comunidad de Madrid no adquiriría compromiso alguno respecto a:

- los resultados de explotación de la línea,
- la evolución del número de viajeros en la línea objeto de la concesión,
- la evolución de los residentes en el entorno de las estaciones,
- el aumento, la supresión, la reducción o modificación de las líneas de transporte colectivo de superficie que sirven actualmente a la zona, o las que se prevean en un futuro para prestar servicio.

Pudiendo el concesionario utilizar, previa autorización de la Administración, por sí mismo o a través de terceros, las estaciones de la línea para actividades diferentes a la del transporte pero complementarias o compatibles con esta.

La empresa concesionaria no podrá reducir el capital ni cambiar la composición del accionariado sin previa aceptación de la Administración.

Los criterios de valoración de ofertas fueron los siguientes:

- Plazo de ejecución, máximo 20 meses,
- calidad del proyecto, solución técnica y nivel de equipamiento en línea, trenes y estaciones,

- conectividad con las redes de transporte público
- nivel de servicio ofrecido, frecuencia, tiempo y confort
- marco tarifario propuesto, compensaciones solicitadas e inversión realizada

No se establecían sanciones específicas en el Pliego de Condiciones para el proyecto, si no son aquellas derivadas de la Ley de Ordenación de los Transportes Terrestres (Ley 16/1987 de 30 de julio).

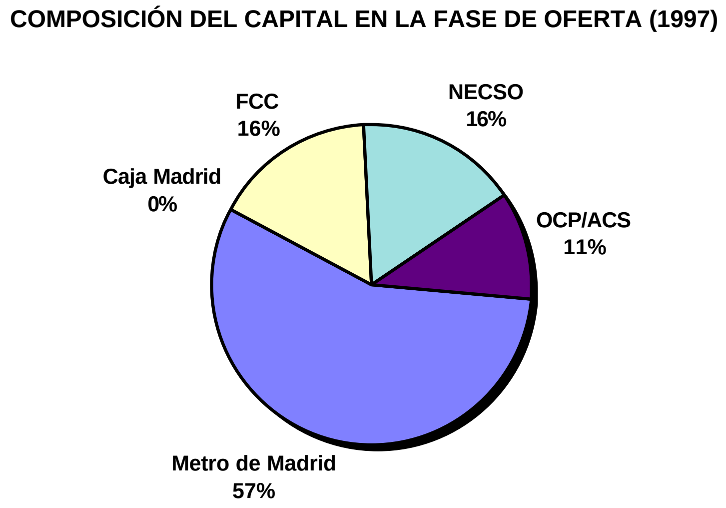
Los grupos competidores fueron 2:

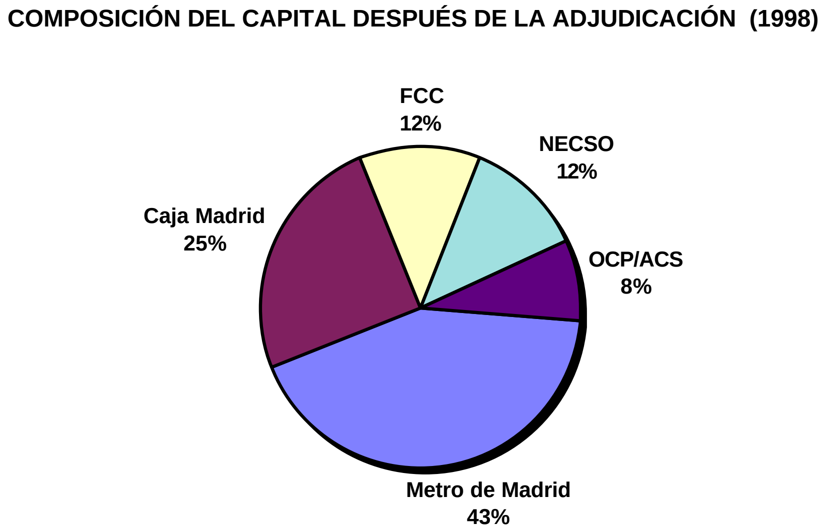
- FEVE-AGROMAN-FERROVIAL. Consorcio integrado por FEVE, empresa estatal que opera los ferrocarriles de vía métrica, principalmente del Norte de España, y dos importantes empresas constructoras. Contaba con el apoyo financiero del Banco de Santander y proponía como solución técnica una lanzadera de Arganda a Puerta de Arganda.
- Una agrupación de empresarios -AIE que pasaría posteriormente a S.A.- formada por Metro de Madrid, una entidad financiera, Caja de Madrid, y un conjunto de empresas constructoras de primer nivel.

Esta última agrupación, con el nombre "Transportes Ferroviarios de Madrid", fue elegida el 14 de marzo de 1997 como nueva sociedad concesionaria del Ferrocarril de Arganda. Una empresa independiente realizó la valoración de las ofertas.

En el siguiente cuadro se puede apreciar la composición del capital de este segundo grupo en sus dos fases, como AIE y posteriormente como S.A.

COMPOSICIÓN DEL CAPITAL		
	AIE / SA-1997	SA-1998
Metro de Madrid	56%	42,5%
Caja de Madrid	--	25%
FCC	16,250%	12,188%
NECSO	16,250%	12,188%
OCP/ACS	10,833%	8,125%





Los principales méritos de la oferta elegida eran:

Conectividad y demanda optimizadas por la conexión y el servicio conjunto con la línea 9 de Metro de Madrid a 70/110 km/h, con un tiempo mínimo de recorrido de 16,2 minutos. En realidad se trata de una ampliación de la línea 9 de la Red de Metro de Madrid, desde la estación de Puerta de Arganda, en el límite del término municipal de Madrid, hasta el término de Arganda del Rey, situado a 18 km.

Una financiación garantizada con Caja de Madrid a 20 años, sociedad que participaba en el capital.

- Estándares y equipamiento de estación tipo Metro con ATP/ATO, videovigilancia y aire acondicionado en los trenes, tipo serie 6000 de Metro de Madrid. En la oferta se presentaban dos soluciones posibles, una con ancho metro y otra con ancho RENFE, siendo seleccionada la primera.

- Tarifas integradas en el marco del Consorcio de Transportes de Madrid y compensación competitiva.

La licitación del proyecto se llevó a cabo convocando un concurso europeo de “concesión de obra pública para la redacción de proyecto, ejecución de obra y gestión del servicio público de explotación” a la que se presentaron dos grupos, resultando adjudicatario el formado por Metro de Madrid, una entidad financiera, Caja de Madrid, y un conjunto de empresas constructoras de primer nivel.

ANEXO 2. DATOS BÁSICOS DEL SISTEMA DE TRANSPORTE DE ILE DE FRANCE

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ANEXO 2. DATOS BÁSICOS DEL SISTEMA DE TRANSPORTES EN ILE DE FRANCE

1. LA LEGISLACIÓN FRANCESA EN MATERIA DE TRANSPORTES

La Ley de Orientación de los Transportes Interiores, LOTI, del 30 de diciembre de 1982 (Loi 82-1153 du 30 décembre 1982), establece las atribuciones generales del Estado y de las entidades locales francesas en materia de transporte.

La LOTI estipula:

- Los principios generales que deben regir el funcionamiento de los transportes, estableciendo la definición y los objetivos del transporte público y las obligaciones del mismo (fundamentalmente reglas de seguridad y reglas técnicas fijadas por el Estado).
- La organización general de los transportes, en particular, que:
  - el Estado, y, en el límite de sus competencias, las entidades locales y sus agrupaciones, organizan los transportes públicos regulares de personas. Las modalidades de explotación de los servicios pueden clasificarse en dos categorías: explotación en gestión directa por la administración correspondiente o explotación delegada en el marco de un convenio con una empresa.
  - la política tarifaria está definida por la autoridad competente, de forma a obtener la mejor utilización desde el punto de vista económico y social del sistema de transporte.
  - los contratos entre una persona pública y una empresa, desde el momento en que afecten a fondos públicos, deben incluir cláusulas de control de su utilización.
- La organización sectorial de los transportes, en concreto, que:
  - la responsabilidad de los transportes ferroviarios regionales y de cercanías es competencia de la SNCF (desde hace poco tiempo, y a título experimental, se han transferido a algunas regiones).
  - la responsabilidad de los transportes urbanos es de los ayuntamientos, agrupaciones de ayuntamientos o, por delegación, de un establecimiento público, siempre que haya sido definido un "Perímetro de los Transportes Urbanos". En este caso, el ayuntamiento o agrupación de ayuntamientos puede constituir una "Autoridad Organizadora de los transportes urbanos".
  - la responsabilidad de los transportes por carretera, no urbanos, es competencia del Departamento.

Por tanto, de acuerdo con la LOTI, los servicios de transporte en el interior de una aglomeración solo son calificados como "servicios urbanos" en el caso de la creación de un "Perímetro de los transportes", límite geográfico del territorio del ayuntamiento o ayuntamientos agrupados. La puesta en marcha de las competencias de una "Autoridad organizadora en materia de transportes urbanos" está, consecuentemente, subordinada a la creación de este "Perímetro de los transportes" por la misma.

Las misiones de las "Autoridades organizadoras de los transportes publicos urbanos" son:

- Creación del "Perímetro de transportes urbanos", paso previo para su funcionamiento como tal.
- Organización del transporte público: itinerarios y puntos de parada de las líneas, elección de los operadores, forma técnica de explotar los servicios, tarificación, convenios con las compañías operadoras, fijación y financiación de las subvenciones para la inversión y la explotación,...
- Construcción y gestión de infraestructuras y de equipos ligados al transporte.
- Reglamentación de las actividades de transporte y control de su aplicación.
- Desarrollo de la información sobre el sistema de transportes.

