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# France

# TGV Mediterranean

# *TGV Méditerranée*

omega centre

**Centre for Mega Projects in Transport and Development**

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This report was compiled by a team belonging to the LATTS: Laboratoire Techniques, Territoires et Sociétés, connected to the Ecole des Ponts Paris Tech, CNRS and Université Paris-Est Marne-la-Vallée.

Please Note: This Project Profile has been prepared as part of the ongoing OMEGA Centre of Excellence work on Mega Urban Transport Projects. The information presented in the Profile is essentially a 'work in progress' and will be updated/amended as necessary as work proceeds. Readers are therefore advised to periodically check for any updates or revisions.

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This report is also available in French.

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## A PROJECT INTRODUCTION

### Type of project

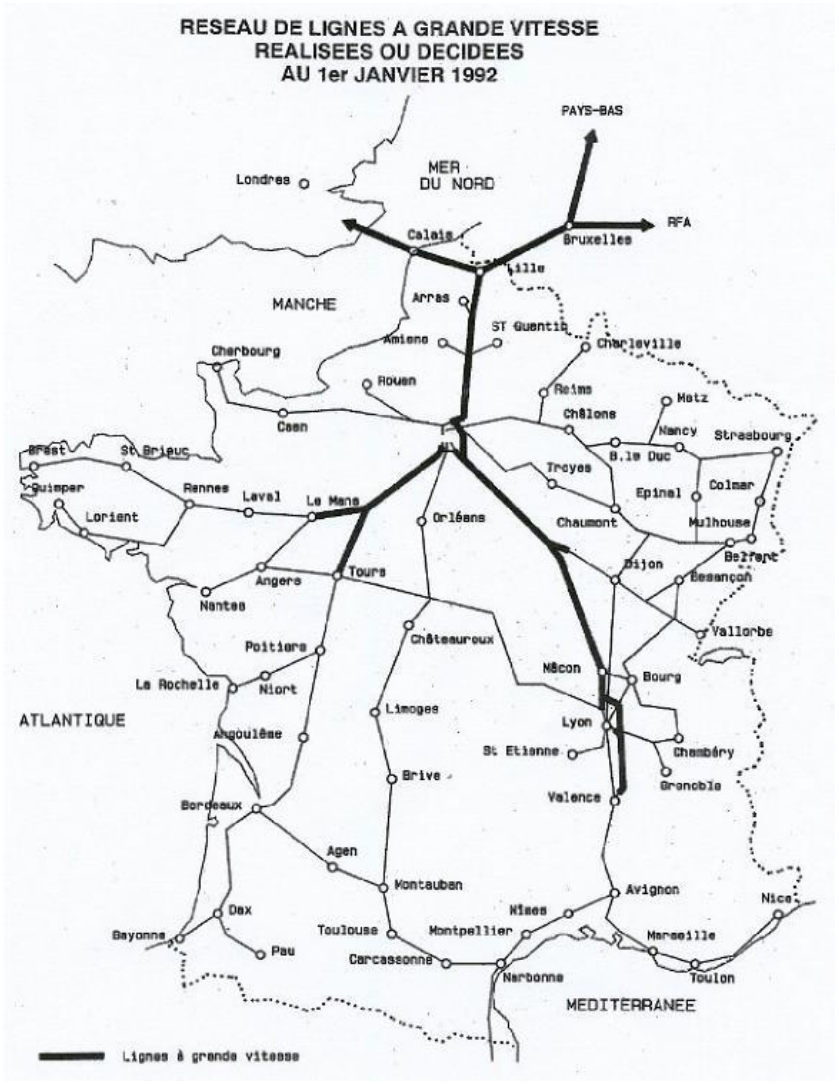
Project name

The TGV Med is a construction project of a high speed line, between Valence and Marseille, and to Nîmes. This project is combined with the creation of three new stations in Valence, Avignon and Aix-en-Provence. The project includes also related works: increasing the speed standard to 300km/h on the high speed line Paris-Lyon (instead of 280km/h); modification of railway infrastructures of the front-station in Marseilles Saint-Charles; and refitting of old stations in downtown areas (Paris Gare de Lyon, Lyon Part-Dieu, Valence-ville, Marseilles Saint-Charles, Montpellier Saint-Roch and Nîmes).

Description of mode type

The TGV Med is a railway line conceived for high speed. This project corresponds to the line LN5, and thus follows the previous high speed lines in France:

**Figure 1: The High Speed Lines Network completed or decided at 1 January 1992**




Source: SNCF.

*LN1 TGV South-Eastern: from Paris to Lyon*. In 1969, SNCF proposed to the State a train service project in the south-east of France, characterised by high speed and high frequency, with the new Paris – Lyon line. The project was declared of public utility on 23 March 1976. The works began on 7 December 1976. In September 1981 the Southern section was brought into service between Saint-Florentin and Sathonay, giving 275km of new line. The Northern section from Combs-la-ville to Saint-Florentin (115km) was brought into service on 25 September 1983. The commercial speed initially envisaged at 260km/h has been increased very quickly to 270km/h.

*LN2 TGV Atlantic*: 285km of new line from Paris to Le Mans and Tours. The studies on this project started in 1975, and the project was declared of public utility on 26 May 1984. Works began on 15 February 1985. The Western branch serving Brittany was brought into service on 24 September 1989 and the South-western branch on 30 September 1990.

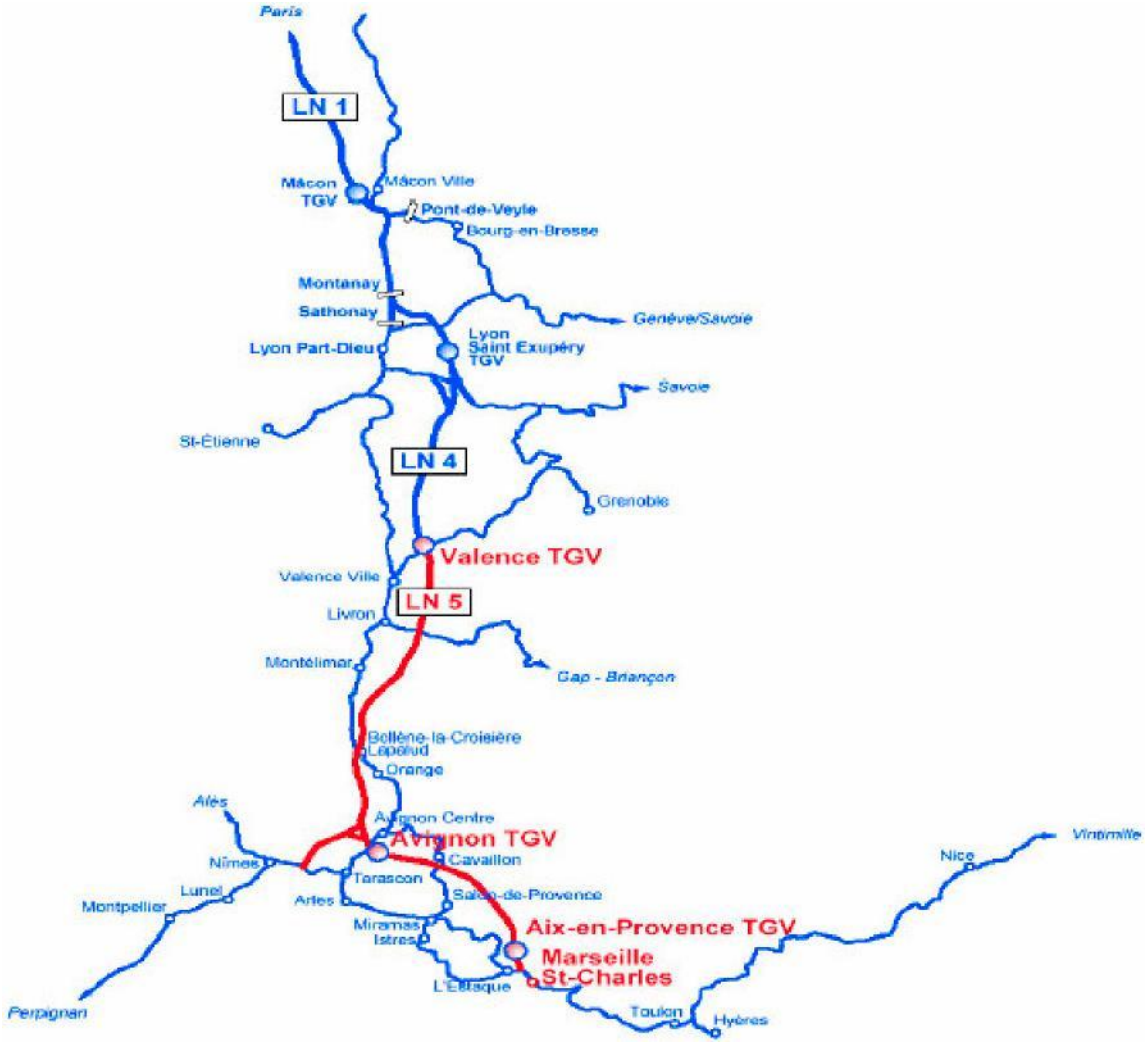
*LN3 TGV Northern Europe*: from Paris to Lille, with 350km of new line. The project was declared of public utility on 29 September 1989, and works started in summer 1989. The line was brought into service on 26 September 1993. The prolongation towards Great Britain was opened on 14 November 1994 (with the Channel Tunnel) and towards Belgium on 2 June 1996 (towards Antoing, and then on 14 December 1997 to Brussels).

*LN3 Interconnection in Ile-de-France*: 102km of new lines which make it possible to connect LN1, LN2 and LN3 with the construction of two new stations (Roissy-Charles de Gaulle and Marne-la-Vallée Chessy). The project was declared of public utility on 1 June 1990. The opening day of the interconnection between TGV Atlantic and TGV South-eastern (between the station of Massy TGV and Créteil) on the existing lines was 29 September 1991. On 29 May 1994 the North-South section between Vémars and Moisenay was brought into service, with the inauguration of Marne-la-Vallée Chessy station. The Western branch was brought into service on 2 June 1996 (via Créteil and Coubert).

*LN4 TGV Rhône-Alpes*: 122km of new line between Montanet and Saint-Marcel-les-Valence, declared of public utility on 26 October 1989. The works began in November 1989. The Northern section from Montanay to Saint-Quentin-Fallavier was brought into service on 13 December 1992. The Southern section to Saint-Marcel-les-Valence was brought into service on 3 July 1994. This line corresponds to the first stage in the extension of the South-eastern high speed line, and has been prolonged by the TGV Mediterranean.

*LN5 TGV Mediterranean*: when the project was launched, the high speed lines network was composed of three lines terminating in Paris and a first extension beyond Lyon towards Valence. The TGV Med project then consisted of extending the LN4 to Marseille.

**Figure 2: LN5 TGV Mediterranean**




Source: SNCF/RFF, 2007.

The last stage in the construction of this high speed network was the realisation of the East European line, from Paris to Strasbourg and Germany. The project was declared of public utility on 14 May 1996. The first phase was completed with the opening on 10 June 2007 of 300km of new line between Vaires-sur-Marne and Baudrecourt. The project continues today with the second phase, which represents 106km of line between Baudrecourt and Vendenheim.

As of 1 January 2008, the French railway network represents 1,875km of high speed lines. The speed of circulation of these trains is 300km/h, except for the TGV East, conceived for a commercial speed of 320km/h, and some parts of the network which remain at 270km/h.

**Figure 3: The French Railway Network in 2008**


Source: RFF.

Technical specification

The TGV Mediterranean constituted by its dimensions one of the largest civil engineering building sites in the twentieth century in France. It required the construction of 500 structures, including seven exceptional viaducts, 13km of tunnels, and three new stations.

The technical and economic principles used for the creation of the TGV South-Eastern were renewed in the case of the TGV Mediterranean. These principles make it possible to define a 'TGV system' and were stated in the origins of the model in the 1960s by the SNCF research department. They fixed great strategic directions:

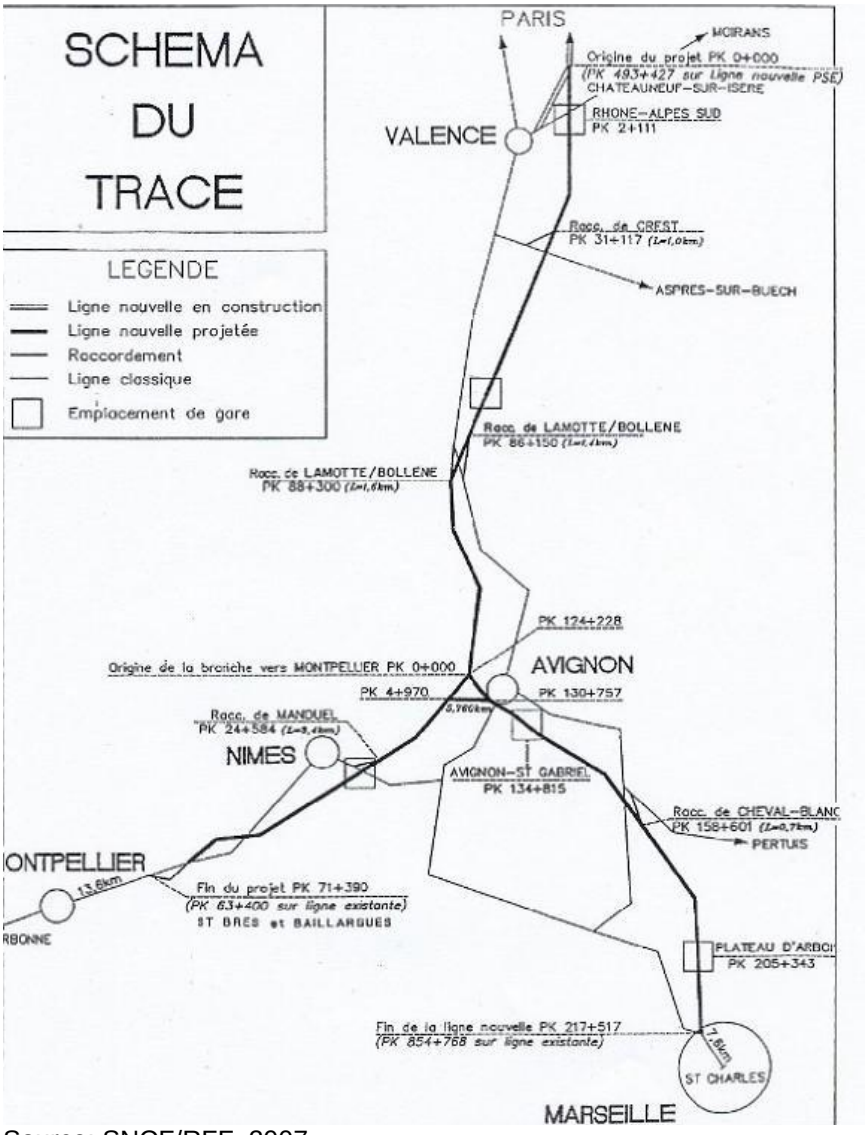
- the creation of a new infrastructure dedicated solely to high speed and passenger traffic;
- the compatibility of rolling equipment with the conventional network, to be able to stop at downtown stations;
- the abandonment of motor-drawn trains for articulated trains, indeformable and capable ofbeing twinned;
- the reduction in carrying capacity of the trains, balanced by the increase in frequency;
- the establishment of new stations outside the city-centre, to avoid waste of time;
- the limitation of the number of stops per train, to maintain a high speed;
- a train service entirely concentrated on Paris;
- compulsory reservation of seats and a marketing policy aiming to offer the TGV like a traditional train and to take market shares from the plane.

The realisation of a high speed line differs from that of a traditional railway line, in particular because of the technical constraints imposed by speed. In the case of the TGV Mediterranean, the technical constraints evolved compared to the previous lines. The route was studied for a reference speed of 350km/h and a commercial speed of 300km/h. The radius of curvature of the line is of 8.33km (whereas it was of 3.75km for the TGV South-eastern, and 6.km for the TGV Northern and Lyon – Valence) and the diameter of the tunnels doubled compared to the TGV Atlantic (100-120$m^2$ against 55-72$m^2$ for the TGV Atlantic).

Principal transport nodes

The principal nodes correspond to the three new TGV stations and Marseille Saint-Charles station, terminus of the high speed line. The three new stations were designed as multimodal centres of passenger transport, and with the idea of giving a strong architectural signal in connection with the TGV image of modernity. The creation of these stations was entrusted to AREP, a subsidiary company of SNCF Participations, founded in 1997 by the architects and engineers Jean-Marie Duthilleul and Etienne Tricaud.

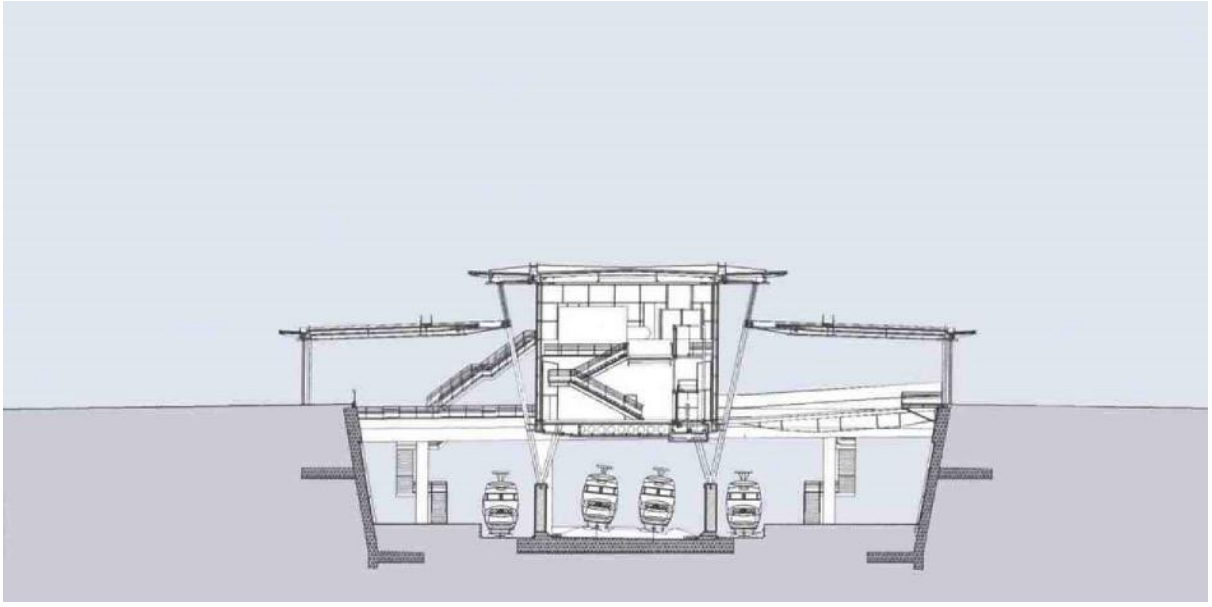
**Figure 4: Outline of the route and the principal nodes**




Source: SNCF/RFF, 2007.

*Valence TGV (Southern Rhône – Alpes):* established at 10km from Valence near the national road, with the intersection of the existing railway (Valence city – Grenoble) to allow connection with the traditional railway network. This is a multimodal station which connects the TER (Regional Train), buses, taxis, car rental and private cars. The objective of this station is to serve the metropolitan area formed by Valence, Tain l'Hermitage and Romans.

**Figure 5: Plan of Valence TGV Station**



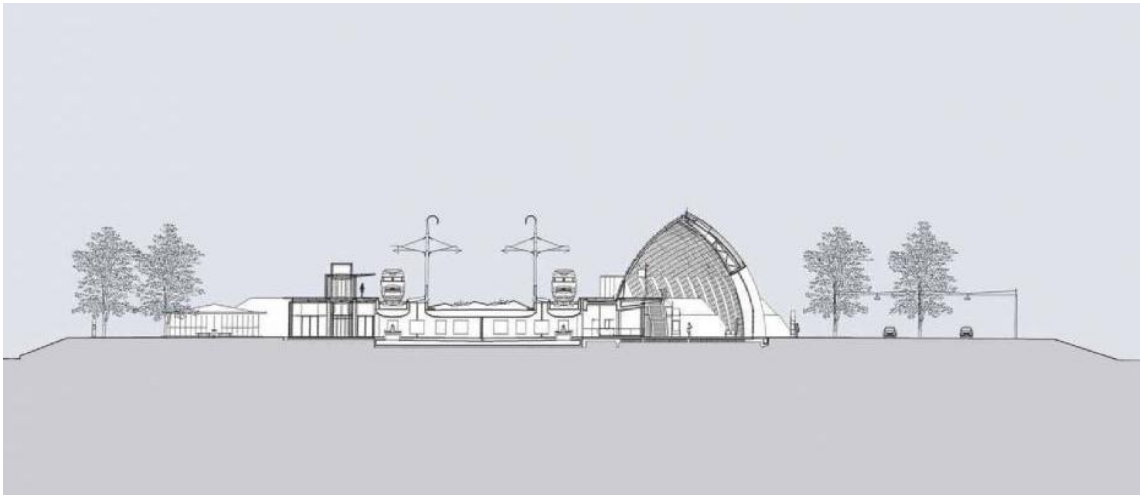
Source: AREP

**Figure 6: Valence TGV Station**

Source: AREP

*Avignon TGV (Great Avignon):* the station is located between Avignon and the Durance (on the peninsula of Courtine at the junction of the Rhône and the Durance), and serves a population area of 1 million inhabitants. The station is composed of two buildings: the Departure House which accommodates 80% of the traffic in departure towards the north; and the Arrivals House which accounts for 20% of the traffic. The Departure building has a large closed vaulted-hall long of 400m, a curved nave protected on its southern frontage by panels of composite cement-glass and on its northern frontage by screen printed glass.

**Figure 7: Plan of Avignon TGV Station**



Source: AREP

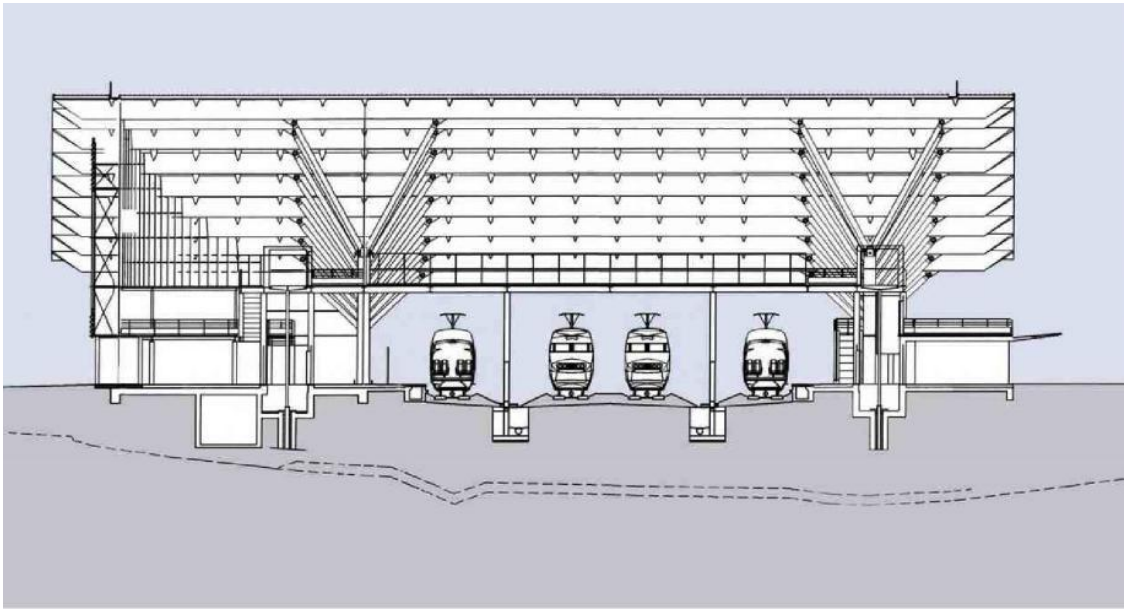
The connection between the traditional railway network and TGV access in the downtown station was programmed in the CPER (Contract between the State and the Region) 2000-2006. Finally, the project evolved in 2007 into the creation of a single of connecting track by TER (Regional Train System) between the two stations. For the moment, the connection is provided by a shuttle bus.

**Figure 8: Avignon TGV Station**

Source: AREP

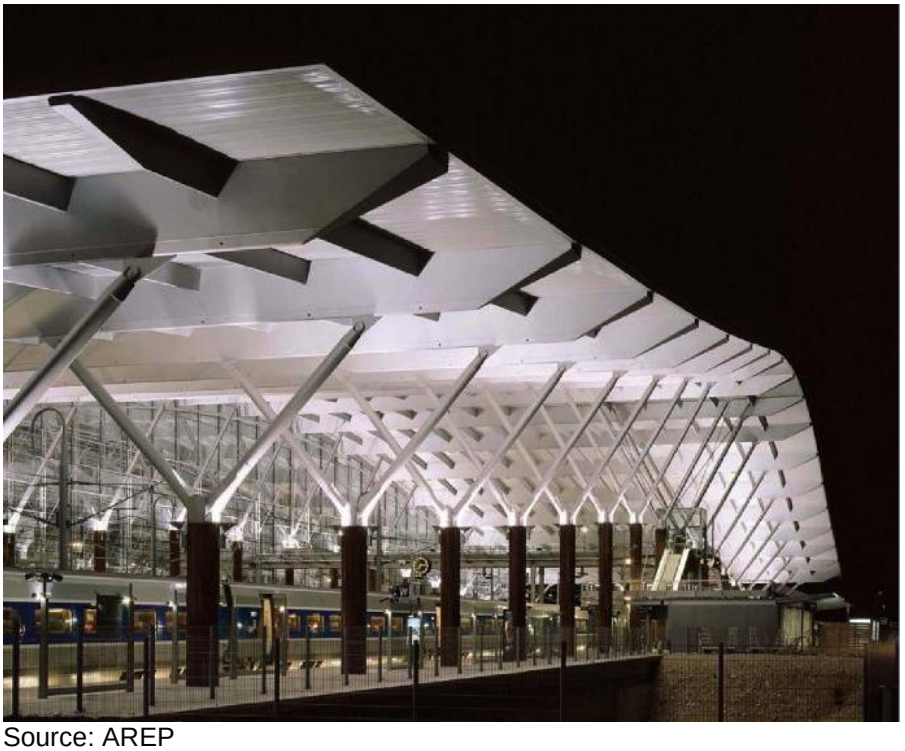
*Aix en Provence TGV (Plateau of Arbois):* facing the Sainte-Victoire mountain, the station of Aix-en-Provence TGV serves the conurbation of Aix, Marseille, and Etang de Berre. It is located on the Arbois plateau, at 15km from Aix-en-Provence and near the express road which connects Aix to the highway A7. The roof is characterised by an undulation. The glass frontages are transparent on the east side, and are equipped with a wood moucharabieh on the west side to guarantee the thermal comfort of the building depending on sunshine.

**Figure 9: Plan of Aix-en-Provence TGV Station**



Source: AREP

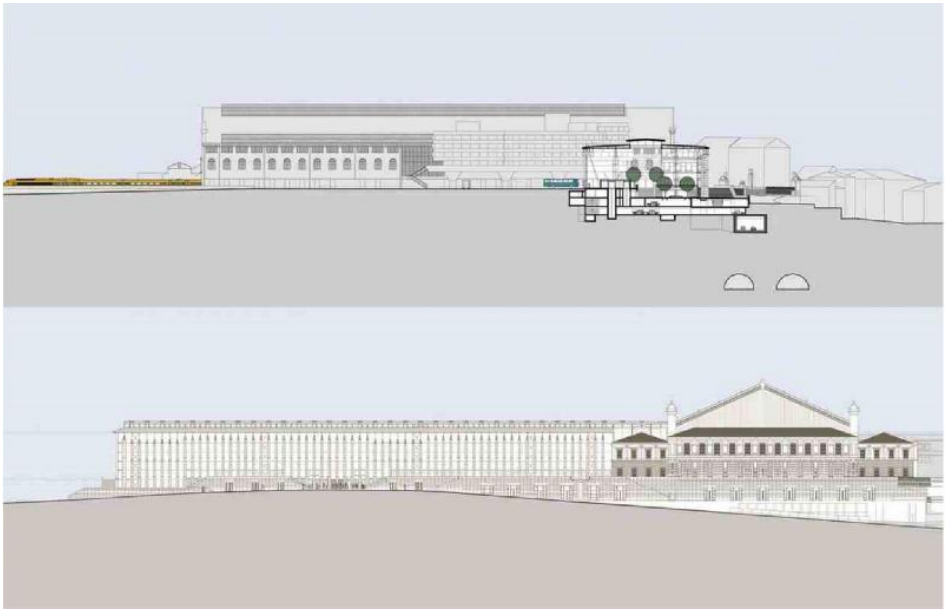
**Figure 10: Aix-en-Provence Station**



Source: AREP

*Marseille Saint-Charles:* this station located in the downtown area underwent many operations to accommodate the TGV. It was brought into service in 1848, consisting of a U-shaped building and a glass roof. The station is integrated in the urban project *Euroméditerranée* (Operation of National interest which aims at making Marseille a dynamic metropolis on a European scale). In this project, the Saint-Charles district was designed as a nerve centre for transport in Marseille and its area. The operation resulted in the creation of a pole of transport, with the integration of a coach station and the creation of a new TGV terminal. Pedestrian access was promoted through the creation of a road tunnel, by the urban government, which passes under the station and thus allows the traffic outside to be reduced (entry: bd Voltaire and bd d'Athènes, exit: av Zattara). The station thus allows connection for all transport modes: TGV, TER, buses, subway, taxis and car parks. These modifications were inaugurated on 10 December 2007.

**Figure 11: Plan of Marseille Saint-Charles Station**



Source: AREP

**Figure 12: Marseille Saint-Charles Station**

Source: AREP

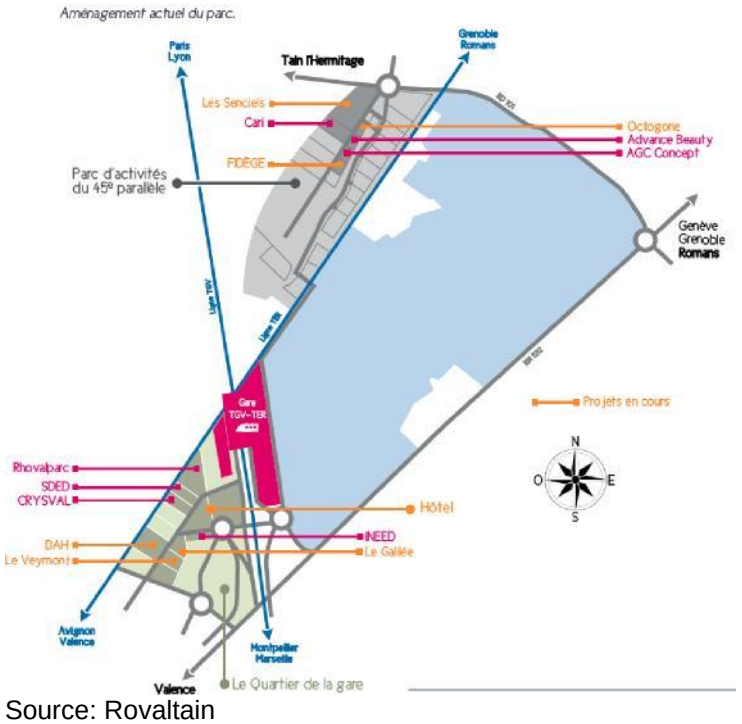
Major associated developments

The TGV Med project includes several elements: the creation of the new line, the creation of three new stations, the refitting of the old downtown stations. The main associated developments concern the stations.

The three new stations were designed as multimodal hubs of exchanges to allow economic development around them.

In the case of Valence TGV station, the *Rovaltain* association was created on 16 January 1990 to join together the towns of Valence, Romans and Tain, as well as the small villages, and to launch a reflection on the development of this area. This association supported the creation of a new pole of activities near the TGV station. A first ZAD (zone of deferred planning) of 300ha was created around the future station. Then, the ZAC (zone of concerted planning) of *Correspondance* was declared of public utility in April 1998, covering a surface of 162ha. In 2003, the installation of two parks of activities was launched inside the ZAC. The Park of *Quartier de la Gare*, on 10ha, gathers tertiary sector and services activities. At the end of 2008, 48 companies had invested in the first four buildings completed. The Park of *45ème Parallèle* gathers industrial and tertiary sector activities on 20ha. At the end of 2008, three companies were established there.

**Figure 13: Park of activities at Valence TGV Station, 2008**



Source: Rovaltain

In the case of Avignon TGV station, on the peninsula of Courtine, several initiatives were taken to develop this zone, with the objective of developing an economic and urban pole for the Great Avignon. The transformation of this zone had already started in the 1970s, but it soared with the arrival of the TGV and the creation of a TGV business centre (on 23ha with hotels, residences, shops, local services and tertiary sector). The creation of *Agroparc* has reinforced the dynamism of this pole. Head offices of companies, research organisations (INRA), formation and educational establishments have been established in the park. In 2005, *Agroparc* obtained the status of pole of competitiveness on the agroalimentary sector.

At the end of 2008, the development area of Courtine covered 810ha, 20,500 jobs (in trade) and 7,000 companies [Source: Internet website of Great Avignon http://www.grandavignon.fr/developpement_intro.donut?cid=5&modele=developpement].

**Figure 14: The development pole of Avignon TGV**


Source: Great Avignon

In the case of Aix-en-Provence TGV station, the development is also centred around the TGV station on the Arbois plateau. A first association of local authorities was created in 1991, *Europôle Méditerranéen de l'Arbois*, to organise the establishment of companies, research units and educational centres in the field of the environment. The technopole was organised with a ZAC (Zone of concerted planning), around three parks: the Domaine du Petit Arbois (75ha), the Domaine du Tourillon (90ha), the Domaine de la Gare (40ha). In 2008, it gathered eight research laboratories, 25 start-ups and 46 companies

[Source: Website of Mediterranean Europole of Arbois, http://www.europole-med-arbois.org/html/modules.php4?name=Sections&op=viewarticle&artid=32].

**Figure 15: The development pole of Aix-en-Provence TGV**


Source: Mediterranean Europole of Arbois.

The *Euroméditerranée* project in Marseille is the main development project related to the TGV Med. It is an Operation of National Interest, managed by a public society of planning (*Euroméditerranée*), created by decree on 14 October 1995. This project of reorganisation of the downtown area answers three major goals:

- to contribute to the international influence of Marseille by creating the equipment necessary in the fields of culture, economy and education, and by taking account of the urban and architectural quality of the new districts (access to the sea, green areas, equipments, modes of transport);

- to create jobs on the metropolitan scale while taking part in the reduction in unemployment numbers in the city-centre;

- to contribute significantly to the housing policy of the city by producing a range of new housing at affordable prices, and by eliminating unhealthy housing and the vacancy in its perimeter.

[Source: Website Euroméditerranée, http://www.euromediterranee.fr/]

This project is the greatest operation of urban renovation in France. The initial perimeter of 310ha was increased in 2007 to 480ha. This operation is funded half by the State, and half by the local authorities and Europe. The public contribution, between the State and the local authorities, is around EUR 531m between 1995 and 2012. For the same period, private sector investments are of EUR 3bn. Over the period 2012-2020, we expect additional public and private investment of EUR 3.5bn.

**Figure 16: Euroméditerranée, the Project Flyer**


Source: Euroméditerranée

The project concerns several districts in Marseille:

- the district of Joliette on the coastal frontage, between the port and the downtown area;
- the district of Saint-Charles around the station;
- the district of Belle-de-Mai on the site of the old tobacco factories;
- the main street, Rue de la République;
- the current port area, Cité de la Méditerranée.

**Figure 17: Euroméditerranée, perimeter of the project**


Source: Euroméditerranée.

The district Saint-Charles project, which was based very largely on the TGV arrival in Marseille, was designed inside a ZAC of 16ha, by the town planners Bruno Fortier and Jean-Michel Savignat. The unit represents a total of 120,000m$^2$ SHON (surface area), including:

- 42,000m$^2$ of offices;
- 500 new or renovated housings;
- 7,000m$^2$ of hotel trade;
- 3,000m$^2$ of shops;
- a school complex;
- two public carparks (for 1,600 cars).

This operation is composed of three features:

- The creation, starting from the station, of a pole of transport.

This pole corresponds to the extension of the station by the integration of a coach station and the creation of a TGV terminal. The total construction costs of the buildings in this new pole were estimated at EUR 115m (including creation of the Honnorat Hall, transformation of the historical station and construction of a tunnel in the foundations). The operation was carried out by SNCF with the financial contribution of many partners:

| | |
|---|---|
| SNCF | EUR 29.24m (26.06%) |
| Urban Government (Marseille Provence Métropole MPM) | EUR 24.31m (21.67%) |
| Region Provence-Alpes-Côte d'Azur | EUR 18.65m (16.63%) |
| Euroméditerranée (EPAEM) | EUR 14.88m (13.27%) |
| Europe (under objective 2 FEDER) | EUR 12.66m (11.04%) |
| Department of Bouches-du-Rhône | EUR 9.56m (8.52%) |
| The State | EUR 2.87m (2.56%) |

- Many programmes of hotels, housing and offices, which are organised around a new pedestrian lane between the station, the university and the Porte d'Aix.

- Two new squares: the station square and the place of the arch of triumph, released from traffic as a result of the opening of the Saint-Charles Tunnel at the beginning of 2005 and the A7 highway being cut off at the level of bd Leclerc (planned for 2009).

The reorganisation of station access includes: the creation of a new public space between the University of Provence and the station, by joining the square Victor Hugo and a large parvis in front of the university; the creation of a footbridge crossing the bd Maurice Bourdet and connecting the station to the new district, Bernard Dubois; the requalification of the urban boulevard in front of the pole of transport; the creation of an entry signal for the station at the top of the bd Nedelec on the square of station. The works started in 2007 and their completion is expected by the end of 2009.

