

Mobility Management through land use management: The Spanish N-III corridor as a good practice

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Workshop 1 c): Interaction between spatial planning and mobility management
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1. Introduction: why land use and transport co-ordination?

Our starting point tries to answer one apparently simple question: are there good examples regarding transport and urban development policies? The answer is not, unfortunately, easy, since there are not many examples. Here, we will present what we think is a good case of land use and transport rational interaction: the construction of a new Metro Line, connecting Arganda and Rivas municipalities, both in Madrid, along the National-III corridor (Madrid-Valencia), located at the East of Spain), proving the increasing importance of having in mind urban transport as a step before urban development. It is a corridor with a high potential development, given the amount of available land and nearness to Madrid (27 km and 19 km from Arganda and Rivas, respectively), which results in an excellent test-bed for different types of transport strategies. Regarding population, in 2001 there were 32,807 inhabitants in Rivas and almost the same in Arganda: 32,927

This could be the current state of the art: urban sprawl, increases car availability, and the concentration of working places and shopping facilities in out of town locations, have resulted in continuing increases in journey length for all purposes, but specially for commuting journeys. Generally speaking, we could state that access to basic services is becoming more and more dependent on car transport. Trying to find out a solution, the European Union Transport Policy is focusing more and more on the concept of mobility – and more specifically “sustainable mobility”- rather than accessibility; and, from the view of sustainability, the railway solution seems to be the most appropriated,

So, the case we are writing about, shows, indeed, a good solution for new developments suffering from poor accessibility, and involves the integration of policies and measures at several levels, finally showing the possibility of achieving a better balance between public and private transport, shifting demand onto public transport and reducing the amount of private vehicle trips. In other words, it is necessary to overcome the classic paradigm infrastructures ? development, taking advantages from the existing modes more than investing in new programmes.

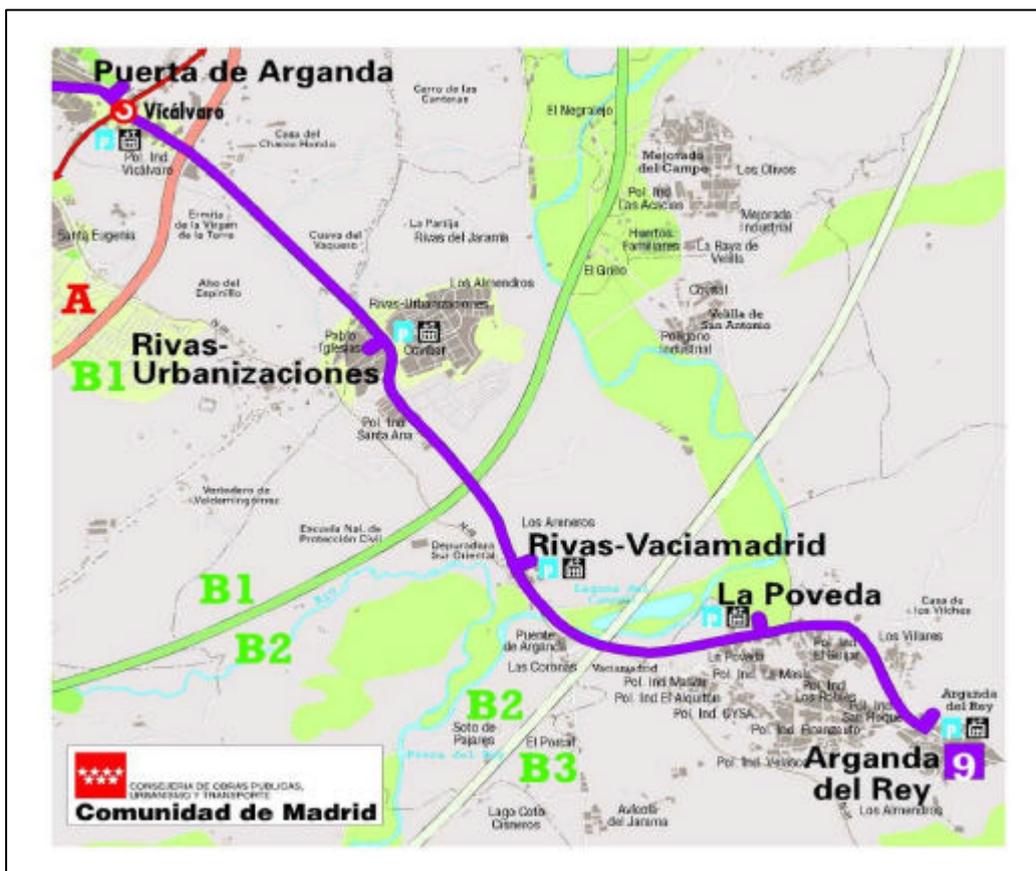
Anyway, fair is to say that here we will show just one of a wide range of policy measures as were identified in the PROSPECTS project (5th UE framework programme); in fact, we deal just with one forming part of a group called “land use measures”: a transport corridor-based development designed to encourage provision and use of public transport, but, obviously there are a lot of policy measures which are available to cities. More than ever is indispensable to design policies aimed to foster and

improve the current transport system, having in mind the different perspectives at hand: from legal to financial, not to mention those organisational and even operational. In this sense, we are firmly convinced that an efficient transport passengers planning depends on its co-ordination with other policies; more specifically, would be more than appropriated that the financial system worked together with land planning co-ordination and new information technologies