Un 75% de la población francesa vive en zonas urbanas, lo que ha llevado a las aglomeraciones a desbordar los límites del centro de la ciudad y a desarrollarse sobre los ayuntamientos limítrofes. La agrupación de ayuntamientos se ha convertido en una necesidad, sin embargo, sobre todo en las pequeñas aglomeraciones, el ayuntamiento es todavía con frecuencia la autoridad organizadora. Alrededor del 88% de las autoridades organizadoras tienen una población inferior a 100.000 habitantes y el 41% inferior a 30.000.

Los ayuntamientos pueden agruparse en asociaciones públicas, que no tienen por única finalidad el transporte colectivo, bajo siete formas jurídicas distintas, cuyas diferencias corresponden principalmente a:

- el carácter más o menos voluntario de su creación;
- la mayor o menor rigidez de su estructura;
- la atribución o no de las competencias obligatorias; y
- la fiscalidad propia o no.

En el campo de los transportes los ayuntamientos han sido fuertemente incitados a agruparse a partir de 1973, cuando por Ley se permite a las asociaciones de entidades locales a establecer un nuevo impuesto para financiar los transportes colectivos, el ‘versement transport’. Las autoridades organizadoras del transporte urbano solo pueden establecer este nuevo impuesto a partir de un límite de población en el interior del "Perímetro de los transportes urbanos".

Las autoridades organizadoras de los transportes han creado en 1980 una asociación, el GART (Groupement del Autorités Responsables de Transport), lugar de intercambio de información y experiencias.

Además de la LOTI existen en la legislación francesa dos leyes importantes para el funcionamiento de los transportes urbanos:

- La ley relativa a la prevención de la corrupción y a la transparencia en la vida económica y en los procesos públicos. (Loi 93-122 du 29 janvier 1993). Define un proceso largo, de 9 meses a un año, muy estructurado pero que permite una gran libertad de negociación. Los puntos principales de esta Ley son:

    - establece el proceso a seguir en los contratos de delegación de servicio público: publicidad que permita la libre competencia, garantías profesionales y financieras exigibles a los candidatos, obligación de publicar un pliego de condiciones con las características cuantitativas y cualitativas de los servicios y libre negociación de las ofertas,

    - prevé que las convenciones o contratos tengan una duración limitada temporalmente,

    - fija las reglas relativas a la apertura de ofertas (creación de una comisión específica) y de la elección de la empresa (presentación a la asamblea de un informe que analice las ofertas y la elección de la empresa ganadora y el equilibrio financiero del contrato).

- La ley sobre el aire y la utilización racional de la energía. (Loi 96-1236 du 30 décembre 1996). Es básicamente una ley para prevenir el aumento de la contaminación atmosférica. Esta Ley establece la obligación para las aglomeraciones urbanas de más de 100.000 habitantes de elaborar un "Plan de los desplazamientos urbanos", que tenga como objetivos:

    - la disminución del tráfico de automoviles.

    - el desarrollo de los tansportes colectivos y en general de modos de transporte no contaminantes.

    - la ordenación del viario y las reglas de estacionamiento para favorecer los transportes colectivos y no contaminantes.

2. LA REGIÓN DE ILE DE FRANCE

París, que constituye con su periferia – con mucha diferencia – la mayor aglomeración francesa (cerca de 11 millones de habitantes en la Región d'Ile de France en 1999) ha recibido siempre un trato particular en comparación con el resto de Francia. Este es aún más acusado con relación a los transportes públicos urbanos, completamente distinto del que tienen el conjunto de las ciudades y aglomeraciones del país.

Creada en 1976, la Región Ile-de-France posee 8 Departamentos, entre los que destaca París con 2,1 millones de habitantes en 1999. París desde la revolución francesa es a la vez Ayuntamiento y Departamento, pero en materia de transportes, a diferencia de los otros departamentos, no tiene competencias sobre la circulación. Esta competencia la ostenta el Prefecto (representante del Estado en el Departamento) por atribución estatal.

La preponderancia de la Aglomeración en el conjunto de la Región y el gran número de ayuntamientos que la componen han llevado a la Administración a definir una "Autoridad organizadora de los transportes" única a escala regional, en la que los ayuntamientos y sus agrupaciones, contrariamente a lo que ocurre en el resto del país, no tienen responsabilidad directa: El Syndicat des Transports Parisiens, STP. Dada la complejidad del sistema de transporte se pretende crear en el futuro autoridades del transporte complementarias (información RATP), que bajo la responsabilidad de la autoridad regional estén más próximas de la problemática local.

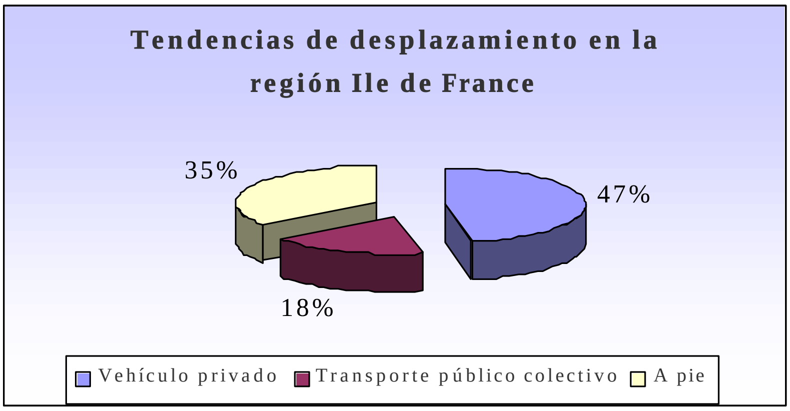
Hasta 1995 correspondía al Estado la preparación del Esquema Director de la Región, que fija las orientaciones de ordenación hasta el año 2015. Esta responsabilidad ha sido transferida a la Región, en asociación con el Estado, por la Ley de 4 de febrero de 1995. El nuevo esquema director SDRIF ha sustituido al antiguo SDAURIF, aprobado en 1976.

En el nuevo "Contrato del Plan 2000-2006 Estado/Región Ile-de-France" firmado el 18 de mayo del 2000 se recoge un presupuesto de 50.530 millones de francos (6.316 millones de DÓLARES), de los que 19.940 millones de francos (2493 millones de DÓLARES) son aportados por el Estado y el resto por la Región.

En este Contrato se da prioridad al transporte colectivo, al que está destinado el 40% de las acciones programas y 2/3 de los créditos acordados a las infraestructuras de transporte.

3. LA MOVILIDAD EN ILE DE FRANCE

Los resultados de las encuestas de movilidad realizadas en Ile-de-France entre 1991 y 1997 establecen las siguientes tendencias de los desplazamientos en la Región:



El Plan de los Transportes Urbanos, obligatorio por Ley, establece los siguientes principios:

- La planificación del transporte debe ser global, lo que implica la articulación de las distintas medidas que se realicen a cada nivel de actuación.
- La planificación global debe aplicarse al aparcamiento, principal herramienta de regulación de los viajes en vehículo privado.
- Se deben mejorar las condiciones de circulación de los modos alternativos al vehículo privado.

Los principales títulos existentes son:

- Billete sencillo.
- Billete de diez viajes.
- Abono de transporte, denominado "Carte orange", que puede ser semanal, mensual y anual.
- Abono de transporte para jóvenes, denominado "Carte Imagine" con validez anual y características muy especiales adaptadas a este tipo de clientela.
- Billete denominado "Mobilis" con las características de un abono de transportes diario.

- Billete "Paris-Visite", válido en toda la red de 1 a 5 días, orientado a los turistas, con dos niveles de tarifas, infantil y adulto.
- Billete denominado "Ticket joven" destinado a los jóvenes, con acceso a la red durante un día y solo válidos en sábados, domingos y festivos.
- Billetes denominados "alternis" y "combinis", a precio reducido en billete unitario o carnet de 10 billetes para circular por ciertas aglomeraciones de l'Ile de France.
- Abonos para la tercera edad, denominados "Cartes Améthyste, Emeraude et Rubis".

En los últimos años se ha dado una especial atención al billete destinado a los estudiantes, la "tarjeta imaginaria" (carte imagine'R). Pueden beneficiarse los estudiantes hasta los 26 años y permite desplazarse durante la semana en el sector elegido y durante fines de semana y vacaciones en el conjunto de la red. Este título de transporte, anual, ha tenido un programa de publicidad específico destinado a captar la clientela juvenil, una parte importante de su coste está financiada por el Ministerio de Educación Nacional y el Consejo Regional d'Ile de France.

Existe además el denominado "cheque mobilité", (cheque de movilidad) dirigido a los parados, con bonos que permiten comprar cualquier tipo de títulos de transporte, así como tarificaciones especiales con motivo de celebraciones excepcionales.

ANEXO 3. DATOS BÁSICOS DEL SISTEMA DE TRANSPORTE DE LYON

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ANEXO 3. DATOS BÁSICOS DEL SISTEMA DE TRANSPORTES EN LYON

1. LA COMUNIDAD URBANA DE LYON

La "Comunidad Urbana" (Communauté Urbaine), figura creada por Ley el 31 de diciembre de 1966, establece un tipo de administración de las aglomeraciones urbanas que se superpone a la de los ayuntamientos que participan en las mismas. Se trata verdaderamente de un federalismo comunal, con fusión de servicios y de redes técnicas, fiscalidad propia, luego solidaridad financiera, y reparto de las cargas.