[Source: Website Euroméditerranée, http://www.euromediterranee.fr/]

**Figure 18: Reorganisation of the Saint-Charles Station accesses**

Source: Euroméditerranée

**Figure 19: Tunnel Saint-Charles**

Source: Euroméditerranée

**Figure 20: Tunnel Saint-Charles**

Parent projects

At the end of the Council of Ministers of 31 January 1989, the government asked SNCF to prepare a strategic plan of high speed lines and to launch “studies of the route and of the conditions of realisation of the extensions of the TGV South-Eastern towards Marseille, Italy and Spain”. At that time the TGV Med project was a project of European scale. On 22 December 1989, SNCF transmitted to the government a first version of this strategic plan, which contained a project to extend the TGV South-eastern characterised by two sub-projects:

- a project Provence-Côte-d'Azur, divided into a branch towards Marseille and a branch towards Fréjus, the Riviera and Italy, with a profitability record of more than 13% (TRI economic[1]);

- a project Languedoc-Roussillon, towards Spain, with a profitability of only 5% (TRI economic).

From these two sub-projects, only a half-project has survived to become the TGV Mediterranean, after the abandonment of the two branches towards Spain and Italy.

The first drafts of the project were released on 15 December 1989 by Michel Walrave, Executive vice president of SNCF, in front of the regional elected representatives of Languedoc-Roussillon and Provence-Alpes-Côte-d'Azur, gathered in Marseille. They positioned themselves favourably to the project and confirmed their will to create a train service towards Barcelona and Milan. Their fear was of course to see the project limiting itself to a branch towards Marseille, with an adjournment of the branches towards Spain and Italy. Consequently they created an association of regional elected officials, Association Provence-Alpes-Côtes-d'Azur for the TGV South-eastern Mediterranean in October 1989, which was committed to obtaining the State’s guarantee for the realisation of the TGV to Nice and Italy, and thus the realisation of a great southern bar.

Following the meeting of 15 December 1989, some leaks in the press of internal documents belonging to SNCF and in particular a first map of the project, caused the beginning of the protest movement amongst the residents and local elected people. On paper, the route was drawn to Montpellier and Fréjus only, with arrows indicating the extension towards the Spanish and Italian boundaries. Many associations were then created along the route, each branch being subjected to protests. In the Var, for example, the mayors of the 64 cities and villages concerned by the TGV route towards Nice created an association, *Le Var et ses élus pour la défense du patrimoine* (the Var and its elected officials for the defense of its heritage). They joined many other associations opposed to the project in the ‘Union of associations safeguarding the Var department and its country’, placed under the honorary presidency of Hubert Falco, Deputy UDF of the Centre-Var and vice-president of the Departmental Council.

The President, Francois Mitterrand, intervened on 14 July 1990 to request from SNCF the withdrawal of the reference route. SNCF then engaged studies to propose alternatives. These alternatives were studied during the Querrien Mission, appointed by the Minister for the Equipment to select a route. The report of the Querrien Mission was submitted to the Minister on 2 January 1991. The mission led to the definition of the selected route and especially to the abandonment of the Riviera branch towards Italy. The Querrien report

[1] Le taux de rentabilité interne financière ou TRI désigne le taux d’actualisation pour lequel la somme actualisée de l’investissement et des flux d’exploitation sur la durée du projet est nul. Je fais référence ici au TRI pour la SNCF.

distinguished three lines to be carried out in the project:

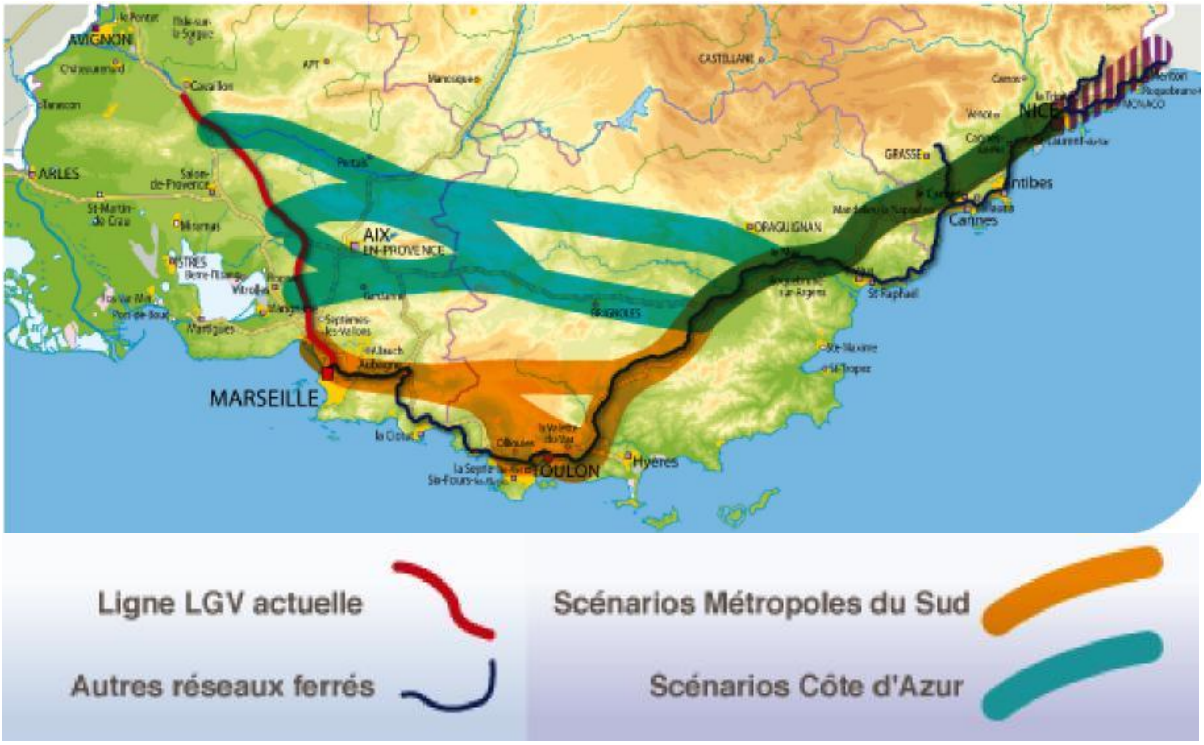
- the TGV Provence-Languedoc, profitable (TRI 9.8%) ;
- the TGV Languedoc-Roussillon from Montpellier towards Spain, much less profitable (TRI 6.1%) ;
- and the TGV Côte d'Azur towards Italy, rather profitable (TRI 8.4%).

The TGV Provence-Languedoc, between Valence and Marseille, was the most profitable, and the studies already well advanced on this section following the Querrien mission. As of 17 January 1991, the Minister, Louis Besson, approved the Querrien route for this part of the project, but he reserved his decision for the Riviera branch and requested a prolongation of the Querrien Mission until July 1991 for the Languedoc-Roussillon branch.

The Côte d'Azur or Riviera branch was abandoned very quickly, between January and May 1991. This abandonment is explained by several reasons related to both the calendar and the project route, and protests from elected people and residents. As the project route started from Valence within the framework of a line extension, the studies prioritised the first part of the project between Valence and Marseille. At the conclusion of the Querrien Mission in December 1990, the selected route was compatible with the objective of a large Mediterranean arc, due to the creation of the bar Languedoc-Côte d'Azur in the south of Avignon. An important point of dispute was in the north of Aix-en-Provence, around Mallemort, Vernègues and Alleins. The wine-producers of *Coteaux d'Aix*, residents and local elected people were opposed to the creation of a branch in the north of Aix-en-Provence towards Fréjus. The difficulties of realising this branch appeared during the negotiations of the Querrien mission. To avoid blocking the project and remaining in conflict, SNCF and the State decided to defer the realisation of this branch. For the SNCF Project Manager , the objective was to calm down the tensions: “When we carried out the negotiations in the country of Aix, after they (Inhabitants of Aix) had obtained the passage by the west of Aix to Marseille, with a station somewhere on the Arbois plateau, they becomed stiffer in a way. They said to us: OK for this branch towards Marseille, but the other one connected towards Fréjus we don't want it! And as in the Var, we couldn't pass in Toulon, the elected people criticised the project... even if we could nevertheless discuss with them and they had finally admitted that it was undoubtedly the least worse route for them... But as the inhabitants of Aix had battled very hard to obtain that the route doesn't pass in the country of Aix, we have finally decided not to make this branch for the moment”. The decision not to build this branch was officialised on 8 October 1992 with the launching of the public survey on the definitive route, to Marseille and Montpellier, without a branch towards Fréjus. The withdrawal of this branch was thus not related to any constraints of profitability, since at the time the profitability of this branch was estimated at 8.4% (TRI). It was rather the pressure of protest movements from inhabitants in the Aix country and undoubtedly the lack of mobilisation of the Var elected people to obtain this branch, which carried the decision.

Today the realisation of this branch is again very topical. The extension project of the TGV Mediterranean to Italy is known more from now on under the name of LGV Provence-Alpes-Côte-D'Azur (LGV PACA). Further studies were started in December 1998 by the CIADT, which decided “to examine in more details the studies relating to the train service of Toulon and the Riviera”. Between 2000 and 2002, RFF carried out a study on the opportunity of developing a high speed train in the PACA Region. The CIADT of December 2003 replaced this project in the State priorities. A public debate was organised from 21 February to 8 July 2005, within the framework of the National Commission of the Public Debate, to discuss the opportunity to realise such a project. After the debate, the project received a favourable opinion and RFF engaged to pursue the studies. The Regional Department of RFF in PACA, in charge of this project, identified 14 scenarios gathered in two families of routes: South Metropolises, passing by Marseille and Toulon; and Riviera, characterised by a direct route towards Nice starting from the TGV Mediterranean near Aix-en-Provence.

**Figure 21: Two families of routes studied for the LGV PACA project**




Source: RFF

Finally after many long months of negotiations with regional elected people, the Minister for Ecology Jean-Louis Borloo announced on 29 June 2009 the selected route, South Metropolises. The new line will pass by Marseille, Toulon and all the most important cities on the coast. The calendar proposed by RFF scheduled a declaration of public utility in 2013 and an opening in 2020.

The branch Languedoc-Roussillon was abandoned later, in January 1995, for , economic reasons . In the stage report of July 1990 which presented the project, SNCF considered a rate of economic internal profitability of 9.3% for the project overall, i.e. from Valence to Marseille, Fréjus and Montpellier. With the modifications made on the route, the improvement of environmental insertion of the line and a more thorough examination of the studies, SNCF revalued the project's TRI in February 1995 to 6.8%. At that time, the branch towards Fréjus had already been abandoned. The Ministry for the Equipment had begun to guarantee SNCF a rate of profitability superior to 8% to limit its debt. This engagement is specified in article 26 of the plan contract agreed betweenSNCF and the State in 1990 (the contract is renewed every five years): "If the State, a local authority, or a public agency, asks for the realisation or modification of an investment plan, it must be simultaneously committed to bring to SNCF the necessary support such as, ultimately, its realisation does not lead to any deterioration in SNCF accounts. In this aim, their participation in project funding will be established on a level such as the internal rate of profitability estimated for the part funded by SNCF is at least equal to the rate used by it for its own investments". The TRI revaluation by SNCF of around 6.8% led the company to ask the State for a subsidy of EUR 640m (Cour des Comptes, 2003). The Ministry for the Equipment appointed a mission to revaluate of the project cost, by the *Conseil Général des Ponts et Chaussées* and *Inspection Générale des Finances*, in 1995. The final report recommended the abandonment of the Nîmes-Montpellier section to raise the TRI to 7.3% and to limit the necessary subsidy to EUR 366m in order to obtain 8% of internal profitability. This decision has been retained. The abandonment of this branch was officialised on 25 September 1995 by the ministerial decision of approval concerning the TGV Med project.

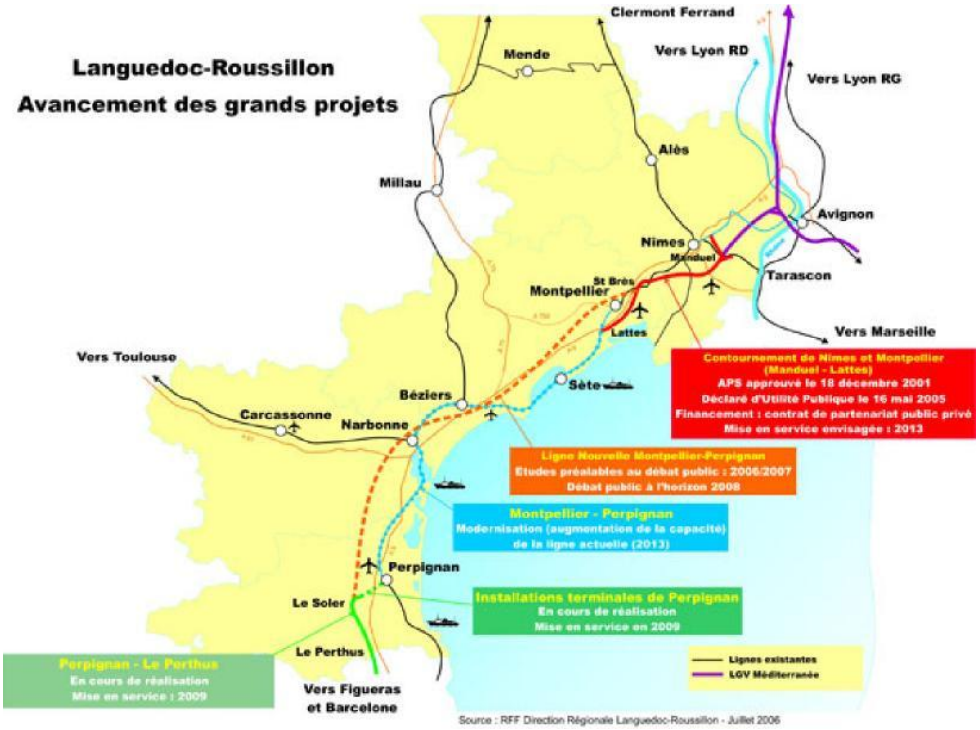
Again it was not a final abandonment. But contrary to the Riviera branch where the abandonment was mostly caused by protestations, in the case of the Languedoc-Roussillon branch the route suggested in the SNCF studies was not called into question. The route to Montpellier, which had been studied in the APS (preliminary and summary draft) and approved by ministerial decision in May 1995, was used as a reference when the process has been restarted. The project was started again in 2000 with its inscription as a Projet of General Interest (PIG) procedure, which makes it possible to reserve a corridor of passage. The line extension from Nîmes corresponds to a new project, the LGV European Southern, which includes several sections:

*The bypass from Nîmes to Montpellier*: this section was carried out the most swiftly after the TGV Mediterranean. The APS (summary and preliminary draft) was approved on 18 December 2001, and the project was declared of public utility on 16 May 2005, ten years after the decision to abandon this branch within the framework of the TGV Med project. It is a mixed line, freight and passengers, whose opening to traffic is scheduled for 2013. A financial draft agreement on a Public Private Partnership contract was signed in June 2008 by the local authorities. The project is currently in a stage of preparation for competitive dialogue. Three groups have presented their candidature for the realisation of this section: Bouygues TP, Eiffage and Vinci Concessions.

*The Montpellier-Perpignan section*: in 2006 the studies on this section were started again by the Transport Minister. These studies led to a proposal of four scenarios, which have been debated by the public (from 3 March to 3 July 2009).

*The Perpignan-Figueras section*: the section of 44km is currently completed. It was carried out as a result of an agreement signed in 1995 between France and Spain. The project was realised by a concession granted to TP Ferro (a company owned half by Eiffage and half by ACS Dagrados). It was delivered on 17 February 2009 after five years of work and the realisation of the Perthus Tunnel.

**Figure 22: Projects of high speed line in Languedoc-Roussillon**




Source: RFF

**Figure 23: The Perpignan-Figueras section during the works**

Source: RFF

## Country/location

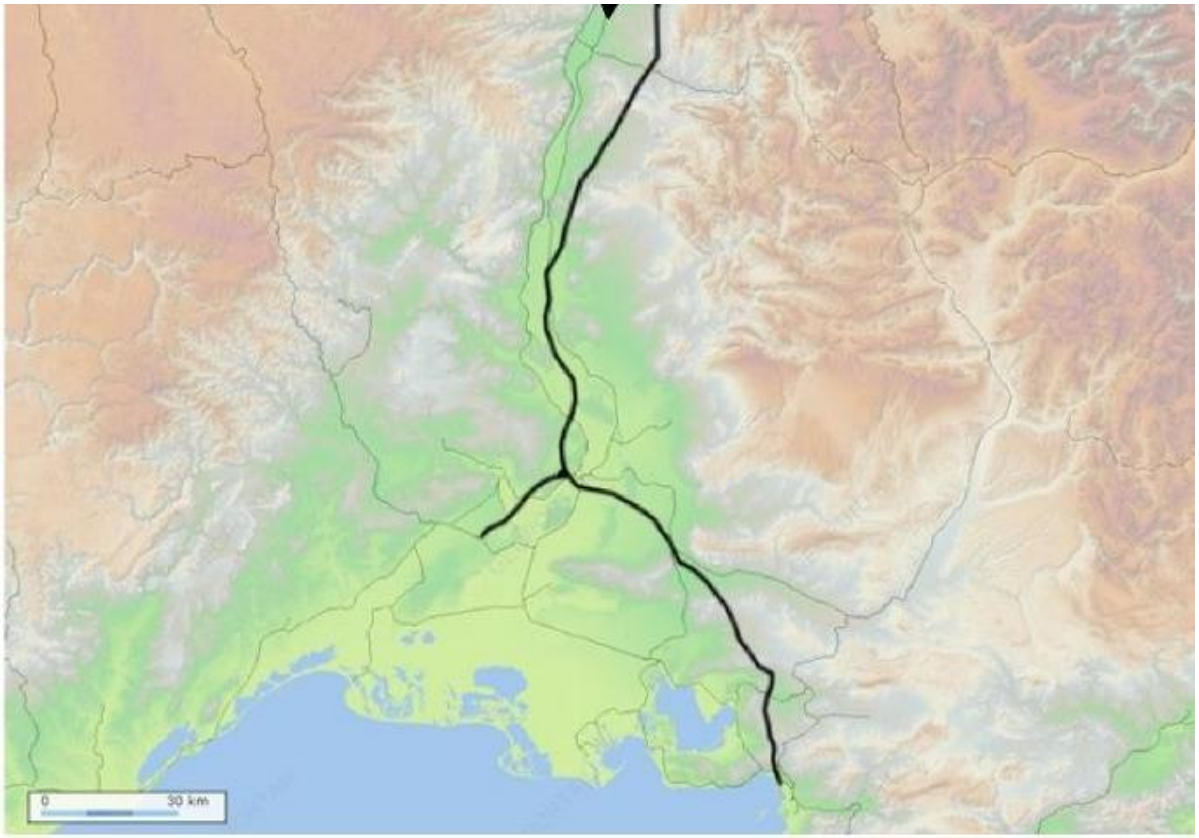
The TGV project is located in France. The 250km of new lines cross the Departments of Drôme, Gard, Vaucluse and the Bouches-du-Rhône, and directly relate the Regions of Rhône-Alpes, Provence-Alpes-Côte-D'Azur and Languedoc-Roussillon. The TGV Mediterranean crosses the Rhône valley, the Durance valley, and the Provence. The crossed areas are characterised by:

- A high density of population, and an open settlement which results in a large number of medium-sized cities;
- An agriculture of small farmers, with small lots, fruit and vegetable farming and vineyards (in the Rhône valley and in Provence);
- Symbolic landscape units, strongly marked, such as the Lubéron mountain, the Durance valley, the Alpilles chain of mountain and the Crau plain.

**Figure 24: Project localisation at a European scale**


Source: Géoportail, IGN

**Figure 25: Project localisation at regional scale**



Source: Géoportail, IGN

**Current status**

The line was inaugurated on 9 June 2001 by the President Jacques Chirac. On 10 June 2001, the first commercial trains were brought into service by SNCF. The new stations were brought into service at the same time. However, the installations at Marseille Saint-Charles station were finished later. The station renovation was inaugurated on 10 December 2007, six years after the arrival of the first TGV.

In January 2007, the government gave its agreement for the creation of a new station in the sector of Montélimar/Pierrelatte. The site was envisaged at the beginning of the TGV Med project, but conflicts with residents and the lack of political will led to the abandonment of this new station. Negotiations are currently in progress concerning its realisation and funding. The objective of this fourth TGV station around Allan is to serve Montélimar, one part of the Drôme, the south of Ardèche and the north of Vaucluse.

## B PROJECT BACKGROUND

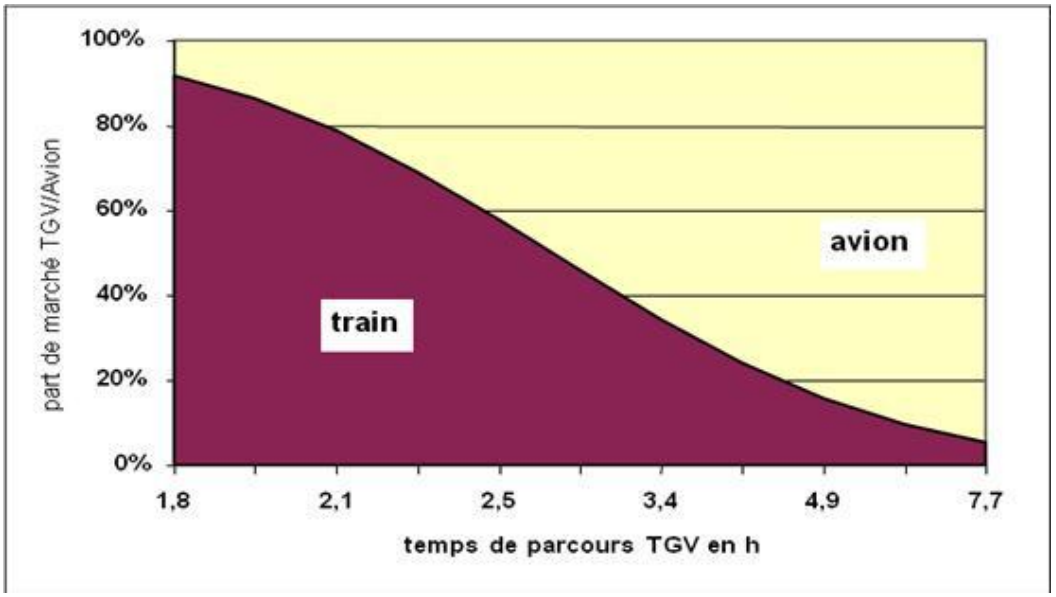
### Principal project objectives

The main objectives of the TGV Med project were presented in July 1990 in the SNCF stage report and have not changed from that time, except for one objective (presented here at the end) added because of the protest movement:

- "To accelerate the direct relationships between the main agglomerations in the south-east and the capital", i.e. to put Marseille at three hours from Paris.

This three hours objective is achieved only by the non-stop trains and without delays. The three hours line is extremely important for SNCF since it makes it possible to gain market shares from the plane. For longer journeys, the plane is more competitive on average.

**Figure 26: TGV/air market share according to the travel time**




Source: Jean-Marc Moulinier, Daei/Meeddat

The three hours line constitutes an efficient commercial argument. The stake for SNCF is to take market shares from the car and air in a Rhône corridor reaching saturation point.

- "To still improve, compared to the situation expected in 1994, the transport offer and travel times between the southern-eastern cities and the northern and Atlantic facades, by direct trains city to city, without break of load in Paris, by exploiting all the possibilities offered by the new inter-connected high speed network".

The TGV Mediterranean aims to supplement the network following the Northern TGV, Atlantic TGV and junction in Ile-de-France TGV, which ensures a connection without stopping in Paris. The network logic becomes more important for the first time than the logic of centralisation on Paris. Thus the idea is to leave the radial plan and to engage the construction of a transverse network, at the European scale rather than just the national scale.

- "To create new high speed connections between the Regions Rhône-Alpes, PACA

and Languedoc-Roussillon.

- "To create a completely international axis of high speed between the North and the South of Europe".

The project answers to a European logic, by keeping the possibility of an extension towards Spain and another towards Italy.

- "To manage a first phase of equipment of the Great South, by connecting Nice and Marseille to Montpellier, Toulouse and Bordeaux, but also to Barcelona".

So the TGV Med constitutes the first stage of a process still in progress, with the LGV PACA and South-European projects.

- The construction of the TGV Mediterranean was also supposed to release some new capacities for regional traffic and freight on the existing lines.

This objective was not presented in the first version of the project proposed by SNCF, nevertheless it appeared rather quickly because of protestations from residents. The associations of residents and elected people, opposed to the project, developed an argumentcalling into question the opportunity for a new railway line. They required the examination of an alternative solution, such as using the existing tracks in the Rhône corridor. This is the case of *Le CARDE* (Coordination of Regional Action and Defense of the Environment) in particular, which federated most of the associations of the cities and villages crossed, the agricultural trade unions, and local elected people, in the Department of Bouches-du-Rhône. The association was created in December 1989. In November 1990 it produced a report entitled 'The existing railway corridor? With SNCF, all becomes possible!', which proposed using the existing railway corridor (on the tracks or near). The Querrien mission, which proceeded from September 1990 to January 1991, led to the selection of a route but without taking account of this proposal to use the existing railway corridors and the pendular technology to run the TGV. The disputes thus continued after the submission of the Querrien report, demanding a new examination from all angles of the project and recourse to external expertise. In summer 1991 and with the influence of *Le CARDE'*s leaders,, a Federation of Regional Action (*FARE-SUD*) was created, which exceeded the only anti-TGV movement and gathered most of the associations of environmental protection. For *Le CARDE'*s leaders, the objective was to move away from anti-TGV opposition speeches which could be accused of nimbyism, towards a criticism of the legitimacy of SNCF as decision-maker. According to them, SNCF proposed a project in conformity with its economic and commercial strategy, but which had to be discussed publicly. The associations argued for a new examination of the project and recourse to an independent commission to examine SNCF's proposals and alternative solutions. In May 1992, a member of the Minister's departmental staff, Claude Sardais, answered this request favourably. A College of Experts was created on 14 May 1992, with a mission to appraise SNCF's studies, to prepare the public survey. The College of Experts studied six scenarios, from the existing railway corridor to SNCF's proposal of a new high speed line. The report concluded that it was necessary to choose between two proposals: the improvement of frequency and speed on the existing railways (a solution which could answer only partially the needs of the next ten or 15 years but would be problematic after this period); or the high speed system which imposes the construction of a new line. The College of Experts thus concluded with two important points: the final choice of high speed with a new line creation, and the objective of improving regional traffic and freight on the existing network, assuming traffic transfer to the TGV network. So this last objective was not part of the initial project objectives but resulted from the College of Experts' reflections. The identification of this objective made it possible to calm the tensions down and to associate a greater number of elected people with the project.

**Key enabling mechanisms**

Description of key enabling mechanisms

The principal decisions which led to the realisation of the TGV Med are:

- The French Government's decision at the end of the Ministerial Council of 31 January 1989 to launch the "route studies and the reflections on the conditions of realisation of a TGV South-Eastern extension towards Marseille, Italy and Spain". This decision came in a logical sequence after the announcement in October 1987 of a first extension with the launching of the TGV Rhône-Alpes, from Lyon to Valence, in continuity to the TGV Northern and Interconnection. With this first extension, the objective was to create a North-South axis with a European vocation. At the end of this Council, the government also asked SNCF to produce a strategic plan of the future high speed lines. This strategic plan was adopted during the Interdepartmental Council on town and country planning of 14 May 1991. It officialised the design of a high speed network.

- The second key moment in the decision-making process dated from 2 August 1990 with the announcement by the Equipment Minister Michel Delebarre of the appointment of a special Mission entrusted to Max Querrien, member of the *Conseil d'Etat*, to determine the route of the new line according to all SNCF's proposals.

Faced with strong opposition against the project appearing in the press when the first information concerning the future route had been spread, SNCF proposed a number of alternatives, recapitulated in the stage report of July 1990. The project implied at that time:

- three major options of passage in the Drôme Department (route east, median or western);
- three major options for the Avignon triangle (large triangle, small triangle western, or route along the Rhone by the south-west of Avignon with a triangle in front of Arles);
- four families of routes for the Riviera branch (in the south or north of Venelles, the north of Meyrargues or in the Durance Valley);
- and two options of passage around Lambesc et Eguilles.

These alternatives represented up to seven times the length of line to be built. The protest movements were multiplied along the alternative routes, with many associations created to gather residents, conservationists, farmers, and local councilors. Demonstrations were organised, with marches, occupancy of stations, and roadblocks on the main axes and the railways. August and September 1990 constituted the highest peak of contestation, with regard to the number of anti-TGV demonstrations organised. The regional elected people, who were rather favourable to the project during the first consultations with SNCF, gradually sided with the demonstrators because of the extent of the mobilisation. For SNCF as for the State, the situation was blocked and revealed two kinds of arguments:

- The demonstrators blamed SNCF for being judge and partial at the same time, and for proposing the most direct route, which would satisfy the company accounts as well as possible but without taking account of the stakes of town and country planning. The actions led by project opponents prevented SNCF from correctly undertaking the studies to progress the project.

- They also reproached the State for having taken sides for the wine-producers of Côtes-du-Rhône wines and the 'President's friends' by requiring SNCF to withdraw the Eastern route in the Drôme Department (to avoid the vineyard). On 2 August 1990, at the same time as he announced the creation of the Querrien Mission, the

Equipment Minister announced officially the suppression of the eastern route (between Montélimar and Orange), at the President's (Francois Mitterrand) request. This decision indicated on the one hand the lobbying exerted by the association *Très Grande Vigilance* (Very High Vigilance), which gathered together wine-producers of the Rhône valley and elected people close to the President (Henri Michel and Guy Penne, whose properties in the Drôme were threatened by the route); on the other hand the weight of the most important socialist elected people, responsible for many other modifications of the project route (see 'Detailed description of route' section). This decision led to the satisfaction of some associations concerned, but also to anger and extended contestation for the other associations. This was the case in particular for the *Coordination Drôme-Vaucluse*, supervised by Mariette Cuvellier, who protested against what seemed to be an 'act of Prince' in a pamphlet published in 2001.

The appointment of the Querrien Mission aimed to resolve the conflicts and organize a consultation process to determine the route and the location of the new stations. In this way, the Mission organised meetings in each Department concerned by the project to meet all the protagonists: elected people, engineering services of the local authorities, professional institutions, trade unions, and associations. The Mission was made up of a small team, around Max Querrien, André Ponton and Michel Rochette. SNCF assisted the Mission as technical adviser. Between September and October 1990, the Mission met all the mayors concerned by the project and its route.

The Mission report was submitted on 2 January 1991 to the Transport Minister, Louis Besson. It concluded with the definition of a new reference route, called the Querrien route, which was pretty similar to the definite route. This route represented a consensus overall, even if several districts still posed a problem locally (the passage next to Tricastin, the passage in the Gard, the Mallemort-Vernegues-Alleins triangle with the connection of the branch towards Fréjus, the entrance in Marseille at Pennes-Mirabeau). The implementation of this Mission was decisive in the project process:

- It led initially to the death of many associations which were concerned by the various alternative routes. This is the case for example of the *Union Durance-Alpilles*, in the north of the Bouches-du-Rhône Department, which federated the area of Comtat, around Châteaurenard, and which was demobilised from the announcement of the Querrien route which avoided the Durance-Alpilles area. This is the case also of the majority of the associations of elected people who had obtained what they wished.

- It led then to a strategic evolution by the associations that remained concerned by the route, opening a new legal front to give each other the means to negotiate if the project was successful. The *Union Juridique Rhône Méditerranée* (Legal Union of the Rhône Mediterranean region) was created in January 1991, following the ministerial approval of the Querrien route on 17 January 1991. This association appealed to lawyers and land experts, to get advice and prepare for negotiations with the State and SNCF, in the case of a realisation of the new line on the Querrien route. It was indeed a second front, and the associations, as *Le CARDE*, continued to be opposed to the project by requiring a reexamination of the project from all angles.

- It also made it possible for SNCF not to break the dialogue with residents and locally elected people. SNCF continued its studies on the ground under the Querrien Mission's supervision.

- Finally it led especially to the stabilisation of one route, which minimised impacts on inhabited and agricultural areas. The route was obtained by negotiations in the

strongest zones of dispute. It led quite simply to the avoidance of these zones, which resulted in a transfer of the high speed line in natural spaces (the Rhône and Durance valleys).

The third key moment corresponds to the implementation of the College of Experts, which was announced by the Equipment Minister Jean-Louis Bianco on 14 May 1992. The associations opposed to the project, such as the *FARE-SUD* (Federation of Regional Action for the Environment) which brought together activists from over 150 associations, asked for a project re-examination. The *FARE-SUD* published in March 1992 a White Paper on the environment in which it denounced the sham dialogue organised by the Querrien mission. The main arguments were that all the negotiations were based on analyses and data from SNCF, despite the fact that SNCF would be the future operator of the line. This White Paper was transmitted to all the candidates with the regional elections, which took place in March 1992. The candidates put the recommendations on their agenda and decided in particular to support the creation of an independent commission to evaluate SNCF's proposals from an external point of view. It was the case for example of Jean-Claude Gaudin who was re-elected as President of the Regional Council in PACA.

In April 1992, the government changed. The new Equipment Minister, Jean-Louis Bianco, was appointed on 2 April 1992 and discovered the project file. He entrusted to his principal ministerial adviser, Claude Sardais, the mission of continuing the negotiations to advance the project. To answer at the associations' request, the Minister announced the creation of a College of Experts, to prepare the public survey in a transparent manner. The College was composed of eight members, who were jointly selected by the State, SNCF and the associations. Olivier Domenach (economist), Francois Plassard (geographer), Jean-Paul Ferrier (geographer), and Pierre Sarracino (public transport operator in Marseille) were proposed by the associations. Jean Armengaud (Ministry Environment), André Blanc (Inspection Générale des Finances), René Mayer (Equipment Ministry), and Claude Quin (former Chairman of the RATP) were proposed by the ministry. The College had a function of evaluation and mediation; the aim was to follow and evaluate SNCF's proposals, to order complementary studies from foreign firms. The device included the creation of a follow-up committee which gathered all the project stakeholders, associations who had asked for this evaluation and the elected people. This follow-up committee controlled the work of the College of Experts. The College used the possibility of recourse to independent experts, by calling in a British consultancy, Ove Arup and Partners International Limited, to appraise SNCF's traffic studies and to evaluate the various scenarios suggested.

The College of Experts Mission took place from May to September 1992. Its consequences were decisive for the project timeline:

- It resulted in reinforcing the position of SNCF as a qualified building owner, since the recourse to Ove Arup confirmed on the one hand the quality of the traffic studies produced by SNCF, and on the other hand the coherence of the proposals supported by SNCF, in particular the option of the creation of a new line, which did not lead to any more debate.

- It led to a very clear separation between, on the one side, associations that remained against the project, because they were opposed to the route or the TGV system, and on the other side associations that required a democratic debate in the decision-making process. The first group were not satisfied and continued the fight, either until the declaration of public utility for most associations (such as the *Coordination Drôme-Vaucluse*, in particular because of the passage near the nuclear site of Tricastin), or until the end for others. The second group obtained satisfaction with the creation of a new public debate procedure, through the Querrien Mission, and the appointment of an independent commission, the College of Experts. It is the case in

particular of *Le CARDE*, whose leader Gerard Perrier withdrew from the movement just after the dissemination of the College of Experts' conclusions; it is also the case of many other associations such as the UJRM. These associations accepted the College's conclusions, and tried to make the debates revolve around environmental and risk issues, to delay the project where possible, and above all to obtain the best possible facilities and protection. With no more alternatives to propose, the associations concentrated their actions on this type of request.

The last moment which led to the final realisation of the project and the construction of the new line must be the Declaration of Public Utility, which intervened on 31 May 1994. This declaration engages the State decision and confirms in a final way the project realisation. It was pronounced only three days before the validity deadline, on 3 June 1994. The validity period is a period of 18 months following the public survey closure. The proximity of this deadline testifies to the many hesitations by the State on whether to confirm the project. Until that date, the project outcome was still very uncertain for all stakeholders involved. In March 1993, the legislative elections led to a victory of the right-wing party (RPR and UDF), which resulted in a change of government. Edouard Balladur was appointed Prime Minister in a government of cohabitation. Michel Barnier replaced Segolène Royal in the Environment ministry, and Bernard Bosson replaced Jean-Louis Bianco in the Equipment ministry. The new Minister discovered the thorny TGV file, in which several problems remained: in the Drôme, where associations were still strongly opposed to the route along the Tricastin site, and throughout the route with requests for environmental protection. These requests from associations of residents and conservationists led to a process turndown and to an increase in the project cost. The SNCF representatives in charge of the project submitted the project to the new Minister and to his cabinet, and received a not very enthusiastic proposal: "I remember very well a meeting when we were going to introduce the project to the Ministerial cabinet, and they made us understand very clearly that anyway it was a project good for the trash because it was unfeasible, and it was a Socialists project, so we would perhaps continue to talk about this project to few weeks again but that's all" (Interview HR5). However, in spite of this political opposition, the Minister continued the studies to solve the persistent problems on the route. In April 1993, the Commission of Public Survey Report was submitted to the Minister Bernard Bosson. The report was favorable to the project's Declaration of Public Utility but under three conditions: the project had to avoid the site of Tricastin, not to cross the plain of Marsanne, and not to modify risks in the plains liable to flooding. For SNCF, these conditions were clearly unbearable, because the avoidance of the Tricastin site would have led to an increase in the project cost; the passage in the Marsanne plain had already given place to alternatives which were rejected during the Querrien mission; finally the modification of the flood risk was unavoidable, except by route constructing a viaduct through the whole route, according to SNCF engineers, which did not prevent them from taking account of these stakes to implement effective preventive and protection measures. All these negotiations were acted during the Inter-ministerial committee of 23 September 1993, which confirmed the decision to lead the project to its term and ratified the route.