2. Project description: the N-III corridor then and now

First of all is worth to mention that the Madrid National III corridor shows a lower development standard than others. As Monzon points out (Monzón A., González , J, 2000), this may be due to the fact that most wastes sites from Madrid have were traditionally located along the Jarama River. Until the construction of the new Metro Line in 1996, private car had the highest modal share in the area, whilst bus demand had more or less the same level that other corridors, i.e., between 20% and 25%.

Once the problems with the waste deposits disappeared thanks to the new modern techniques, the fact is that a lot of new developments –both housing and industrial- were carried out, mainly because of its nearness to Madrid (no more than 27 km), and the possibility to acquire a brand new house at a reasonable price, as strange as it may seem!



So, anticipating forthcoming conditions¹, the Madrid Regional Government decided to promote a new rail/subway line in November, 1996. This proves the crucial importance of considering public transport within the urban development process at an early stage. It is, in fact, as “simple” as getting a better integration of transport planning and spatial planning.

3. The call for tenders and the financing: a good case for PPP

The construction process had to face strong budgetary constraints, imposed by the European convergence requirements, which explains the very in favour that Regional Government was of allowing and stimulating the private participation into the project, i.e, into the provision of public transport services.

From the legal point of view, the Spanish Land Transport Act (LOTT), sets up the possibility to launch calls for tenders for construction and exploitation of any new rail line, provided that are not a part of the so called Integrated National Network(INN)² On this basis, and giving the fact that the new line entirely passed through the Madrid Region, and was not a part of the INN, the decision was, finally, to open a call for tenders for the building and operation of a 18.3 km rail/subway line.

The project would benefit from an existing rail track of a concrete factory located near Arganda. Due to this, the tenders should only have to upgrade the existing track for passengers services, solving the conflicts related to goods and passenger movements.

The tender process was as follows: once the General Conditions of the contract were passed by the Regional Government, the contract was put out for tender in the Madrid Region Official Gazette in November 3rd 1996. The interested Groups had a 3 months period to make their bids. The tender should cover:

- The line project
- The civil works
- Rolling stock supply
- Land expropriation
- Operation of the line during 30 years at least, with guaranteed services level
- Global Maintenance of the railway

In February 1997 the process for admission of tenders was closed, starting the evaluation process. To summarise, two groups submitted their proposals, which included projects design, demand forecast, solution to problems derived from the operation of the line (stations and co-ordination with good movements), rolling stock supply, timetable and fares and solicited subsidies. Finally, the Regional Government adopted a decision, based on the following criteria³:

- Fare framework, including ticket pricing and solicited compensation

¹ It is worth to mention that the train arrived before the urban settlements were consolidated, which is very important for sustainability. However there are other actions to take into account, such as the projected new Madrid airport, to be developed in the area by 2015, which has opened good perspectives for new developments in the area.

² Lines and railway public transport services which form part of the basic structure of the general railway transport system. The decision on which lines are or are not a part of this INN is responsibility of the National Government.

³ 20 points were assigned to each of them

- Connectivity and compatibility with the public transport network
- Service efficiency and quality
- Technical standard of the technical solution
- Reduction in construction time

The contract was awarded to a group formed by the following companies

Main activity/responsibility	Concessionaire Group	
	Company	% capital
Operator	Madrid METRO	42.5
	NECSO	12.5
Construction	FCC	12.5
	OCP	9
Financial	Madrid Regional Bank	25

The original budget was estimated in 108.4 Meuros, which included:

- Construction of the new railway infrastructure
- Four new stations (the last in Arganda centre)
- Rolling stock
- New safety system (Automatic Train Protection –ATP)
- Expropriation costs

Despite all this, the municipal bodies demanded some modifications, so the final budget increased to 113.3 Meuros

The concessionaire group committed to construct 4 new intermediate stations: Rivas Urbanizaciones, Rivas, La Poveda and Arganda, connecting this new rail line with the existing subway line 9, with a total length of 18,306 m/double track. The concession period will expire in December 2029, when the line will revert to the Regional Government.

Currently, the concessionaire group decided to constitute the so called Transportes Ferrovarios de Madrid S.A. company (TFM), which acts on behalf of the above mentioned group⁴.

It has played, as well, an important role the bringing of the land for the construction of the infrastructure, which is normally by the way of expropriation. In this case, the formula was an agreement among all the parts involved: Regional Government, Madrid Municipality and land owners and concessionaires as the case may be. In such a way, the Regional Government obtained free land and the land owners a guarantee for re qualification of the land in order to build new houses.