En 1966, las aglomeraciones de Lyon, Burdeos, Lille y Estrasburgo fueron obligadas a constituirse en Comunidad Urbana por vía legislativa. Pero, en general, la "Comunidad Urbana" es de creación voluntaria para un conjunto de ayuntamientos contiguos situados en un mismo Departamento y cuya población acumulada supere los 20.000 habitantes.

Principales características de la Comunidad Urbana:

- fiscalidad propia de tipo comunal obligatoria;
- administración de tipo comunal, con una Asamblea, un Consejo de Comunidad y un ejecutivo, el Bureau;
- atribuciones definidas por mayoría calificada de los ayuntamientos miembros, de las que once son obligatorias, entre ellas el transporte de viajeros; y
- constitución a perpetuidad y disolución a petición de la mayoría calificada reforzada de los ayuntamientos miembros.

La Comunidad Urbana de Lyon, también denominada "El Gran Lyon", reagrupa 55 ayuntamientos, y tiene una superficie de 50.000 hectáreas, estando situada en el centro de la Región "Rhône-Alpes", que agrupa 5 millones de habitantes.

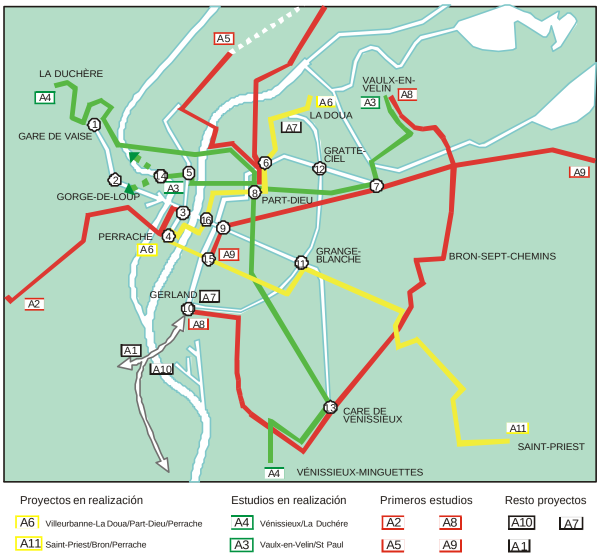
La población del Gran Lyon se aproxima a 1,2 millones de habitantes (1999. Recensement Général de la Population), es decir, el 75% de la población del Departamento de Rhône-Alpes con un 15% del territorio del mismo.

2. LA MOVILIDAD EN LA COMUNIDAD URBANA DE LYON

La Ley sobre el aire y la utilización racional de la energía (Loi 96-1236 du 30 décembre 1996) obliga a todas las aglomeraciones francesas de más de 100.000 habitantes a dirigir el desarrollo de su red de transporte mediante el PDU, Plan de Desplazamientos Urbanos. En la Comunidad Urbana de Lyon el PDU contempla las medidas siguientes para la potenciación del transporte público y los modos de transporte no contaminantes:

- implantación de una red de "líneas fuertes" de transporte. Las dos primeras líneas (tranvía) están actualmente en construcción y los trabajos deben terminar a finales del año 2000. Su inauguración estará precedida de una reestructuración de la red de autobuses. En total el Plan de Desplazamientos Urbanos contempla la construcción de 11 líneas, que se esquematizan en el diagrama adjunto, en las que todavía no se ha definido el modo de transporte que será utilizado.

ESQUEMA. RED DE CERCANÍAS



- prolongación de la línea B del metro (puesta en servicio en septiembre de 2000),

- establecimiento de minibuses en horas valle en la periferia, medida realizada a título experimental, funcionan en 10 itinerarios y son financiadas al 50% por los ayuntamientos a los que dan servicio,

- mejora de la accesibilidad a la red de autobús mediante obras en las aceras y de la accesibilidad a la red de metro mediante la instalación de ascensores,

- mejora de la accesibilidad de las personas con movilidad reducida mediante el desarrollo de la red OPTIBUS, haciendo que el servicio a la demanda sea aún más flexible,

- aumento de la complementariedad entre las distintas redes de transporte de la región, en particular, mayor relación con la red de cercanías de la SNCF: desarrollo de una tarificación conjunta y mejora del sistema de transporte mediante acciones combinadas en el Este y Oeste de la Aglomeración,

- refuerzo de la seguridad de los usuarios, en particular mediante el empleo de agentes de seguridad en línea,

- modernización de la red de autobuses, con la implantación de un sistema de información dinámica a los viajeros, entre otras medidas,

- renovación del sistema de billetes y de canceladoras, implantación de la carta sin contacto,

- renovación del material móvil, con la compra de autobuses y trolebuses de piso bajo,

- mejora de la política tarifaria,

- modernización del metro, aspecto interior y exterior de estaciones e implantación de nuevas tecnologías: video-vigilancia y teletransmisión,

- desarrollo de una política de calidad,

- potenciación de modos de desplazamiento no contaminantes, en particular del uso de la bicicleta y de los desplazamientos a pie mediante obras en el viario y la calzada que adapten el urbanismo urbano a este tipo de desplazamientos y les concedan prioridad de paso con relación al vehículo privado.

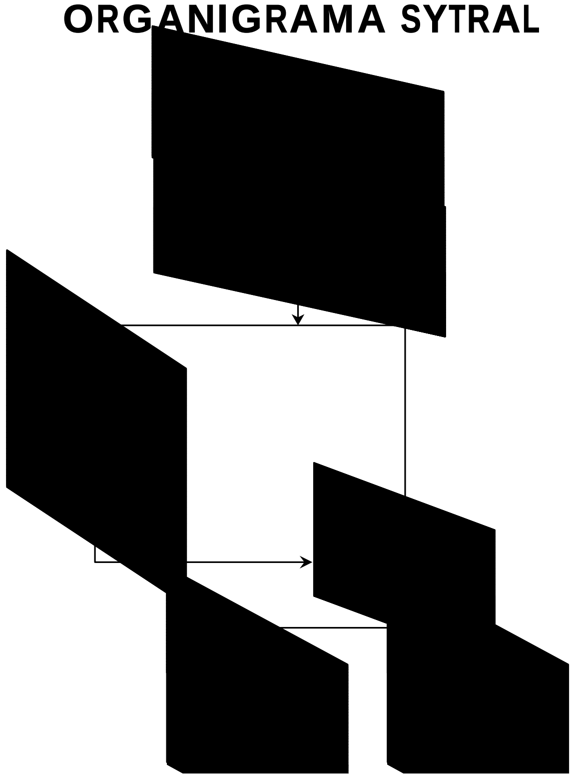
3. ORGANIGRAMA DE SYTRAL

Por su Ley de constitución, una "Comunidad Urbana" posee obligatoriamente las competencias sobre el transporte público urbano. Cada Comunidad Urbana puede elegir entre ejercer directamente estas competencias mediante sus órganos de gestión o crear un organismo específico. Esta última opción ha sido la empleada en Lyon, donde ha sido creado el "Syndicat Mixte des Transports pour le Rhône et l'Agglomèration Lyonnaise", SYTRAL.

Los órganos de decisión de SYTRAL son:

- El "Comité Sindical" (Comité Syndical), que tiene como misión la definición de la política de transportes y la toma de decisiones, en particular las inversiones, la oferta y las tarifas, y está compuesto por diez representantes de la "Communauté Urbaine de Lyon" y diez del "Conseil Général" (está previsto que próximamente la proporción sea de 13 y 7).
- El "Gabinete ejecutivo" (Bureau exécutif), que debe preparar las decisiones y está compuesto por cuatro representantes de la "Communauté Urbaine de Lyon" y cuatro del "Conseil Général"
- El conjunto de la Administración de SYTRAL, que engloba 60 personas y está encargada de la realización de estudios, la preparación de los informes y la ejecución de las decisiones. La Administración de SYTRAL está organizada en torno a cuatro Direcciones: Dirección General, de la red, de desarrollo y financiera.

ORGANIGRAMA SYTRAL



4. CARACTERÍSTICAS DEL CONTRATO DE EXPLOTACIÓN ENTRE SYTRAL Y STC

SYTRAL tiene firmado con SLTC un contrato de delegación de servicio público de una duración de seis años (comienzo del contrato: 1 de enero de 1999). Este tipo de contrato está basado en el reparto de riesgos, en particular los riesgos financieros y la implicación de la compañía operadora en el servicio. En el caso de Lyon existen dos principios fundamentales: separación entre las tareas de cada uno y transparencia. Por dichos principios:

- SLTC adopta libremente las decisiones sobre la gestión, negocia la convención colectiva y el resto de medidas salariales con sus empleados,
- SYTRAL ejerce libremente sus propias competencias,
- SLTC tiene la obligación de:
  - transmitir todos los datos relativos a la operación del sistema de transporte y el conjunto de las cuentas, en particular la contabilidad analítica,
  - realizar un informe anual sobre la calidad del servicio y
  - puede tener una auditoría en cualquier momento de la explotación.

El reparto de responsabilidades entr**e** SYTRAL y SLTC está establecido en el contrato de delegación de servicio público de la forma siguiente:

- Responsabilidades de SYTRAL
  - Definición de la política de transportes colectivos.
  - Aumento de la oferta de transporte.
  - Elaboración del Pliego de Condiciones de operación y mantenimiento.
  - Establecimiento de los objetivos de calidad del servicio.
  - Establecimiento de las tarifas.
  - Definición de la inversión (SYTRAL es propietaria de todos los elementos necesarios para la explotación del sistema de transporte).
  - Control del servicio y de los indicadores fijados en el contrato
- Responsabilidades de SLTC.
  - Realización y comercialización del servicio, con optimización de los medios puestos a su alcance.