Until the Declaration of Public Utility, conflict between the Environment Ministry and the Equipment Ministry kept the project outcome pending. The procedure of the Mixed Inquiry at the Central Level (*Instruction Mixte ˆ l'Echelon Central IMEC*), which opened on 20 October 1992, allowed the various Ministries concerned by the project to present their observations. For the Department of the Environment, the project's offences against the Environment were unacceptable. On 295km of new line, the route covered 138km of floodplains. The Ministry pointed out SNCF's failings in the hydraulic studies. In February 1994, the conflict between the Transport and Environment Ministries over the floodplains was revealed in the press. A few days later, on 4 February, the two Ministers issued a joint press release in which they confirmed their agreement concerning the project achievement and the confirmation of the route. Following the *IMEC* procedure, the *Conseil d'Etat* delivered a favourable opinion on

the project, which led to the Declaration of Public Utility. This declaration intervened after a change of government majority and after sharp negotiations between the ministries, and led finally to the confirmation of the project execution.

Key enabling mechanisms timeline

| | |
|---|---|
| 31 January 1991 | Decision by the French government to launch the "studies on route and on the conditions of realisation of the South-Eastern TGV extension towards Marseille, Italy and Spain". |
| 2 August 1990 | Creation of a special Mission of expertise to study the possible alternatives and to negotiate a route between all the stakeholders involved, the Querrien Mission. |
| 14 May 1992 | Creation of a College of Experts, an independent commission responsible for evaluation of SNCF's proposals. |
| 31 May 1994 | Declaration of Public Utility which leads to the State engagement for its realisation. |

**Main organisations involved**

The main organisations concerned with the TGV Med project are:

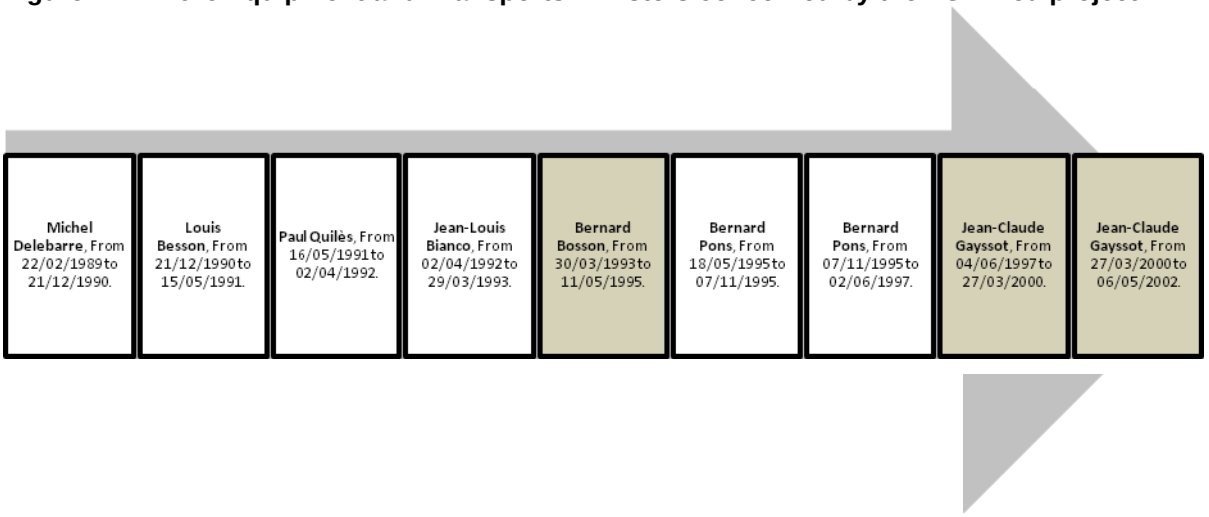
The State and its departments

The State intervened in the project initially as the main decision maker, based on SNCF's proposals. It also took part in the project financing, by the means of a subsidy granted to SNCF to guarantee the project's profitability. This subsidy represents a little more than 10% of the total project cost.

*The French President, François Mitterrand*, intervened personally in the process, firstly surrounded by his government, in January 1989, to launch the project and the first studies. Then personally, on 14 July 1990, to reject the reference route privileged by SNCF. During his speech for the national day, the President expressed himself in the following way: "And I was still yesterday with Mr Fournier, the President of SNCF, to say to him: but your route over there starting from Valence and of Montélimar, to go to Fréjus, it will not cross a little too much the vineyards, in these splendid vineyards of the Côtes-du-Rhône. As you can see the environment interests me (É) the trees do not vote but me I defend them". The day before, the President had already convened a meeting with the President of SNCF and the director of the TGV Med Mission, to make them explain the project. This intervention from the French President gave birth to a strong polemic. For the associations of residents, and public opinion in general, this declaration was the reflection of intervention by the wine lobby and especially of the influence of the President's friends, Henri Michel (Socialist Deputy of the Drôme from 1971 to 1993), Guy Penne (Socialist Senator from 1986 to 2004) and Jean Garcin (Representative from L'Isle-sur-la-Sorgue between 1945 and 1998, President of departmental council in Vaucluse from 1970 to 1992). On 2 August 1990, the Minister Michel Delebarre acted the President choice and announced the decision to suppress the route East in Drôme. This event is the only direct intervention by the President during the project process, but its impact was considerable and significantly amplified the protest movement, especially in Drôme.

*The Equipment Ministry* was in charge of the project. Several ministers were involved in implementation of the project:

**Figure 27: All the Equipment and Transports Ministers concerned by the TGV Med project**




The project faced a political change, following the legislative elections of March 1993. The new Equipment Minister, Bernard Bosson, continued the project in spite of some hesitation. The progress of the negotiations and the appeasing of tensions on the ground overcame the political quarrels.

*The Transports Department* (*Direction des Transports Terrestres DTT*), within the Equipment Ministry, is the administration in charge of the transport policy implementation. It is also the administration responsible for supervision of SNCF (because of the status of SNCF as a public corporation related to commercial and industrial activities (*EPIC*). The Equipment Ministry and in particular the Transport Department, are composed in great majority of a corps of technocrats, coming mostly from the same famous schools of engineers, mainly the *Ecole des Ponts et Chaussées* (*ENPC*). These same engineers also work within SNCF, so that the passages from State service to the service of the main public company are very frequent. Over the period concerning the TGV Med, some transfers can be noticed if we look at the top of the hierarchy: Claude Gressier (X-Ponts), Director of the Transport Department from 1986 to 1993, responsible for the circular of 2 August 1991 relating to the establishment of the high speed railway projects, became Executive vice-president of 'Europe and Market' with SNCF in 1994, then Chairman and managing director of SNCF-Participations Group in 1994. This proximity is demonstrated at every level. It results in a close cooperation between the Ministry and the public company, which can also lead to fears about the collusion of interests.

*Other Ministries* were concerned with the TGV Med, because of the route of the new line: 70% of the Querrien route crossed Natural Zones of Ecological, Floristic and Faunistic Interest (*ZNIEFF*); it crossed plains at risk of flooding in a corridor already saturated by infrastructure (with highways, express roads, railways, high voltage lines and pipelines) and strongly urbanised; it passed near the nuclear site of Tricastin and touched the Seveso zone. By its characteristics, the project thus interested the Ministries of the Environment and of Industry.

*The Environment Ministry*: The first meeting between the Environment Ministry, the Transports Department and SNCF in connection with the TGV Med took place on 5 March 1990. The various alternatives were presented with their advantages and disadvantages in terms of environmental impacts. Very quickly many tensions appeared between the two administrations:

- The associations of opponents used environmental arguments to criticise the project, and to seek support from the Environment Ministry. It is the case in particular of *Le*

*CARDE* and *FARE-SUD* which requested the support of Brice Lalonde, Environment Secretary of State, and met him in 1992.

- The Environment Ministry was also in a balance of power with the Equipment Ministry, which is one of the most important ministries, constituted with a large corps of State, of engineers trained at the ENPC. In contrast, the Environment Ministry was created only in January 1971. It was managed by a Secretary of State, who became a Minister only in May 1991. Brice Lalonde was the first Secretary of State to become a Minister on 16 May 1991, giving evidence of the increasingly important place played by this ministry in the national policy.

The meetings followed one another in 1990 and 1991 between the departments of the Equipment, the Environment and SNCF, to make an inventory of the points which posed problems regarding environmental issues. On 2 February 1991, the Environment Secretary of State, Brice Lalonde, required the complete reexamination of the route in a mail addressed to his counterpart at the Equipment. He also asked for the application to the project of the circular of 2 August 1991, known as circular Gressier, which redefined the implementation process of high speed line projects, mainly following the debates related to the TGV Med. This circular defined a process in three steps, completed with a technical dossier, an environment dossier and an economic and social dossier. The Transports Department refused to apply this circular, estimating that the Querrien mission was equivalent to the preliminary studies and summary preliminary draft stages. Brice Lalonde addressed a second letter to his colleague, Paul Quilès, on 7 February 1992. He deplored the lack of consultation involving his Department, a disappointing local consultation, the difficulties due to the project route and in particular the “very annoying” problem related to the crossing by the nuclear site of Tricastin with Pierrelatte in Drôme, and asked again for a “complete reexamination of the TGV Med project”. With the governmental change in April 1992, the conflict stayed strong between the two ministries. Ségolène Royal, who replaced Brice Lalonde, renewed the request for a reexamination of the project route, in a letter to the new Equipment Minister Jean-Louis Bianco, on 17 July 1992.

*The Industry Ministry.* From July 1990 and François Mitterrand's decision to withdraw the Eastern route in Drôme, the Industry Ministry asked SNCF to produce several studies on the risks induced by the passage of the new line near the nuclear site of Tricastin, and to define appropriate proposals. The Industry Minister Dominique Strauss-Kahn repeated this request for studies in April 1991. The studies were finally realised in October 1991, under the control of the Department for Safety of Nuclear installations. One part of the studies was entrusted to an independent company, SECTOR. The SECTOR report was submitted jointly to the Equipment, Environment and Industry Ministers, in January 1992. Three months later, the Director of Water, Pollution and Risks Prevention Henri Legrand, from the Environment Ministry, sent a letter to Claude Gressier, Director of the Transports Department. He emphasised in this letter the dangers weighing on TGV passengers, of the possibility of a toxic gas leak (hydrofluoric acid and ammoniac from decomposition of uranium hexafluoride) emanating from the chemical plants on the Tricastin site (Comurhex, Eurodif, FBFC). Even if according to SNCF, the simultaneity of such accidents was highly improbable, the Environment delegate wondered in his letter why any human failure had been evoked in the SNCF studies. That's why he asked to find an alternative route avoiding Tricastin.

The conflict between the three ministries became public on 19 August 1992 with publication in the press of Henri Legrand's letter, which the members of Drôme-Vaucluse Coordination had found. The Equipment Minister set up in October 1992 a mission entrusted to Monestier (former Préfet of the Rhône-Alpes Region) to examine the problems linked to the passage near the Tricastin site. The conclusions of this mission were given in November 1992 and confirmed the data presented by the SECTOR report as well as the security measures required. These conclusions led to an initial appeasement. On 17 February 1993, in a letter

to the Equipment Minister, Ségolène Royale accepted the Querrien route, but only with the guarantee that the provisions and recommendations from the SECTOR and Monestier reports would be applied. After the change of government, the agreement was maintained between the ministers: Bernard Bosson and Michel Barnier wrote a joint declaration indicating measurements which made it possible to make the project compatible with protection of the floodplains.

But the conflict was started again by the report produced by the commissioners responsible for the public survey. This report was submitted to the Equipment Minister on 8 April 1993. The investigating commissioners gave a favourable opinion to the Declaration of Public Utility but according to three conditions: the project had to avoid the Tricastin site, not to cross the plain of Marsanne, and not to modify the risks in the floodplains. The IMEC procedure, which corresponds to a dialogue between the civil and military State administrations concerned by the works (a procedure removed by the law of 18 December 2003), allowed each ministry to affirm its arguments. The Environment Ministry presented its arguments in a letter by the Delegate for Quality of Life, dated from 26 November 1993. This time, the letter was not written by the minister himself but by a delegate, to avoid showing in public the important tensions within the government. The apparent unity was obtained during the Inter-ministerial committee of 23 September 1993, concluded by Prime Minister Edouard Balladur's announcement: to continue to support the project until its end and to ratify the route selected. This letter from the Delegate for Quality of Life gave a progress report on the environmental issues, the hydraulic problems and the passage close to Tricastin. On the 295km of new line and according to the route selected, the solution crossed 138km of floodplains of which 24.5km were in riverbeds. More than 20 rivers were affected by the route, of which eleven were of great biological interest. For the Environment Ministry, the idea of building transport infrastructure in a floodplain without preliminary hydraulic studies was unacceptable; in the same way the fact of placing the infrastructure in the Durance bed over a length of approximately 4km could not be accepted. The letter concluded with a refusal to support the project in its present state. At the same time, the Environment Ministry introduced a law on the water environment, whose text had been voted on 3 January 1992 and the decrees of law-enforcement on 29 March 1993. The law forced any project to preserve aquatic environments and to ensure free water flow, conservation of floodplains and functioning of ecosystems. However to satisfy the obligations related to this law, the project had to be modified in-depth. The Director of Transports Department quantified these modifications at FRF 2bn - 3bn, which led him to refuse to apply this law in the case of the TGV Med project. On 24 January 1994, the Environment Ministry made vote a circular relating to the Water Law which prohibited all new construction in the most dangerous zones and any new embankment or backfill which would not be justified by the protection of highly urbanised places. Once again this circular was not applied for the TGV Med.

The conflict between the ministries became public again on 1 February 1994, by a press release publishing the letter written by the Delegate for Quality of Life on 26 November 1993. The letter once again was obtained and disseminated by the members of *Drôme-Vaucluse Coordination*, who opposed the route in the floodplains of Marsanne, Pierrelatte and Tricastin. Faced with this polemic, the Ministers for the Equipment and Environment issued once again a joint press release on 4 February 1994, in which they reaffirmed their agreement with the Inter-ministerial committee of 23 September 1993 which ratified the route. The *IMEC* procedure finished on 4 March 1994. The *Conseil d'Etat* (a higher administrative court in France which has the roles of advising the government and of judging the Civil Service) gave a favourable opinion on the project, while asking for a complement of public survey near Tricastin. This additional survey took place from 3 October to 22 December 1994. The board of inquiry gave an unfavourable opinion, since the requests resulting from the preceding public survey on the entire route had not been respected. Despite everything, the procedure of public survey staying a procedure of information and

consultation, without decisional capacity, the Declaration of Public Utility intervened on 5 May 1995 for this section around the Tricastin site (the DUP for the rest of the route had been already signed on 31 May 1994).

Thus the conflict resulted in the decision from the Equipment Minister to keep the Querrien route, with however some modifications. SNCF studied an alternative route to avoid the Tricastin site by using a part of the previous route east which was connected to Caderousse with the Querrien route. But according to the DTT (Transports Department) this alternative destroyed more houses, required many structures and cost an additional FRF 400m. So the Minister Bernard Bosson ruled out this alternative and decided to keep the Querrien route with few minor modifications to avoid the Seveso administrative perimeter. Concerning the passage in the Marsanne plain, an alternative route was possible and had been studied during the Querrien mission, but once again the Querrien route was preserved by SNCF. Concerning the last condition (to not modify the risks of flood), for the project leaders it was impossible to not modify the flood risk except by building an uninterrupted viaduct, which would have been too expensive. They however agreed to envisage additional hydraulic installations to facilitate the evacuation of floodwater.

La SNCF

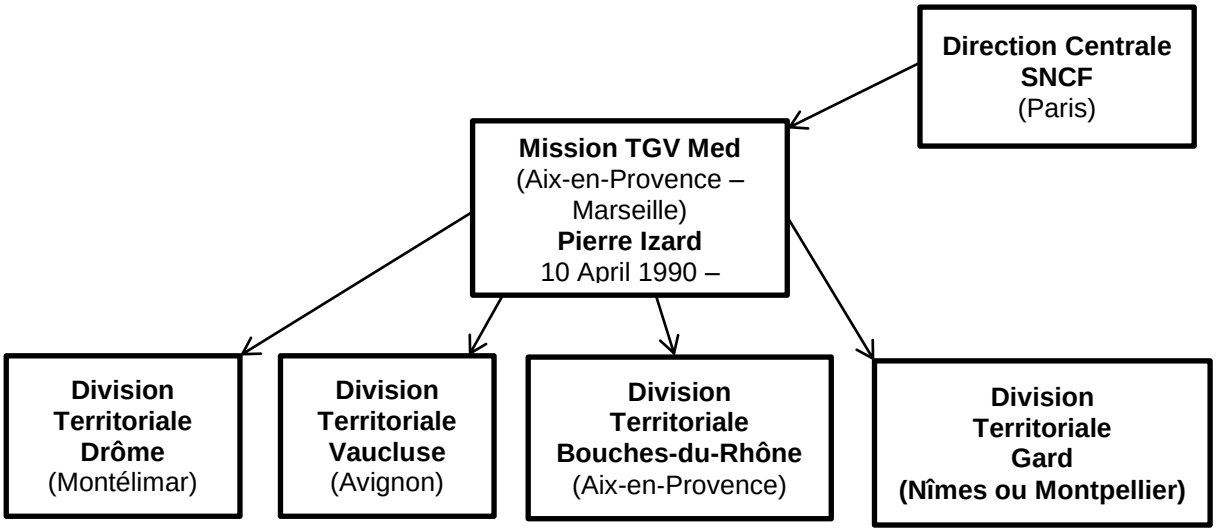
A Public Corporation related to Commercial and Industrial Activity (*EPIC Etablissement Public ˆ Caractère Industriel et Commercial*), SNCF was responsible for the project and the future operator of the high speed line. SNCF is behind the origin of the TGV system, whose origins go back to the reflections born in the SNCF Research Department, created in 1960. This new transversal service, placed directly under the dependence of SNCF Head office, proposed in the C03 project the definition of a new transport system for the interurban service, the TGV system. At that time SNCF was in full crisis, due to air and road competition. The Nora report on public companies published in 1967 recommended management autonomy for public enterprises to reduce State supervision, and more profitability in their activities to reduce their deficits. SNCF took this liberal turning by implementing a transport policy based on a new reference framework: it sought to be involved in a competing transport system. The recourse to economic calculation, to formulate traffic demand, according to service quality, prices and choice of transport mode, made it possible to define a new strategy for the company. With the TGV system, SNCF tried to gain market shares from the car and the plane, for journeys between large cities.

SNCF carried out the TGV Med studies by using its experience from previous high speed lines. Until then, the project timeline was the following: the studies were undertaken by SNCF's central department in Paris, in collaboration with some in-house research departments. SNCF engineers and technicians were sent on the spot only from the beginning of works, which caused the creation of a New Line Department, responsible for project management and work control. Territorial Divisions could be created at a finer level, to carry out work. This organisation was used as a model for the realisation of the previous lines.

In the case of the TGV Med, the distance of the area from Paris and especially the intensity of the protest movement encouraged SNCF to delegate a project manager on the spot. Pierre Izard was thus named on 10 April 1990 as Directeur of the TGV Provence Riviera project. He established his offices not in the SNCF Regional Department in Marseille, but in Aix-en-Provence initially, before choosing Marseille. This small structure, independent and attached directly to the Central Department, brought together at the beginning three people. From September 1990, this manpower doubled, and it did not stop growing until nearly 500 people were employed at the beginning of the works, when the structure became a Direction of New Line.

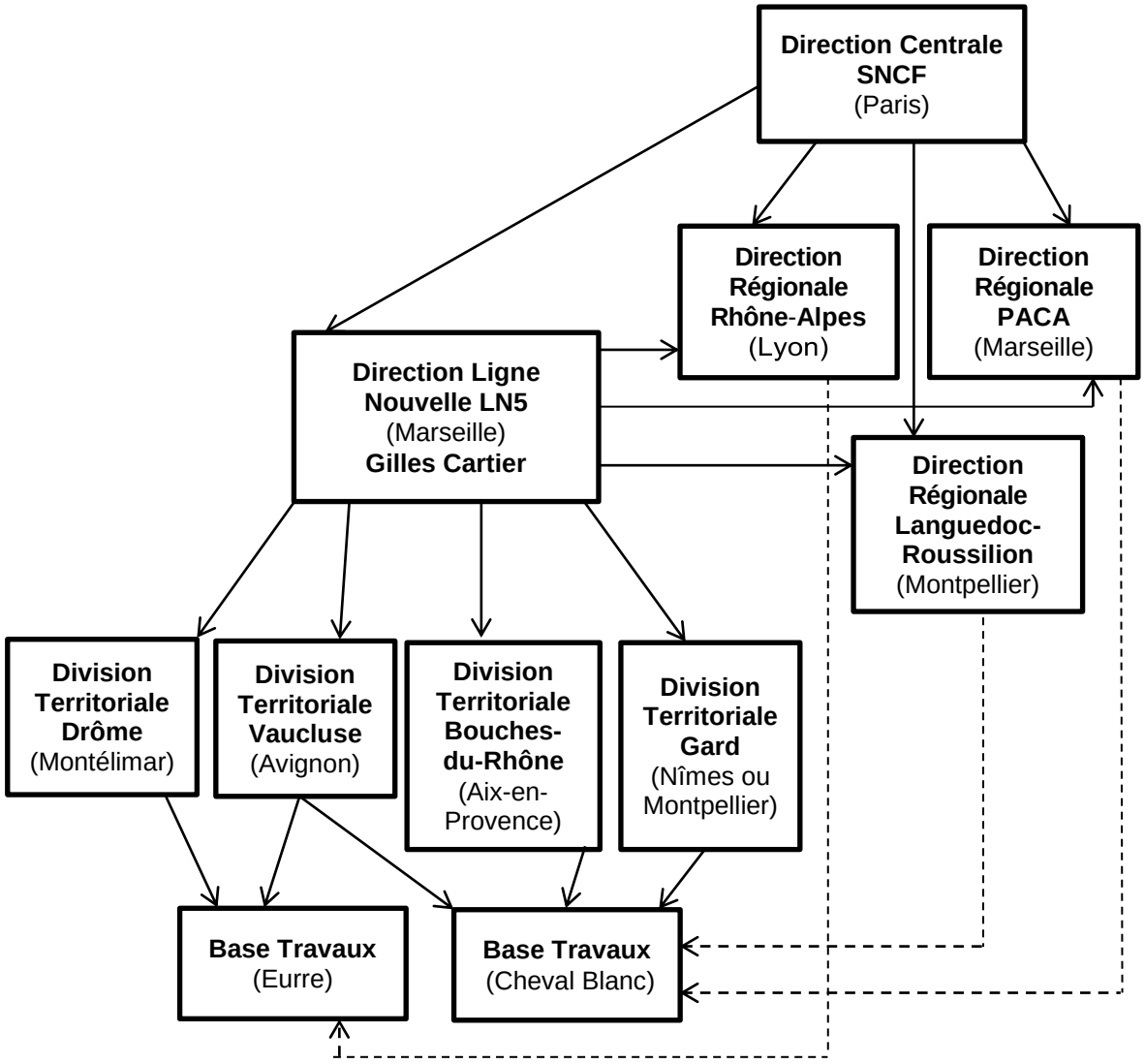
At the beginning of 1991, the decision was made to create territorial divisions, equivalent to subdirectorates of project management, which shared out the four great sections of the project. The territorial divisions were in Montélimar, Avignon, Aix-en-Provence, and Nimes or Montpellier. These divisions included at the beginning five to six people. They were attached directly to the project management, and were very different from the strongly integrated and hierarchical traditional SNCF model. Territorial divisions, like the direction of project, had a studies cell, a land cell, and a market cell. They negotiated the project on the ground with residents and elected people. They functioned with relative autonomy and returned accounts to the project management of. At the beginning of work, they were supplemented by a work section. This system of direction and subdirectorates was characterised by a separation of the structures compared to the traditional organisation chart in SNCF, and by autonomy of initiatives and management. The aim was of course for SNCF to show responsiveness, to answer the associations' requests on the ground, which was impossible with a strictly Parisian management of the events. This local structure studied the alternatives, answered the additional requests for studies from the Querrien mission, then by the College of Experts. The Work Bases in Eurre (Drôme) and Cheval-Blanc (Vaucluse) allowed the coordination of work for the installation of the railway installations themselves and the realisation of the main structures. One part of work on the existing line (connections, control and regulation units, etc) was delegated by the Management of the New Line to regional managements of SNCF in Lyon, Marseille and Montpellier.

**Figure 28: Organisational chart (pre-construction)**




The status of SNCF evolved during the construction phase of the project. The European directive n°91/440 of 29 July 1991 imposed a separation between the infrastructure manager and the company exploiting this infrastructure, to allow today competition between different transport operators. The implementation of this directive was translated in France by the creation of *Réseau Ferré de France* (*RFF*), in the form of an *EPIC*, by the law of 13 February 1997. As from 1 January 1997 (by retroactive effect), RFF became the owner of the infrastructure and responsible for the creation of new lines. By infrastructure, we understand: the whole of the railway network composed of the ways, structures, quays, signal boxes, installations of electric traction, indication and safety. SNCF, which remained the main operator (before the effective opening to competition at 1 January 2010), preserved the maintenance and operation charges. SNCF pays a rental charge to RFF to use the infrastructure, and at the same time invoices RFF for the network maintenance.

**Figure 29: Organisational chart (during construction)**

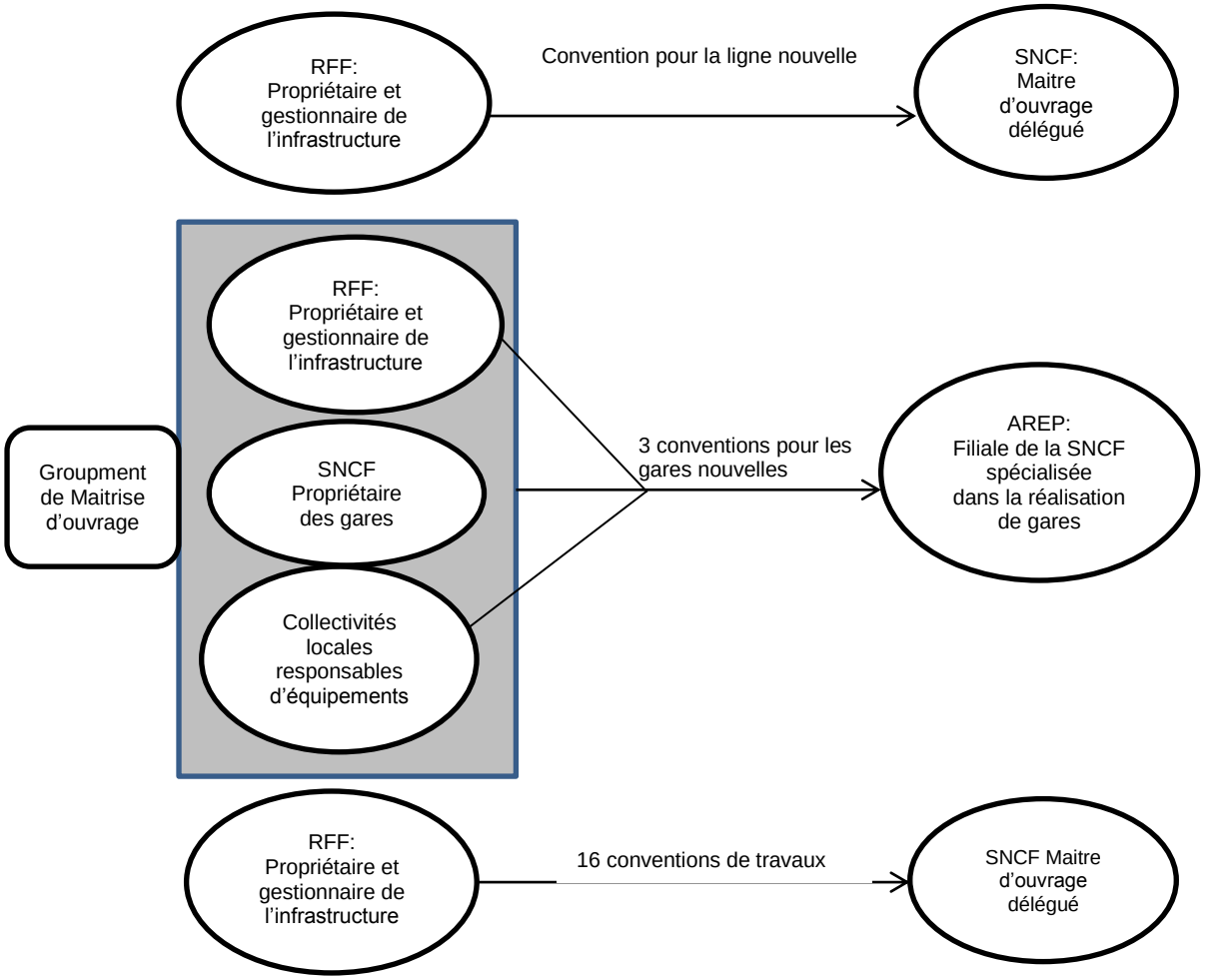



The law of 1 9 97 specified that "taking into account the safety requirements and the continuity of the public service requirements, the traffic management on the national railway network as well as the operation and maintenance of the technical installations and safety equipements of this network are ensured by SNCF for the account and according to the objectives and principles defined by RFF. It remunerates it for this purpose". This evolution of functions is clearly visible when we look the number of employees. SNCF counts nearly 170,000 agents including approximately 55,000 assigned to the infrastructure, while RFF employs less than 800 people (Cour des Comptes, 2008).

In the TGV Med case, the creation of RFF did not affect the project implementation. RFF immediately transferred the control of work and project management to SNCF and its Direction of New Line, which was already responsible for the project. The situation was more complex for the stations because RFF and SNCF intervened among many other partners (the Department for the realisation of coach stations, the city or local government for the road equipment, the urban networks, etc). So the work control was shared between RFF, owner of the line and the railway equipment, SNCF, owner of the station buildings, and the local authorities, persons in charge of certain equipment, and who intervened in the architectural choices. For the occasion, a group of partners and project managers was convened.

The railway construction gave place to the signature of a 20 conventions of mandates concerning the project management: a convention for the construction of the high speed new line (from RFF to SNCF); three conventions for the new stations (from RFF, SNCF and the local authorities concerned to AREP); and 16 conventions covering related works (from RFF to SNCF).

**Figure 30: Conventions of mandates signed**




SNCF was the main project funder, apart from a public allocation of about 10% of the construction cost. It carried out this investment thanks to a loan.

SNCF had the monopoly of expertise on this project. It made all the necessary studies and transmitted information to the Department of Transports. Certain elements required the realisation of counter-evaluations or external evaluations.

- Classically, these evaluations were carried out within the framework of a mission entrusted to the *Conseil Général des Ponts et Chaussées* and/or to the *Inspection Général des Finances*. In the TGV Med case, four missions of evaluation were entrusted to these public agencies.

- In some few cases, other counter-evaluations were required in accordance with the requirements of associations such as *Le CARDE*, which denounced a situation in

which SNCF was at the same time judge and part. Within the framework of the College of Experts mission, the British consultancy Ove Arup was asked to evaluate the traffic studies provided by SNCF as well as the various scenarios suggested. It is the first time that this type of counter-evaluation had been used. The selection of a British company guaranteed independence from SNCF and its usual French partners.

In spite of the importance of the protest movement related to the project, the dialogue was practically never broken between SNCF and the residents. SNCF engineers were sometimes forced to work with the greatest discretion, by using for example unmarked cars on the ground to avoid being recognised by residents and being taken with part. Nevertheless, the surveys and the field studies could be realised without particular delay. In the situations where conflicts had been resolved, the dialogue was direct and without clash. In the situations of continuing conflict, intermediaries were necessary. These intermediaries were:

- the elected people, who allowed to the views of residents to be transmitted to SNCF during the negotiations;

- State representatives, such as the Regional prefects, in charge of the organisation of meetings between the various actors involved in the project;

- professionals outside SNCF, who could be solicited to work in partnership on certain structures during the works. It is the case of the architects and landscape designers, who worked in collaboration with SNCF to improve the environmental and landscape insertion of the structures along the TGV line.

SNCF was the only operator for the TGV Med line, until the opening to competition on 1 January 2010.

The local authorities

The local authorities intervened in the negotiations, regarding the route and the site of new stations. The project process implemented for the TGV Med led as soon as it started in 1989 to very strong opposition between local councilors. This process was developed by SNCF for the previous high speed lines, and consisted of consulting at first the regional elected people (representatives of the Regional Councils, the General Councils and the Town Council), and to propose a reference route, presented on a map on the scale 1/25,000ème. This procedure very quickly created opposition between these regional elected people and the mayors of the small towns or villages, which felt excluded from the negotiations. The dialogue phase with the regional elected representatives proceeded from July to December 1989. On 15 December 1989, SNCF presented its proposals to the regional elected people during a meeting in Marseille. After this meeting, some leaks in the press made the documents presented by the SNCF public. Thus the public and the local elected representatives discovered the existence of the project and its route. Very quickly the local elected representatives mobilised themselves, together with residents, by creating associations. In the Bouches-du-Rhône for example this tension between regional elected representatives and rural mayors resulted in the creation of the association *Solidarité des élus du 13*, which was rather in favour of the residents and for the study of a solution in the existing railway corridor. The association, conducted by the Lambesc mayor, Gilbert Pauriol, and its deputy Robert Célaire, gets closer to *Le CARDE*. The opposition between large and local elected representatives was not only related to the procedure which excluded the latter from the initial negotiations. It was also related to an opposition between two strategies:

- For the regional elected representatives, it was necessary to obtain the TGV Mediterranean and to negotiate with SNCF to obtain stations, symbols of economic revival.

They were afraid SNCF would prefer to realise the TGV East than the TGV Med, because the first studies were already launched for the TGV East and the project was also registered in the Strategic Scheme of high speed connections in May 1991. So they considered the issue at a national scale, in terms of the competition between regions and big metropolitan areas, to adapt their positioning. In Vaucluse for example, the Deputy and mayor of Avignon Guy Ravier pronounced himself in favour of the TGV, and he negotiated with SNCF the passage of the TGV on the right bank of the Durance in exchange for a TGV station in Avignon. In reaction, the *Federation of associations, Environment et TGV* occupied the town hall on several occasions before being thrown out by the police force. In reaction, the opponents created an association of conservation of the Avignon green belt.

- For the local elected people, who had a more direct relationship with the population, it was necessary to take account of residents' opinions and of the fact that the majority were opposed to the project. They considered things logically at the local scale. This strategy was mainly imposed by the electoral weight played by associations of opponents. In the Bouches-du-Rhône case, *Le CARDE* gathered more than 150 associations, and often represented the electoral majority in a village: "you should notice that at that time we were so numerous that we could make switch an election in a town council! We were so many together, you imagine." (Interview GP, *Le CARDE* leader).

This dividing line moved very quickly for several reasons.

- The importance of the protest movement led the regional elected representatives to re-examine their position. They didn't pronounce themselves openly for the TGV Med vis-a-vis their electorate anymore. The regional elections in March 1992, followed by legislative elections in March 1993 played a big role. The candidates were solicited by associations, who forwarded their proposals to them. For the regional elections of 1992, the main candidates (Jean-Claude Gaudin, Bernard Tapie) gave an opinion in favour of the associations by using part of the proposals by *FARE-SUD*, published in a White Paper on the Environment, in their campaign.

- With the creation of the Querrien mission, all of the elected people were invited to take part in the negotiations. The members of the mission organised meetings in each department and met all the mayors concerned with the project route. So the local elected representatives were integrated into the negotiation process. Associations of elected people disappeared progressively during the negotiation process.

After a first period in 1989-1990 of opposition between large and local elected representatives, the next period is characterised by an apparent consensus between the representatives of local authorities. Nonetheless, the positions of each remained very vague and rather rarely expressed. This strategy was not very popular with SNCF, which saw it as a weakness of the elected people, who did not confess that they wanted the TGV even they dreamed about it secretly, as well as of residents, who denounced the wait-and-see policy of their representatives who let the associations fight for them in the limelight.

The local authorities made a small contribution to the project funding, with a public allocation paid to SNCF. This represents only 1% of the total costs of the project and was used for the funding of new stations.

<u>The associations</u>

Associations of residents, elected people, conservationists and so on, were formed throughout the project route. These associations gathered together several types of individuals:

*Inhabitants affected directly by the passage of the TGV.* These were both inhabitants whose property was crossed by one or other of the alternative routes, and farmers or other businessmen whose activity was threatened by the route. The attitude of residents overall changed from head-on opposition to the negotiations, in particular after the Querrien mission which defined the project route. SNCF's announcement of the widening of the compensation band from 50m to 150m on both sides of the line , on 6 October 1992, resulted in involving the most important residents' faction in the negotiation process. They obtained equipments for a better insertion of the structures, but also several protection measures. The association *Union Juridique Rhône-Méditerranée*, created in January 1991 just after the announcement of the Querrien route, was used for legal assistance by all residents during the negotiations with SNCF. The characteristics of the crossed territories make it possible to distinguish several categories of people within this group:

- The presence of a young and dynamic agricultural sector provided big battalions to the associations of opponents. The agricultural trade unions were particularly active in associations. They were strictly opposed to the route, and their demands concerned above all route modifications and land compensation. They were based on a long tradition of contesting and demonstrations against the State, from the great peasant revolts to the more recent demonstrations to support the price of agricultural goods or against the perverse effects of the common agricultural policy in Europe. So they were perfectly accustomed to demonstrating and had developed an arsenal of actions: roadblocks (total or partial), go-slow operations (with tractors), discharge of agricultural produce on the road, burning of tires or other items in public space. These traditional actions were adapted within the framework of the TGV dispute, with road blocks organised on the railways and the firing of several catenaries to block the circulation of the trains. The agricultural trade unions obtained in certain cases the withdrawal of alternatives or the modification of part of the route. Their objective was also to be in a strong position to negotiate the purchase of the land required for the project at a good price for them. They obtained the signature of a draft-agreement with the tax authorities, to fix the price of the arable lands (corresponding to the monetary value of the ground), eviction allowances (corresponding to three years of operating gross profit), and a special allowance known as 'prime TGV' (or TGV bonus) related to damage to public works (equivalent to 10% of the monetary value of the property for landowners or one year of profit for farmers). This agreement was signed in September 1995 in the Bouches-du-Rhône Department.