⁴ The funding of the project is based on a mixed system of fares, subsidies depending on demand, and use of the travel card. For further information, see “La solución ferroviaria del corredor NIII de la Comunidad de Madrid”, Comunidad de Madrid, Consejería de Obras Públicas, Urbanismo y Transporte, 2001

4. Impacts on mobility and land uses

The line started to operate on April 7th, 1999. As stated above, the concessionaire offered to connect and operate the new line as an extension of a line already existing: the line number 9 of the Metro network which presented high connectivity standards with destinations located in the city core. Furthermore, the bus network –provided with urban and suburban coaches- has been restructured to achieve an integrated public transport system, improving as well the accessibility to the new stations in the corridor.

We could claim for two main effects of the Metro line on public transport services. First, the generation of an induced demand, and second the transfer of some users from bus services. Comparing data from the Madrid General Mobility Survey (EDM) in 1996 with an specific household survey carried out two years after the implementation of the subway line, we can draw the following table which illustrates both effects:

Impact of metro line on modal split Daily trips from Arganda and Rivas to Madrid central				
	1996		2001	
	daily trips	%	daily trips	%
car	8,601	57	8,912	51
bus	6,332	42	2,417	14
metro	0	0	6,160	35
Total	14,933		17,489	

Source: EDM/96 and 2001 household survey

So, the impact on modal split highlight the strong effect of the new metro line which attracts 70% of the Public transport demand, and together with bus services has reduced car patronage by 6% after implementation.

Between these two dates, in 1999, and only some months after the line was opened, the Madrid Public Transport Authority (CRTM), carried out another survey to obtain the characteristics and profile of the Arganda's metro line user. 7,927 interviews were taken, along different stations, with the following results:

Profile of subway users /July 1999		
24.5% New trippers (reason to trip now)	new residents	6 %
	Changes in study/work place	24 %
	Occasional, recreational activities	47 %
	Others	23 %
75.5% previous travellers (previous mode)	Car	30 %
	Bus	66 %
	Others	4 %

The survey shows that 75% of travellers has been transferred from other modes; more specifically 2/3 from bus and 1/3 from private car. The new travellers are still occasional, but some 30% could be attributed to new housing developments and change in destinations (work or study). As main conclusion, we could state that there is a big potential of the new metro line in restructuring and drawing new land uses and developments.

Apart from this, but closely connected, it is necessary to mention that policies and actions have been taken to increase the appeal of the new infrastructures for users, such as the reschedule of bus services, the upgrade of connectivity levels, including park & ride facilities near the stations, bike facilities, etc.

5. Conclusions

This case study show the important role of the integrated packages -with planning and operation- when talking about sustainability. We can see that the construction of the new metro line with stations at the core of new developments, has produced a more balanced modal split, with metro attracting trips from car - and even more from bus- and both using the same motorway to Madrid. We could dare to say that it is possible to analyse not only the relationship between land use and transport –and more specifically the impact of the new metro line- but the equilibrium between residential land and industrial activities, in a way that the corridor does not suffer any important imbalance in terms of origin/destiny of the trips.

Even in residential framework, with a rapid growing rate, public transport has increased its share of demand, reducing car trip trends down from 57% to 51 for all motorised trips.

Furthermore, one of the best thing that could be said about the extension of the Madrid Metro line 9 to Arganda, refers to its early planning. As we have stated, through all this paper, the metro coaches arrived before the urban settlement was consolidated whilst, historically, the opposite used to happen, with the metro arriving once the constructions have been built up.

Regarding financing, this unique experience in Spain shows the possibilities for public private partnerships in building infrastructures in a record time; a goal that could have not been achieved otherwise. This was, as well, the first time that the Madrid subway network exceeds the limits of the core city⁵, and illustrates a good example that could have seen the light had it not being for the decision to adopt a cross public/private finance system.

One more positive thing to mention is that the cost of construction and operation works was tantamount to the planned, which maybe would have not happened if construction and operation were have been left to public companies, when actual costs generally exceeds estimated costs. On the other hand, the completely private management of the construction has facilitated that terms and deadlines had been strictly observed, in spite of being short terms in fact, which has been a success even from a social point of view:

⁵ Currently, the so called Metro-Sur, which links Madrid South outskirts population with the city centre is almost finished. It should be operating by mid 2003...but this will be another paper!

users has suffered disturbances not particularly long, taking advantages of the railway services very fast.

Finally, the success of the project is very much due to the political willingness to develop the idea, and secondly, to the effort and efficiency displayed by the private concessionaire.

To summarise, it is of crucial importance considering public transport within the urban development process at an early stage. It is a matter of getting a better integration of transport planning and spatial planning. In the same line, it is necessary to point out the importance of the brand new (2001) Local Instruction for Designing the Public Thoroughfare, passed by the Municipal Government of Madrid, as a step ahead in the long way to the land use and transport co-ordination. This regulation recommends, among other things, to include a transport study in every urban development plans of certain size (i.e., 150 flats). At regional level, it is also worth to mention the new passed on Madrid Region Land Use Act, of July 2001.

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