- Organización del trabajo y relación con el personal (de derecho privado).
- Recomendaciones sobre la evaluación de la oferta y de la tarificación.
- Obligación de transmitir a SYTRAL todos los datos necesarios.

Realizando un balance de lo que representa este tipo de contrato para la organización del transporte en una ciudad media, podemos establecer que:

- Las dificultades de la relación son:
  - Ausencia de competencia en la práctica, la competencia es muy limitada, sobre todo para las redes de cierta importancia.
  - Reparto tácito del mercado entre los grandes grupos operadores.
  - La complejidad para la autoridad organizadora para establecer un Pliego de Condiciones que sea completo y transparente y que permita a los distintos candidatos apreciar los márgenes de maniobra.

En estas condiciones es muy difícil conseguir una transparencia financiera:

- En Lyon la primera transmisión de cuentas se ha realizado en 1997 a pesar de la obligación legal que existía con anterioridad. La transmisión de la contabilidad analítica solo se ha realizado en 1999.
- Es difícil la comparación con otras redes de transporte público, ya que no existe una autoridad federativa fuerte que pueda establecer ratios de referencia.
- Existe una gran dificultad para la realización de auditorias.
- En la realidad el riesgo para el operador está muy limitado:
- El precio fijo de operación es muy difícil de discutir por la autoridad ante la falta de datos sobre el mismo,
- Las preocupaciones del operador son la paz social y la rentabilidad, lo que le lleva a peticiones frecuentes de medios complementarios y a previsiones muy prudentes y cuando los problemas con el personal son importantes siempre llegan a la autoridad política.

El sistema tarifario de Lyon comprende un importante número de títulos de transporte:

- Billete sencillo, para un viaje, con número ilimitado de transbordos durante una hora.
- Billete de diez viajes, para diez viajes, con precio reducido y las mismas características que el billete sencillo.
- Billete denominado "ticket libertad", que puede utilizarse por cualquier usuario durante dos horas en el conjunto de la red entre las 9 y las 16 horas. Existe también el "ticket familia" con las mismas características pero válido para toda la familia los miércoles, sábados o domingos.
- Billete denominado "Liberté junior été" destinado a los menores de 21 durante el verano, con el que pueden viajar con tarifa reducida durante todo un día.
- Abono normal mensual, denominado "Pass Partout". Existe también un abono mensual permanente denominado "City Pass" para el que el pago se realiza automáticamente cada mes mediante domiciliación bancaria.
- Distintos tipos de billetes para escolares.
- Abono estudiantes.
- Abono tercera edad.
- Títulos especiales para familias numerosas.
- Billete denominado "Pass 2 partout" dirigido a los parados y personas con recursos limitados.
- Tarjeta familiar para el fin de semana.
- Tarjeta denominada "Forfait TCL PASS" reservado a grupos de visitantes de la aglomeración, se trata de una tarjeta individual con el nombre de titular, la identidad del grupo organizador y el período de validez (idéntico para todo el grupo). Se otorga un descuento del 40% a: intercambios de estudiantes, intercambios internacionales, acciones humanitarias y servicios especiales.

ANEXO 4. DATOS BÁSICOS DEL SISTEMA DE TRANSPORTE DE HAMBURGO

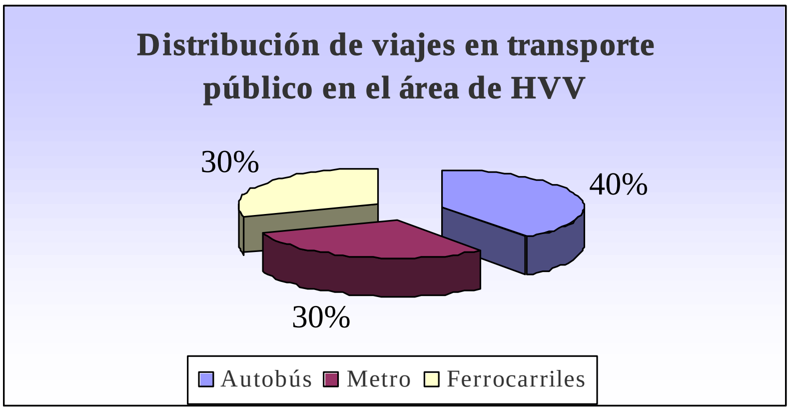
ANEXO 4. DATOS BÁSICOS DEL SISTEMA DE TRANSPORTES DE HAMBURGO

ÁREA DEL HVV

- El área de competencia del HVV incluye la totalidad de la ciudad de Hamburgo y parte de los Länder vecinos de Schleswig-Holstein y Lower Saxony.
- Superficie total, 3000 km^2. Hamburgo, 747 km^2.
- Está estudiándose ahora una ampliación del área para incluir Kreise completos.
- Población total, 2,6 M habitantes. Hamburgo tiene 1,7 M.

MOVILIDAD Y SISTEMA DE TRANSPORTES EN EL ÁREA DEL HVV

- Motorización cercana a 500 coches por cada 1000 hab.
- 22.900 M asientos x km ofertados en la totalidad de modos de transporte público
- 482 M viajes / año en transporte público, distribuidos aproximadamente así:



- 3700 M viajeros x km en transporte público.
- Los recorridos medios son:
    - Autobuses de Hamburgo 3,0 km.
    - Metro (U Bahn) 5,9 km
    - S Bahn 9,7 km
    - Trenes Regionales 15,6 km
- Un 83,3% de los viajeros utilizan los Pases mensuales o anuales del HVV.

Los operadores son actualmente once empresas públicas, de todos los modos de transporte, y varias privadas de autobuses. Las de mayor volumen de demanda, con gran diferencia, son:

- HHA (Hamburger Hochbahn AG), propiedad de la Ciudad y que opera el metro y los autobuses de la misma.
- S-Bahn Hamburg GmbH, subsidiaria de la DB AG, a cargo de los ferrocarriles suburbanos.

Operan además:

- AKN Eisenbahn AG (regional rail services).
- Kraftverkehr GmbH, Stade. KVG. (Bus services).
- Pinneberger Verkehrsgesellchaft mbH. PVG (Bus services).
- Regionalbahn Schleswigholstein GmbH. RB. (Rail services. Subsidiary of DB AG.
- Regionalbereich Niedersachsen der DB Regio AG (DB Regio) (Rail services.
- Stadtwerke Norderstedt (Bus services).
- Verkersgesellchaft Norderstedt mbH (VGN) (Metro and regional rail services.
- Verkehrsbetriebe Hamburg-Holstein AG (VHH) (Bus services Seetouristik und Fährdienst AG (HADAG) (Waterbus/ferry services). Subsidiary of HHA.

Todas las empresas precedentes son públicas. Existe además un conjunto de operadores privados, objetos de contratos de cooperación.

ANEXO 5. DATOS BÁSICOS DEL SISTEMA DE TRANSPORTE DE BERLÍN

ANEXO 5. DATOS BÁSICOS DEL SISTEMA DE TRANSPORTES DE BERLÍN

En conjunto tienen una extensión muy amplia, 30.000 km², con una población de 6,1 millones de habitantes y una densidad por tanto muy baja. Berlín tiene 3,4 millones de habitantes y una extensión de 889 km².

MOVILIDAD Y SISTEMA DE TRANSPORTES EN BERLIN-BRANDENBURG

Las características principales del sistema de transporte en el área del VBB son las siguientes:

- Trenes Regionales, RB y RE.

  31 Líneas regionales de la Deustche Bahn AG con 40 millones de pasajeros / año.

- S-Bahn (Ferrocarriles suburbanos)

  14 líneas, con una extensión de 300 km, que llegarán a 360 km en dos años. Ofrecen frecuencias de un tren cada 10 a 20 min. Transportan 240 millones de pasajeros / año.

- U-Bahn (Metro)

  9 líneas, con una longitud total de 143 km y frecuencias de 3 a 5 min. 169 estaciones. Coexisten vehículos de dos anchos distintos (2,60 m y 2,30 m) en vías de ancho U.I.C. Transportan 400 millones de pasajeros / año.

- Tranvías

  En Berlín hay 28 líneas con una extensión de 182 km y 367 paradas. En Brandenburg y hay otras 16 líneas. Transportan 150 millones de pasajeros / año.

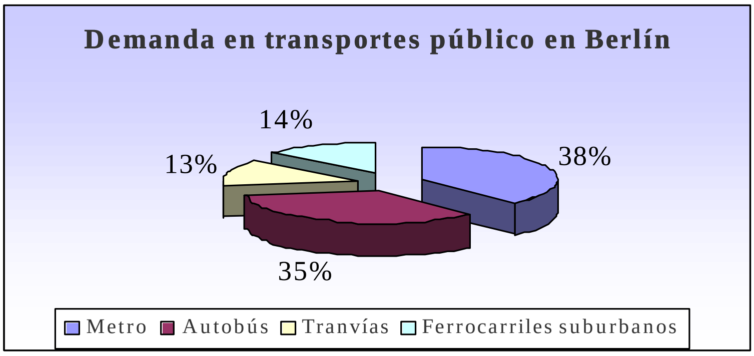
- Buses

  Berlín dispone de 160 líneas, sobre 1.270 km y con 2.708 paradas y Brandenburg otras 880 líneas, transportando respectivamente 350 y 170 millones de pasajeros / año.