- The territorial attractiveness, due to the Mediterranean climate, the beauty of the landscapes, and the proximity of many huge metropolitan areas, resulted in a high number of 'rurbain' people (urban people who lived in rural areas). The small towns and villages in the regions crossed by the TGV Med attracted many executives and intellectual professions who lived there all year and got involved in the local associations to protect the quality of life which characterised these territories. This is the case for example of a large number of members in the association *Coordination Drôme-Vaucluse*, led by Mariette Cuvellier (a teacher). They often corresponded to the most virulent opponents and they refused categorically the creation of new infrastructure. For them it was an intolerable nuisance. They obtained several equipments and an engagement by SNCF and the State to reduce the nuisance and pollution related to the TGV's passage. But many of them stayed opposed to the project until the end and remain so now.

- The Provence is one of the most popular tourist areas in France, and includes many second homes, for a population which is on average quite wealthy. One of the main difficulties experienced in particular in the definition of the branch towards Fréjus, which was supposed to pass through the Aix-en-Provence hinterland, was due to the huge number of residences belonging to influential people crossed by the route. The negotiations were sometimes done publicly, as in the case of the President's intervention to avoid his friends' properties in Drôme, but mostly it was done discreetly. Sometimes the press relayed

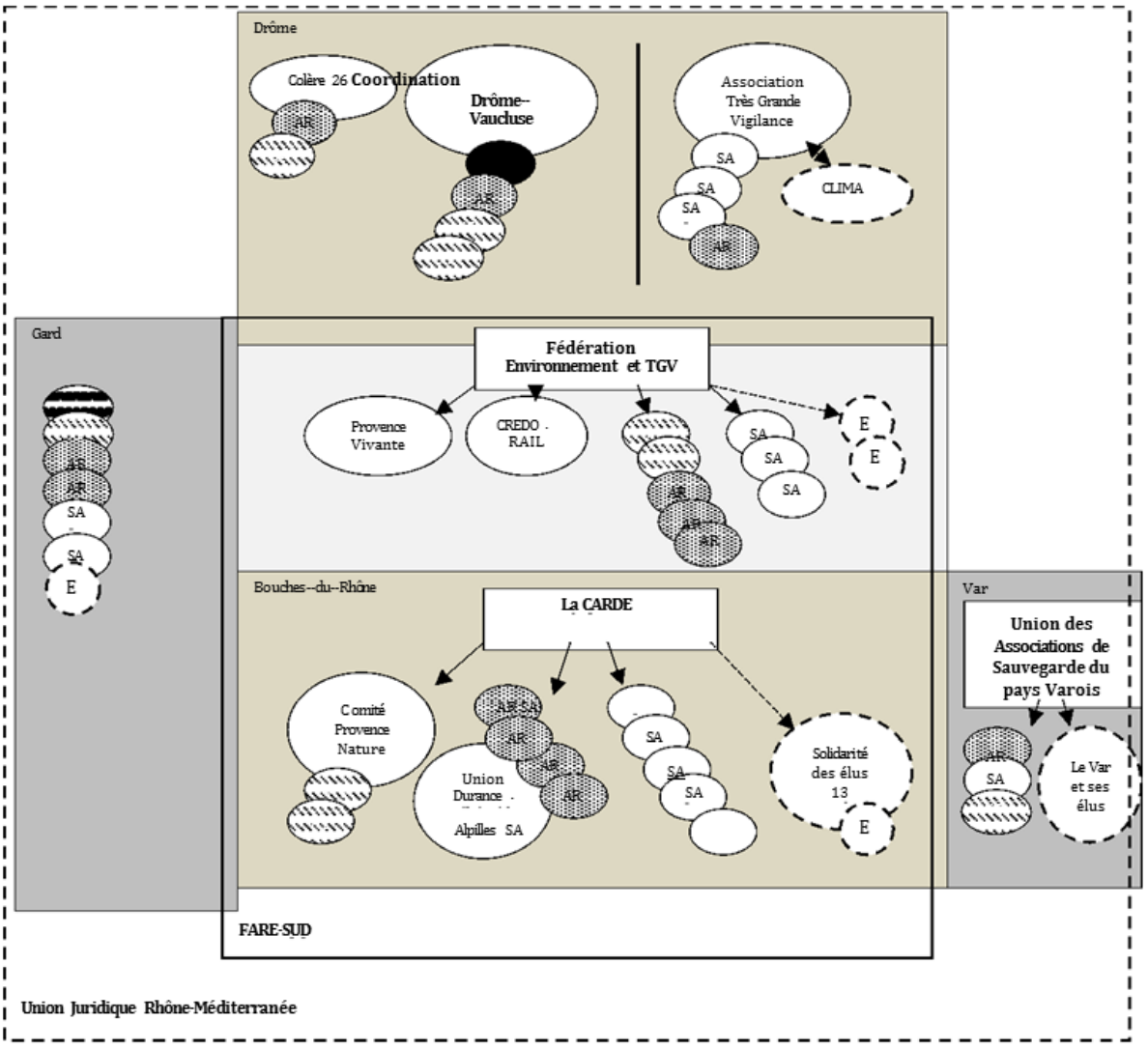
information. According to interviewees, the route avoided property belonging to Prince Charles of the UK, to a partner of the bank Lazard Frères, etc.
*People interested by the project but not affected directly*. In this category, two groups can be distinguished:

- Ecologists and conservationists who were completely against either the project or the conditions of insertion of the new line in the environment. Their mobilisation was important especially as the Querrien route crossed, on 70% of its route, a protected area *ZNIEFF* (Natural Zones of Ecological, Floristic and Faunistic Interest), passed through floodplains (along the Durance on 30km in Vaucluse, the floodplains of Gardon and Briancon in Gard) and passed very close to the nuclear site of Tricastin (controlled by a Seveso perimeter). These conservationists formed either general associations, with residents such as the *FARE-SUD*, or purely environmentalist associations. Some of them joined the negotiation process with SNCF, in particular thanks to the commitment taken by SNCF to take account of the environment. The others stayed in the opposition.

- Active citizens who were not really concerned by the route as users, but were interested in the project and protested against the non-democratic form of the decision-making process. That concerned for example the members of associations who were concerned by the first alternatives, but who continued their action in spite of the suppression of the alternative which affected them. That concerned also a few members of *Le CARDE*, such as the leader Gerard Perrier, who defended a civic criticism to permit his movement to be heard and to play a role in the negotiation process. Many of these people were also former leaders of trade unions and knew the best strategy to adopt in this type of confrontation.

The associations were distributed along the entire project route, with a more or less wide area of influence. They were unified within coordinations or federations in Vaucluse and Bouches-du-Rhône, or just on a common positioning in the Var and Gard. On the other hand, they stayed divided in Drôme, where a clear opposition remained between the vine producers of Côtes-du-Rhône and the residents of the Rhône valley.

**Figure 31: Répartition of the main associations according to their location**




AR — Association of residents

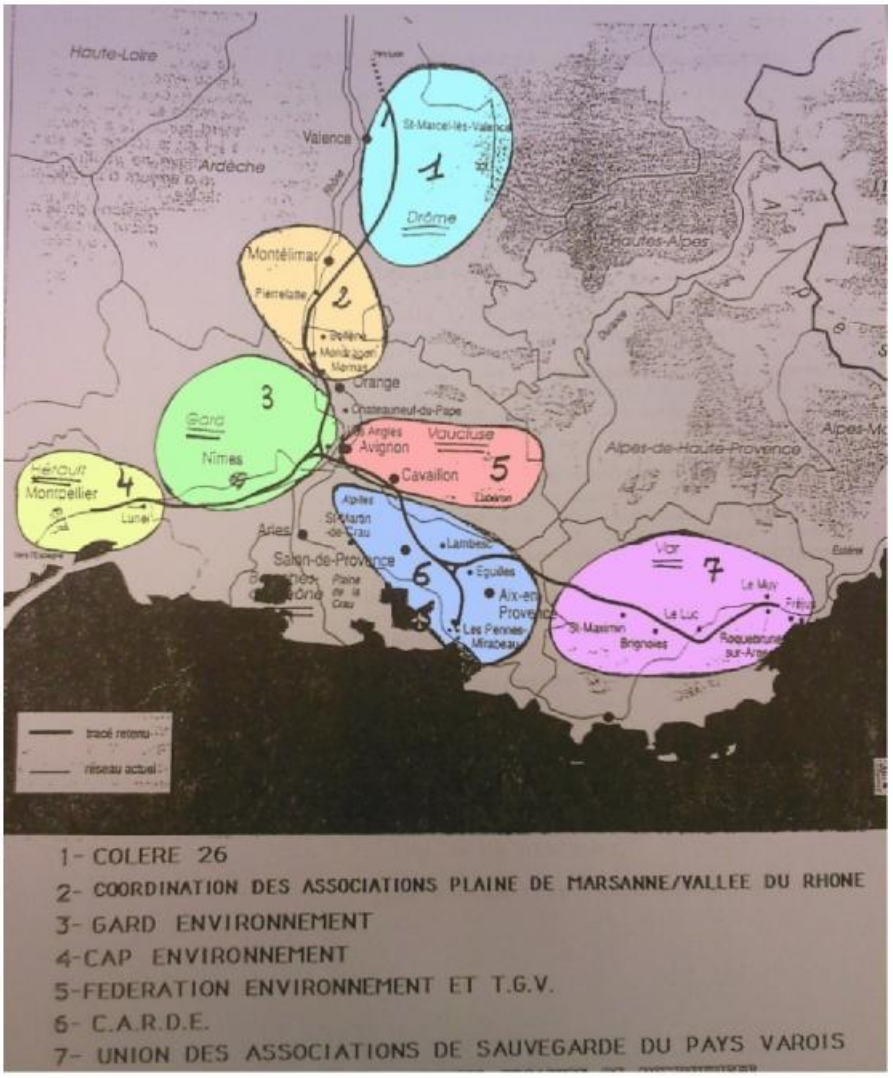
Association for defense of the environment and landscape.

SA — Agricultural Trade Unions

E — Association of elected representatives

FIGURE 28: RƒPARTITION OF THE MAIN ASSOC IATIONS ACCORDING TO THEIR LOCALISATION.

**Figure 32: map of the zones of intervention of associations taking part in the College of Experts mission**




Source: College of Experts Report, 28 August 1992.

The various associations were shared according to several lines of conflicts:

*On the opportunity of creation of a new line*

Some associations were strictly opposed to the construction of the new line. The main arguments were: the uselessness of such a line, which did not answer a request related to the general interest, but aimed at improving the financial profitability of SNCF, at satisfying a rich clientele of executives (like the *navetteurs* between Paris and Lyon); the project strongly affected the environment in the Rhône corridor, which was already saturated by infrastructure; the creation of new infrastructure would generate new transport demand and worsen the problem of transport saturation and pollution. To the great surprise of SNCF engineers, protests concerned the TGV itself and its great principles: the train service between great cities, by high speed trains, frequent and with few intermediate stops. “At that time we listened people to say us: me the TGV I don't need it! So it means it was not just a question of route, the real problem was the TGV in itself, and that was a huge surprise for us. Perhaps we made a mistake by coming with our triumphing technique, but in any case we didn't expect that and especially not at that point!” (Interview PS former member Mission

TGV Mediterranean). These arguments were made by the associations *Colère 26* and the *Federation Environnement et TGV*, which developed counter-proposals based on the TGV's circulation on existing railways and the use of pendular technology to improve the train service between the cities in the South of France. At the opposite end, other associations were created to support the TGV project, by supporting the idea of induced economic effects related to the TGV passage. It was the case for example of the association *Provence-Alpes-Côte-d'Azur pour le TGV Sud-Est Méditerranée*, which gathered together regional councilors at the beginning of the project, anticipating the opportunity and attractivity effects related to the TGV. These associations of regional elected people were constituted quickly to influence the negotiation process with SNCF and the State, the aim for each being to obtain a TGV station, the guarantee in their mind of economic growth. Facing the extent of protests on the public opinion side, the majority of the regional elected people turned to the side of their voters, between 1991 and 1992, even if they didn't clearly affirm their position in favour of the TGV.

*On the route*

This was the principal dividing line between the various positions of stakeholders. Faced with the protest movement, SNCF proposed from summer 1990 a multitude of alternatives, offering many possibilities to determine the best possible route. Each of these alternatives was subjected to the creation of an association with residents, conservationists, town councilors, etc. to prevent the TGV passage. The proliferation of alternatives led to the extension of protests, so that almost all the villages within the six crossed departments were concerned by one or other alternative.

We can distinguish the associations founded punctually on one part of the route, such as for example the *Association Non au TGV* in the Gard, which gathered residents and elected representatives opposed to the route in the Gardon low plain (where the construction was completed with the realisation of a huge embankment about 8-10m off the ground). Most of these associations were demobilised after the announcement of the suppression of their alternative. It is the case for example of the *Coordination des élus du tracé du TGV Crau*, which opposed the passage of the TGV in the Crau plain. They obtained satisfaction in August 1990 and were demobilised quickly after that.

We can distinguish then more important associations divided on different choices between alternatives. This is the case in particular in Drôme, where a major division separated the associations, between the partisans of the route east (crossing the vineyard of Côtes-du-Rhône) and the partisans of the median or western route (in the Rhône valley). On one side of this division, was the *Association Très Grande Vigilance*, with the wine producers of Côtes-du-Rhône who opposed the route east crossing the vineyard, and who were supported by the association of elected representatives CLIMA, chaired by the deputy Henri Michel, who was close to Francois Mitterrand. On the other side the *Coordination Drôme-Vaucluse* was opposed to the passage in the already saturated Rhône valley. The President's opinion, on returning from holiday in his friend Henri Michel's property in Drôme, in favour of the wine producers, very quickly radicalised the position of the *Coordination Drôme-Vaucluse* which refused to take part in the negotiations (refusal to take part to the Querrien Mission, boycott of the public survey, etc). In this type of situation, the opposition between associations was frontal, each trying to push the route into the other's backyard.

*On the decision-making process*

This is one of the conflicting elements which made it possible for the associations to move from a 'nimby' position and to propose more general arguments. One section of associations of opponents reorientated the debate, not around the route or the project in itself, but on the implementation process decided by SNCF and the State, and considered as

a non-democratic process. These associations supported a civic criticism: the construction of a new line is a question of town and country planning, a public question which must be raised by politicians and democratically discussed. This position is taken by *Le CARDE* for example in the Bouches-du-Rhône, which represented the most important federation of associations concerned by the project. One of the principal requirements of this association was to re-examine the project from all angles and to evaluate SNCF's proposals through a form of independent expertise. This request was satisfied with the appointment of the College of Experts, which is why the leader and founder of the association, Gerard Perrier, left his functions after this announcement. This refocusing of the debate around the decision-making process can be seen as a real strategy from the associations' leaders, in particular from *Le CARDE*. They understood very quickly that their disputes would not have any consequence if they stayed in head-on opposition by pushing the route onto their neighbours. To be heard, the CARDE leaders set up a strategy which was profitable thereafter: to unify associations by creating coordination, to refocus the dispute on the democratic debate and the decision-making process, and to move away from the purely territorial debate which resulted in groups of residents opposing each other according to the various alternative routes.

*On the details of line insertion*

After the route selection by the Querrien mission, the association of environmental protection struggled to obtain guarantees from the State and SNCF, to try to minimise the impacts of the infrastructure on the environment.

**Planning and environmental regime**

Outline of planning legislation:

*Strategic scheme*

The project was included in the Strategic Scheme of the new high speed lines, adopted on 14 May 1991 by the Inter-ministerial Committee of Town and Country Planning, *CIADT*. This is a traditional procedure. From SNCF's proposals, *CIADT* adopted a strategic scheme on which were reproduced the existing high speed lines, and those in construction or in the planning stage. The projects were classified by a set of priorities on this scheme, according to their economic profitability (for SNCF) and their socio-economic profitability (for society). *CIADT* (since October 2005, the *CIACT* Inter-ministerial committee of planning and competitiveness between territories) is chaired by the Prime Minister, and decides on the objectives of the national policy of territorial attractivity, competitiveness and cohesion.

*Appointment of the Querrien mission*

Appointment of the Querrien mission then was an exceptional procedure and completely new. It consisted of introducing a consultation procedure into the decision-making process. The objective of the mission was to obtain consensus on the route, by using three tools for dialogue:

- The base line, which is obtained according to the rigidity of the route and the technical constraints imposed by the TGV. The presentation of this band gives a range of negotiation of about 100m, even of kilometers. A negotiation process involves successive redefinitions and refining to obtain a base line by consensus.

- Air photographs. In the study territory, open settlement and rapid urbanisation require frequent updates of information, and the use of air photographs to define with the

elected people the close environment was very useful.

- Practical work on the spot, using maps and land surveys (visits in town halls, work on maps, village by village, section by section).

The mission was appointed by the Minister of Equipment and Transport, Michel Delebarre, because of the extent of the disputes which put back the decision again and again on the State side.

*College of Experts*

The College of Experts was also an exceptional procedure, intended to answer to the requirement made by the associations. Again it was a mission, entrusted to Claude Quin, to evaluate SNCF's proposals. This type of evaluation and counter-evaluation mission was not new. On the other hand the innovation was in its composition and its competences. These missions generally report to a public administration, such as the CGPC or the IGF, and are not well known by the public. They are generally a work in cabinet to check the abundant data given by SNCF. In the Quin mission case, for the first time the experts were selected by both the State and the associations. Moreover, a foreign research department, external to SNCF and the public administration, was requested to propose a counter-evaluation. The Bianco circular can be seen as the legal application of this procedure, introducing the idea of an independent commission in charge of organising the debates.

*Public inquiry*

The procedure then followed again a traditional timeline with the opening of the public inquiry on 8 October 1992, in the five departments and 105 communes concerned with the project route. Envisaged at the beginning to last six weeks, the investigation was prolonged by two weeks. It took place in a normal way, except in the Marsanne plain area where the mayors of the 14 communes refused to participate in the process, in protest against the ministerial refusal to conduct the investigation on an alternative route and not just on the Querrien route. The file of public inquiry weighed 26kg, with four enormous volumes and three additional books, totaling 1,700 pages. Since the law Bouchardeau in 1983, the public survey consists of an information procedure for the public and a collection of the appreciations, suggestions and counter-proposals. The dossier submitted to the Public inquiry contains all of the studies realised until that date, and it constitutes a reference file. It includes an impact study, etc., but remains rather vague since it concerns a band 500m wide.

*IMEC procedure*

The *IMEC* procedure (*Instruction Mixte ˆ l'Echelon Central* or Mixed Instruction between central administrations) begun semi-officially in March 1990 with the first meetings between the various administrations concerned by the project, and officially in October 1992. It also corresponded to a traditional procedure. The *IMEC* procedure is engaged by the Department of Transports, which requests opinions and remarks from the other ministries on SNCF's proposals. In the TGV Med case, this procedure emphasised the conflict between the various ministries (Equipment, Environment, and Industry). The instruction was closed on 4 March 1994, authorising the complete transmission of the file to the *Conseil d'Etat*, on 8 March 1994. This *IMEC* procedure dating from 1952 was compulsory for any major infrastructure project. It was removed within the framework of the law in 2 July 2003 dealing with the simplification of the law, to allow the shortest procedures. The suppression of the *IMEC* procedure does not mean that there is no longer any dialogue between administrations but is a way of simplifying the process by the free reference to central administrations by local actors.

*Conseil d'Etat*

The *Conseil d'Etat* approved the project on 19 May 1994, in accordance with the procedure. The *Conseil d'Etat* (State Council) is the higher administrative jurisdiction in France. It answers two main missions: to advise the government and to judge the administration. As an administrative judge, the *Conseil d'Etat* has to deliver its opinion on any project submitted to a Decision of Public Utility. It can also be seized in a litigation case with a public person, and plays in this case the role of supreme judge (its decision cannot be submitted to any appeal). Several claims were deposited against the project in *Conseil d'Etat* by the associations concerned. All were rejected. The *Conseil d'Etat* on the other hand asked for an additional public inquiry in the Tricastin sector because the route definitively fixed in September 1993 came off the spindle defined in the public survey by a few metres.

*Declaration of Public Utility*

The Declaration of Public Utility was pronounced on 31 May 1994 by decree. At this stage in the decision-making process, the State decision is engaged; it confirms the realisation of the project and precedes the first works. The decree related more exactly to "the extension of South-Eastern TGV line from Valence (Châteauneuf-sur-Isère) to Marseille and Montpellier (Saint-Brès and Baillargues)". It was supplemented by the decree of 5 May 1995 declaring of public utility the route modification around the industrial site of Tricastin, then by the decrees of declaration of public utility relating to the construction of three new stations on the communes of Saint-Marcellès-Valence (6 June 1996), Avignon (18 October 1996) and Aix-en-Provence and Cabriès (24 September 1997). The DUP makes it possible to apply the devices in order to make the project fit with the PLU (local plans of town planning). It also makes it possible to launch the procedures of expropriation. It leads finally to the implementation of a detailed project, based on extensive studies.

*Declaration of ministerial approval*

The declaration of ministerial approval takes place just after, based on the detailed studies. The File of Ministerial Approval presented to the Minister for the Equipment and Transport summarises all the studies for the project and synthesises all the proposals surrounding the project, in particular in terms of environmental insertion and urban planning. The Ministerial Approval Document is the second reference file following the file of public survey. It is much more detailed and much more precise since it relates to the exact route, rather than just a band of 500m. The document contained one new element in the TGV Med case, in accordance with the Bianco circular: a summary of the State engagements relating to environmental protection. During the negotiation process between SNCF, the State and residents, SNCF began to implement many protection measures against noise and flood risks, and for environmental protection, etc. All of these measurements were negotiated on the ground, on a case-by-case basis and throughout the route. Very quickly as regards the extent of negotiations, the State and SNCF decided to put down all these measurements in writing. The Minister for Transport at that time, J.L. Bianco, proposed in the circular of 15 December 1992, to reform the procedure by creating a 'file of the State engagements'. The implementation of these engagements is controlled by a follow-up committee, composed by political leaders, socio-economic representatives, and local associations of environmental protection. SNCF implemented this procedure for the first time. The document was made up after the declaration of public utility and was integrated into the File of Ministerial Approval.

Taking into consideration this document, the minister Bernard Pons approved the project on 25 September 1995, but excluding the Nîmes-Montpellier branch. This decision is explained by the State's determination to limit the subsidy necessary to maintain a minimum rate of profitability for SNCF.

From that point the first work of civil engineering could begin. The first phase of work (from 1995 to 1999) concerned land acquisitions and heavy work (main structures, earthworks, networks, re-establishment of access roads). Construction of the new stations started in 1998. Work on railway equipment (way, ballasting, catenaries and signals) started in 1999. The first rail was welded on 3 June 1999, in the presence of SNCF President Louis Gallois and RFF President Claude Martinand. The first trial runs took place in October 2000, and the inauguration of the line on 9 June 2001 with the French President Jacques Chirac.

*Legislation on implementation of major transport projects*

The extent of the protest movement led to an evolution of the legislation concerning implementation and decision-making processes for major transport projects. Traditionally, when the project was launched, the procedure was as follows. On a national scale, the main political organisations decided the main trends and route options, by publishing a strategic scheme of the new infrastructure projects. On a regional scale, preliminary studies isolated a study zone 10km to 20km wide, in cooperation with the regional elected representatives. Then this study zone was reduced to a spindle 1km wide which was retained by ministerial decision. On a local scale, the *APS* (*Avant-Projet Sommaire* or Preliminary Draft) was established in collaboration with the mayors concerned with the various alternatives within the spindle. Lastly, people delivered their opinion at the public inquiry, within a perimeter of utility 300m wide. This procedure was modified partly, but not solely, as a result of the TGV Med. Other debates took place at the same time on major infrastructure projects (on the highways A16, A51, A89, A8bis, etc.).

- The Gressier circular

The circular n°91-61 (2 August 1991) relating to the implementation process for new high speed line projects, known as the Gressier circular. In November 1990, the *Conseil Supérieur des Transports* or Superior Council of Transport (which became the *Conseil National des Transports* or National Council of Transport with the law LOTI in December 1982) approved the strategic plan of TGV development submitted by SNCF. This organisation of consultation is composed of representatives of the State, of local authorities, transport professionals and users. The council compared the implementation process for TGV projects with that for highway projects. It concluded that in the TGV case, the procedure resulted in additional costs and extended protests, as we could see in the TGV Med case. From these conclusions, an administrative work group was created to consider the decision-making and implementation process for high speed lines, because it was not yet clearly defined. Until then the procedure was regulated by the law of 12 July 1985, law MOP, which gave a general framework for the relation between public and private project management for any building, industrial equipment or infrastructure. Following this law, a procedure was published more specifically for road projects, by describing the stages of planning, design, realisation, and operating. The work group set up at the end of 1990 led to the settling of a comparable process, specific to high speed lines. This reflection led on 2 August 1991 to the Gressier circular which regulates the management of TGV projects.

The circular defines a three steps approach:

- The preliminary studies: choice of a spindle 1km wide following the conclusion of comparative studies based on technical, economic and environmental criteria; prefectoral consultation of the ministries and local authorities; creation of a information file with a map on a scale of 1/100,000; ministerial decision on the selected band.

- The *Avant-Projet Sommaire (APS)* or Summary Preliminary Draft: route study on a scale of 1/25,000; collection of administrations' opinions, prefectoral consultation

locally and more precise definition of the route, a decision made by the minister. The public inquiry and the administrative instruction are based on this stage to prepare the declaration of public utility.

- The *Avant-Projet Détaillé (APD)* or Detailed Preliminary Draft: route study on a scale of 1/5,000, taking into account the previous conclusions; dialogue between the ministries concerned; local consultation controlled by SNCF; ministerial decision at the end.

Each stage makes it possible to complete three files: a technical file, an environmental file, and a socio- economic file.

*The Carrère Mission*

The Carrère Mission, from October 1991 to July 1992, is also partly related to the TGV Med debates. This mission was launched by the Minister for the Equipment and Transports, Paul Quilès, to generate a national debate on transport infrastructure. The mission was entrusted to Gilbert Carrère, and was concluded by a report published in July 1992, 'Transport, Destination 2002'. This debate was the occasion to raise problems in the implementation and decision-making process for major transport projects and to make proposals to introduce a public debate into the process.

*The Bianco circular*

The Bianco circular of 15 December 1992. This circular summarised most of the proposals in the Carrère report and created a consultation procedure on whether to build new major infrastructure at the very beginning of the project. Obviously the idea was to answer the TGV Med polemic because in that case the protest movement dealt with the project in itself, whether it should be built at all, and not only with the project route. The circular induces the creation of an independent commission, appointed by the Prefect who is still responsible for organising the debates. It also implies that the project manager publishes a 'file of the State engagements'. This document summarises all the environmental measures to guarantee better insertion of the infrastructure.

*The Barnier law*

The environmental protection law, or law Barnier, completed the Bianco circular in Febuary 1995, by creating the *Commission Nationale du Débat Public (CNDP)* or National Commission of Public Debate. The Barnier law makes legal the obligations for public debate for all major projects, for any infrastructure owner or project manager whatever. This law concerns all major projects, not only in transport, but for all types of equipment. The Barnier law also testifies to another lesson drawn from the TGV Med, concerning the positioning of the public investigators. In the TGV Med case, following the public inquiry, the commissioners approved the project, but under certain conditions. The project should avoid the nuclear site of Tricastin, not cross the Marsanne plain, and not modify the flood risks in plains. These conditions had not been respected, neither by SNCF which refused the too expensive counter-projects, nor by the State which did not wish to reconsider a route already negotiated, the Querrien route. In reaction to this decision, which scandalised the commission of public inquiry, Huguette Bouchardeau presented a report to the Minister of the Environment in December 1993, to reinforce the weight of the public investigators' opinion. This report was published ten years after the law relating to the reform of the public inquiry, supported by Huguette Bouchardeau when she was minister. The law of 1983, known as law Bouchardeau, aimed at transforming the public inquiry into a real procedure of information and consultation with the public, allowing the collection of appreciations, suggestions and counter-proposals. The report published in 1993 evaluated the

implementation of the Bouchardeau law. It insisted on the fact that the public inquiry came too late in the process and on the need to create a permanent and independent authority to check the validity of the public inquiry. These remarks were included in the Barnier law in 1995. That's why the law indicates in case of unfavourable opinion from the public investigators, that a new deliberation is necessary. Nevertheless the opinion expressed by the board of inquiry remains an advisory opinion.

*The Water Act*

In the middle of the TGV Med debates, the Ministry for the Environment worked out the Water Act, of 3 January 1992. In this case, the TGV Med was not a trigger element but constituted an element of context which allowed the vote of this law. This Water Act forces any project: to preserve aquatic environments; to provide a natural drainage system and conservation of floodplains; to maintain ecosystems in good working order. For the Ministry, the main stake was to apply this law to the TGV Med project, which implied huge modifications in the project. The Ministry for Transport refused the demands for modification, which would have increased the project cost. The major floods of October 1993 in the Rhône valley changed a few things. The association of opponents organised demonstrations by boats exactly on the route. The Ministry for the Environment used it as an opportunity to issue, on 24 January 1994, a circular relating to the Water Act which prohibits all new construction in the most dangerous zones and any dyke or new embankment which would not be justified by the protection of densely urbanised places.

<u>Environmental statements</u>

Concerning innovations related to a better territorial insertion of the project, several environmental measurements were taken.

*Limitation of noise levels and development of hydraulic studies*

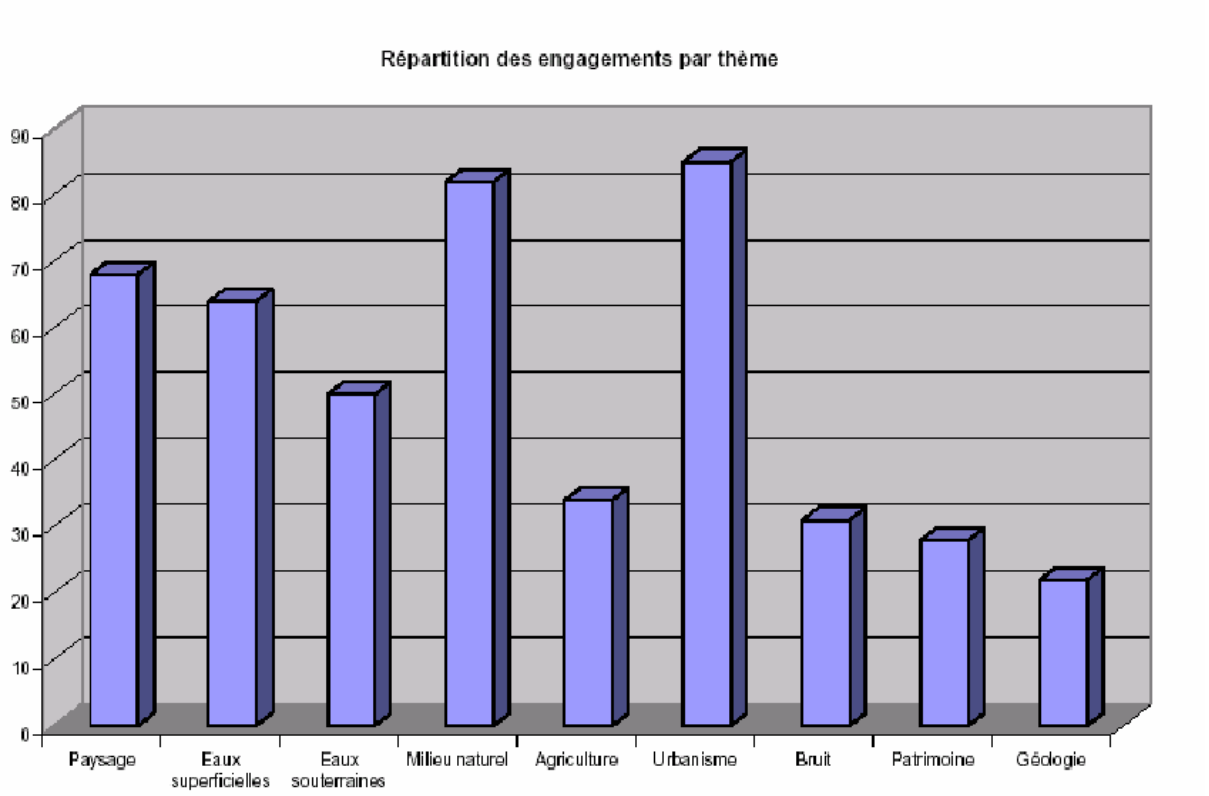
The limitation of the noise level allowed and the development of hydraulic studies to ensure the project did not intensify flooding of the crossed rivers, were amongst the improvements made on the preliminary draft. The limitation of the noise level to 62 decibels (between 8:00 and 20:00) represents a reduction by half of the noise level allowed hitherto. A further limitation to 60 decibels was realised with the renewal of the old TGV stock. This noise reduction was obtained as a result of the acoustic protections along the line, calculated by taking traffic growth into consideration. A specific approach to combat noise was implemented in Drôme. A mission of expertise was created by the State following complaints by residents concerning the noise level after the opening to circulation.

The hydraulic studies were undertaken to improve the environmental insertion of the infrastructure and to limit its impact on the floodplains. Thus on the Durance, there are three viaducts and 60 structures of discharge which allow the re-establishment of a natural drainage system. These measurements are detailed in the RFF report.

*Engagements by State and infrastructure owner*

The main source of innovation is the engagements made by the State and the infrastructure owner, on a certain number of environmental protection measures. The ‘file of the State engagements’ comprised 464 engagements, of which 421 were localised and 43 related to the entire project. On the whole, 85 engagements related to town planning, 82 to the natural environment, 68 to landscape and 64 to surface waters.

**Figure 33: Distribution of the State engagements by topic**




Source: Bilan Loti.

On these engagements, SNCF estimates *a posteriori* that 455 were respected, that is to say 98%:

- three engagements were not formally respected:

**Engagements non respectés formellement**

Il s'agit de mesures relatives au milieu naturel qui ont été remplacées par d'autres mesures équivalentes.

**1/Drôme (Bois de Blagnat - Réserve de chasse de la Panette)**
L'engagement consistait à rétablir deux passages à grande faune jumelés avec les ouvrages hydrauliques au niveau du ruisseau de la Rouaille et au nord de la ferme des Paluds. L'ONF a menée une étude spécifique des déplacements de la grande faune qui n'a pas maintenu cette proposition mais a proposé à proximité immédiate un ouvrage mixte hydraulique / faune / chemin rural d'une largeur de 15 mètres, un peu plus au Nord, au droit du bois de l'Alary.

**2/Gard (Maillac)**
L'engagement consistait à rétablir un passage à grande faune (sangliers) spécifique à hauteur de Maillac. Cette proposition n'a pas été maintenue suite à l'étude spécifique des déplacements de la grande faune menée par l'ONF, qui a néanmoins proposé d'aménager un parapet de 1,5 m de haut au niveau du passage faune implanté sur la tête sud du tunnel de St-Geniès.

**3/Gard (les Angles, Saze, Domazan)**
L'engagement consistait, au sein d'une garrigue à chênes kermès et taillis de chênes verts :
• à limiter les emprises et enclaves dès la phase chantier.
• à recenser et localiser des espèces protégées avant les travaux.
Ces mesures n'ont pas été confirmées par l'étude spécifique menée par le bureau d'étude IARE mais des compensations équivalentes ont été proposées :
• sauvegarde et protection d'espèces animales,
• contraintes de calendrier travaux,
• installation de buses spécifiques petite faune,
• dispositifs spécifiques contre les risques d'électrocution/percussion des oiseaux,
• et réhabilitation d'écosystèmes.
Pour conclure, ces trois engagements n'ont pas été respectés au pied de la lettre mais ont été remplacés par des mesures équivalentes à proximité immédiate.

- six engagements were partially respected:

**Engagements partiellement respectés ou non respectés (Etape 2)**

Il s'agit de mesures relatives au milieu naturel : reconstitution des ripisylves (ensemble des formations boisées présentes sur les rives d'un cours d'eau) ou maintien du lit des cours d'eau aux caractéristiques naturelles. La vérification du degré de ces engagements a été faite sur place en février 2007.

***Non respectés***
**1)Drôme (Le Jonas)**
L'engagement consistait à reconstituer les ripisylves et à maintenir le lit du cours d'eau aux caractéristiques naturelles.
**2)Drôme (L'Ourches)**
L'engagement consistait à maintenir le lit du cours d'eau aux caractéristiques naturelles
**3)Vaucluse (le Lauzon)**
L'engagement consistait à reconstituer les ripisylves.

Les enrochements mis en place ont artificialisé totalement le lit et les berges. La situation est plus nuancée pour trois engagements où la reconstitution a été partielle

***Partiellement respectés***
**1)Drôme (L'Ecoutay)**
L'engagement non respecté totalement consistait à reconstituer les berges et le lit.
**2)Drôme (Le Jabron et le ruisseau des Citelles)**
L'engagement non respecté totalement consistait à rétablir le lit naturel.
**3)Vaucluse (le Coulon)**
L'engagement non respecté totalement consistait à aménager les rives.

The evaluation of these engagements was carried out by an external research department SCETAUROUTE, for RFF. The exhaustive examination of whether each of these engagements had been respected was based on documents, visits and interviews.

Several follow-up committees were organised in each department concerned: Drôme, Vaucluse, Gard, Bouches-du-Rhône, chaired by the prefects. SNCF had to prove to these committees that all the engagements were respected. In September 1999, RFF set up for the first time again an observatory of the environment (open from 1999 to 2006). This observatory published studies, experience feedback and a final synthesis. The realisation of this file of the State engagements played an important and strategic role in the decision-making process, because it made it possible to seal the agreements which had been negotiated between residents and SNCF throughout the route. This procedure, which aimed at integrating the project within the territory, was also a way of integrating it socially and mentally. SNCF agreed to considerable concessions and to grant additional protection measures, in order to involve an increasingly large number of residents in the decision-making process. By integrating them in the negotiation process, SNCF managed to reduce the opposition.

*Extension of compensation band*

The extension of the compensation band to 150m on both sides of the railway is also a part of these innovations which tried to improve the territorial insertion of the project. It was also a way of involving residents as soon as possible in the negotiation to limit conflicts. The decision to extend this band was announced on 6 October 1992 during the press conference of P. Izard, project manager. He announced the decision taken by SNCF to repurchase all the properties situated less than 150m from the TGV line, up to three years after the start of the line. This new measure intervened a few days before the opening of the public inquiry. Again the issue for SNCF was to answer the protest movement and to propose new initiatives to advance the project.