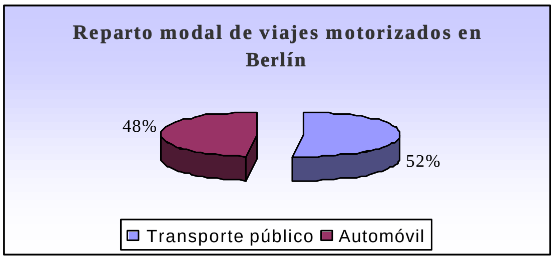
- Ferries

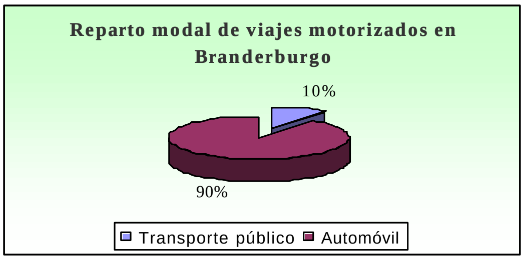
  En Berlín hay 6,9 km de líneas de ferries subcontratadas a un operador por BVG.

En Berlín la demanda total en transporte público es de 3,5 millones de viajeros/día, distribuidos así:



El reparto modal de los viajes motorizados en el conjunto del VBB es el siguiente:





La estructura tarifaria puede sintetizarse en billetes únicos, billetes para un día y tarifas de grupos, unos pases semanales, mensuales y anuales, así como un billete para trayectos cortos.

	Zonas A y B	**Zonas B y C**	**Zonas A, B y C**
Tarifas Normales (tarifa por persona)			
Trayectos cortos	0,80	-	-
Billete Unico	1,05	1,05	1,95
Billete para un día	2,10	2,10	3,90
Grupos de 5 personas	5,25	5,25	9,75
Grupos mayores	1,05	1,05	1,95
Tarifas Reducidas			
Trayectos cortos	0,60	-	-
Billete Unico	0,80	0,80	1,50
Billete para un día	1,60	1,60	2,95
Pase Semanal (standard)	9,00	9,00	14,00
Pase Mensual (standard)	27,50	27,50	42,50
Pase Anual (standard)	261,50	261,50	404,00

Nota: Existen además Pases y Abonos a precios reducidos para niños y tercera edad. Precios en US $

ANEXO 6. DATOS BÁSICOS DEL SISTEMA DE TRANSPORTE DE MUNICH

ANEXO 6. DATOS BÁSICOS DEL SISTEMA DE TRANSPORTES DE MUNICH

El crecimiento de la población en el área de influencia de las distintas líneas, desde su puesta en servicio, es bastante importante. La ciudad de Munich ha crecido un 8% desde 1973, pero los municipios periféricos servidos por el S-Bahn han aumentado más del 33%.

MOVILIDAD Y SISTEMA DE TRANSPORTE

En el área del MVV hay cerca de 1,4 millones de coches particulares. El índice de motorización es de un vehículo por cada dos habitantes en la ciudad central y un vehículo por cada 1,8 hab en la periferia.

El metro de Munich, al igual que la red del S-Bahn son un buen ejemplo de integración con la ciudad: la accesibilidad es excelente y es normal encontrar comercios en las estaciones. Los transbordos están pensados para reducir al máximo los recorridos a pie, con andenes adyacentes o superpuestos en vertical, así como con proximidad a los mismos de las paradas de autobús.

La red de ferrocarriles suburbanos unen la periferia con el centro de Munich, mediante 10 líneas totalizando 510 km. y 150 estaciones. Una de las líneas es de tracción diesel y el resto electrificadas a 15.000 V. Es de destacar el tramo común, en túnel, de 4 km, que atraviesa el centro de la ciudad.

Los autobuses regionales realizan principalmente un servicio de alimentación al ferrocarril suburbano, para lo que se han coordinado los horarios de ambos modos.

En la ciudad de Munich, el transporte se integra como una *régie* en *la Stadtwerke München Werkbereich Verkehr*, SWM, una sociedad municipal que se ocupa de los servicios de la ciudad: electricidad, gas y agua.

Los precios actuales de algunos de estos títulos son los siguientes

Billete Diario. Zona Central	4
Billete Diario. Zona Exterior	4
Billete Diario. Todas las Zonas	8
Billete Diario para familias	6
Trayectos Cortos	0,85
Carta Verde (Horas valle). Mensual. Zona interior o exterior	30,5
Abono semanal. Zona interior	6,9

Nota: precios en US $

ANEXO 7. CARACTERÍSTICAS GENERALES DEL TRANSPORTE PÚBLICO EN AMÉRICA LATINA

ANEXO 7. CARACTERÍSTICAS GENERALES DEL TRANSPORTE PÚBLICO EN AMÉRICA LATINA

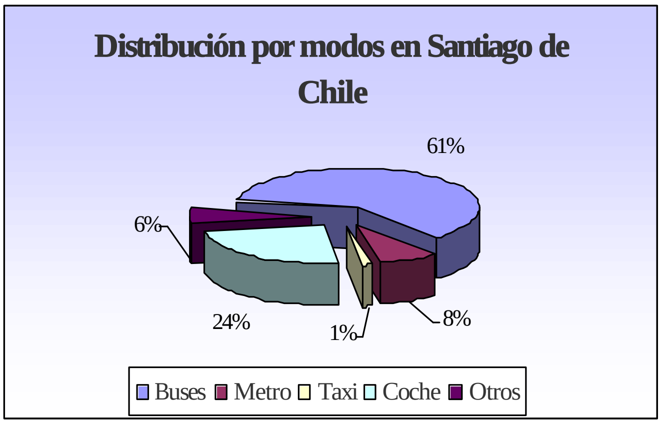
País	Ciudad	Nº Líneas	Longitud Red
Argentina	Buenos Aires	5	36,5 km
Brasil	Belo Horizonte	1	29,2
	Brasilia	1 (trial oper.)	38,5
	Porto Alegre	1	26,7
	Recife	2	52,5
	Río de Janeiro	2	25,5
	Sao Paulo	3	43,6
Chile	Santiago	3	37,6
Colombia	Medellín	2	29,2
México	México City	8	128
Perú	Lima	1 (trial oper.)	9,8
Venezuela	Caracas	2	42,5

Fuente: Light Rail Association. April 2000.

La situación del sistema de transportes en ambas ciudades es la siguiente:

	Santiago de Chile	Caracas
Población	4,6 M hab.	3,2 M hab.
Densidad	100 hab / Ha	200 hab / Ha
REPARTO MODAL		
Coche	19%	34%
Transporte público	59%	50%
Viajes andando	22%	16%

En Santiago, los 7,34 millones de viajeros diarios del transporte público se distribuyen así:



En Santiago de Chile los vaivenes políticos de los últimos 25 años han influido en el transporte urbano. Tras una desregulación extrema se está volviendo a un modelo regulado pero, sin embargo, ejemplar en cuanto al proceso liberalizador y excluyendo subsidios.

Son interesantes los resultados obtenidos con la licitación masiva de rutas de autobuses, que en el período 1992 - 1998 han alcanzado la cifra de 8.700 autobuses. Los criterios de los Concursos incluían edades máximas para los vehículos a incluir en las propuestas de los aspirantes a las concesiones: 12 años de edad máxima. En realidad, la edad media de los 8.700 vehículos (en el momento de adjudicación de cada concesión) ha sido de 4 años, un dato bastante excepcional.

Aunque en América Latina abundan los ejemplos de transporte informal (más de la mitad de los taxis de Lima parecen pertenecer a este grupo, o un 15% de los autobuses regulares de Managua…), las publicaciones suelen referirse para tipificar esta situación a los *matatus* de Nairobi. Son 6500 microbuses de 12 a 25 asientos, sin horarios, normalmente sin paradas intermedias entre su origen y destino, con cerca de 700.000 pasajeros diarios compitiendo con las líneas de *Kenya Bus* que con sus 370 buses de 110 plazas en rutas radiales ven disminuir permanentemente su cuota de mercado.

Los *matatus* captaban el 50% del mercado en 1994. Ahora llegan al 70%. No pagan tasas ni impuestos. Por el momento se les ha prohibido acceder al centro de Nairobi, pero el problema de la regulación de este subsector ha adquirido tales dimensiones que ahora resulta muy difícil de afrontar.

Las propuestas de coordinación tienen que ser realistas, entendiendo por tal

- De escaso coste.
- Sencillas. Compatibles con la debilidad institucional.
- Susceptibles de implantación por fases.
- Compatibles con el marco de competencia total, en lugar de complementariedad entre modos y en especial de los autobuses entre sí.
- Su implantación deberá ser concertada, negociada con los transportistas.

El escalón más sencillo de la integración es el **marketing conjunto del sistema de transportes,** para transmitir a la población la imagen de coordinación y facilitar el acceso al mismo.

El primer aspecto es la identificación de las paradas, terminales y vehículos de acuerdo a criterios comunes.

Las paradas de autobús, como señala Fred Salrucci (*Public Transport System Integration*. Center for Transportation Studies. M.I.T., 1992) son los *escaparates* del transporte público. En la mayoría de las ciudades de los países desarrollados las paradas de autobús están llenas de información: itinerarios de las líneas, horarios, esquemas y, en ocasiones, tarifas.

También es importante la identificación de los vehículos. Es importante que el pasajero reconozca desde la parada, con tiempo suficiente, a qué línea pertenece el autobús que llega o que acaba de pasar y a qué destino se dirige.

Los modelos para identificar paradas y vehículos difieren según las ciudades

- En Madrid, tanto las paradas como los vehículos muestran la identidad corporativa del Consorcio Regional de Transportes. Frente a la disparidad de colores e identificación de los autobuses que encontró el Consorcio en 1985, optó por implantar por fases un color único y una referencia clara al logotipo del Consorcio, pudiendo mantener también los de las respectivas empresas. Hace ya algunos años que todos los autobuses suburbanos de Madrid ostentan un único color verde.

- En Hamburgo, el HVV, como otras Verkehrsverbund de otras regiones alemanas han preferido insistir en la presencia de su identidad en las paradas, puestos de información, mapas, horarios, billetes, etc., mientras que los vehículos llevan la identificación de cada empresa.

- El London Transport requiere a las compañías privadas a las que subcontrata líneas que lleven señales en los parabrisas de sus vehículos ostentando el logotipo del London Transport e indicando que ese autobús está operando un servicio de aquel.

- Todos los vehículos de Chicago están pintados con los colores y la identidad de uno de los tres operadores de la ciudad. Pero también llevan el símbolo de la Regional Transportation Authority.

Otra cosa es la necesidad de introducir criterios firmes en cuanto a identificación, que pueden resolverse con la inclusión del *logo* de la Autoridad de Transporte en el lateral del vehículo. Así como dictando normas sobre señalización de rutas y destinos, que deben resultar bien visibles, normalizados y evitando carteles manuscritos y letreros pintados en el parabrisas, tan frecuentes en estas ciudades y que transmiten una impresión de servicio poco profesional y de mala calidad, de acuerdo con Salrucci.

Respecto a las paradas, dada la falta de medios de las Administraciones para financiar su construcción y equipamiento, una solución conveniente es concursar su construcción y mantenimiento, permitiendo la publicidad en las mismas. Así se hizo en Madrid hace quince años para dotar de marquesinas y abrigos en las paradas de autobuses, y Managua concursa ahora la construcción y mantenimiento de cerca de 500 *bahías y casetas*, en las paradas de los autobuses, por un sistema similar.

Análoga situación puede plantearse para editar planos sencillos de la red de transporte público, suscritos por la Autoridad de Transporte, incluyendo información básica sobre el sistema y sus operadores, así como publicidad en caso de no disponer de suficiente financiación. Esta información conjunta es también un paso en el camino hacia la integración.

Una etapa más complicada consiste en la **coordinación de los servicios**: se trata de eliminar, al menos en parte duplicaciones, sustituyendo competencia entre operadores por complementariedad.

No se trata de intervenir en el mercado ni de poner límites al acceso sino de evitar sobrecostes para el conjunto del sistema por duplicaciones innecesarias. Se trata, en suma de planificar la red.

La introducción de transporte masivo o cambios significativos en la oferta de transporte, como puede ser una nueva línea de LRT o Corredores de transporte separados con servicios *premium* de autobús, requieren normalmente de una reestructuración de la red de autobuses preexistente, lo que no suele resultar sencillo.

La Comisión de Transporte de Toronto empezó a modificar itinerarios de líneas de autobús, para adaptarlas como feeders conforme se iba ampliando la red de metro, desde que entró en servicio la primera línea en 1954. Es un caso excepcional de integración temprana de la red de transporte público.

Pero la situación, desgraciadamente no siempre ha sido así y en la aplicación de esta necesaria política en los países menos desarrollados habrá que ser cuidadoso por la debilidad institucional para negociar estas reestructuraciones y las complicaciones jurídicas derivadas de un marco en el que los transportistas pueden invocar derechos adquiridos por autorizaciones o concesiones confusas o incompletas.

Bogotá necesita con urgencia potenciar su sistema de transporte público, pues la ciudad se encuentra congestionada, a pesar de la aplicación de una decidida política de limitación del uso de los coches particulares en períodos horarios de punta, conocida popularmente como "pico y placa".

También interesará seguir de cerca el desarrollo de la política de Corredores de Transporte en plataforma reservada y otorgados en concesión, previstos en varias ciudades latinoamericanas, que conllevan reestructuraciones significativas de las rutas de autobuses.

En cualquier caso, parece que los modelos resultantes tras la reorganización de la red tendrán que mantener ciertas duplicaciones en las áreas de mayor demanda, lo que en el fondo proporciona cierta tranquilidad ante las posibles alteraciones en el normal funcionamiento del sistema.

Finalmente, la última etapa en la integración de los transportes es la **coordinación tarifaria,** aunque estas fases no son secuenciales y pueden abordarse de diferentes formas y en distintos momentos, según las particularidades de cada caso.

El objeto es poder realizar más de una etapa con un mismo título, o, al menos poder adquirir billetes abonos que valgan, indistintamente para más de un medio de transporte. Fuera de los ejemplos brasileños es difícil encontrar en este tipo de comodidades en las ciudades latinoamericanas y, en general, en el conjunto del mundo en desarrollo.

De todas formas conviene recordar que los ejemplos de integración tarifaria analizados en el presente Estudio corresponden todos ellos a números reducidos de operadores y niveles de integración muy altos. No siempre es así, ni siquiera en casos donde la integración es tan completa como en el área de San Francisco o en Toronto.

En efecto, incluso en ciudades con Autoridades Unicas de Transporte y elevado desarrollo, los acuerdos tarifarios se concentran en los *commuters* (Madrid, París, Londres) o son parciales (Washington, San Francisco) o conllevan cierta penalización de los transbordos si existe cambio de modo o de operador (Toronto, Chicago, Los Angeles, Filadelfia)

Londres, Madrid o París tienen un tipo de Abonos pensados básicamente para quienes realizan muchos viajes en transporte público, los *commuters*. Berlín o Hamburgo por el contrario priman el uso de billetes multimodales también para los pasajeros ocasionales.

La región metropolitana de Buenos Aires está habitada por 12 millones de habitantes que realizan 18 millones de viajes diarios, utilizando un sistema formado por un metro con cinco líneas, una ruta de premetro, seis líneas de ferrocarriles suburbanos, 300 líneas de autobuses y cerca de 50.000 taxis.

Esta multiplicidad de operadores y reguladores plantean problemas tanto a las propias administraciones como a los transportistas y a los usuarios.

Ya en 1973, el Estudio Preliminar del Transporte de la Región Metropolitana proponía que se elaborara una Ley para crear una autoridad metropolitana de transporte. Esta idea se repite en planes y proyectos posteriores, a lo largo de los años 1980. Junto a la idea original de implantar una Autoridad, por Ley, surgen proyectos menos ambiciosos pero interesantes, que no salieron adelante pero que pueden servir como referencia a la hora de plantearse la puesta en marcha de Autoridades de Transporte en áreas metropolitanas complicadas: Son de este tipo el Consejo Interjurisdiccional del Transporte, que tendría por objeto el estudio y la coordinación del transporte a través del intercambio de información y experiencias, la planificación y la regulación; también, el proyecto de Convenio, de 1985, para constituir el Comité de Coordinación del Transporte, con objeto de intercambiar información y criterios a fin de "racionalizar el sistema con miras a mejorar la calidad de los servicios y su eficiencia, y reducir sus costes para los usuarios y para toda la comunidad".

Del análisis comparativo de los casi diez proyectos sobre organización funcional del transporte en la región de Buenos Aires surge que todos tienden a remediar el serio problema de la multiplicidad de administraciones intervinientes. También existe coincidencia en que la regulación debe ser ejercida por un ente estatal con participación de varias Administraciones, con la misión de fijar las políticas para el sector, elaborar en forma participativa los planes correspondientes y regular y fiscalizar los servicios prestados por los operadores (P. Brennan, A. Ternavasio y N. Turco. *La creación de la Autoridad Metropolitana de Buenos Aires*. 1993).

Es decir, se plantea la creación de un órgano con las funciones básicas de una Autoridad de Transporte. También se resalta que dado el proceso de privatización emprendido es conveniente que la ATAM no intervenga en la operación del transporte.

El principal objetivo planteado para la futura ATAM es proveer un sistema de transporte eficaz, coherente con el planeamiento urbano, que favorezca el desarrollo económico, ofrezca accesibilidad a la comunidad, promueva la libertad de elección con un enfoque multimodal, minimice el consumo de recursos escasos, persiga políticas ambientalmente saludables y sea seguro (P. Brenann y alt. Op.cit.).

Entre las funciones citadas en su norma de creación destacan las siguientes:

- Supervisar y controlar los servicios ferroviarios que se otorguen a empresas privadas, así como asegurar el cumplimiento de los planes de inversión previstos para los mismos.
- Planificar el desarrollo del sistema de transporte. Realizar los necesarios estudios técnicos y económicos.
- Regular rutas y tarifas.
- Controlar el desempeño de los servicios de transporte de los distintos modos en lo relativo a calidad y seguridad, pudiendo rescindir concesiones.
- Establecer limitaciones al uso del automóvil.

- Realizar la capacitación de su propio personal como de las empresas integradas en el sistema.
- Celebrar convenios de cooperación con organismos internacionales y gobiernos vinculados con la problemática del transporte urbano.
- Llevar a cabo un programa de asistencia técnica a los municipios que forman parte de la Región metropolitana.
- Realizar las aportaciones de fondos públicos que procedan.

En Río, una región metropoliana con 10,3 millones de habitantes, un 56% de los cuales habitan en la capital, y 10,4 M viajes motorizados diarios, la Comisión ha avanzado en la definición de unas tarifas comunes y la política de ayudas al sector. También ha establecido prioridades de actuación.

En Río de Janeiro los autobuses desempeñan la parte fundamental de la oferta de transporte, captando el 77% de la demanda total de viajes motorizados: 13.000 autobuses en la región metropolitana transportan 7,9 millones de viajeros / día. El metro, con una red de 30 km, sólo lleva el 3% y el ferrocarril, el 4%. Tras un descenso espectacular de la demanda del ferrocarril durante los últimos diez años el Estado lo ha privatizado (quedan únicamente dos líneas operadas por el sector público), comprometiéndose a ejecutar un programa de obras.