*Landscape and architectural studies*

The landscape and architectural studies of insertion were systematic throughout the project route. They required an exercise of co-operation between SNCF engineers and the architects and landscape designers, who were solicited for the TGV Med project. Until then recourse to these professionals was limited to some interventions at the end of the decision-

making process, for example choosing the shape and color of the parapets. For the first time, SNCF appealed to architects and landscape designers from the beginning to design the most important structures. For one member of the TGV Med mission which set up this collaboration, it was a huge first: “It is something which revolutionised our ways of working; we made work the research department structures with architects to design the structures together, in a real cooperation. For the SNCF at that time it was a sort of cultural revolution”. This collaboration resulted in some ‘exceptional structures’, according to SNCF terminology, and in the design of the new TGV stations. In general, the entire route profited from a landscape scheme (realised by Didier Courtemanche), to give it a visual identity, even if the landscape units were treated differently. For SNCF, this collaboration with architects and landscape designers was thought a real risk. Obviously it involved extra cost. But especially it had an extremely positive effect on the conflict. For SNCF the stake was to federate the maximum number of residents around the project. By using this collaborative procedure, SNCF once again intended to involve in the negotiation process those who were opposed to the project. Several commissions of judgment of the architectural projects were organised to evaluate the proposals by engineers, architects and landscape designers. The town councilors were invited to express their views on these proposals. So they encourage the opposition to enter in the negotiation process and the dialogue stage. SNCF largely communicated on this new initiative, by employing a person in charge of the communication in the TGV Med mission. A newspaper on the project was published by SNCF, for the first time, and distributed to the public. During the work, the realisation of the ‘exceptional structures’ was relayed in the press. Exhibitions and specific events were organised and gathered a growing number of people as the project advanced and people accepted it.

The project was the object of a landscape evaluation, entrusted by the Department of the Environment to an external research department (*Evaluation paysagère du chantier du TGV Med*, 2000).

Overview of public consultation

When the TGV Med project started, the consultation process was extremely limited. The one and only phase of consultation corresponded to the phase of public inquiry, during which members of the public were invited to deliver their opinions on a project already largely defined in a perimeter of utility 300m wide.

In the TGV Med case, the extent of the protest movement encouraged the State and SNCF to open the decision-making process, which was restricted previously to the regional elected representatives. They decided to open the process to a large audience with the local elected people, residents and associations. The public consultation took place:

*During the Querrien mission*

All the associations were heard by the mission. The dialogue was only about the route. The members of the Querrien mission organised meetings, in each department concerned, with the State external services, the Departmental councils, professional organisations, trade unions, mayors, and associations.

*During the Quin mission*

The College of Experts invited the associations to register their counter-proposals. This dialogue concerned the opportunity of doing such a project and its conditions of realisation.

*During the public inquiry*

Legally, the public inquiry was the unique phase of public debate. The dialogue concerned a

precise project and a route determined in a band of 500m (rather than 300m, as in the usual procedure).

*On the ground and throughout the decision-making process, since the first studies until the end of work*

This dialogue on the ground concerned mainly the landscape equipments and the protection measures against noise and floods. It took place at public meetings, organised in town hall or prefecture, or with meetings on the ground between SNCF agents and residents. SNCF's territorial sub-directions played a central role in this process, as the main interlocutors with residents.

The public consultation in this process was organised outside of the legal framework, except for the public inquiry. This procedure was completely modified, partly following the TGV Med experience, with the Bianco Circular (1992), then the Barnier Act (1995), and more recently with the Circular of 28 December 2000 by the Director of Transports relating to the implementation and decision-making process for major infrastructure projects. This circular specifies the methods of dialogue in each stage of the decision-making process. The last law was voted in 2002: the law on the democracy of proximity transforms the National Commission of the Public debate into an independent authority (from the State and the infrastructure owner).

Ecological mitigation

The landscape and architectural improvements allowed a better insertion of the line in its environment. The majority were indexed in the file of the State engagements, except some equipments which could have been negotiated on the ground by residents during the construction works. During the *IMEC* procedure, the Department of the Environment evaluated the cost of these equipments (in the conditions of January 1991):

**Table 1: Cost evaluation of the equipments related to the State engagements**

| | en MF | en M€ |
|---|---|---|
| Protection acoustique des habitations et équipements sensibles | 900 | 137 |
| Rétablissement de circulations locales | 150 | 23 |
| Intégration paysagère | 200 | 30 |
| Traitement architectural des ouvrages d'art | 200 | 30 |
| Remembrements et aménagement des dépôts ou emprunts | 200 | 30 |
| Préservation du milieu naturel (faune, eau, milieux sensibles) | 100 | 15 |
| Préservation du patrimoine archéologique | 100 | 15 |
| Total | 1850 | 280 |

Source: CGEDD, 2008

This estimation does not take account of the abandonment of the Nîmes – Montpellier section, and we do not know more precisely the real amount of the expenditure realised.

The studies undertaken by the environmental Observatory were not published by SNCF or RFF. They were used as a database for the evaluation of the State engagements carried out by the research department SCETAUROUTE, whose results appear in the Bilan LOTI (*a posteriori* evaluation), but they are not published separately. The only published documents in our possession are the impact study on the Avignon – Marseille section, presented by RFF within the framework of the LGV PACA public debate. This section represents 95km of line, including 10km of tunnel and 8km of existing way on the arrival at Marseille.

On this section of 95km between Avignon and Marseille, we know with precision the various measures which were taken:

- 130 structures to restore the traffic (one every 600m) were built to limit the severance effect of the infrastructure. .

**Table 2: Structures to restore the traffic between Avignon and Marseille**

| Nature des mesures | Nombre |
|---|---|
| Rétablissements ferroviaires | 3 |
| Rétablissements routiers | 45 |
| Rétablissements agricoles et forestiers | 87 |
| TOTAL | 135 |

Source: RFF

- SNCF realised several structures to restore the Durance outflow during the swelling of the river: three viaducts with a total length of 3.5km and 60 structures of discharge. A sill on the Durance was built in the Cachade floodplain to control the flow of the river. The other major rivers (Coulon, Boulery, Touloubre and Arc) were crossed by four viaducts, which represent a total length of 1.1km. The other natural flows were restored due to 76 hydraulic structures.

- In Avignon, the new line passes by the west of the city (on the Rhône right bank) and by the south (right bank of the Durance), but passes near the hospital Saint Martin with a covered section 1.4km long. Before the arrival in Marseille, a covered section of tunnels 7km long makes it possible to cross the mountains.

- The fight against the fire hazard in the main forests between Vernègues and Les Pennes-Mirabeau led to: the re-establishment of the forest roads interrupted by the TGV Med in order to allow access for the fire brigade; the construction of a new surveillance tower; the realisation of an alveolar clearing in the forest (cutting all vegetation not wooded).

- The deserted spaces created between the LGV and the river, in the Durance valley, were used to reconstitute wet natural spaces.

All along the route, the environmental measures of insertion resulted in:

- Measures of landscape insertion: the creation of a landscape master plan made it possible to reorganise the territory crossed while taking account of local specificities. For example, the grass planted on the talus was a mixture of herbaceous adapted to the local conditions and defined by a landscape designer.

- Measures to limit the severance effect of the infrastructure and the consumption of space.

- Measures to re-establish the natural drainage system and protection of the wetlands.

**Figure 34: Discharge equipment to limit the flood along the TGV Med**

Source: RFF

- Protection measures against noise: nearly 20km of acoustic protections (at source) were built, either in the form of merlons or as protective screens.

**Table 3: Acoustic protections on the TGV Med line**

| Nature des protections acoustiques | Longueur (m) |
|---|---|
| Merlons | 10 992 (60 %) |
| Ecrans | 7 141 (40 %) |
| ***Total*** | **18 133** |

*Protections localisables sur les planches 2003 du catalogue photographique.*

Source: RFF

**Figure 35: Noise-reduction screens on the TGV Med line**

Source: RFF

**Figure 36: Merlon (natural noise-reduction screen) on the TGV Med line**

Source: RFF

- Protection measures against fire hazard.
- Protection measures for the environment.

In the Drôme department and on 84km of new line, 44km are equipped with noise protection at source. The protections were located mainly in the plain of Chabeuil and Marsanne. SNCF signed a deal with 15 householders to insulate their houses.

Regeneration

The project's impact on town and country planning, on economic activities and employment are not easy to determine. These effects are not systematic and not based on a simple relation of cause and effect, but on the contrary involve a chain of multiple causalities. Moreover, there is no systematic follow-up with measurable indicators ex post concerning

the realisation of the objectives presented in the file of public inquiry.

The TGV's impacts were distinguished in the public inquiry file according to three types of activity: secondary and tertiary industries (by modifying the conditions of transport, the TGV affects working procedures and sales strategies in business industries); the tourist sector (geographic origin and type of trips are influenced by the TGV); and agriculture.

*On the employment situation*

The public inquiry file appraised the job creation related to the TGV Med at 85,000 for the construction of the line (including 57,000 jobs in the areas crossed by the project route) and 19,000 jobs related to the TGV's structuring effects (including 17,500 in the areas crossed by the project route). These figures were produced by a Setec Economie study for RFF. These employment effects were envisaged using models gauged after ten years of traffic on the South-eastern TGV line, and a qualitative investigation (interviews with economic decision makers and professionals). But no study makes it possible to know the number of jobs created *a posteriori*. According to the interviews realised for the Bilan LOTI, the persons in charge of Euromed estimate that the TGV allowed the relocation of a thousand jobs from Paris to Marseille.

The principal expected effects concerned the new stations, which justified the financial participation of the local authorities**.**

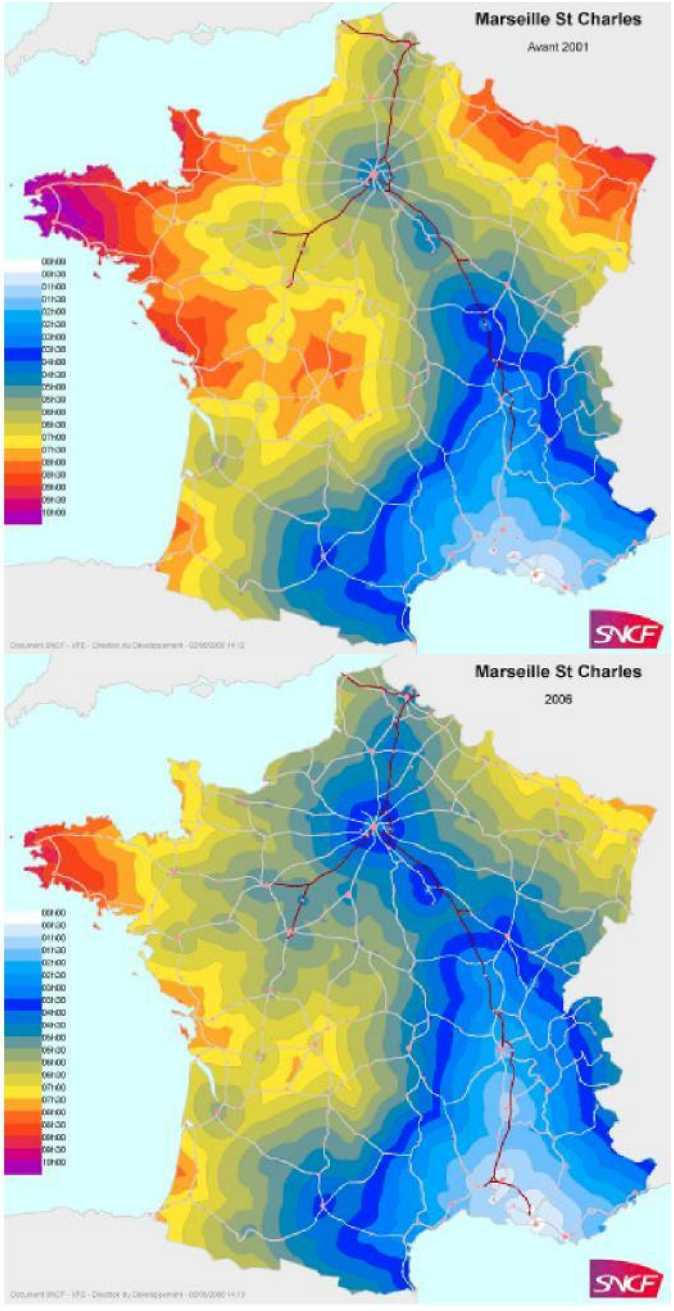
*Extract from the Bilan LOTI, 2008*

> The TGV Med improved the image and accessibility of the territories served by the train. But, five years after its opening, the high-speed line has not transformed the existing structures. Its effects on the economy and local development are not spectacular. It seems that the TGV contributes more to raise the Provence on the national level, than to attract new economic and cultural activities. Actually, the economic effects are slow to appear, contrary to the effects on traffic demand and modal transfer. Until now, behaviours have evolved but the organisations remain stable. The objective of service improvement and modern architectural symbols with the three new stations can be considered as fulfilled, but the objective of local development is more difficult to estimate. The image effects are at the same time immediate and spread over time. The areas less well served do not benefit from this effect. So the high-speed line introduces a sort of territorial disparity. Touristic activity is still not much affected, expect for transformations related to traffic (hotels, restaurants, etc.) and the modifications of tourist behaviour (increase in the number of short stays). The rise in house prices, faster in the major southern cities than the average for major French cities, could be related more to an adjustment because the initial prices were lower. The effects on employment, excluding the construction period, are not visible, except in Marseille with the planning operation Euroméditerrannée. The customers of the TGV Med, first beneficiaries of the operation, are characterised by an over-representation of the most mobile higher and intermediary socio-professional categories. They represent 75% of the passengers while they constitute only half of the French population.

*Improved accessibility*

The introduction of the service improved accessibility, in particular for Marseille. The proportion of the French population able to reach Marseille in less than three hours doubled (39% in 2006), as did the proportion accessible in less than four hours (45% in 2006).

**Figure 37: improved accessibility from Marseille, before and after the TGV Med**




Source: RFF/SNCF

Appraisal methods

Several evaluations were carried out on this project, either through the initiative of RFF/SNCF directly, or at the State's request.

**Table 4: Appraisal methods**

| | Before Construction | During construction | After Construction |
|---|---|---|---|
| Baseline studies | -Schema Directeur national des liaisons ferroviaires ˆ grande vitesse, 1991 (SNCF).<br>-Dossier prealable ˆ la Declaration d'Utilite Publique, 1991 (SNCF).<br>-Dossier des engagements de l'Etat, 1994 (SNCF).<br>-Dossier d'Approbation Ministerielle, février 1995 (SNCF). | | -Bilan LOTI (de la LGV Mediterranee, juin 2007 (RFF, SNCF).<br>-Rapport sur le Bilan LOTI (de la LGV Mediterranee, juillet 2008 (CGEDD: J-N. Chapulut, J-P. Taroux). |
| Monitoring environmental variables | -Etudes spécifiques relatives aux milieux naturels traversés (ONF, DFCI réseau de Défense des Forêts Contre les Incendies). | -Etudes réalisées par l'Observatoire de l'Environnement (RFF).<br>-Publications du CNRS sur les fouilles archéologiques entreprises lors du chantier.<br>-Mission d'evaluation paysagere, 1999 (Ministere de l'Environnement : M. Lambert). | -Etudes réalisées par l'Observatoire de l'Environnement (RFF) Nuisances phoniques de la ligne TGV Mediterranee dans le Sud de la Drôme, août 2003 (CGPC: B. Desbazeille, J-N. Boutin). |
| Risk analyses | -Commission ad hoc, 1992 (CGPC, IGF).<br>-Rapport de mission prealable ˆ l'approbation ministerielle, 1995 (CGPC, IGF). | -Mission d'audit sur le TGV Mediterranee, 1998 (IGF, CGPC: M. Marec, C Dichon)<br>-Rapport de la mission sur les redevances d'infrastructures du TGV Mediterranee, 2000 (IGF, CGPC: M. Brossier, M. Blanc) | -Le projet TGV Mediterranee, 2003 (Cour des Comptes). |

<u>Complaints procedures</u>

The complaint and appeal procedures were resolved in several ways:

*On the ground by direct negotiations between SNCF and residents*

The residents were attended by associations and in particular the *Union Juridique Rhône-Méditerranée*, which proposed legal assistance. The territorial sub-divisions, present on the ground and placed under the governorship of the TGV Med mission, played an important role in these negotiations.

*Within the framework of the missions appointed by the State to introduce a public debate: Querrien mission and Quin mission*

Some other missions of expertise were created by the State because of the mobilisation of residents on certain points. This occurred in the south of Drôme with the creation of a

specific mission of expertise on noise pollution. The mission report was published in 2003. This mission answered the residents' request and in particular the association *Coordination Drôme-Vaucluse*, led by Mariette Cuvellier. The letter ordering the creation of the mission on 18 November 2002 (from the Director of Transports to the CGPC) referred to the “deep incomprehension” of residents concerning noise pollution. In July 2001, one month after the startup of the line, several demonstrations were organised in the Valence TGV station, causing a traffic interruption.

*During the public inquiry*

At this time, residents could make all their remarks concerning the project.

*The legal remedy*

The appeal to justice, in the case of a major infrastructure project affecting the State (as a public person) or RFF (an EPIC, so also a public person), falls within the competence of administrative justice. Three levels of jurisdiction can be distinguished:

- The administrative courts to which the claimant must address himself initially

Recourse to the administrative court generally relates to compensation requests. In the TGV case it related to work, to the loss in value of a property or a professional activity, to a request for additional expertise, to a problem of non-compatibility between the TGV project and the local master plan, etc. According to the Bilan LOTI, concerning the environment and the respect of the State engagements, 155 litigation procedures were submitted to the administrative courts, of which 90 have been closed. For the opponents of the project, the objective of these appeals is to delay the project or to block it.

- The administrative appeal courts

These courts rule in appeal against a judgment pronounced by the administrative court. We have no information concerning the number of judgments treated in these jurisdictions related to the TGV Med.

- The *Conseil d’Etat*

This is the highest authority. The *Conseil d'Etat* is the cassation court judge concerning the judgments delivered by the administrative appeal courts. An appeal to the *Conseil d'Etat* can also be the first stage when the decision relates to a ministerial decree. This type of procedure had been launched by the *Union Juridique Rhône-Méditerranée*, on 6 July and 4 November 1994, in order to demand the cancellation of the Declaration of Public Utility. This request was rejected by the *Conseil d'Etat* on 17 November 1995. Several appeals were lodged within the framework of the TGV Med, but all were rejected. Appeals were lodged until very recently (the last decision pronounced by the *Conseil d'Etat* dated from 31 March 2008).

**Land acquisition**

SNCF bought 3,400ha of lands for the TGV Med construction, compared to a forecast of 2,300ha. The land surplus, beyond the strict site of the line, was more extensive than expected. This difference can be explained by the extent of protests, which encouraged SNCF to take control of the land quickly.

In the context of strong opposition to the project, SNCF proposed to widen the band of

compensation to 300m instead of 100m. This decision intervened on 6 October 1992, after the announcement by Pierre Izard, Director of the TGV Med Mission. It was intended to reduce tensions before the opening of the public inquiry. This measure allowed the residents domiciled in a band of 300m centred on the project axis to obtain the acquisition of their property, from the declaration of public utility and until three years after the startup of the line. This exceptional procedure consists of instituting a right of conventional renunciation all along the route. A total of 285 houses were purchased for a total cost of EUR 50m (Bilan LOTI), although according to the *Cour des Comptes* there were only 234 acquisitions. This offer finally concerned only a few houses (approximately 430), and is besides what encouraged SNCF to make this proposal. In Drôme, this measure concerned the repurchase of 140 houses (Report on the noise pollution, 2003). Of the houses repurchased by SNCF, some were destroyed, others were resold (by taking into account in the resale price the cost of sound-proofing equipment) but the majority were rented. This extension of the compensation band is an exceptional procedure, and was not renewed for the other TGV lines in construction.

The arable lands were acquired after the signature of draft-agreements on the land price and on the compensation for expulsion. These agreements were signed between the tax authorities and the agricultural professional organisations. The interdepartmental draft agreement fixing the calculation principles was signed on 18 September 1995. In complement, SNCF signed with these same agricultural professional organisations a protocol on the damage of public works. According to this protocol, a special allowance known as 'prime TGV' or TGV bonus, equal to 10% of the monetary value of the property for the owners or a year of margin for the producers, was paid if SNCF's offer was accepted in a period of two months and if the main allowance was not fixed by the judge of expropriation. This special bonus made it possible for SNCF to quickly proceed to the repurchase of land and to promote the procedures by amicable agreement. Less than ten cases of expropriation were resolved in the courts.

The total costs of the land operations exceeded the initial budget of 10.2%, according to the Bilan LOTI and the report of the Cour des Comptes, if we compare the 1995 estimate with the real investment. The 1995 report by the IG and CGPC however noticed that savings were possible. A total of 480 land operations were realised, including 70 operations with a cost over EUR 0.5m (Cour des Comptes).

**Table 5: Cost of land operations related to the TGV Med**

| | Details taken into account | Public Inquiry File (1991) | Ministerial approval File with branch Montpellier (1994) | Ministerial Approval File limited to Nîmes (1995) | Real Investments (2003) | Variations |
|---|---|---|---|---|---|---|
| Bilan LOTI, RFF/ SNCF (2007) (2003 prices) | Land acquisitions and land readjustments | EUR 221.3m | EUR 324.3m | EUR 324.3m | EUR 457m | +41% |
| | Land (without precision) | | | EUR 415m | EUR 457m | +10.2% |
| Cour des Comptes (2003) (1994 prices) | Land and buildings acquisitions, land adjustments | | | EUR 364m | EUR 401m | +10,2% |

| | | | | | | |
|---|---|---|---|---|---|---|
| | (reallotments), restoration of the networks and compensation for the damage related to work. By taking account of the new stations and the forecasts of lands sale. | | | | | |

Source : SNCF/RFF, 2007 et Cour des Comptes, 2003

The decree n¡ 86-445 of 14 March 1986 imposes on the public corporations an opinion delivered by the tax services before any real estate transaction, even if it results from an expropriation or a friendly agreement. This procedure aims at controlling the regularity and the opportunity of the decisions by the building owner, and at guarding against excessive compensation. Any payment of a higher amount than the national evaluation must be a decision justified by the tax services. In the TGV Med case, the land operations were realised directly by the TGV Med Mission, which became then the management of the new line, in total autonomy with respect to SNCF's Central Management. For the largest operations, the opinion delivered by SNCF's Central Management was requested but outside of any formal procedure. The tax services examined 13 operations, accounting for approximately 10% of the entire amount, so among the most important. In three of these 13 operations, either the opinion of the State property missed, or the cost overrun appearing in the notice was not justified. For the tax services, the choice by SNCF to introduce dissociation between the land acquisition and the compensatory allowance related to the 'TGV bonus' appeared in certain cases as an operation to give more money without any consultation with the tax services.

Extract from the Cour Des Comptes report, 2003

> The largest land operation induced two transactions signed the same day: the first one concerning building, land acquisition and equipments for EUR 18.3m in accordance with the tax services' opinion, and the second one concerning a compromise allowance of EUR 3.2m, for an entire amount of EUR 21.5m finally equal to the demands made by the company expropriated. A farmer received EUR 2.3m (EUR 1.1m for the acquisition of land property, EUR 1.2m for the compensation for damages) whereas the file contains only one opinion not signed delivered by the tax services on a monetary value of EUR 0.9m and that the documents available suggest that this sum of EUR 2.3m was excessive.

## C PRINCIPAL PROJECT CHARACTERISTICS

### Detailed description of route

The first route conceived by SNCF, resulting from the studies started in January 1989, was presented to the regional elected people in December 1989 during a meeting in Marseille. It was transmitted by SNCF to the government on 22 December 1989, in a file including two sub-projects (the Provence Riviera project with one branch towards Marseille and one branch towards Fréjus, and a Languedoc-Roussillon project). The file contained a cartographic document, on a scale of 1/25,000, realised with the assistance of the research department SETEC in Vitrolles, directed by a former leader of the CETE of Aix-en-Provence. This route is called the 'reference route'. It was presented without alternatives and corresponded to the phase of preliminary studies, relating to the general environmental studies (to determine the possible passages) and the socio-economical studies (what kind of service? which stations? which transfer from air or road? which profitability? etc). The reference route was composed of:

- A main section from Valence to Saint-Cannat (177km) located on the Rhône left bank away from the valley for the passage in Drôme and Vaucluse, with a passage in Val de Durance between Caumont and Mallemort;

- then two branches near to Saint-Cannat and Lambesc, one towards Marseille and the other towards Fréjus.

In the north of Avignon, a connection makes it possible to join the traditional railway line and to ensure the service of Languedoc-Roussillon. The line also joined the Paris – Lyon – Marseille line at L'Estaque, 9.5km from the Saint-Charles station, to leave the possibility of creating another station on the Arbois plateau serving the conurbation of Marseille/Aix/Etang-de-Berre.

This reference route answered the objectives and principles related to the high speed connection for SNCF. It corresponded to the most direct route, avoiding the too difficult reliefs (floodplains). Obviously it is an engineers' route, conceived to minimise costs (to limit the number of bridges and tunnels) and risks. For SNCF, it was not the exact route of the future TGV Med, but a first draft making it possible to launch the first land studies and for use as a basis for negotiations. The file transmitted to the government was entitled with many precautions: 'Draft proposal by SNCF', published in January 1990. During this first period, the studies were carried out by SNCF's Central Management in Paris, under the responsibility of Pierre Izard. Local research departments were asked to take part in the first studies, in particular the CETE Mediterranean located at Aix-en-Provence, and SETEC in Vitrolles. It is via these local research departments that information on the creation of a new high speed line was disseminated to the public. These leaks led to the diffusion in the press in July 1989 (Southerner 7, 8 July 1989) and in October 1989 (supplement South-Businesses of the newspaper Of Provence) of a first draft of the route; then with the diffusion of the internal documents presented by SNCF during the meeting with the regional elected representatives of December 1989, which encouraged the government and SNCF to make the file public in January 1990.

Even if it was just a first draft for SNCF, the vision of this black line drawn on a map had an extremely strong effect on residents and the elected people, for whom this line corresponded to a route already defined and decided without them. As of January 1990, associations started forming and the first demonstrations were organised. The protest movement was immediate and significant, the demonstrations gathering a large number of residents, including the town councilors.

The multiplication of alternatives was one of the consequences of this protest movement. Faced with the extent of the demonstrations, SNCF decided to send a project manager, Pierre Izard (in April 1990) to listen the proposals of each one. At thistime, there was no official conciliation procedure, except the public survey phase. SNCF set up this TGV Med Mission on the ground to meet the local actors and to listen to their proposals. Meetings were organised everywhere, in prefectures, in town halls, in communal rooms or even in private properties. As a resultof this process, SNCF formulated a new proposal, transmitted to the State at the beginning of July 1990, in the form of a report entitled 'Stage report'.

The main service roads and stations were:

- in Valence, to ensure the connection towards Grenoble and a direct access with the TGV network towards the north and south;
- on the Arbois plateau to serve Aix, Marseille, Etang de Berre;
- in the sector of Avignon/Nîmes;
- In central Var, a station was planned to serve Toulon and Saint-Rapha'l and for seasonal traffic;
- in Languedoc-Roussillon, two stations were planned on the south of Montpellier and in Béziers/Narbonne.

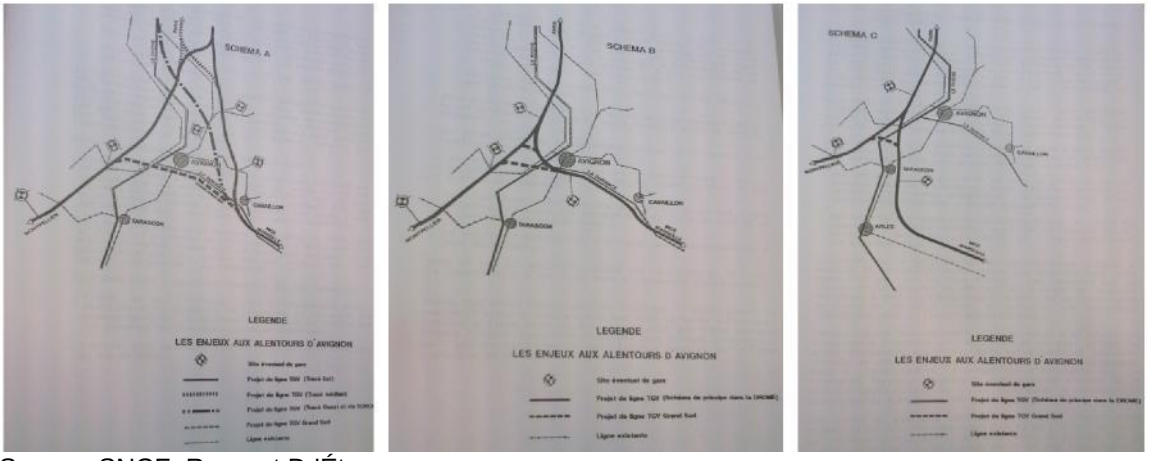
The main route options were divided into:

- major options of passage in the Drôme (route east in black, median in blue or west in red);
- major options for the Avignon triangle (large triangle in black, small triangle west in green, route along the Rhône prolonged in the south-west of Avignon by a triangle close to Arles in yellow);
- families of routes for the Riviera branch in Bouches-du-Rhône (the Trévaresse route in black with two options of passage near Lambesc and Eguilles, the route by the Durance valley in red, the route starting from Eguilles in the north of Venelles in blue and orange);
- And several other options in Gard and Var.

**Figure 38: route options for the TGV Med, July 1990**


Source: SNCF, Rapport D'Étape

**Figure 39: route options for the TGV Med to Avignon, July 1990**




Source: SNCF, Rapport D 'Étape

Finally all these alternatives represented nearly seven times the line to be built. In the stage report of July 1990, SNCF compared these various alternative routes. SNCF defined its favourite route, known as the ‘reference route’ in black on the map, corresponding to the first draft proposed in December 1989.

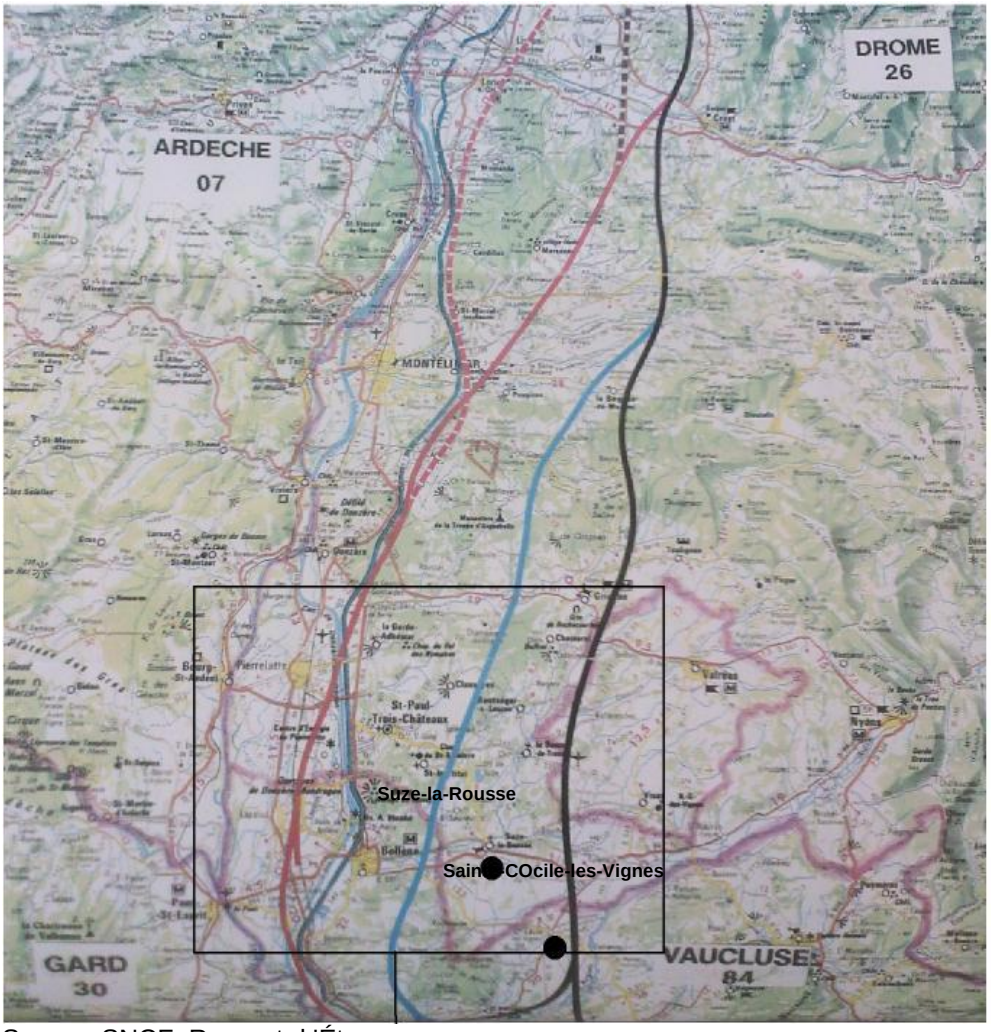
From summer 1990, several alternatives were removed. The President's intervention on 14

July 1990 suggested already a modification of the route. On 2 August 1990, the Minister for the Equipment Michel Delebarre announced officially:

<u>The suppression of the route East or reference route in Drôme, between Montélimar and Orange</u>

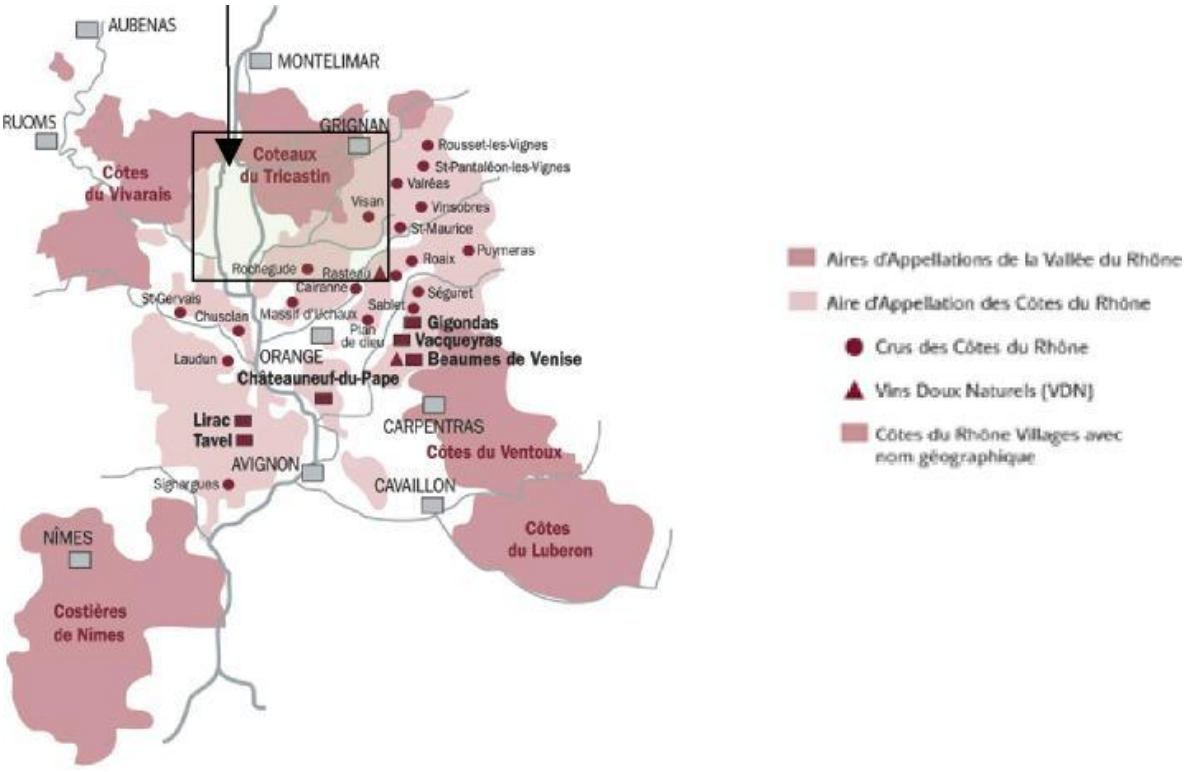
This decision reflected the choice of the President and the influence of his friends, socialist elected representatives in Drôme, who requested his support to push the route away from the vineyard of Côtes-du-Rhône. The argument supported officially by the President, during his intervention, as by the Deputy Henri Michel, was due to environmental protection. The argument was denounced instantaneously by associations, in particular *Drôme-Vaucluse Coordination*, since the passage in the Rhône valley was supposed to cross more fragile and natural spaces. This choice is explained by the action of the trade unions of wine producers who realised an action of lobbying, thanks to the deputy Henri Michel, who intervened directly with the President, and then the President asked the SNCF President to withdraw the route East from the alternatives on this part between Montélimar and Orange. The route finally retained in this section passes between the Rhone and its canal, on figure 40 in the zone without vineyards. It also avoids the districts of the close relations of Francois Mitterrand: Suze-le-Rousse, known for its wine university and its mayor Henri Michel, and Saintes-Céciles-les-Vignes where Guy Penne is elected.