Se han otorgado concesiones por 25 años y se ha creado una Agencia reguladora de servicios concedidos, para fiscalizar los contratos de concesión y garantizar, entre otras cosas la calidad comprometida, que se traduce en cinco índices: cumplimiento del programa de servicios, puntualidad, regularidad, kilometraje medio y tiempo medio recorrido, así como un índice de calidad percibida establecido mediante encuestas.

En Sao Paulo coexisten, bien coordinados dos Programas plurianuales, el PCTI y el PITU.

El Programa de Corredores y Terminales de Integración, elaborado por la Secretaría Municipal de Transporte, SMT, estructura la red en ejes pesados, feeder y redes locales, y contempla plataformas reservadas para buses de gran capacidad, guiados, sobre neumáticos, con tracción eléctrica y gran frecuencia. Este sistema puede proporcionar una capacidad de 20.000 pasajeros por hora y sentido. El operador es la SP Trans, la Empresa Municipal de Transportes. Por su parte, el Programa Integrado de Transportes Urbanos ha sido elaborado por la Secretaria de Transporte Metropolitano, STM.(Citado por F. Kühn, Institut National de Recherche sur les Transports et leur Sécurité, INRETS. Arcueil, Francia. 2000)

El caso de Curitiba es probablemente el más interesante de todo el continente. El área metropolitana se extiende sobre 432 km^2, integra a 25 municipios y tiene 2,4 millones de habitantes, de los que 1,6 M viven en la capital. Estos valores eran 500.000 hab. y 400.000 hab., respectivamente, en 1960. Desde los años 1970 Curitiba está creciendo a ritmos elevados, hasta 5,7% anual en algunos de los años 70 y actualmente la Región crece al 3,5% anual, al doble de los demás centros urbanos del país.

Con una densidad baja: 23 hab / Ha en el Area metropolitana y 40 hab / Ha en la capital y una motorización de 300 coches por 1000 habitantes, resulta llamativo que la cuota de los transportes públicos sea del 75% del total de los viajes. La empresa URBS que atiende al conjunto del sistema transporta cerca de 2 millones de pasajeros diarios.

Actualmente en la red operan 1.900 autobuses, de distintos tamaños, En 1992 Curitiba incorporó autobuses bi-articulados con capacidad para 270 pasajeros.

La estructura del sistema está formada por

- Vías exclusivas. Dispuestas en el centro de la calzada, enlazando el centro con los barrios de la periferia. Hay cinco ejes, totalizando 56 km.
- Red Alimentadora: 270 km de líneas que dan acceso a las Terminales extremas de los anteriores ejes.
- Líneas interbarrios, que los unen sin pasar por el centro. Hay en servicio 185 km.
- Red de líneas convencionales, para complementar el servicio.

ANEXO 8. PROPUESTA DE ORGANIZACIÓN Y FUNCIONES PARA EL INSTITUTO REGULADOR DEL TRANSPORTE EN MANAGUA

ANEXO 8. PROPUESTA DE ORGANIZACIÓN Y FUNCIONES PARA EL INSTITUTO REGULADOR DEL TRANSPORTE EN MANAGUA

El presente equipo Consultor está llevando a cabo en estos meses una Asesoría a la Alcaldía de Managua, para el mejoramiento del transporte urbano.

El trabajo, que se enmarca en el Programa de Fortalecimiento Insitucional del BID para Managua, está financiado por el BID y el Fondo español de Consultoría. Se inició en Marzo de 2000 y se prevé finalizarlo en Octubre de este año. Está dirigido por el mismo Consultor qu el presente Estudio.

La Legislación sectorial de Transportes de Nicaragua asignaba la competencia reguladora de todo tipo de transportes al Ministerio correspondiente. Pero, muy recientemente, en 1997 y 1998, en desarrollo del principio constitucional de Autonomía Municipal se han aprobado un conjunto de Leyes afectando al marco legal del transporte urbano.

En virtud de ese nuevo marco es competencia municipal *impulsar, regular y controlar* el servicio de transporte colectivo intramunicipal, en coordinación con el ente nacional correspondiente.

A diferencia de otros precedentes europeos, en los que la transferencia de competencias a las Regiones ha venido acompañada del traspaso de medios humanos y materiales, en el caso de la Municipalidad de Managua se da un componente original que es la transferencia de competencias, con la consiguiente asunción de funciones, sin la simultánea dotación de equipos técnicos.

En España, la aprobación del Estado de las Autonomías, con la consiguiente creación de Estados regionales dotados de poderes legislativo y ejecutivo, vino acompañada de un marco legal, la Ley de Financiación de las Comunidades Autónomas, que puso en marcha los mecanismos de valoración de los servicios transferidos, que iban acompañados de la correspondiente dotación de funcionarios y/o de los recursos presupuestarios que permitieron organizar nuevos equipos.

En Nicaragua, el nuevo marco legal dispone la transferencia de un conjunto de competencias a los Municipios, pero ni se aportan los funcionarios, ni los medios materiales, ni las dotaciones presupuestarias para poner en marcha el nuevo modelo.

Tras el traspaso, y con el fin de dotar de mayor eficacia a la gestión municipal de las nuevas competencias sobre el transporte, la Alcaldía de Managua ha procedido a la creación de un nuevo organismo, el IRTRAMMA (Instituto Regulador del Transporte del Municipio de Managua) en Septiembre de 1999.

En la Resolución se define al IRTRAMMA como una *Entidad para el desarrollo, regulación y control* y se incluye una enumeración de objetivos para el nuevo organismo, que pueden resumirse en los siguientes:

- Desarrollar el transporte de pasajeros y carga, de una manera eficiente, con seguridad y calidad.
- Planificar, organizar y controlar el cumplimiento de la normativa en los medios de transporte y en las Terminales.
- Establecer y aplicar normas y mecanismos obligatorios de supervisión y control, para todos los medios de transporte, que regulen el funcionamiento del sistema.
- Establecer políticas tarifarias.
- Conceder Licencias y Permisos de Transporte público, en todas sus modalidades.
- Contribuir al desarrollo de las vías de comunicación y fomentar su señalización.
- Planificar y diseñar la señalización de las vías, en coordinación con los organismos responsables de las mismas.

En la Asesoría citada se han propuesto las funciones, en base al cometido que realizan las administraciones de tutela de los transportes urbanos de otras áreas metropolitanas. Se ha tenido muy en cuenta la especificidad de Managua y sus prioridades estratégicas.

Las funciones propuestas para el IRTRAMMA son las siguientes:

- **Planificar** el futuro del sistema, tanto en lo relativo a la infraestructura como a los servicios:
  - Diseño preliminar de los Corredores de transporte, terminales y paradas, así como su posterior proyecto de ejecución.
  - Programación de las inversiones en todas las infraestructuras de transporte.
  - Supervisión de los proyectos, a efectos de garantizar la consecución de los objetivos de calidad del servicio.
  - Planificar los servicios de transporte: Mejorar el servicio en ciertas áreas o corredores, proponer nuevas rutas o extensiones de las existentes, reordenar las redes de transporte y planificar los servicios a proporcionar en las terminales, la carga y descarga de mercancías, y el servicio del taxi.

- **Ordenar técnica, administrativa y reglamentariamente** el sistema de transporte:
    - Velar por la seguridad del transporte (pasajeros y vehículos).
    - Inspeccionar el estado mecánico de los vehículos.
    - Controlar las condiciones de la circulación de los autobuses y su relación con el resto de usuarios del sistema vial.
    - Impulsar la renovación de la flota de autobuses.
    - Realización de Estudios y Proyectos:

✓ Estudios de la oferta y demanda de transporte.

✓ Mantenimiento y actualización de las matrices ya disponibles de origen y destino de viajes.

✓ Seguimiento de la calidad del servicio, tanto mediante la medición de factores de desempeño (calidad objetiva) como por encuestas de la valoración por los viajeros (calidad percibida).

✓ Estudios económicos de las concesiones (fundamentales para la definición del marco tarifario).

✓ Preparación de una cartografía digital de Managua, incorporando rutas y paradas (el Consultor del Estudio de Factibilidad del Busway lo aportará en AutoCAD.

✓ Estudios y proyectos de ordenación y gestión del tráfico, en lo relacionado con los transportes públicos: tratamiento de las paradas de buses, prioridad al transporte público en intersecciones, diseño del busway...

✓ Estudios de señalización horizontal y vertical y seguridad vial.

✓ Realización de diseños de ingeniería vial, en lo que afecte a los transportes públicos.

✓ Realización de estudios y proyectos de ingeniería de transporte: conteos, encuestas, mediciones de tiempos.

✓ Supervisión de proyectos y obras relativas al transporte público.

- Tratamiento de terminales y paradas de autobuses: Controlar itinerarios de autobuses en terminales, asegurar limpieza y mantenimiento, ordenar los negocios ubicados en las terminales... Ordenación de los accesos y los transbordos.
- Tratamiento a las personas con movilidad reducida (PMR).

- Elaboración del marco tarifario del sistema: propuesta de estructura tarifaria (tipos de títulos de transporte) y niveles de precios, para su aprobación por el Concejo Municipal.
- Definición de estándares para vehículos: tamaños, puertas de acceso, % plazas sentadas, iluminación, identificación y señalización, pintura, etc.
- Definición de estándares de calidad del servicio.
- Constitución de una base de datos para la administración del transporte urbano. Producción de estadísticas.
- Tramitación y resolución de licencias de funcionamiento, reasignaciones, permisos de operaciones, prórrogas, cambios de unidad, constancias y demás trámites administrativos.
- Registro y custodia de todos los expedientes sobre concesiones y autorizaciones administrativas.
- Organización e informatización del archivo.
- Regulación del acceso a la profesión de transportista.
- Atención a las reclamaciones ciudadanas.
- Constitución de una base de datos y producción de estadísticas sobre Expedientes, por tipos.
- Diseño e instrumentación, en su caso, de programas de financiación o compensaciones a transportistas (eventuales ayudas para renovación de flota o compensaciones por obligaciones de servicio público).

Hay además otras funciones que está desarrollando coyunturalmente el Instituto en cumplimiento de acuerdos entre el Gobierno y los transportistas:

- Administración de las exoneraciones de impuestos a transportistas para importación de vehículos y repuestos.
- Entrega de los bonos para combustible a Cooperativas de taxis y buses.
- **Crear un marco normativo** (y/o adaptar el existente)que posibilite el desarrollo de estas funciones.
- **Controlar el cumplimiento de la normativa:**
  - Inspección de la seguridad de los pasajeros y de los vehículos.
  - Inspección del cumplimiento de las condiciones esenciales de la Licencia de Funcionamiento:

- ✓ Itinerario: control de las extensiones ilegales, de las invasiones a corredores de rutas autorizadas o cambios de recorrido sin autorización, del abandono de calles mal pavimentadas, etc.
- ✓ Paradas: parar en puntos no autorizados, no detenerse en las paradas obligatorias por la Licencia, parar sin entrar en las bahías, etc.
- ✓ Frecuencias y horarios.
- ✓ Vehículos adscritos: utilizar vehículos no incluidos en la Licencia.
  - Monitoreo de los índices de desempeño de los operadores.
  - Función sancionadora: Denuncia, por el Agente de la inspección; instrucción del expediente sancionador, por un funcionario habilitado para ello; tramitación del expediente de sanción; recepción del Recurso, en su caso; resolución del Recurso; cobro de la sanción.

- Realizar funciones de **coordinación:**
  - Entre la planificación de los transportes, la del desarrollo urbano, la económica y la ambiental.
  - Entre los distintos modos de transporte.
  - Entre los distintos Organismos con competencias en el transporte urbano.
  - Con los municipios limítrofes de Managua.
  - Del transporte con las actividades que le afecten o que resulten afectadas por él.
  - Desarrollar su estrategia de transportes en un proceso de concertación y consulta con los afectados: usuarios, vecinos y otros colectivos, así como con los transportistas.
  - Fomentar el asociacionismo entre los transportistas, de manera a dotarse de interlocutores sólidos, representativos y con prestigio en el sector, con los que discutir el nuevo marco regulador y su progresiva implantación.
  - Crear Comisiones informativas y consultivas con los transportistas, en las que ir extendiendo al sector los criterios básicos de la nueva política de transportes.
  - Crear Comisiones mixtas en las que se puedan contraponer los intereses y puntos de vista de los transportistas, de los viajeros y de los distintos colectivos empresariales y ciudadanos.
  - Combinar la política de sanciones con algunas compensaciones, de forma que el sector no tenga únicamente que perder en todos los frentes y que se distinga entre aquellos transportistas que cumplen la normativa y los que no lo hacen.

- Recabar apoyo institucional y político para que IRTRAMMA y sus responsables no soporten en solitario el desgaste de la aplicación de la política de transporte que convenga a la ciudad.
- Informar de sus realizaciones y resultados. Comunicar frecuentemente con los transportistas y los ciudadanos.
- Desarrollar una política de puertas abiertas en el Instituto, dando una imagen de servicio a los administrados.

➢ **Capacitar a los transportistas y conductores, así como a los propios directivos y empleados del IRTRAMMA** para un mejor servicio al ciudadano y un mejor desarrollo de la operación.

➢ Informar a todos los implicados. Responsabilizarse de las **relaciones con los ciudadanos** en general y los usuarios del transporte en particular, a efectos informativos y de defensa de sus derechos:

- Información sobre rutas, paradas y terminales y tarifas.
- Señalización de paradas.
- Información en las *casetas.*
- Información exterior e interior en los buses.
- Publicación de planos de las rutas, de difusión gratuita (pueden incluir publicidad).
- Información sobre el IRTRAMMA, sus objetivos, funciones y realizaciones.
- Publicidad y promoción del sistema de transporte público.
- Atención a las reclamaciones de los usuarios.
- Atención a las peticiones de modificación o mejora de servicios expresadas por colectivos ciudadanos.

➢ Finalmente, en la medida en que para llevar a cabo todo el amplio conjunto de funciones descritas es necesario poner en marcha una organización compleja, existe todo un grupo de funciones para la organización, mantenimiento y desarrollo del propio organismo.

- Administración y capacitación del personal.
- Compras y suministros de bienes y servicios (mediante concursos públicos abiertos o restringidos, o por adjudicación directa, según cuantía).
- Tesorería. Contabilidad. Intervención. Financiación.
- Elaboración del Presupuesto de ingresos y egresos y el de inversiones. Seguimiento presupuestario.

- Preparación de los Estados Financieros y el Informe Anual.
- Elaboración de planes técnico económicos.
- Servicios generales. Mantenimiento de las instalaciones.
- Auditoria interna (económica y de gestión).
- Preparación de Bases y Términos de Referencia para licitaciones de bienes y servicios.

ANEXO 9. RENOVACIÓN DE LA FLOTA DE AUTOBUSES EN LAS EMPRESAS PRIVADAS CONCESIONARIAS DE LÍNEAS DE TRANSPORTE DE PASAJEROS EN MADRID

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La Red de autobuses interurbanos de la Comunidad de Madrid está integrada por 257 líneas, operadas por 33 empresas distintas, al amparo de 48 concesiones administrativas (Licencias de Funcionamiento).

En su conjunto ofertan 17.500 expediciones diarias, que llegan a ser hasta 150 por hora punta y sentido más cargado en algunos corredores radiales. El conjunto del parque es de 1.100 autobuses,

De los que 973 cuentan con los colores y logotipo del Consorcio Regional de Transportes. La capacidad media es de 48 plazas sentadas y 21 de pie.

En un año transportan 225 millones de pasajeros, que suponen 2.200 millones de viajes x km. El recorrido medio del pasajero es de 9,8 km. La demanda de transporte está creciendo en esta red a un ritmo del 6% al 8% anual en estos últimos años, a pesar del crecimiento de la motorización en Madrid (parque de vehículos privados)

En 1998 se han renovado 125 autobuses de la flota regional, con lo que la edad media del parque es de 5,6 años, parámetro excelente tanto desde el punto de vista de la seguridad como de la ausencia de averías (disponibilidad) y la calidad del servicio. La edad media en 1985, año en el que se creó el Consorcio era de 10,6 años.

Se ha producido por tanto un esfuerzo importante de renovación por parte de las empresas, gracias a la ayuda económica prestada por el Consorcio concretada en dos aspectos: la subvención de hasta cinco puntos en el tipo de interés para la financiación de vehículos nuevos y el establecimiento de líneas de crédito preferenciales mediante acuerdos con entidades financieras. El destinatario al que se entrega la subvención siempre es la entidad de crédito con la que el transportista tiene el préstamo o el contrato de arrendamiento financiero (leasing).

El esfuerzo del Consorcio se concentró en el período 1987-1990. En este último año ya se había conseguido rejuvenecer la flota de 10,6 a 6,3 años. Se financiaba la compra de vehículos nuevos y también la de material asociado, como las canceladoras de billetes: por este sistema se renovaron 20 vehículos en 1985, alrededor de 80 anuales en el período 1990-95 y algo más de 100 en los años siguientes.

Posteriormente se ha continuado con el Programa de ayudas, pero centrándolos más en la adquisición de autobuses adaptados a Personas con Movilidad Reducida (PMR).

El Consorcio ha ido disponiendo de partidas presupuestarias en su Presupuesto ordinario, para este fin (1,2 millones de US $ en 1999), que ha asignado entre las solicitudes recibidas, según un baremo que puntuaba a las empresas. Los primeros años la subvención era de 3 o 4 puntos porcentuales (entonces los créditos estaban al 10-12%). Luego se transformó en el 5% del coste total del vehículo.

A partir de 1999 sólo se ayuda a la adaptación de la flota a la Ley sobre Supresión de barreras arquitectónicas (1993). Se están concediendo 25.000 US $ por la compra de un autobús nuevo de piso bajo, 15.000 US $ por uno de piso bajo parcial y 9.000 US $ por un autobús de piso alto dotado de plataforma elevadora.

Uniendo la partida presupuestaria del Consorcio y la del Instituto de Servicios Sociales, (Ministerio de Sanidad y Consumo) que también va a colaborar en este Programa, Madrid dispondrá de 1,8 millones de dólares en el 2000, lo que permitirá renovar cerca de 150 buses.

La clave del éxito de este programa, además de la decidida voluntad política de llevarlo a cabo, dotándolo de fondos específicos, es que las Concesiones administrativas que habilitan al transportista incluyen expresamente un Plan de renovación, imponiendo una edad máxima (normalmente 10 a 12 años) y una edad media (en torno a los ocho años).

Esta no era la situación en 1985, pero se ha ido aprovechando la convalidación de las antiguas concesiones (basadas en una Ley de 1947) para incluir esta cláusula de renovación obligatoria en todas ellas.

El título concesional incorpora la lista de vehículos adscritos a la concesión, distinguiendo entre los que tienen dedicación exclusiva (en las líneas más urbanas y con más tráfico) y los autobuses con adscripción parcial (autorizadas para dedicarse a otros usos distintos del servicio en la línea, en horas valle).

No se autorizan, salvo algunas excepciones, nuevas incorporaciones de vehículos con más de cinco años de antigüedad.

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