**Figure 40: Options of route for the TGV Med in Drôme, July 1990**




Source: SNCF: Rapport d 'Étape

**Figure 41: Vineyard of Côtes-du-Rhône, southern part**




Source: Inter-Rhone, 2008

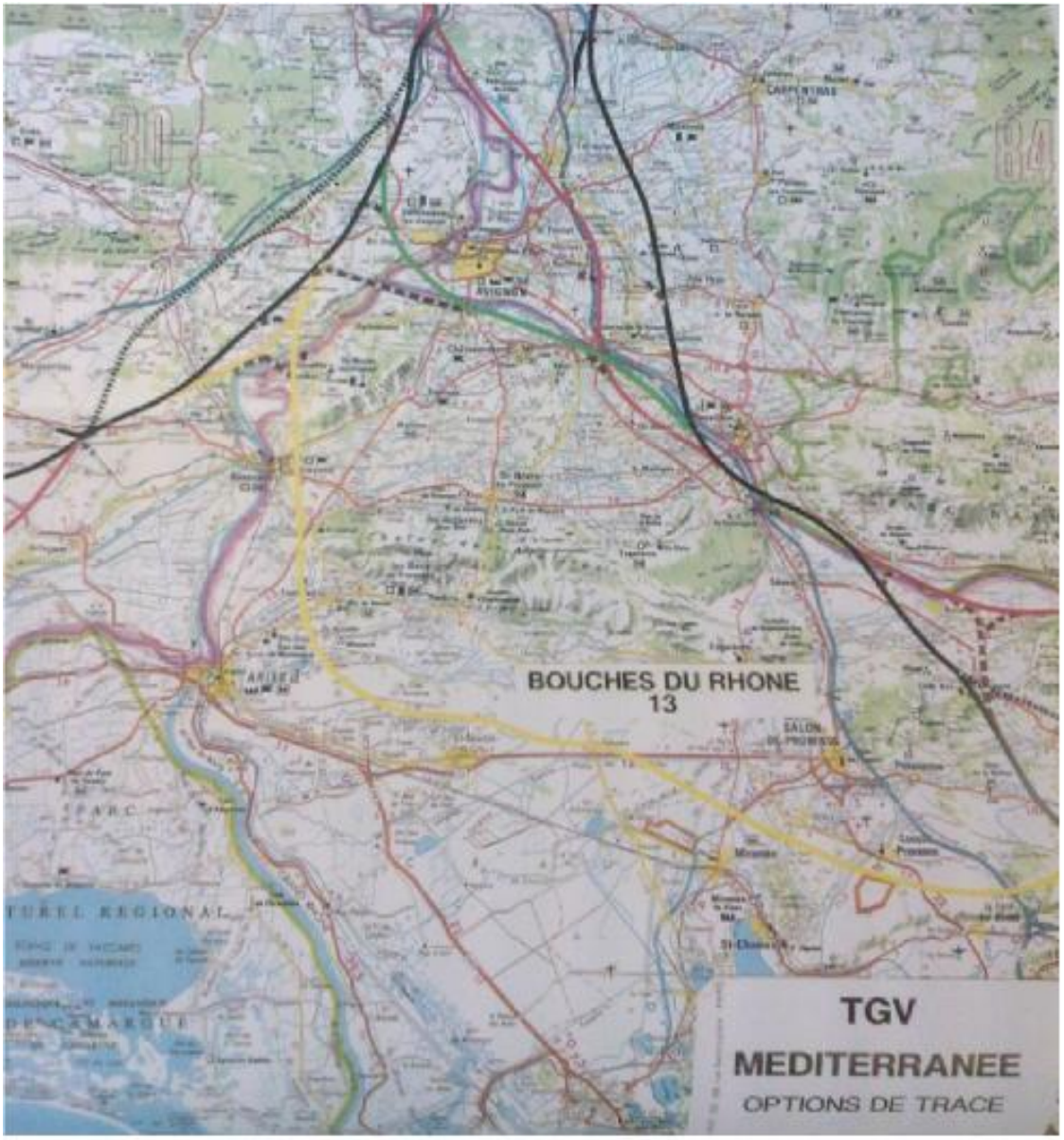
The abandonment of the alternatives on Avignon (routes direct, median and western)

These alternatives were disputed by the socialist Deputy and mayor of Avignon, Guy Ravier, because they were incompatible with the idea of creating a new station in Avignon. Guy Ravier negotiated a passage of the line on the Durance right bank (in the green belt of Avignon), in exchange for a TGV station. The Federation of associations in the Department, Environment and TGV, strongly opposed this choice, in particular by occupying the town hall on several occasions, and even by sequestering the mayor during meetings of the municipal council on 29 September 1990and 22 October 1990.

The abandonment of the route by the plain of Crau

The plain of Crau is located between the Alpilles mountains (in the North) and the Etang de Berre and the Mediterranean Sea (in the South). It corresponds to a steppe plain, located in an old delta of the Durance. The abandonment of this route is explained by the mobilisation of the elected people, within the *Coordination des élus de la Crau*, supported by Michel Vauzelle. He was a socialist Député, elected official of the 16th district of the Bouches-du-Rhône (sector of Arles). He belonged to the group of large socialist elected officials close to Francois Mitterrand (he was one of his main advisers in 1981, and become Minister for Justice in 1992). After the withdrawal of this alternative, the *Coordination* was dissolved. No argument was officially presented by the minister to justify the withdrawal of this alternative.

**Figure 42: Option of route in the Plain of Crau, in yellow, July 1990**

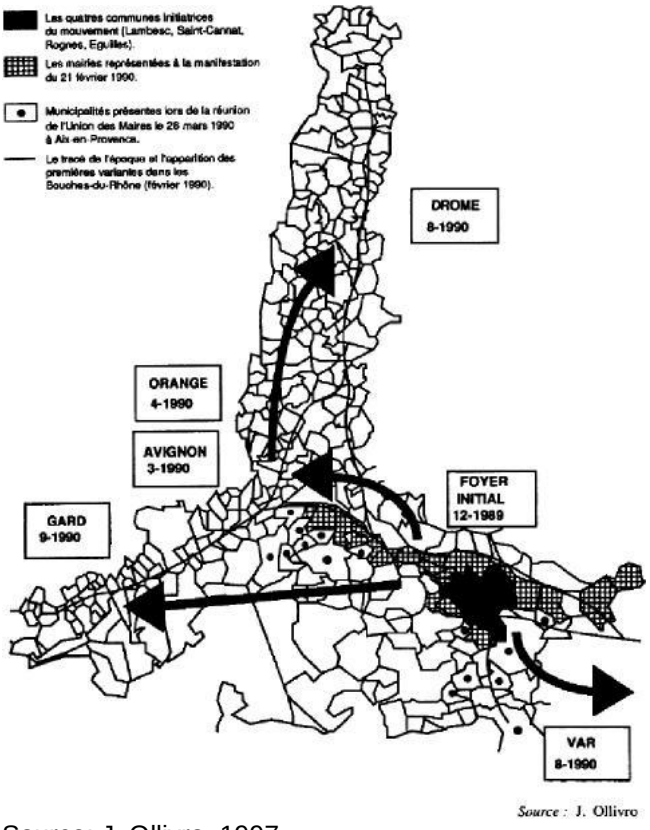



Source: SNCF, Rapport D 'Étape

The abandonment of the alternative by the North of Lambesc

This is related to the mobilisation of the elected people within *Solidarité des élus du 13*, supported by Gilbert Pauriol (Mayor of Lambesc) and his assistant to the environment Robert Célaire. This association federated 34 mayors of the Bouches-du-Rhône, rural elected representatives for the majority, but succeeded in obtaining the support of large regional elected people to listen and to stay above the political opposition. Leon Vachet (Deputy RPR of the Bouches-du-Rhône from 1988 to 2007), Andre Vallet (Senator UDF and Maire of Salon-de-Provence from 1989 to 2001), and Lucian Weygand (Socialist president of the General Council from 1989 to 1998) were appointed as honorary presidents of the association. The withdrawal of the alternative is explained at the same time by the action of this association, but also by the importance of the disputes in this zone which constituted the starting point of the protest movement. It is in Lambesc and Saint-Cannat that the first public meetings and the first demonstrations were organised, in winter 1989.

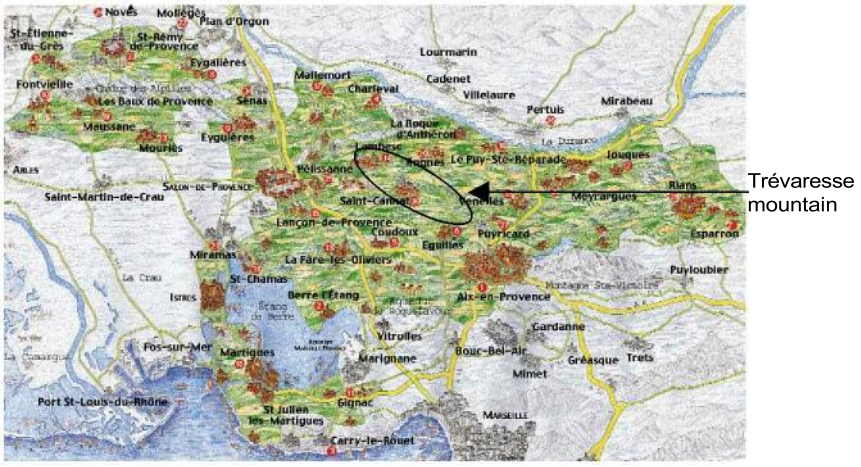
**Figure 43: Diffusion of the protest movement against the TGV Med in 1990**




Source: J. Ollivro, 1997

A third element of explanation plays a role in the suppression of this alternative. It relates to the decision on behalf of the State and SNCF to avoid the Trévaresse mountain, which was supposed to be "one of the places where it would be most difficult to pass, because of the very significant number of influential people living in this sector" (Interview EB). This zone is characterised by very high prices for land and real estate. We can add the protests of the wine producers of the Côteaux d'Aix-en-Provence which called into question any passage of the line in the North of Aix-en-Provence, and thus posed a problem for the branch towards Fréjus.

**Figure 44: Vineyard of Coteaux D'Aix-En-Provence**




Source: Syndicat Général des Côteaux d'Aix-en-Provence

After the annoucement of these first modifications to the route on 2 August 1990, the minister Michel Delebarre announced at the same time the creation of a mission, chaired by Max Querrien (member of the *Conseil d'Etat*). He was a senior official, appreciated on the ground because he was also elected by a rural district, Paimpol in Brittany (mayor from 1961 to 1995). This mission aimed to determine the route of the future high speed line, after having interviewed all the stakeholders and ordered the studies necessary to SNCF.

In December 1990, SNCF presented an intermediate report which synthesised all the studies carried out during the Querrien mission and the principal results. This report thus presented the route called the 'Querrien route'. It was presented to the Minister for Transport Louis Besson, on 2 January 1991, and was made public immediately. The Querrien report thus defined a new reference route, which was compatible with the initial objective of a large Mediterranean arc, since it always contained a branch towards Marseille, a branch towards Fréjus and Italy, and a branch towards Spain.

- Between Valence and Orange, the route passes through the plain of Marsanne and joins the Rhône valley. Several options of passage are maintained, but the route stays away from the Côtes-du-Rhône vineyards.

- A triangle in the West of Avignon allows the junction towards Nîmes, Montpellier and Spain. The line towards Marseille continues while passing along the Durance right bank.

- The connection towards Fréjus is envisaged between Eguilles and Saint-Cannat for a route by the North of Aix-en-Provence.

The route still contained some options of passage (see figure 48), but it corresponded to the route submitted to the public inquiry. Few modifications were brought thereafter. It is a compromise route, built according to a principle of progressive irreversibilisation: to create obliged points of passage by avoiding the strongest conflict zones and to connect these points in straight line to provide the TGV features. On the whole, the route avoids most of the inhabited and agricultural areas, to the detriment of natural spaces, even protected areas. Thus the Querrien route crosses the ZNIEFF (Natural Zones of Interest Ecological, Floristic and Faunistic) on 70% of its route. It crosses 138km of floodplains: the Rhône, the major bed of the Durance for 30km, the sharp bed of the Durance for 4km, the plains of Gardon and Briancon in Gard, etc. More than 20 rivers are affected by theroute, of which eleven are of great biological interest. The route crosses the Rhône five times and the Durance three times. The route also passes near Pierrelatte and the site of Tricastin, which consists of a nuclear plant, a factory of uranium enrichment and several chemical plants. The route crosses the field of Barben, in the Rhône delta, near Salon-de-Provence, which constitutes a Special Protection zone, resulting from the European directive n°79/409 relating to the protection of birds. This zone is a natural habitat for the eagle of Bonelli, rare and threatened species of which there are about thirty couples in France, primarily in Hérault and Bouches-du-Rhône.

The approval of this route by the Minister for Transport Louis Besson, on 17 January 1991, led to a conflict with the ministry for Industry concerning the passage to Pierrelatte, and especially with the Department of the Environment, because of the huge hydraulic problems posed by this route. This route was also called into question by the public survey (8 April 1993), which led to an approval of the route but under three conditions: the project had to avoid the site of Tricastin, not to cross the plain of Marsanne, and not to modify the risks in the floodplains.

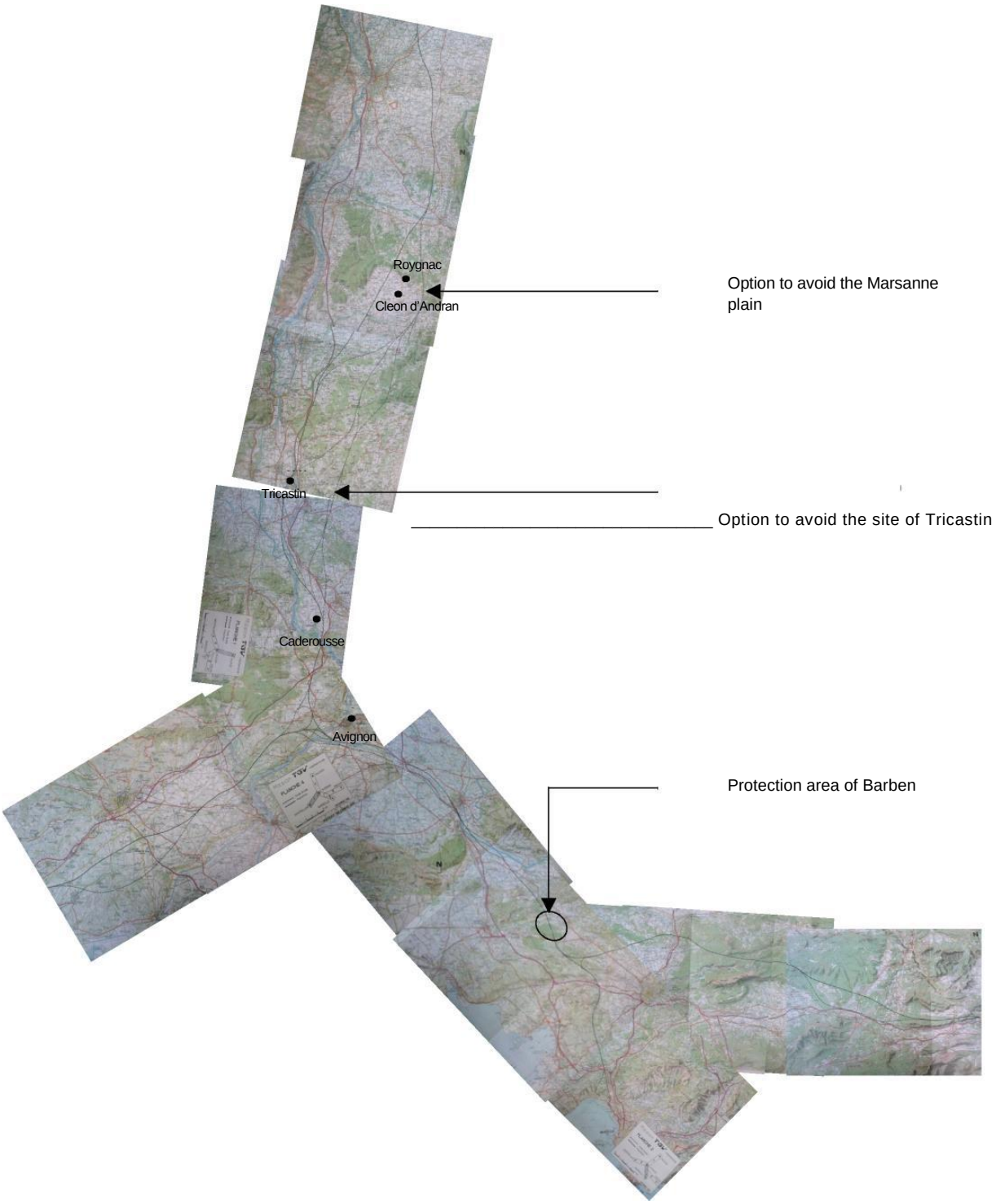
- To avoid the Tricastin site, the route could use one part of the previous route east (the first reference route) and be connected to the Querrien route around

Caderousse (see figure 40). SNCF studied this alternative, which destroyed more houses and required the construction of more structures. The additional cost was estimated at FRF 400m, which led the minister Bernard Bosson to cast aside this alternative. The route however was moved by about 50m to avoid crossing the Seveso perimeter, and subjected to rigorous regulation as regards protection against industrial risks. This modification led to the opening of a complementary public inquiry. This inquiry proceeded from 3 October to 22 December 1994 and concluded with an unfavourable opinion from the board of inquiry. Nevertheless the route was maintained

- To avoid the Marsanne plain, an alternative route in limit East, near Roynac and Cléon d' Andran (see figure 40), was possible and was studied by the Querrien mission. SNCF negotiated a passage to preserve the route with the seed-bearer farmers of the Marsanne plain

- Not to modify the risks in the floodplains: either to avoid the floodplains or to pass through them with a tunnel or viaduct, so as not to disturb the natural drainage system. These assumptions were not studied because they were too expensive. On the other hand, several hydraulic studies were realised to plan the equipments necessary and to limit the risks of flood.

**Figure 45: The Querrien Route, December 1990**




Source: SNCF, Rapport Intermediaire

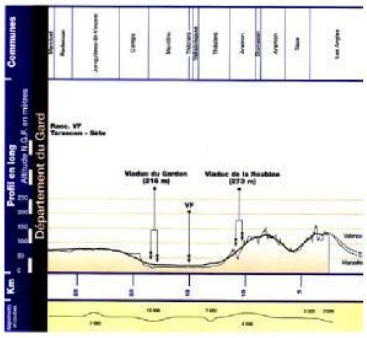
The route was ratified by decision of the Prime Minister Edouard Balladur, on 23 September 1993. In spite of the protests of many associations, no modification was made to theroute, except the equipments of protection.

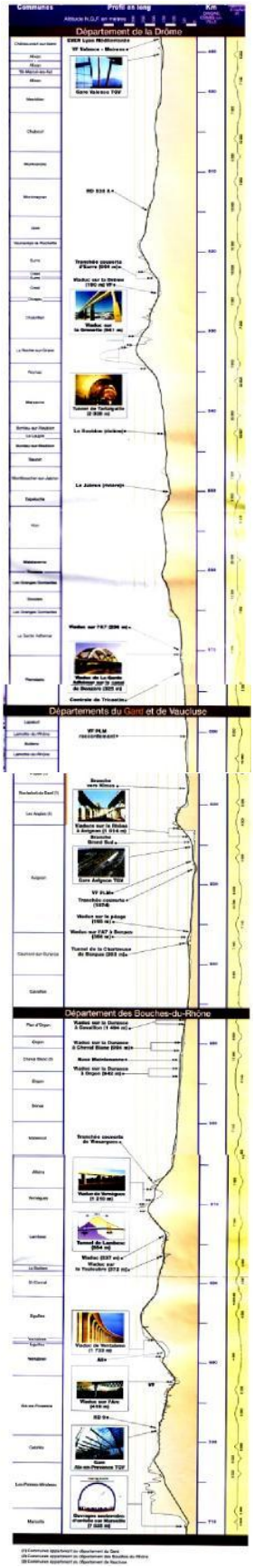
In 1996, although work had alreadystarted, the Avignon-Marseille section of the route was called into question, by the association *Credo-Rail*. On 13 January 1996, the review *Le Point* published the proposal by *Credo-Rail* to abandon the construction of the new line

between Avignon and Marseille. According to the association, it was preferable to connect the new line to the traditional network around Beaucire (close to Avignon). The association estimated in its proposals that the 100km of new line between Avignon and Marseille cost nearly FRF 12bn and provided travel time savings of only 15 minutes . In contrast, the option of connection to the existing network was estimated to cost FRF 1bn, because the most important structures were in this section. The diffusion of these proposals in the national press had a strong impact. On 18 January 1996, the mayors of ten communes affected by the route signed a motion demanding the suspension of work of the TGV Med between Avignon and Marseille, and requesting a connection from the existing network. The following communes were involved: Caumont-sur-Durance, Sénas, Alleins, Vernègues, Lanbesc, Barben, Saint-Cannat, Eguilles, Ventabren and Cabriès. A few days after, Anne-Marie Idrac (Secretary of State to Transport) announced the ministry's refusal to modify the project. The minister of environment Corinne Lepage expressed her opinion on 23 January 1996 on a national television channel (France 3), specifying that this modification was an interesting idea on the economic and environmental plan, but was likely to reduce to nothing all the work done to obtain the declaration of public utility of the project. Finally in spite of this last suddenincident, the route was not modified.

The route finally selected is longer than the 'route east' initially privileged by SNCF, and represents a total of 250km new line. To compensate for the lengthening of the route and to maintain the objective of a three hour journey between Paris and Marseille, SNCF envisaged as of 1995 to increase the commercial speed on the Paris – Lyon line from 270km/h to 300km/h. The investments required were budgeted for and added to the total costs of the TGV Med. In 2001, SNCF informed the CIES (Committee of the Investments, whose authority depended on the Minister for the Economy and Finances, charged to examine the investment plans of companies and organisations profiting from public funds, removed in 2003), that this work on the Paris-Lyon line was to be supplemented by interventions on the overhead lines (catenaries), which would not support the passages to 300km/h. The delay of the studies and the opening to markets allowed work to begin only in autumn 2002, one year after the opening of the line.

**Figure 46: The TGV Med route**




Source: SNCF.

The high speed line is connected to the traditional network in several points: in Châteauneuf-sur-Isère, with the line Valence-Moirans; in Lamotte-du-Rhône, with the Paris-Lyon-Marseille line; in Avignon station, with the Paris-Lyon-Marseille line; and in Manduel, the high speed line finishes and is connected to the Tarascon-Sète line.

### Detailed description of main and intermediate travel nodes

The principal transport nodes connected by the TGV Med are the old TGV stations located at the end of the line: Paris, Lyon, Valence-centre and Marseille, Nîmes, Montpellier; and the new stations created for high speed: Valence, Avignon, Aix-en-Provence.

**Table 6: Main and intermediate travel nodes**

| Train Station | Type of station | Equipements related to TGV Med | Service | Interconnection |
|---|---|---|---|---|
| Paris Gare de Lyon | Ancienne de centre-ville | Reamenagements partiels, nouveaux guichets | Desserte Internationale Genève, Lausanne, Berne, Turin, Milan, connexion avec autres gares parisiennes et aeroports), nationale (Clermont-Ferrand, Dijon, Besancon, Grenoble, Nice, Montpellier, Saint-Etienne), regionale (Laroche -Migennes, Montereau, Montargis et desserte RER), locale. | TGV, TER, Metro & RER, bus, taxis, parkings |
| Lyon Part-Dieu | Ancienne de centre-ville (nouvelle pour la ligne TGV Paris-Lyon) | Reamenagements partiels, transformation du hall central, renovation de l'espace de vente | Desserte international (Bruxelles, Genève, Connexion vers aeroport), nationale (Paris, Marseille, Nice, Perpignan, Hendaye, Nancy/Rennes, Dijon/Metz, Strasbourg, Bordeaux, Perpignan), regionale (Saint - Etienne, Grenoble, Clermont–Ferrand, Roanne, Bourg-en-Bresse), locale | TGV, TER, Metro, bus, tram, taxis, parkings |
| Valence-Ville | Ancienne de centre-ville | Reamenagements partiels | Desserte regionale (Grenoble), locale | TER, bus, taxis, parkings |
| Valence TGV | Nouvelle, ˆ 10 km de Valence | Creation d'un pôle multimodal | Desserte internationale (Bruxelles, Genève), nationale (Paris, Lille, Dijon/Metz, Strasbourg, Nantes/Rennes), regionale (Marseille, Nice, Grenoble), locale | TGV, TER, bus, taxis, parkings |
| Avignon TGV | Nouvelle de centre-ville | Creation d'un pôle multimodal | Desserte internationale (Bruxelles, Genève), nationale (Paris, Lille, Dijon/Metz, Strasbourg, Nantes/Rennes), regionale (Marseille, Nice), locale | TGV, TER, bus, taxis, parkings |
| Aix-en-Nouvelle, Provence TGV | ˆ 15 km d'Aix | Creation d'un pôle multimodal | Desserte international (Bruxelles, Genève, navette vers aeroport), nationale (Paris, Lille, Strasbourg, Nantes/Rennes, Dijon/Metz, Toulouse), regionale (Marseille, Nice), locale | TGV, bus, taxis, parkings. Connexion TER en projet |

| Train Station | Type of station | Equipements related to TGV Med | Service | Interconnection |
|---|---|---|---|---|
| Marseille Saint-Charles | Ancienne de centre-ville | Reamenagement complet et transformation en pôle multimodal | Desserte international (Bruxelles, Genève, navette vers aeroport), nationale (Paris, Lille, Strasbourg, Nantes/Rennes, Dijon/Metz, Toulouse, Bordeaux), regionale (Montpellier, Nice, Briancon), locale | TGV, TER, Metro, bus, taxis, parkings. Connexion TGV en projet (avec branche LGV PACA) |
| Nîmes | Ancienne de centre-ville. | Reamenagements partiels | Desserte international (Bruxelles, Genève), nationale (Paris, Lille, Dijon/Metz, Bordeaux, Nantes/Rennes, Strasbourg, Toulouse), regionale (Clermont-Ferrand, Perpignan, Marseille, Nice), locale | TGV, TER, bus, taxis, parkings. Connexion TGV vers Espagne en projet |
| Monpellier Saint-Roch | Ancienne de centre-ville. | Reamenagements partiels. | Desserte international (Bruxelles, Genève, Barcelone), nationale (Paris, Lille, Dijon/Metz, Bordeaux, Nantes/Rennes, Strasbourg, Toulouse), regionale (Perpignan, Marseille, Nice), locale. | TGV, Tram, Bus, Taxis, Parkings. Connexion TGV vers Espagne en projet |

**Project costs**

In the Bilan LOTI, carried out in accordance with the law of orientation of transport in 1982, the infrastructure owner (here SNCF/RFF) is supposed to realise an *a posteriori* assessment of the economic and social impacts of infrastructure financed with public funds. It intervenes on average five years after theopening. This assessment was launched in November 2005, for publication in June 2007. It makes it possible to know with precision the costs relating to the project. A second important source of data is the 2003 report published by the *Cour des Comptes*. The *Cour des Comptes* is a financial jurisdiction with the role of controlling Government action, supervising implementation of finance laws, evaluating public policies and finally controlling organisations calling upon public funds. Within this framework, the *Cour des Comptes* may be required to evaluate major infrastructure projects, as significant investments involving public funds.

The *Cour des Comptes* evaluated the total cost of the infrastructure at EUR 5.6bn (in 2003 prices), includng:

- EUR 0.8bn of interest charges;
- the construction cost of the 250km of new line between Valence, Marseille and Nîmes;
- the three TGV stations in Valence, Avignon and Aix-en-Provence:
  - connected investments outwith the influence of the new line but necessary to its operation, such as setting the standard of 300km/h for the Paris-Lyon line or modification of the railway infrastructures at the original station of Marseille Saint-Charles;
  - purchase of materials and new trains for the line operation.

In the majority of the articles or reports on the TGV Med, the cost is quantified at between

EUR 3.8bn and EUR 4.2bn (2003 prices). This estimate does not take account of the investment required in rolling material for the line operation, and interim interest related to the loan realised by SNCF/RFF to finance the infrastructure.

We can separate several costs in this total infrastructure cost.

Construction costs

In the Bilan LOTI, SNCF/RFF evaluated the construction cost of the project at EUR 4.362bn (in 2003 prices). This cost includes:

- The construction of the line itself, which comprises civil engineering work (land acquisition, land refitting, release of influences, general earthworks and cleansing, current and special structures, major structures, re-establishment of the roadways, landscape and fences), the railway equipments (way and ballasting, indication, overhead line, sub-stations supply, telecommunications, buildings) and general fees;

- The construction of the new stations, which also includes work of civil engineering, the railway equipment and general fees;

- Related equipments, such as connection with the existing lines, and all the investments outwith the influence of the line.

The table below makes it possible to compare the construction costs in the various evaluations and reality, according to the figures extracted from the Bilan LOTI expressed in EUR m 2003 prices.

**Table 7: Construction cost of the TGV Med**

| *En Millions d'Euros 2003* | | | Dossier d'enquête publique en 1991 | | | Dossier d'approbation ministérielle en 1994 | | | Variation (entre DEP et DAM) | Dossier d'Approbation du Ministre en 1995 (limité à Nîmes) | | | Réalisation | | Variation (entre réalisation et DAM 1995) | Réalisation Remise à jour 2007 | Variation (entre réalisation 2007 et DAM 1995) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Coûts construction | Construction de la ligne + gares nouvelles | Génie civil | 2781,5 | 3831,5 | 4334,1 | 3039,1 | 4233,3 | 4512,2 | 4,10% | 2654 | 3822,8 | 4201,7 | 4037 | 4402 | 4,80% | 4362 | 3,80% |
| | | Equipements ferroviaires | 857,7 | | | 846,7 | | | | 743,6 | | | | | | | |
| | | Frais généraux | 292,8 | | | 347,8 | | | | 325,1 | | | | | | | |
| | Aménagement lignes existantes + atelier d'entretien des rames | | | 402,3 | | | 278,9 | | | | 278,9 | | 365 | | | | |

Source: SNCF/RFF, 2007

Construction cost timeline

Between 1991 and 2007, the construction cost evolved. This evolution is explained by the evolutions of the project:

- Between 1991 and 1994, the cost appraisal increased by +4.1%, from EUR 4.3341bn to EUR 4.5122bn (2003 prices). This evolution is explained by tiny route modifications, and especially by measures of insertion in the environment and protection against the risks of flood and seismic activity.

    - Concerning the new line and the new stations, the cost overrun is related to: an increase in land expenditure (because of the decision to widen the band of compensation to 300m); protection measures against floods which led to the creation of additional structures; improvements related to reinforcement of

structures according to new paraseismic regulation; landscape and architectural treatment of structures; adjustment of foreseeable expenditure following more detailed studies. These elements led to a revision, with the rise in the estimated cost concerning civil engineering.

We can also add the rise in general fees related to the long development of the project. In contrast, the cost of railway equipment was re-examined, with a fall following the opening of the Northern LGV and the Rhône-Alpes LGV.

- The related investments concern construction of a building for train maintenance in Lyon, connecting the new line to the traditional network in Marseille, enlarging the installations at the Marseille Saint-Charles station, improvement of the Paris – Lyon line, construction of a train park in Toulon and Nice, and purchase of material and tools for maintenance of the new line. All these costs were re-examined between 1991 and 1994 (-30.6%).

**Table 8: Evolution of the construction cost between 1991 (DUP) and 1994 (DAM)**

| M€ 2003 | LGV (dont gares) | Investissements connexes | Total (hors matériel roulant) |
|---|---|---|---|
| DUP | 3 932 | 402 | 4 334 |
| DAM (Projet complet) | 4 233 | 279 | 4 512 |
| Ecart | + 7,7% | - 30,6% | + 4,1% |

Source: SNCF/RFF, 2007.

The decision in 1991 to suppress the branch to Fréjus did not modify the cost appraisal suggested by SNCF, since the data concerning this branch was not used in the public inquiry file of 1991. Thus the route suggested in the public inquiry corresponded to the Querrienroute, from Valence to Marseille and Montpellier.

- Between 1994 and 1995, the cost evolved very clearly because of the decision to abandon the Nîmes – Montpellier branch. The Public Inquiry File as the Ministerial Approval File of 1994 included estimates concerning a route from Valence to Marseille and Montpellier, in the optics of a future connection towards Spain. In 1995 the decision to abandon the Nîmes – Montpellier section intervened, related to budgetary constraints. The construction cost was thus comprehensively re-examined, falling from EUR 4.5122bn to EUR 4.2017bn (2003 prices).

- In 2003, the real investment was evaluated by the *Cour des Comptes* at EUR 4.402bn (2003 prices) which represents a variation of +4.8% compared to the Ministerial Approval File estimate in 1995.

**Table 9: Evolution of the construction cost between 1995 (DAM) and 2003 (Bilan)**

| M€2003 | Ligne nouvelle | Gares nouvelles | Investis. connexes | Total |
|---|---|---|---|---|
| Budget (DAM 1995) | 3 733 | 189 | 279 | 4 202 |
| Coût final | 3 798 | 239 | 365 | **4 402** |
| Ecart | +1,7% | +26,5% | +30,6% | **+4,8%** |

Source : Cour des Comptes Rapport public 2003

Source: SNCF/RFF, 2007

- The cost of the new line was correctly estimated. The respect of the budget is explained by control of the costs of civil engineering. The *Cour des Comptes* evaluated that the civil engineering contracts were let at low prices on average of 25% with SNCF forecasts (because of the difficulty of establishing objective prices and especially of the depressed economic situation of public works). The volume and difficulty of work were underestimated, but the favorable context led to a revision to the fall in the costs. The cost of land operations exceeded the initial budget by 10.2%. The services ensured by SNCF exceeded the budget envisaged by 33% mainly because of the delay in the completion date for the work.

**Table 10: Evolution of the construction cost of the Line between 1995 (DAM) and 2003 (BILAN)**

**Coût de construction de la LGV Méditerranée**
**Budget initial (DAM) et coût final pour la seule ligne nouvelle**

| M€2003 | Foncier | Génie civil | Equipements ferroviaires | Prestations SNCF* | Total Ligne nouvelle |
|---|---|---|---|---|---|
| Budget (DAM 1995) | 415 | 2396 | 514 | 408 | 3733 |
| Coût final | 457 | 2287 | 511 | 543 | 3798 |
| Ecart | +10,2% | -4,6% | -0,7% | +33,0% | +1,7% |

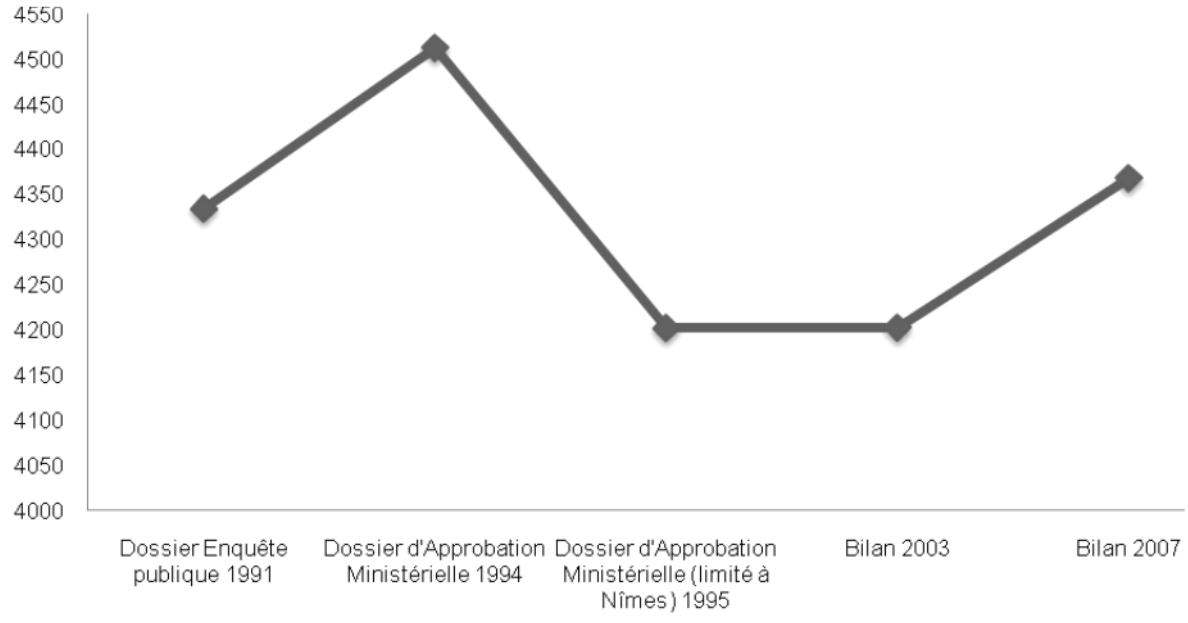
Source : Cour des Comptes Rapport public 2003 *Frais de maîtrise d'ouvrage et d'œuvre, transports par trains, etc.

Source: SNCF/RFF, 2007.

- The cost of the new stations was much less well estimated, the variation being +26.5%. This variation is explained by the difficulties of implementation of building sites where RFF, SNCF and local government agencies intervened at the same time.

Finally in 2007, SNCF/RFF revalued the final construction costs by entering the final expenditure. The figure obtained is EUR 4.362bn, which reduces the variation compared to the 1995 estimate to only +3.8%. The investmentis distributed between SNCF (5%) and RFF (95%).

**Figure 47: evolution of the construction cost for the TGV Med**




Source: SNCF/RFF, 2007.

In the Bilan LOTI, SNCF/RFF specifies that the construction cost presented for the TGV Med does not include maintenance costs. These costs related to renewal of the infrastructure appear neither in the preparatory files preceding the construction of the line, nor in any *a posteriori* document on the costs of the line. Calculations suggested counting over a period of 20 years actualisation, which is lower than the amortisation periods taken into account for the infrastructure (20 years for electrical installations, 25 years for safety equipment, 25 years for the way and the ballast, infinite for land acquisitions).

Other costs

The other costs to be taken into account are:

*Investment costs in rolling material (trains)*

Three types of TGV cars circulate on the new line: TGV Sud-Est, TGV Réseau and TGV Duplex. These trains are 200m long.

- The Public Inquiry File envisaged the adaptation of the existing train park of the South-eastern TGV type and the purchase of 16 pure Duplex trains for a total of EUR 512m (2003 prices).

- In 1994, the number of Duplex trains was reduced to 12 instead of 16, then to only eleven in 1995.

- In 2000, one year before the opening, CGPC and IGF proposed a new evaluation of these costs within the framework of a mission on the infrastructure tax. SNCF revalued in January 1999 the number of Duplex trains necessary from eleven to 21 trains, thus claiming additional investment. The CGPC/IGF mission called these figures into question, estimating that the number of trains was to be reduced to 16 (with a margin of uncertainty of + three trains).

We don't know exactly the total cost of investment in rolling material *a posteriori*. On the other hand, SNCF specified in the Bilan LOTI the number of Duplex trains finally bought.

**Table 11: Evolution of investment costs in rolling material (trains)**

| In EUR m (2003 prices) | Public Inquiry File in 1991 | Ministerial Approval File in 1994 | Ministerial Approval File in 1995 (limited to Nîmes) | Realisation |
|---|---|---|---|---|
| Investment Costs In high speed trains | EUR 512m | EUR 393m | EUR 373 | Estimate to EUR 750m in 2007. |

Source: SNCF/RFF, 2007.

SNCF bought all the TGV trains from Alstom within the framework of several orders, which do not relate only to the TGV Med:

- The initial deal included 100 trains, therefore 45 in firm phase. It was signed on 20 June 1991. The number of trains in firm phase was reduced to 30 in April 1993. It is within the framework of this order that an additional contract of 12 trains was signed on 20 July 1999 for the TGV Med.

- A third contract was signed for 82 trains on 5 October 2000 in response to an

increase in traffic and in preparation for the opening of the LGV East. In this market, 14 trains were ordered for the TGV Med.

**Table 12: Evolution of the material cost in TGV Duplex for the TGV Med**

| | Dossier d'approbation ministérielle 2003 (projet limité à Nimes) | Coût réel 2003 | Coût réel 2005 |
|---|---|---|---|
| Coût unitaire ($M€_{2003}$) | 20,1 | 23,4 | 23,0 |
| Nombre de rames | 11 | 21 | 26 |
| Total ($M€_{2003}$) | 221,1 | 490,5 | 599,0 |

Source: SNCF/RFF, 2007.

In addition to this cost of purchasing Duplex TGV trains, it is necessary to add the cost of the renovation of the South-eastern TGV. This cost was quantified at EUR 152m (2003 prices) in the ministerial approval file, then at EUR 146m (2003 prices) by the CGPC/IGF mission in 2000.

In general this investment in rolling material (new TGV trains) for the TGV Med represents a cost of approximately EUR 750m (2003 prices) in 2007. These figures should be taken with much precaution because the trains are not attached to a particular line.

The eluded investments

A certain number of investments were eluded because of the TGV Med project. The eluded investments are those which would have been necessary in the absence of realisation of the project. They are not considered measurable by calculation. They concern:

- Investment in infrastructure: on the traditional lines (installation of lines, operational capacity, commercial work in Marseille Saint-Charles station). These eluded investments account for EUR 183m (2003 prices) according to the CGPC/IGF mission of evaluation.

- Investment in rolling material which corresponds to savings in traditional material permitted by new TGV service roads. This investment is evaluated by SNCF at EUR 200m (2003 prices) *a posteriori* and EUR 171m (2003 prices) by the CGPC/IGF mission of evaluation.

Operating costs

Operating costs comprise traffic costs (driving, accompaniment, service on board, maintenance of the trains, energy and operation) and the marketing costs.

**Table 13: Evolution of the operating costs of the TGV Med**

| $M€_{2003}$ | Dossier d'approbation ministérielle 2003 | A posteriori 2003 | A posteriori 2004 |
|---|---|---|---|
| Commercialisation | 34,7 | 42,9 | 48,2 |
| Circulation TGV | 42,0 | 87,1 | 92,5 |
| Circulation Corail | - 61,8 | - 91,3 | -94,4 |
| **Total** | **15,0** | **38,7** | **46,3** |

Source : SNCF – Direction du Développement

Source: SNCF/RFF, 2007.

- The financial costs related to the loan by the SNCF to finance the project to a total value of 90% of the total costs.

Note: the creation of RFF did not have precise financial impacts on the project. The purpose of the creation of RFF in 1997 was to clarify the respective responsibilities of the State and SNCF as regards infrastructure, while freeing SNCF of debts to enable it to find a financial balance. Additional costs related to the duplication of certain functions could appear, but the transfer of the project management to the direction of the new line which was already in charge of the project made it possible to control these costs.

**Project delivery**

- In 1991, the public inquiry file planned an opening in 1998;

- In 1994, the file of ministerial approval envisaged an opening in 2000. The variation is explained by the important modifications to the project, in terms of environmental insertion, and especially by the strong protests which called the project into question;

- The TGV Med was brought into service in June 2001. The delay of one and a half years compared to the ministerial approval file is related to the budgetary constraints imposed by CIES to spread out the work expenditure of SNCF. This delay involved financial costs, evaluated by the CGPC/IGF mission at EUR 160m in current prices.

On the whole between the launching of the first studies in January 1989 and the opening in June 2001, the project was realised in 12 years. This time is quite short if we consider the size and complexity of such a project.

**Main engineering features**

Details of engineering and construction

- The project implementation was led only by SNCF, which requested assistance from external research departments

- The project construction involved the signature of 20 conventions of mandates for the project management delegated between RFF and the SNCF.

Note: According to an AFP (French Press Agency) dispatch of 4 June 2001, between 1995 and 2001 the TGV Med construction led to the death of ten people. Over the same period, 1,224 industrial accidents were entered, which represents 46,368 days lost in total.

Main engineering key facts and figures

**Table 14: Main engineering facts and figures**

| | |
|---|---|
| Vay | 500km |
| Excavated material | 40,700,000m$^3$ |
| Backfill | 46,000,000m$^3$ |
| Viaducts (longueur cumulée) | 16,148m |
| Tunnels and covered sections | 12,732m |
| Road bridges | 86 |

| | |
|---|---|
| Rail bridges | 422 |
| Hydraulic equipments | 300 |
| Acoustic Protections | 41,000m of walls<br>48,000m of merlons |
| Upper layer | 1,900,000m$^3$ |
| Under layer | 755,000m$^3$ |
| Ripraps | 1,800,000m$^3$ |
| Alignment minimal radius | 4,000m |
| Profile longitudinally minimal radius | 16,000m |
| Maximum slope | 35mm/m |

The final route required the construction of several structures:

**Table 15: Engineering structures**

| | Infrastructure owner | Project manager | Architect | Research Departments, Companies. |
|---|---|---|---|---|
| Gare Valence TGV | SNCF, RFF, Département de la Drôme. | SNCF (Agence des gares), AREP. | Jean-Marie Duthilleul, Etienne Tricaud (AREP). | Desvigne et Dalnoky, NG AH (structure), SGTE (technique), OTH (synthèse), Jacob SERETE (OPC). |
| Tranchée couverte d'Eurre (664m) | RFF | SNCF | | Intrafor, Welbond Armatures, Coyne et Bellier, Terrasol |
| Viaduc sur la Drôme ˆ Crest (190m) | | | | |
| Viaduc sur la Grenette (941m) | RFF | SNCF | Jean-Pierre Duval | R. Foucault et Associés, SOLEN, Quillery, Presspali France. |
| Tunnel de Tartaiguille (2338m) | RFF/SNCF | SNCF | | Coyne&Bellier, SOLEN, Terrasol, Quillery, Demathieu et Bard, Presspali France. |
| Viaduc sur l'A7 ˆ La Garde Adhémar (236m) | | | | |
| Viaduc de La Garde Adhémar sur le canal de Donzère (325m) | | | | Marc Mimram Ingénierie, R. Foucault et Associés, Greisch, Eiffel, GFC, Victor Buyck Steel Construction NV. |
| Viaduc sur le Rhône ˆ Mondragon (637m) | RFF | SNCF | Jean-Pierre Duval | Greisch, Campenon Bernard, EMCC, Etablissements J. Richard Ducros, Secométal SA, Spie Batignolles TP, Sarens SA. |
| Viaduc sur le Rhône ˆ Mornas (887m) | RFF | SNCF | | |

| | Infrastructure owner | Project manager | Architect | Research Departments, Companies. |
|---|---|---|---|---|
| Viaduc sur l'Aigues (186m) | RFF | SNCF | | |
| Viaduc sur le Rhône ˆ Roquemaure (680m) | SNCF | SNCF | Alain Amadeo | PX Consultants, Setec TPI, Demathieu et Bard, Groupe Razel, EMCC, Fougerolle, Razel Pico Sud, Freyssinet International, SAMT, Mageba SA. |
| Viaduc de Saint-Geniès (550m) | RFF | SNCF | | |
| Tunnel de Saint-Geniès (250m) | RFF | SNCF | | |
| Viaduc sur l'A9 ˆ Roquemaure (116m) | | | | Bartec Systèmes constructifs |
| Viaduc sur la RN580 (155m) | | | | |
| Viaduc sur la Rhône ˆ Avignon (1514m) | | | Michel Desvignes, Michel Virlogeux, Jean -Francois Blassel, Tom ray | RFR Ingénieurs, Setec TPI, Bouygues Construction, GTM Construction, Nouharet. |
| Gare Avignon TGV | RFF, SNCF. | SNCF (Agence des gares) et AREP. | Jean-Marie Duthilleul, Etienne Tricaud (AREP). | Desvigne et Dalnoky, RFR (BET structure), SERETE (technique), INGEROP (synthèse), COPIBAT (OPC). |
| Tranchée couverte ˆ Avignon (1874m) | RFF | SNCF | | |
| Viaduc sur le péage de l'A7 ˆ Avignon (195m) | RFF | SNCF | Jean-Pierre Duval | R. Foucault et Associés, Demathieu et Bard, Secométal SA, Sarens SA. |
| Viaduc sur l'A7 ˆ Bonpas (356m) | RFF | SNCF | | |
| Tunnel de la Chartreuse de Bonpas (303m) | SNCF | SNCF | | Fougerolle, GTM Construction, Appro Service, Arcane, Cabinet Veillard, EDG, Midi Travaux, Forézienne d'Entreprises, Etandex, Asloc. |
| Viaduc sur la Durance ˆ Cheval Blanc (994m) | RFF | SNCF | Charles Lavigne, Alain Montois | R. Foucault et Associés, Groupe Razel, Demathieu et Bard, Cimolai Costruzioni Metalliche. |
| Viaduc sur la Durance ˆ Orgon (942m) | RFF | SNCF | Alain Montois | Centre Technique Industriel de la Construction Métallique, Chagnaud, Guintoli, Baudin-Châteauneuf, FIP Industriale SpA. |

| | Infrastructure owner | Project manager | Architect | Research Departments, Companies. |
|---|---|---|---|---|
| Tranchée couverte de Vinsargues | | | | |
| Viaduc de Vernègues (1210m) | RFF | SNCF | Atelier Amadeo, Padlewski et Associés. | Ingérop, SECOA, Dodin, SOGEA, Bartec Systèmes constructifs. |
| Tunnel de Lambesc (554m) | RFF | SNCF | | Terrasol, Bec Frères SA, Perforex. |
| Viaduc ˆ Lambesc (337m) | | | | Bartec Systèmes constructifs. |
| Viaduc sur la Touloubre (372m) | RFF | SNCF | Atelier Amadeo, Padlewski et associés | Demathieu et Bard, Groupe Razel, Etablissements J. Richard Ducros, Secométal SA. |
| Viaduc de Ventraben (1733m) | RFF | SNCF | Charles Lavigne, Alain Montois | EEG, R. Foucault et Associés, Coyne & Bellier, Campenon Bernard, Spie Batignolles TP, Spie Citra Sud-Est, SAMT, Bartec Systèmes constructifs. |
| Viaduc sur l'Arc ˆ Aix-en-Provence (416m) | RFF | SNCF | Bruno Gaudin | Greisch, COGECI, Baudin -Châteauneuf |
| Gare d'Aix-en-Provence TGV | RFF, SNCF. | SNCF (Agence des gares) et AREP. | Jean -Marie Duthilleul, Etienne Tricaud (AREP). | Desvigne et Dalnoky, ARCORA (BET structure), Trouvin BETEREM (technique), OTH (synth èse), COPIBAT (OPC). |
| Tunnels des Pennes-Mirabeaux et Marseille (7835m) | RFF | SNCF | | Fougerolle -Ballot, Campenon Bernard, Groupe Razel, Pico, Béton Chantiers Provence, Delta Pompage, Terrasol. |
| Viaduc de la Roubine (273m) | RFF | SNCF | | CARI TP, Etablissements J. Richard Ducros |
| Viaduc du Gardon (216m) | RFF | SNCF | | CARI TP |

- Speed: The line is designed to allow a speed of 350km/h on most of its route. The operating speed is 300km/h on the whole of the route, except for a section of 40km near Avignon where the speed reaches 320km/h.

- Indication (road signal): is transmitted in cabin by track circuit (TVM 430), with 15 stations SEI (System with Integrated Interlockings), 12 CAI (Centre of Intermediate Equipment) distributed along the line, and two centralised control units in Lyon and Marseille.

- Electric supply: the line is electrified with single-phase current (25Kv – 50Hz), with five sub-stations and 17 stations of traction.

## D PROJECT TIMELINE

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| 1987 | October | | Government's decision to build the LGV Rhône-Alpes, first step of the extension of the Paris – Lyon line to Valence. At the same time, decisions are taken concerning the Northern LGV and the Interconnection Ile de France LGV, in order to draw a European North-South axis. |
| 1989 | January | 31 | The government of Michel Rocard asked SNCF to prepare the TGV strategic plan and to lead preliminary studies for TGV Med (the most profitable connection of the plan). The first project is a business project, designed by SNCF. SNCF entrusts , this phase of technical studies on the possible routes and their environment to SETEC international, an engineering company based in Vitrolles. |
| 1989 | June | | European elections and breakthrough of the ecologists (10.6% of the votes). |
| 1989 | July | | Opening of negotiations with regional elected representatives about the project. They all express agreement but try to insert this project within a more Mediterranean vision of planning and criticise the Avignon junction. First phase of consultation but not public. |
| | | 7 | First meeting in Marseille, prepared by the regional Préfet (State delegate) with presidents of Regional and Departmental councils of the area and the mayors of the main cities affected by the route. |
| | | 7 & 8 | Publication in *Le méridional* (local press) of a first very schematic route. |
| 1989 | October | | The elected representatives of the major cities and departments crossed by the route constitute an association: the association *Grand Delta*. |
| | | | Publication of a schematic route in the supplement *Sud-Affaires* of the newspaper *Le Provençal* (local press). |
| | | | Creation, by elected regional politicians, of the association *Provence Alpes Côtes d'azur for the TGV Med*. This association proposes to obtain a commitment from public authorities to realise the TGV Med, its extension to Nice and Italy and the *Barreau Grand Sud*. |
| 1989 | October - November | | SNCF organises local meetings in Avignon because the junction in Avignon is problematic for local politicians. |
| 1989 | December | | End of prior consultation with elected representatives (started in July and organised by SNCF). |
| | | 15 | Michel Walrave, Executive vice president of SNCF, again exposes his proposals in front of elected people gathered in Marseille, before transmission of the project and strategic plan to the government. The presidents of Departmental councils confirm the agreement of their assemblies. The Languedoc-Roussillon politicians require the urgent creation of the branch to Montpellier and beyond to Barcelona. PACA politicians also show support for the project in the optic of a way to the South, Barcelona and Milan. |
| | | 22 | Transmission to the government of a first version of the strategic plan; the TGV Med corresponding to two projects: a priority Provence – Côte d'Azur TGV project, and a Languedoc – Roussillon TGV project. |
| | | | Following the meeting on 15 December, leaks make public the internal SNCF document, which had been used for the presentation to elected representatives. |
| 1990 | January | 5 | SNCF and the Ministry of Transport decide to make the document public, explaining its preliminary technical character. They |

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| | | | organise the same day of an information meeting in the prefecture of Marseille. The purpose of this meeting is to provide the foundations of a dialogue. The schedule is announced: public inquiry in summer 1991, public statement in summer 1992, and beginning of works in 1993 for an opening into service in 1997. Meeting with the elected representatives of rural areas. |
| 1990 | Febuary | 3 | First demonstration organised by the association of defense of Mallemort. Filtering of the RN7 (National Road) in Vernègues-Cazan near Lambesc. Many demonstrations follow, initially very local, then regional, which mobilise more and more people. |
| | | | Creation of *La Carde*. |
| | | | Creation of *Fédération Environnement et TGV*. |
| | | | Creation of the *Union Durance-Alpilles* in the north of Bouches-du-Rhône. |
| | | 21 | Deposit, in the prefecture of Marseille, of 17,000 signatures collected during the first great demonstration about the TGV Med. |
| 1990 | March | 5 | Meeting between the DTT, SNCF and the Environment Ministry. This is the first time that the two central administrations have met to discuss the TGV Med. |
| | | 22 | Meeting between the DTT, SNCF and the Environment Ministry. |
| | | 27 | Creation of the association *Comité de liaison maires – associations*, sponsored by Henri Michel. |
| | | 31 | Great demonstration in Avignon. |
| 1990 | April | 7 | Great demonstration in Montélimar. |
| | | 10 | Pierre Izard is appointed Director of the TGV Med project. |
| | | 14 | Blocking the railways in Barbentane and Cavaillon. |
| | | 20 | Demonstration and blocking the railways Orange. |
| | | 21 | Demonstration by *La Carde*, great demonstration in Aix. |
| | | 29 | Blocking six bridges over the Durance. |
| | | | SNCF present to the local politicians a set of alternatives which will be recapitulated in the stage report of July 1990. |
| 1990 | May | 19 | Blocking the railway bridge of Rognonas, organised by the associations of Vaucluse and Bouches-du-Rhône. |
| | | | SNCF confirms the east route as the reference route for the path in Drôme and specifies the Western and Median alternatives which are studied more in detail for the stage report of July 1990 |
| | | | Organisation by *La Carde* of debates on transport policy, regional planning and the environment. |
| | | | Creation of the *Coordination des associations du tracé Ouest*, which will become the *Coordination Drôme – Vaucluse*, gathering the residents of the plain of Marsanne, Pierrelatte and Tricastin. |
| 1990 | June | 8 | Demonstration in Marseille. |
| | | 13 | Creation of the Association *Provence Vivante*. |
| | | Fin | SNCF submits its stage report to the government. This specifies the advantages and disavantages of the various routes and estimates that the east route, reference route, is the one which best saves the habitat and makes it possible to reconcile objectives |
| 1990 | July | 14 | Statement of François Mitterrand in which he suggests a modification of the route in the name of environmental protection, under the influence of lobbying from wine growers'. |
| | | 16 | Creation of the association *Le Var et ses élus pour a défense du* |

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| | | | *patrimoine*. |
| | | Fin | The *Coordination Drôme–Vaucluse*, the main opponent of the western route, manages to obtain the stage report of SNCF. SNCF and the government are then forced to make it public. |
| | | Fin | The Ministry of Industry and Urban Planning requires SNCF to study the risks induced by the passage of the new line close to the Tricastin nuclear site. |
| 1990 | August | 2 | Statement by Michel Delebarre, Minister of the Equipment, of the choices made following the stage report of SNCF. The minister officially announces the suppression of the east route (between Montélimar and Orange) and presents the Querrien mission. The minister also imposes other modifications: rejection of the three alternatives in Avignon (direct, median and western route); the *Crau* route and the north Lambesc variable. The minister entrusts the examination of the various alternative routes to Max Querrien, André Ponton and Michel Rochette. |
| | | 4 | During the night, the associations succeed in the total blocking of the Paris – Marseille line with the occupation of the track in Babentane, Orgon and Villeneuve-lès-Avignon, and the occupation of Avignon station the next day. |
| | | 18 | Unification of the dispute with the creation of a new coordination which joins together all the associative networks in Lambesc. Union of the six departments concerned by the TGV, called the *Union des 6*. |
| | | 18 | The *Union des 6* organises several demonstrations during the night which paralyse the Rhône Valley: occupation of nine stations, blocking the RN7. Occupation and blocking of the tracks in Aix Station. |
| 1990 | August - September | | Month of the greatest extent of the dispute against-TGV |
| 1990 | September - October | | Consultations by the Querrien mission. |
| 1990 | September | 26 | Highest point of the contestation with a demonstration organised in Paris, to meet the prime minister, Michel Rocard, then absent from Paris. |
| | | 28 | The Languedoc-Roussillon general council pronounces itself in favor of the strategic plan. |
| | | 29 | Occupation of the town hall of Avignon by the *Fédération des associations vauclusiennes Environnement et TGV*; evacuation by the police at 23.00 hours; the mayor Guy Ravier brings an action in justice against the occupants. |
| 1990 | October | 1 | The *Fédération Environnement et TGV* is received by Guy Ravier. He declares that the Department should pay the sacrifice of the high-speed line in exchange for a TGV station. |
| | | 6 | In reaction, opponents threatened by the route on the right bank of the Durance create a new association, *Sauvegarde de la ceinture verte d'Avignon*. |
| | | 13 | Demonstrations by *La Carde* with occupation of the tracks and road blocks, two demonstrators were injured during the evacuation of Salon station by the police. |
| | | 22 | After negotiations with the Vaucluse socialists' politicians, the route by the right bank of the Durance is chosen, in exchange for a railway station in the city of Avignon; the agreement is officialised at this meeting. |
| | | 22 | The private meeting of the town council of Avignon, which deals |

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| | | | with the passage of the TGV in the greenbelt of the city, was interrupted by protesters. The deputy mayor Guy Ravier is obliged to leave the town hall under the protection of the police. |
| | | 25 | The PACA regional council decides in favour of the strategic plan, with a negative opinion for the TGV Med, for which it requests a consultation. |
| | November | 12 | The national council of transport gives its opinion on the strategic plan of the TGV and compares the procedure for the preparation of the TGV project with the procedure for preparation of highway projects. It concludes that the TGV procedure results in extra costs and protests. |
| 1990 | | 12 | Adoption of a Charter of the union of the six departments by the initiative of the *Fédération environnement et TGV* and *La Carde,* to federate the various associative oppositions affected by the TGV Med. This Charter requires the removal of the current project at the design stage between Valence, Montpellier and Fréjus. It specifies: "That does not mean that we are opposed to the necessary evolution of the means of the SNCF in our area but we ask to make a clean slate of the project without preconditions." |
| 1990 | December | 12 | Presentation by *La Carde* of a file, *Le couloir ferroviaire existant? Avec la SNCF, c'est possible*. |
| 1990 | End | | The Querrien mission presents its report to the Ministry of Environment, without its administration being able to make a direct contribution. |
| 1990 -1991 | End 1990 to begining 1991 | | An administrative working group is formed to develop a process of study for high-speed lines comparable with the process of study for highways. This process gives rise to circular 91-61 of 2 August 1991, known as Circular Gressier. |
| 1991 | January | 2 | The Querrien report is given to the new ministers of Transport, Louis Besson, for the Valence branch – Marseille and the Riviera. It defines a new reference route compatible with the objective of a large Mediterranean arc, with a Languedoc-Riviera bar in the south of Avignon, and which minimises impacts on inhabited areas and agricultural land. |
| | | 17 | Louis Besson approves the Querrien route. He askes SNCF to initiate the detailed preliminary studies required for the constitution of the public utility investigation and prolongs the Querrien mission until July 1991 for the branch towards Montpellier and Spain. |
| | | 26 | Organisation by *La Carde* of debates on transport policy, regional planning and the environment. |
| | | | Creation of the *Union Juridique Rhône-Méditerranée (UJRM)*. |
| 1991 | Febuary | 2 | Brice Lalonde, minister of the environment, asks to make a clean slate of the route in a letter. |
| 1991 | May | 14 | Adoption of the national strategic plan of high-speed rail links by the Interdepartmental Council of Regional Planning (CIADT). The scheme consists of 4,700km of new high-speed lines. The map includes 16 projects of new lines. |
| | | 15 | A meeting is organised with the DTT and the central services of the environment, in SNCF offices, to inventory difficult sections of the project from an environmental point of view. |
| | | 16 | In the new government of Edith Cresson, Brice Lalonde keeps the attribution of the environment but becomes a minister instead of secretary of state. Its requirements are then more pressing. |
| 1991 | April | | The request for a study of the risks induced by the passage of the line close to Tricastin is renewed by the minister Dominique Strauss-Kahn. |

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| | | 19 | A bomb attack takes place at Barbentane station and causes property damage. |
| 1991 | August | 2 | Circular n°91-61 relating to the establishment of new high-speed railways lines, known as Circular Gressier. The circular defines a three-step approach:<br>- preliminary studies (choice of a path of 1km wide at the conclusion of comparative studies of the possible path with technical, economic and environmental criteria, with a prefectoral consultation of the minister and the field – information file to a scale of 1/100,000) followed by a ministerial decision on the path to retain;<br>- summary project APS (study of a route to a scale of 1/25,000 with collection of administrative opinion, prefectoral consultation of the field and precision of the route, minister's decision . It is on this basis that the public inquiry will be conducted, the administrative instruction with the DUP);<br>- detailed preliminary project APD (study of a route at a scale of 1/5,000 which considers all that was retained at the end of the previous periods and a dialogue with the minister, local consultation led by SNCF and ministerial decision).<br>Each step feeds three files: a technical file, an environmental file, and a social and economic file. |
| 1991 | October | 2 | Launching of mission Carrere (until July 1992): National debate on transport infrastructures launched by the Transport minister Paul Quiles and animated by Gilbert Carrere. |
| | | 10 | Meeting organised with the DTT and the central services of the environment, and SNCF, to inventory difficult sections of the project from an environmental point of view. |
| | | | SNCF agrees to begin a series of studies under the control of the competent service of industry, the direction of the safety of nuclear installations (DSIN). A part of these studies is given to the office Sector (Study firm and advise in technology and organisation). |
| 1991 | November | | Creation of *FARE-SUD* by the leaders of *La Carde*. |
| | | 28 | Meeting organised with the DTT and the central services of the environment, and SNCF, to inventory difficult sections of the project from an environmental point of view. |
| 1991 | December | 12 | Meeting organised with the DTT and the central services of the environment and SNCF, to inventory difficult sections of the project from an environmental point of view. |
| | | | Refusal of the DTT to apply the circular of 2 August 1991 to the TVG Med as desired by the Ministry of Environment. |
| 1991 -1992 | December 1991 to March 1992 | | The *FARE-SUD* writes a white book on the environment and organises several demonstrations in February 1992 to put pressure on elected representatives. In this book, they require the maximum use of the existing railway corridor Valence – Marseille, the abandonment of the branch project towards Fréjus and creation of an independent experts' commission of the Ministry of Transport and SNCF to study counter-projects. All election candidates are in favour of these proposals, in particular the counter-evaluation. |
| 1992 | January | | The Sector report is presented to the three ministries concerned (transport, environment and industry) |
| | | 3 | Vote for legal text on water |
| 1992 | Febuary | 7 | Second letter of Brice Lalonde to the Minister of Equipment, in which he asks to make a clean slate of the TGV Med project. Brice Lalonde addresses a letter to his colleague of transport, Paul |

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| | | | Quiles. He deplores the lack of consultation of its services, a disappointing local consultation, the difficulties of the route and in particular the "very annoying" problem of the crossing of the nuclear site of Tricastin in Pierrelatte in Drôme, ultimately proposing to make a clean slate of the TGV Med project which could have been entrusted to the Carrere mission extended to some specialists, including an environment expert whom he was ready to make available for this mission. Despite this letter, the studies continue and the conflict between the ministries resumes. |
| 1992 | March | 13 | Paul Quiles announce that the public inquiry would be subject to exceptional arrangements in its preparation and conduct. |
| | | | Cantonal and regional elections. For regional elections: PACA socialist list, *Energie Sud*, with Bernard Tapie, Elisabeth Guigou, Jean-Louis Bianco. Cantonal elections and defeat of the Socialists of the Drôme, new RPR-UDF majority of the General council of Drôme, chaired by Jean MOUTON, the UDF-CDS mayor of Pierrelatte. Cantonal elections. the Vaucluse general council majority shifts to the right, wants to change the previous agreement, claims the return of the Sud Durance route and a station in Pujaut in the Gard, in the Grand Avignon. |
| 1992 | April | 2 | Jean-Louis Bianco appointed Minister of Equipment and Transport. He chooses Claude Sardais, former CFDT trade unionist, as chief of his staff in charge of negotiations with the opponents to TGV Méditerranée. |
| | | | The Sector report becomes public. |
| | | 30 | Following the Sector study, the director of water, risk management and pollution prevention of the Ministry of the Environment, Henri Legrand, writes to M. Gressier, director of transports in the Ministry of Transport. He underlines in particular the dangers, for TGV passengers, of a possible toxic gas leak (ammonia and fluorhydrique acid from the decomposition of uranium hexafluoride) from the chemical industries (Comurhex, Eurodif, FBFC). The danger is real if a TGV becomes immobilised under the wind of the rejection. M. Legrand notes that, according to SNCF, the simultaneity of such incidents is highly improbable but he was surprised that the national company, in all the studies, never mentioned a human failure. He asks them to find an alternative route avoiding Tricastin. |
| 1992 | May | 14 | Jean-Louis Bianco announces the creation of a College of Experts in order to control the step of transparency and preparation of the public inquiry on the TGV project. This step will allow validation and further consideration of the strategic studies made, in particular those concerning the use of existing ways and corridors; to support a social and economic development approach of regional planning. This college of experts' mission is: to appraise the studies carried out by SNCF in these fields; to follow the answers of SNCF; to order complementary studies from specialised firms. |
| 1992 | May to September | | Mission of the college of experts. The organisation set up is: a college of eight members which has a function of evaluation and mediation but not of expert testimony; a follow-up committee bringing together all the protagonists to lead the work of the experts (sponsors and politics in the broad sense); the open possibility of recourse to an independent expert testimony. |
| 1992 | June | 20 | Organisation in Marseille of the conference Ecology, Economy, Democracy, by *FARE-SUD*. |
| | | 21 | The president of the administrative court of Marseille appoints 17 |

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| | | | regular members and five substitute members for the public commission of inquiry. |
| | | 29 | Beginning of the work of the public commission of inquiry which meets the services of the SNCF. Then visit to the various routes and of a part of the TGV Atlantique. |
| | | 30 | In a resolution, the general council of Drôme votes its opposition to the route by 29 votes against five. |
| 1992 | July | | Weakening of *FARE-SUD* with the departure of two associations of Vaucluse. |
| | | 17 | The new Environment Minister, Ségolène Royal, writes to Jean-Louis Bianco, the Minister of Transport in the Beregovoy government, where she is opposed to the crossing of the perimeters of danger of the high-risk industrial site of Tricastin, and asks for a study of an alternative route, by suggesting that the public inquiry relates to proposals for alternative routes, like the debates suggested by the Carrere mission. She also emphasises, like her predecessor, the important attacks by the TGV Med on natural sites of high quality and in particular on a zone of community interest for the protection of birds. |
| 1992 | August | 19 | The conflict between the ministries becomes public with the diffusion in the national press of a letter of Henri Legrand by the Drôme-Vaucluse coordination. |
| | | 27 | The Ministry of Transport publishes the Sector report to stop the rumours. |
| 1992 | September | 30 | The report of the college of experts is presented to the public in Marseille. The report concludes that it is necessary to choose between two systems: improving frequencies and speeds on the current tracks, a solution which can partially satisfy needs for ten to 15 years to come but would be a problem beyond then; or the high-speed system which imposes the construction of a new track. |
| 1992 | October | 2 | In the notice n°12, the college of prevention of technological risks (independent administrative authority close to the Prime minister) criticises the relatively reassuring conclusions of the Sector report. The college draws attention to the risks of the project for the population in Pierrelatte and criticises the evalutation of the Sector report to only compare alternative versions of the Querrien route. |
| | | 8 | The public inquiry opens in the five Departments and 105 municipalities affected by the route (17 in Bouches-du-Rhône, seven in Hérault, 36 in Gard, 33 in Drôme, 12 in Vaucluse). Planned at first for six weeks, the inquiry is prolonged for two weeks. It is held in a normal way, except in the plain of Marsanne where the mayors of 14 municipalities refuse to participate in its official progress, in protest against the refusal of the ministry to study an alternative version of the Querrien route. |
| | | 18 | The Minister of Equipment entrusts M. Monestier (former Préfet of Rhône-Alpes region) with the mission to review all the technical issues coming from this notice and to evaluate the answers which could be made. |
| | | 20 | The Ministry of Transport opens the mixed instruction procedure at the central level, IMEC, the conference between the ministries affected by the project in which they present their observations. |
| 1992 | Novemb er | 16 | The conclusions of the work of M. Monestier are given on 16 November 1992 and confirm the data of the SECTOR report and the planned security measures. |
| 1992 | December | 3 | The public inquiry is closed. |
| | | 15 | After a long period of inactivity, the end of the association |

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| | | | *Solidarité des élus 13* with the exclusion of Robert Celaire, its main leader. |
| | | 15 | Circular Bianco which democratises the conduct of major infrastructure projects. The circular combines three measures: the public debate ahead of the public inquiry, continued and phased dialogue, and the institutional and impoverished recovery of the college of experts. The circular redefined the procedures of public utility by inaugurating a four-step global process:<br>- a first step of preliminary and intermodal debate on the purposes and the economic and social interest of the project, leading to determination of the specifications of studies of the route. This step is entirely new.<br>- studies of the route according to these specifications and in a perspective of regional planning. This step will be led by the prefects, assisted by the debate follow-up commission.<br>- a public inquiry from the perspective of regional planning.<br>- a follow-up to implementation of the decision, downstream of the DUP, lasting three to five years, to establish an economic, social and environmental assessment of the infrastructure . A follow-up commitee will be constituted by the prefect to monitor implementation of State commitments concerning improvement measures of the project and its insertion. |
| 1993 | January | 15 | Note from the director of water of the Ministry of Environment, criticising the project in terms of hydraulic risks. |
| 1993 | Febuary | 17 | Letter from the Minister of Environment, Ségolène Royal, accepting, under reserve, the Querrien route. |
| 1993 | April | 4 | Joint statement of two ministers, M. Bosson and M. Barnier, indicating the conditions which make the project compatible with the protection of flood-risk areas. |
| | | | Legislative elections |
| | | 8 | The report of the investigators is submitted only now to the minister Bernard Bosson because they observed a strike in December 1992 and January 1993 concerning their payment. The report expresses a favourable opinion on the declaration of public utility of the TGV Med but with the following conditions: the project must avoid the site of Tricastin, not cross the plain of Marsanne, and not modify risks in the floodplains. |
| 1993 | September | 23 | The inter-ministerial committee chaired by prime minister Edouard Balladur decides to conclude the project and ratifies the route. |
| 1993 | October | 3 | Abundant precipitation causes spectacular floods in the valley of the Rhône. The river overflows in the plains of Lapalud and La Motte-du-Rhône close to the Tricastin. The Drôme-Vaucluse coordination organised boat demonstrations with TV cameras on the route. |
| 1993 | November | 26 | The Environment Ministery presents its observations following the IMEC in a long letter by the Delegate to Quality of Life. This letter points out criticisms from the ministry concerning the public inquiry, the passage close to Tricastin, the attacks against the natural environment. It also insists on the hydraulic problems posed by the project route. On 295km of new line and with the selected route, the solution crosses 138km of floodplains of which 24.5km are directly in the river bed. More than 20 rivers are affected by the route and the study produced recognises eleven rivers of great biological interest. The route involves the construction of 15 viaducts to cross rivers and canals. The fact of placing the infrastructure in a floodplain without preliminary hydraulic studies is unacceptable. The principle of placing the infrastructure in the |

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| | | | Durance bed for 4km cannot be accepted. The delegate concludes with an outright refusal concerning the project in these conditions, taking into consideration the important deficiencies provided by all the studies. |
| 1993 | December | | Huguette Bouchardeau presents a report to the Environment Minister, repeating the proposals by the national company of the commissioner (for public inquiry) in order to reinforce the weight of their opinions and recommendations. This report presents proposals for an evolution of the public inquiry, with better integration of environmental protection and the introduction of a first stage of public debate to realise great infrastructure projects. |
| 1994 | January | 24 | A circular relating to the law on water prohibits all new construction in the most dangerous zones and any new flood barrier or embankments which would not be justified by the protection of strongly urbanised places. |
| 1 994 | Febuary | 1 | An official press release from the Reuter agency in Grenoble reveals in public the conflict between the Transport and Environment Ministers concerning the floodplains. The press agency publish the letter by the Delegate for Quality of Life (of 26 November 1993) as a result of the *Drôme-Vaucluse Coordination* action. |
| 1994 | | 4 | Faced with the polemic, the two ministers issue a joint press release in which they reaffirm their agreement with the Inter-ministerial committee of 23 September 1993 which had decided to launch the project implementation and to put the project route under public survey. |
| 1994 | March | 4 | Conference relating to the IMEC procedure, closing date for the *IMEC* procedure and official transmission of the final project to the *Conseil d'Etat* to prepare the DUP on 8 March 1994. |
| 1994 | March | 8 | Finally the initial route is confirmed in spite of the opposition concerning the hydraulic problems in a press release from Bernard Bosson. The official reason is that the counter-project impact was as important as the selected project. The counter-project was also refused by SNCF because it touched the villages of Domozan, Meynès and Fournès and caused the opposition of the inhabitants and wine producers of Ç Côtes-du-Rhône-village È in Domozan. |
| 1994 | May | 19 | The *Conseil d'Etat* gives a favourable opinion, but also asks for a re-examination of the corrected route within the framework of a complementary public survey because the corrected route diverges from the route submitted to the first public survey. |
| | | 29 | Creation of the ecological collective: the Committee Provence-Nature for the defence of the natural environments threatened by the TGV Med (*Comite Provence-Nature pour la defense des milieux naturels menaces par le TGV Med*). |
| | | 31 | Signature of the DUP concerning the extension of the TGV South-East from Valence (Chateauneuf-sur-Isére) to Marseille (Saint-Bres) and Montpellier (Baillargues). This date is really important because the DUP signature led the associations to modify their strategies and residents to chage their behaviour. The opponents become more and more discouraged and residents start to consider a friendly agreement. |
| 1994 | June | 6 | Signature of the regional draft agreement relating to the completion of works, studies, topographic surveys, soundings with the agricultural unions. |
| 1994 | October | 3 | The complementary public survey continues until 22 December 1994. It concerns route modifications near the nuclear site of Tricastin. The board of inquiry gives an unfavourable opinion for |

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| | | | the DUP, because the route does not meet the conditions they had expressed during the previous public survey. |
| 1995 | Febuary | 2 | Law relative to the reinforcement of environmental protection, known as law Barnier. This law provides that in the case of unfavourable opinion from the public survey commissioner concerning a project realised by local authorities or any public establishment, a new deliberation is necessary. The law also creates the National Commission of the Public Debate (CNDP). |
| | | 5 | Beginning of works and launching of invitations to tender. |
| 1995 | May | 5 | DUP concerning the route modification near the industrial site of Tricastin. |
| 1995 | September | 22 | Project approval by the Minister and abandonment of the Nîmes – Montpellier section to improve the project's profitability. |
| | | 25 | Start of the first civil engineering works. |
| | | 25 | The abandonment of the Nîmes – Montpellier section and the total subsidy (EUR 366m) are officialised by the Transport Secretary of State's project approval decision. To balance out the route extension related to rejection of the Eastern route, SNCF decides to change the operating speed on Paris – Lyon from 270km/h to 300km/h thanks to investments included in the TGV Med budget. |
| 1996 | January | 16 | Publication in the 'Point' review of the proposal by the Association Credo-Rail which wants to abandon the new high speed line between Avignon and Marseille. |
| | | 18 | During the Prime Minister's visit to Marseille, the mayors of ten cities sign a motion asking for a suspension of work on the TGV Med between Avignon and Marseille and a connection with the existing network for this part of the railway. |
| | | 19 | Anne-Marie Idrac, Transport Secretary of State, announces her refusal of the project modification between Avignon and Marseille. |
| | | 23 | Corinne Lepage, Environment Minister, expresses her view on the TV (France 3). She describes the proposal by the association Credo-Rail as an interesting proposal on the economic and environmental sides, but she contests it because it would destroy all the work completed until then. |
| 1996 | Febuary | 9 | Opening of the *IMEC* procedure (mixed instruction between administrations at national level) concerning the TGV station on the Arbois plateau. The Environment Minister does not approve of the project. |
| 1996 | June | 6 | DUP concerning the TGV station construction at Saint-Marcel-lés-Valence. |
| 1996 | October | 18 | DUP concerning the TGV station construction in Avignon. |
| 1997 | Febuary | 13 | Law on the creation of RFF, a state-owned company, to prepare railway transport for revival, with retrospective effect as of 1 January. This law allots ownership of one part of the State property managed by SNCF to RFF, with the rest of the domain managed by SNCF for the State. Responsibilities are shared according to principles formulated in the Law MOP of 12 July 1985. All buildings (especially stations) are managed by SNCF. |
| | | | SNCF decides to include in the TGV Med project the renovation of the shunting checkpoint behind Marseille Saint-Charles station. The new system will not be operational for the line opening. |
| 1997 | June | 17 | Favourable opinion by the Environment Ministry concerning the creation of a new TGV station on the Arbois plateau, near Aix-en-Provence. |
| 1997 | August | 8 | Letter by Dominique Voynet (Environment Minister), giving her |

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| | | | agreement but with recommendations concerning the strict limitation of urbanisation, the protection of natural and agricultural spaces, the prevention of risks around the Realtor Basin, the water reserve of Marseille and the creation of a new non-polluting collective transport system. |
| | | 25 | Positive response of the Equipment Minister Jean-Claude Gayssot to take account of the recommendations of Dominique Voynet concerning the Arbois TGV station. |
| 1997 | September | 24 | Decree of DUP concerning the TGV station of Arbois (Aix-en-Provence and Cabriès). However the recommendations required by the Environment Minister do not appear in the file of DUP. |
| 1997 | Fall | | Creation of a direct shuttle on the Paris – Lyon line, with the TGV Duplex development. |
| 1999 | January | 14 | Agreement between SNCF and RFF defining the responsibilities and functions of each. The project management was delegated by RFF to SNCF and the control of work was entrusted by RFF to SNCF, concerning the new high speed line. But for the new TGV stations the project management was divided between RFF as owner of the line and railway equipment, and SNCF as owner of the station buildings, so they were obliged to constitute a group of stakeholders. |
| 1999 | Febuary | 12 | Meeting concluded by a consensus on the economic and social development project on the Arbois plateau. Creation of a new pole around the TGV station on 40ha and a pole *Petit Arbois*, belonging to the Europole complex on 100ha. |
| 1999 | June | 3 | The first rails are jointed in the presence of the presidents Louis Gallois (SNCF) and Claude Martinand (RFF) near the Cheval - Blanc work site. |
| 2000 | October | 3 | Begining of trial runs. |
| 2000 | December | 28 | Circular from the Director of Transports Department concerning methods of implementation for major railway projects. The circular defines the preliminary stages in the decision making process, and creates for each stage a specific type of dialogue and consultation. |
| 2001 | January | 17 | With Jean-Claude Gayssot (Equipment, Transport and Housing Minister), Louis Gallois (SNCF) and a representative of RFF, a hundred journalists and elected representatives were invited to launch the first test between Valence and Avignon. |
| 2001 | | | SNCF informs CIES that work designed to increase the commercial speed on Paris – Lyon had to be completed by interventions on catenaries which would not support the TGV passages at 300km/h. The necessary delays for studies and markets opening would make it impossible to begin work before autumn 2002. |
| 2001 | May | 26 | Speed record between Calais and Marseille. The distance of 1,067.2km was travelled in 3h29, an average speed of 306.36km/h. |
| 2001 | June | 9 | Inauguration of the line by the French President Jacques Chirac. |
| 2001 | June | 10 | Opening of the LGV Méditerranée. |
| 2002 | Febuary | 27 | Law relative to the democracy of proximity which reinforces the CNDP prerogatives. |
| 2004 | | | Creation of the IDT GV system of low fares only accessible by Internet in reply to competition from airlines, which contributed to high traffic growth, with 500,000 passengers in 2005. |
| 2005 | May | 17 | DUP of the bypass project around Nîmes et Montpelier (previous abandoned branch Nîme s – Montpellier). |

# E PROJECT FUNDING

## Introduction

The TGV Med project was financed by SNCF, as an integrated operator, by recourse to a loan. During the creation of RFF, the debt related to the TGV Med as for all the projects was transferred to RFF. In the Public Survey File of 1991, SNCF envisaged refunding the debt related to the TGV Med construction in 20 years of operating.

In addition, several subsidies were added:

- by local authorities with financial investment for the creation of new stations;
- and by the State to guarantee SNCF a minimum rate of profitability at 8%.

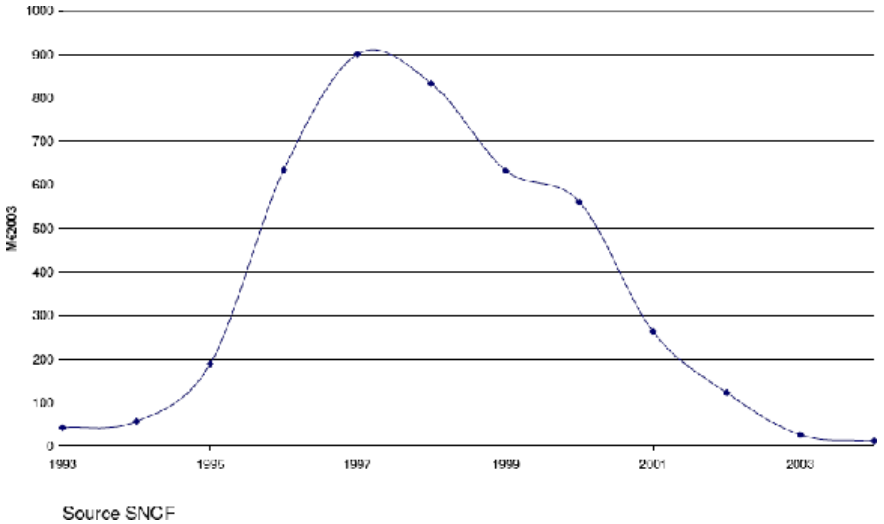
**Table 16: TGV Med financing**

| In EUR m (2003 prices) | | Financing planned in the DAM (1995) | | | Financing realised | |
|---|---|---|---|---|---|---|
| Local authorities | Region Rhône-Alpes | 20.2 | | | | |
| | Region PACA | 13 | | | | |
| | Department Bouches-du-Rhône | 8.7 | | | | |
| | Department Drôme | 6.8 | 46.1 | | 47.7 | |
| European Union | | | | | 19.6 | |
| National government | | 417.1 | | 463.2 | 416.1 | 483.4 |
| SNCF | | | | 3 739 | 3 918.6 | |
| Total cost | | | | 4 202 | 4 402 | |

Source: SNCF/RFF, 2007.

These investments were used according to the following schedule:

**Figure 48: investments pattern for the TGV Med**

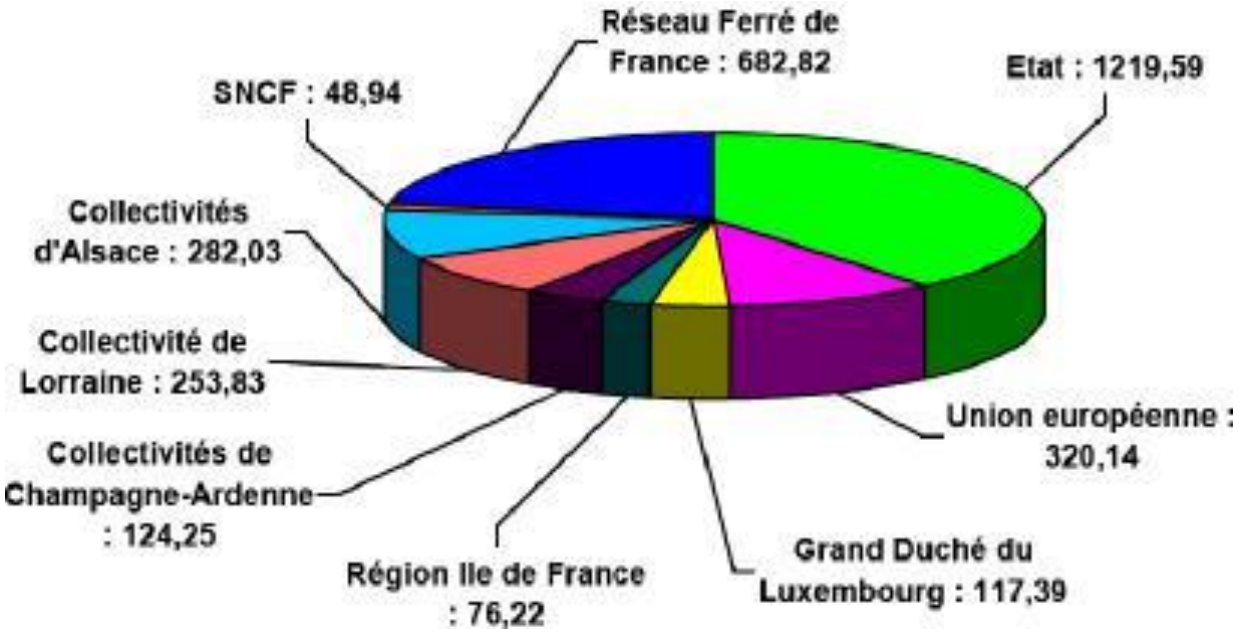



Source: SNCF/RFF, 2007.

This financing key is similar to the previous high speed line projects . All were financed by SNCF, using loans. The LN2 (Atlantic TGV) is the only one which had previously profited from a subsidy, for 30% of the infrastructure cost. In the TGV Med case, State participation accounts for 10% of the infrastructure cost.

For the future high speed lines, the scheme of financing is different. Since the creation of RFF in 1997, the infrastructure administrator cannot invest in projects which would increase its deficit. The financing for the new lines is more widely dispersed today between RFF, SNCF, the State and local authorities, and perhaps a private partner. The last line put into service, the TGV East, for example was financed in the following way.

**Figure 49: financing key for the TGV East Phase 1**




Source: RFF.

## Background to Funding

The profitability of the project evolved and led to an evolution in the forms of financing. At the beginning, no State subsidy was envisaged for the project because of its exceptional profitability.

Economic profitability (for the SNCF)

Economic profitability is fixed in constant currency; it uses the up-dating rate defined by the *Commissariat au Plan* (replaced today by the *Centre d'Analyse Strategique organisation* working directly under the direction of the Prime Minister, with the aim of assisting the government in defining and implementing its economic, social, environmental and cultural policies); and it does not add the intercalated financial costs during the construction stage. It is not, therefore, equivalent to financial profitability. Economic profitability is calculated by using the differential of investments (investments planned less eluded investments) and the difference between the Gross Operating Profit (GOP) of the new line and the GOP of the reference situation. It is expressed by an economic rate of internal profitability or economic TRI.

- In the Public Survey File in 1991, the economic TRI was estimated at 8%.

- In the Ministerial Approval File in 1994, the economic TRI was revised downwards to about 6.8%, substantially under the rate of 8% which is the profitability line for a project likely to be self-financing. This evolution is explained by the modifications to the project, in particular related to environmental constraints and the extension of studies, which increased the project costs. At that time, SNCF appealed to the State for a subsidy of EUR 729m (2003 prices), in order to keep an economic TRI of 8%.

- After SNCF's request for a subsidy, the State appointed a CGPC/IGF Mission in 1995, to evaluate the right amount of subsidy to be granted. The mission did not question the figures provided by SNCF, which appeared correct. But, the Mission recommended limiting the project to Nîmes instead of Montpellier, in order to reduce the subsidy required. SNCF thus revised its propositions. With the abandonment of the Nîmes-Montpellier branch, the economic TRI increased to 7.3%. With the State subsidy, estimated at EUR 417.1m (2003 prices), the economic TRI was estimated at 8%.

- *A posteriori*, SNCF evaluated the economic TRI at 4.1% (or 3.4% without subsidy) in the Bilan LOTI of 2007. This rate is doubly lower than the previous estimate of 1995. This deviation is explained by the fall in revenue and construction and operating cost overruns.

These evaluations relate to an operating period of 20 years, and take account of several hypotheses about operating and investment costs, traffic and prices, infrastructure charges and eluded investments.

Socio-economic profitability (for society)

The socio-economic cost-benefit analysis takes into account the project's impact on the economic performance of other agents (infrastructure providers, in particular concessionary highways companies whose income drops because traffic transfers to the train; transport operators, in particular airline companies whose traffic also decreases; the State with loss of incomes), and the benefits for users (time savings, effects on the environment and safety). It is expressed by a socio-economic rate of profitability or socio-economic TRI.

The socio-economic profitability corresponds to an evaluation of the global and local economic effects related to the infrastructure, on economic development and spatial organisation.

- In the Public Survey File in 1991, the socio-economic TRI was estimated at 12.2%;
- In the Ministerial Approval File in 1994, the socio-economic TRI was 11%;
- In the Bilan LOTI (*a posteriori* evaluation), SNCF evaluates the socio-economic TRI at about 8.1%. The decrease is related to a lower increase in traffic than anticipated and rising railway fares.

**Table 17: TGV Med profitability *a posteriori***

| TRI ex post (SNCF intégrée) | TRI éco | TRI socio-éco |
|---|---|---|
| Hypothèse centrale (20 ans) | 4,1% *(8,0%)** | 8,1% *(11,0%)*** |
| Période d'évaluation de 40 ans | 4,6% | 8,9% |

** DAM avec subvention de l'Etat,*

*** DAM avec projet complet, le TRI socio économique étant un peu inférieur à 11% pour le projet approuvé.*

*(les chiffres de la DUP pour le projet complet sont respectivement de 8,0% et 12,2%)*

Source: SNCF/RFF, 2007.

Revenue:

The revenue estimations depend on the traffic forecasts on the new line.

- In the Public Survey File in 1991, the total increase in traffic was estimated at 6.627m passengers in 2000, representing additional operating revenue per year estimated at EUR 370.9m (2003 prices).
- In the Ministerial Approval File of 1995, the increase in traffic was estimated at 5.922m passengers in 2003, representing revenue of EUR 350.2m (2003 prices).
- These figures are re-actualised in 1998, and the incomes are revised substantially downwards to EUR 227.6m (2003 prices).
- In 2000, after the traffic estimations increase, revenue is estimated at EUR 267.2m (2003 prices).
- The increase in real traffic in 2003 is estimated at 3.8m passengers. Thus the revenue in 2003 related to the operation of the TGV Med is estimated at EUR 257.8m (2003 prices).

## F OPERATIONS

### Reported traffic volume

The TGV Med traffic increased since the opening day, from 15m passengers in 2000 to 20.4m in 2004. The models used by SNCF are based on an assumption of traffic growth, around 1.4% per annum after 2005 (according to *a posteriori* evaluation). This traffic growth rate is calculated according to the evolution of economic growth (measured by GDP), and competition conditions (price effect). *The a posteriori* evaluation of the traffic growth rate is lower than the *a priori* estimation of 2.5%.

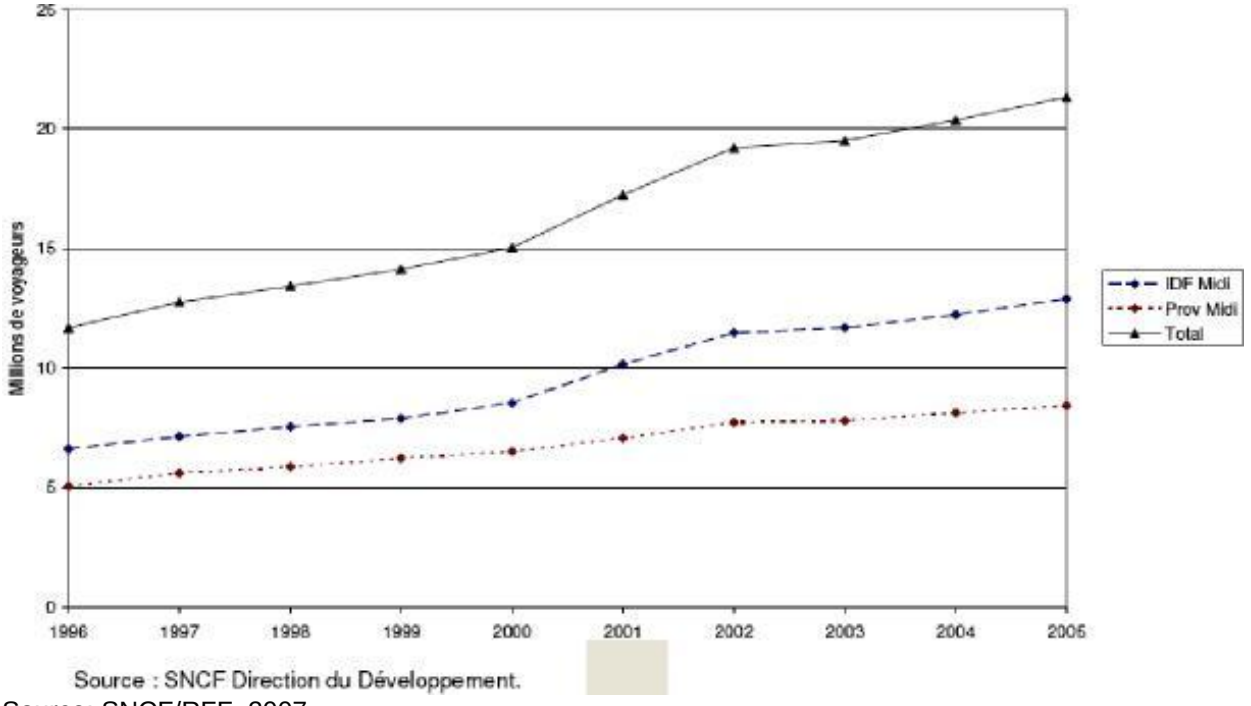
**Table 18: Evolution of the traffic growth rate on the TGV Med**

| Taux de croissance annuelle moyen | Situation de référence | Situation de projet |
|---|---|---|
| A priori | 2,0 % | 2,5 % |
| A posteriori | 1,4 % | 1,4 % |

Source: SNCF/RFF, 2007.

Between 2000 and 2004, the traffic from Paris to the South of France increased by 43%, which testifies to the TGV Med effect.

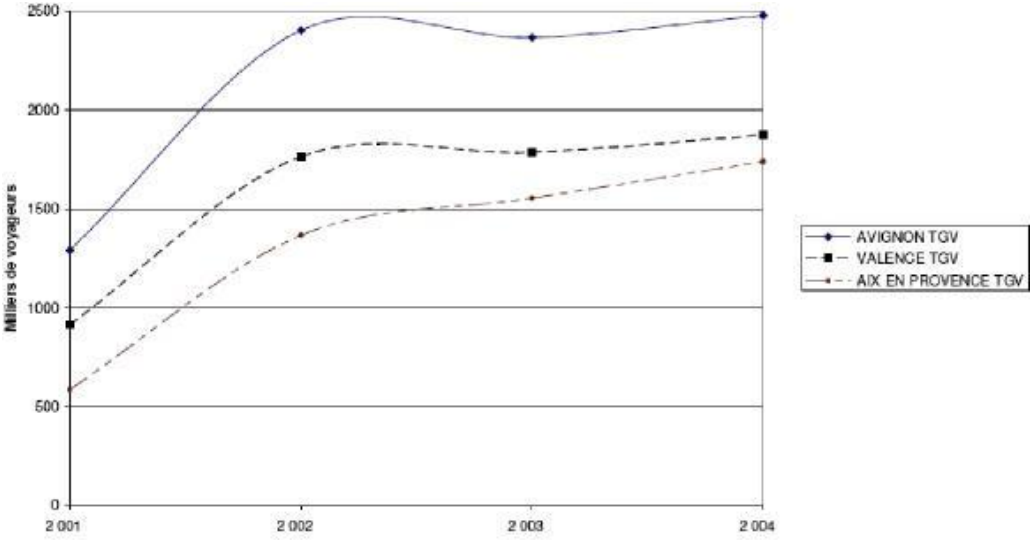
**Figure 50: train traffic evolution in the south direction**




Source: SNCF/RFF, 2007.

The traffic at the new stations also increased with the line opening, in spite of some difficulties related to delays in the delivery of certain equipment.

**Figure 51: traffic of the new TGV Stations**



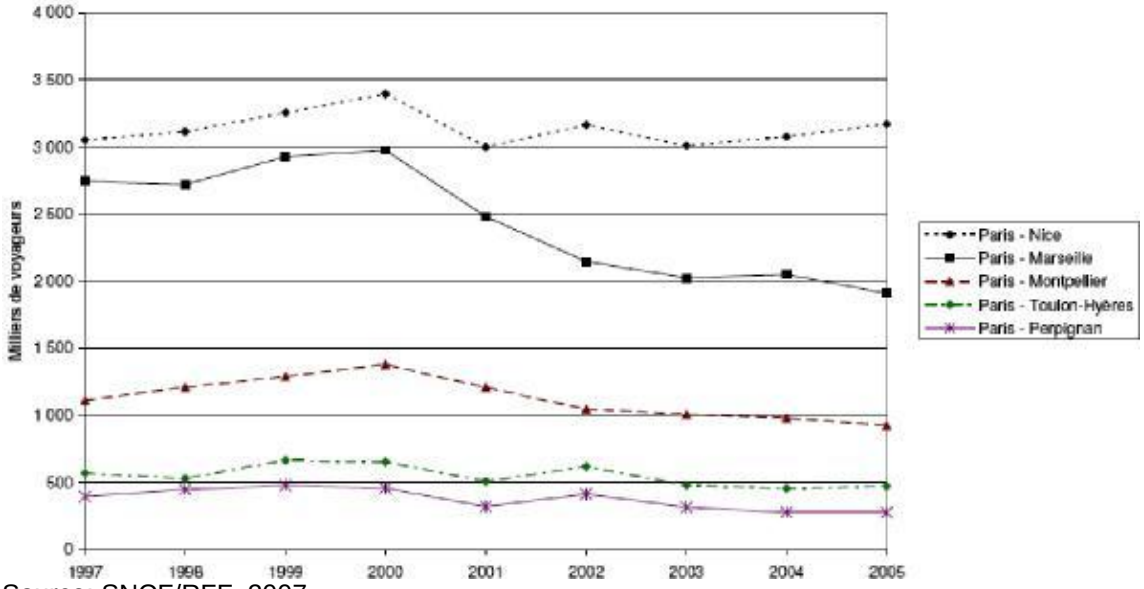

Source: SNCF/RFF, 2007.

In 2004, the traffic at the stations was 2.48m passengers in Avignon TGV, 1.87m passengers in Valence TGV, and 1.74m passengers in Aix-en-Provence TGV. These figures are higher than SNCF forecasts, 30% to 40% for Avignon and Valence, and 70% for Aix-en-Provence. Besides, the car parks were initially too small. The number of parking spaces was increased gradually: 1,800 places at Avignon station since summer 2002 (1,000 more than in June 2001); 1,600 places at Aix station in 2006 (1,300 more than in June 2001).

Traffic transfer

The opening into service of the TGV Med led to a transfer of traffic from the airlines.

**Figure 52: air traffic evolution with the TGV Med competition**



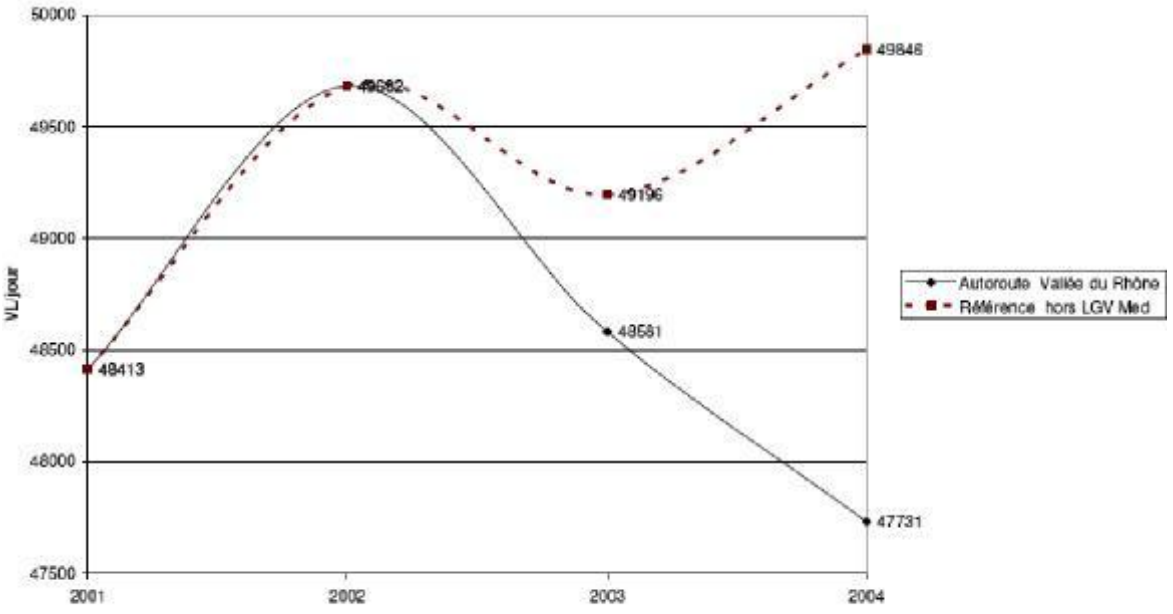

Source: SNCF/RFF, 2007.

The most important impact related to the TGV Med concerns as planned the Paris-Marseille connection. Between 2000 and 2004, air traffic between Paris and Marseille decreased by 31.2%.

SNCF estimated the air traffic diverted by the TGV Med at 1.8m passengers in 2004. In the Ministerial Approval File, this transfer of traffic was estimated at 3m passengers (in 2003, the year of full effect). This variation is explained by the lower growth in air traffic than expected (in particular after 2001), which reduced the number of passengers to be diverted onto the train, and an increase in TGV fares which led to a fall in traffic transferring to the train.

Traffic transferring from the road to the TGV Med is estimated at 1.2m passengers in 2004, which conforms to expectations.

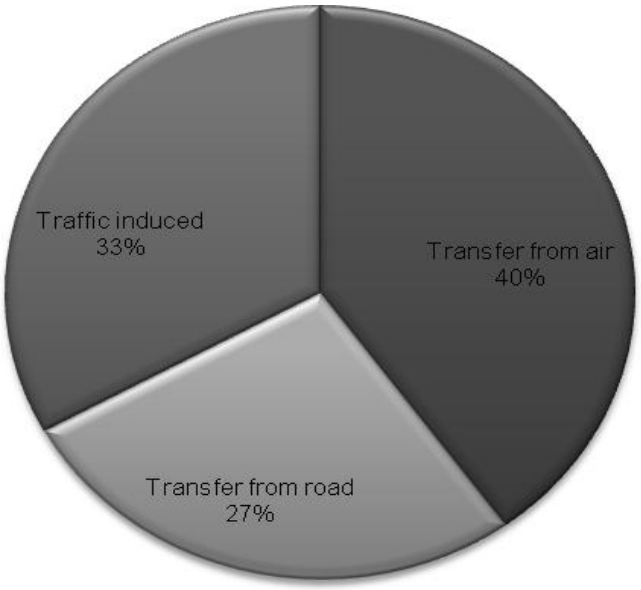
**Figure 53: evolution of the road traffic on Highway A7 (Rhïne Valley) with the TGV Med competition**




Source: SNCF/RFF, 2007.

In total, traffic transfer is estimated, *a posteriori* and for the year 2004, at about 1.8m passengers from the airlines, 1.2m passengers from roads, 1.5m passengers related to the traffic induced by the creation of a new line, which leads to an increase in traffic for the railway of 4.5m passengers.

**Figure 54: origin of the traffic gain for the TGV Med in 2004**




Source: SNCF/RFF, 2007.

Quality of service offered to passengers:

The travel times are respected overall according to the Bilan LOTI (*a posteriori* evaluation) provided by SNCF/RFF for Valence, Avignon, Nîmes, Marseille and the Riviera. On the other hand, travel times are longer than expected to Montpellier, Béziers, Narbonne and Perpignan (because of the abandonment of the corresponding branch) and to Toulon and Nice (because of the high number of stops).

**Table 19: TGV Med travel time**

**Temps de parcours** (Meilleurs temps)

| Origine - destination | Référence : hiver 2000/2001 | Situation projet (avec Nîmes Montpellier) Bilan a priori | Réalisé : hiver 2004/2005 Bilan a posteriori |
|---|---|---|---|
| Paris - Valence | 2h27 | 2h10 | 2h10(Valence TGV)<br>2h17 (Valence ville) |
| Paris - Montélimar | 2h52 | 2h40 | 2h44 |
| Paris -Orange | 3h19 | 3h00 | 3h12 |
| Paris - Avignon | 3h21 | 2h40 | 2h36(Avignon TGV)<br>3h28(AvignonCentre) |
| Paris - Nîmes | 3h49 | 2h50 | 2h52 |
| Paris - Montpellier | 4h19 | 3h00 | 3h16 |
| Paris - Béziers | 5h11 | 3h40 | 3h58 |
| Paris -Narbonne | 5h27 | 3h55 | 4h25 |
| Paris - Perpignan | 6h01 | 4h25 | 4h45 |
| Paris - Arles | 3h43 | 3h40 | 3h49 |
| Paris - Marseille | 4h18 | 3h00 | 3h00 |
| Paris - Aix P TGV | | | 2h54 |
| Paris - Toulon | 5h09 | 3h40 | 3h50 |
| Paris - St Raphaël | 5h35 | 4h40 | 4h34 |
| Paris - Cannes | 6h01 | 5h05 | 5h01 |
| Paris - Antibes | 6h14 | 5h15 | 5h14 |
| Paris - Nice | 6h31 | 5h20 | 5h31 |

Source SNCF. Direction du Développement. Avec le tronçon Nîmes Montpellier (non réalisé)

Source: SNCF/RFF, 2007.

The train service frequency was not indicated in the initial studies, so we cannot compare actual frequencies with what had been considered at the beginning. On the other hand, for the opening day, we can notice that the train service frequency increased.

**Table 20: Evolution of the service frequency on the TGV Med Line since 2001**

Fréquences

| Origine - destination | Référence : hiver 2000/2001 | Réalisé : hiver 2004/2005 Bilan a posteriori |
|---|---|---|
| Paris - Valence | 9,5 | 9 (Valence TGV)<br>4(Valence ville) |
| Paris - Montélimar | 4 | 4 |
| Paris -Orange | 1 | 2 |
| Paris - Avignon | 11 | 12,5 (Avignon TGV)<br>4(Avignon Centre) |
| Paris - Nîmes | 7 | 10,5 |
| Paris - Montpellier | 8 | 12 |
| Paris - Béziers | 2 | 3,5 |
| Paris -Narbonne | 1,5 | 2 |
| Paris - Perpignan | 2 | 3 |
| Paris - Arles | 2,5 | 2 |
| Paris - Marseille | 10,5 | 16,5 |
| Paris - Aix P TGV | | 9 |
| Paris - Toulon | 5 | 7,5 |
| Paris - St Raphaël | 2 | 5 |
| Paris - Cannes | 2 | 5 |
| Paris - Antibes | 2 | 5 |
| Paris - Nice | 2 | 5 |

Source SNCF, Direction du Développement. (Moyenne des deux sens)

Source: SNCF/RFF, 2007.

Punctuality improved slightly since the opening date. On the other hand, it remains below that of the other high speed lines. The punctuality rate is defined by the percentage of trains arriving less than ten minutes late. On the TGV Med line between Paris and the PACA region, the punctuality rate in 2004 is only at 87.8%. This rate however is better and better on the line.

**Table 21: Evolution of TGV med punctuality**

| | 2002 | 2004 |
|---|---|---|
| TGV Sud-Est | **89,5%** | **89,3%** |
| Dont Paris PACA | **85,8%** | **87,8%** |
| Dont Paris Languedoc | **85,7%** | **88,9%** |
| TGV Atlantique | 94,6% | 92,1% |
| TGV Nord | 93,3% | 91,1% |
| Ensemble des TGV | 91,3% | 91,7% |

Source SNCF - SESP

Source: SNCF/RFF, 2007.

Ticket fares have increased since the opening, which is explained by slightly weaker traffic levels than forecast and reduced air competition (in particular since September 2001, with the increase in air travel times due to restrictive security measures). The application of the yield management system has considerably reduced the visibility of fares for the consumer,

creating important price gaps for the same trip. In December 2004, the introduction of the iDTGV system contributed to an increase in traffic. This system corresponds to a ticket service with low prices available only on the Internet, for specific connections (Paris-Avignon/Marseille/Toulon, then Paris-Nîmes/Montpellier in June 2005, then Paris-Nice in January 2006).

**How traffic forecasts were formulated**

The traffic forecasts were slightly over-estimated compared to the real traffic. The traffic forecasts were obtained by comparing the railway offer without the project and the railway offer with the project. The econometric models used by SNCF are the same as those used for the previous high speed lines. The reference situation was defined by taking account of the realisation of the other high speed lines and their opening to traffic: South-Eastern TGV, Atlantic TGV, Northern TGV, TGV Rhône-Alpes and TGV Junction.

- A first traffic forecast was conducted in 1991 in the Public Survey File (DEP). With 1998 retained as the opening date, the studies retained 2000 as year of full effect of the traffic and 1990 as basic year.

- These forecasts were re-examined downwards in 1994 in the Ministerial Approval File (DAM) in order to take account of the poor economic climate in transport and the impact of competition from airlines on the South-Eastern axis. The opening was deferred to 1999 for the Valence-Marseille branch and to 2000 for Nîmes-Montpellier. The year of full traffic retained was thus 2002.

- In 1995, in Ministerial Approval File limited to Nimes, the forecasts are re-examined once again downwards. The opening was always planned for 2001, with a year of full traffic in 2003.

- The traffic studies were re-actualised in 1998 at the request of CIES and RFF. The year of full effect was always 2003.

- In 2000, a last evaluation of the traffic forecasts was carried out by SNCF, following the remarks of the CGPC/IGF mission on the tax infrastructure. The forecasts are re-examined with an increase taking into account the evolution of air competition and of the traffic on the main axis. The year of full effect was always 2003.

- The line was finally brought into service in 2001, which changes the year of full effect to 2003. In fact, the strike movement during spring 2003 has affected the results, so SNCF appointed the year 2004 as year of full effect.

The figures obtained are:

**Table 22: traffic forecasts for the year of full effect**

| In million passengers | DEP (1991) | DAM (1994) | DAM (1995) | Revaluation 1998 | Revaluation 2000 |
|---|---|---|---|---|---|
| Reference situation | 17.479 | 16.655 | 15.749 | 14.171 | 15.410 |
| Project situation | 24.106 | 22.920 | 21.671 | 19.526 | 21.393 |
| Gain of traffic | 6.627 | 6.265 | 5.922 | 5.355 | 5.983 |

Source: SNCF/RFF, 2007.

The traffic forecasts correspond thus to 24.106m passengers in 2000 according to the evaluation of 1991; 22.920m passengers in 2002 according to the evaluation of 1994; 21.671m passengers in 2003 according to the evaluation of 1995; 19.526m passengers in 2003 according to the evaluation of 1998; and finally 21.393m passengers in 2003 according to the evaluation of 2000. Actually, there were 20.368m passengers in 2004. The comparison is interesting if we consider the same years:

**Table 23: comparison traffic forecasted/traffic real, in million passengers**

| Traffic forecasted in 2003 in the DAM (1995) | Real traffic in 2003 | Traffic forecasted in 2004 in the DAM (1995) | Real traffic in 2004 |
|---|---|---|---|
| 21.671 | 19.510 | 22.213 | 20.368 |

Source: SNCF/RFF, 2007.

In these forecasts, the modal transfer was also estimated. In 1991, in the public survey dossier, the traffic saving was estimated at 6.627m passengers. This increase in travellers was estimated at 48% from air travel, 18% from road travel and 34% being a pure profit of mobility growth.

The traffic forecasts were made using assumptions relating to the economic environment and the competition system (with the air sector in particular).

- The economic environment was less favourable than was foreseen. In particular, household consumption, which has a traditional impact in transport economics, was less dynamic in reality than in the projections proposed by SNCF. The *a priori* forecasts were based on an assumption of price stability in the railway, a fall in air prices (taking account of the opening to competition in the domestic air market in 1995), and a rise in oil prices. Actually, railway prices increased since 2000, in particular for lines serving the South.

- Concerning competition from air travel, until 2001 the beneficiary was the consumer through falling prices. The competition between the airline companies and the adjustments made by SNCF led to a fall in prices in both sectors. But since 2001, the prices in both sectors have converged. SNCF set up a price system identical to that of the airline companies, yield management. This system creates important differences in price on the samejourney, according to the booking date (the earlier the ticket is reserved, the more attractive is the fare), of traffic motivation (business or leisure), of travel date (peak period or not), of conditions for exchange or refunding, etc.

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