

Financing French High-Speed Network Problems and Perspectives

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France is currently a leader in European high-speed lines, and was the first nation in Europe to put high-speed trains into service, building the most extensive and fastest network in just 20 years. Will France be able to maintain this impressive record? What will be the effect of present or future changes, and what will be the consequences of changes in the economic situation? To answer these questions we must first explain what has been achieved, as well as projects still in progress. Then, we must examine factors likely to modify the pace of such work, among which, financing has an essential place.

The Present Network

The first section of the high-speed line between Paris and Lyon was built in 1981, and the whole link was completed in 1983. This was followed by connections between Paris and western France in 1989, south-western France in 1990, northern France in 1993, and France and the UK in 1994. Several additions (Lyon Loop, Paris Loop) to the existing lines were then built. At present, 1280 km of new lines are operating (Fig. 1).

It should also be noted, that unlike in Japan, the high-speed trains (TGVs) extend their services well beyond the new lines. Thus, the services between Paris and Marseilles are provided by TGVs traveling at full speed (300 km/h) between Paris to the south of Lyon only. On conventional lines, TGVs run at the maximum speed permitted by the standard track, often improved to between 160 and 220 km/h.

In 1995, TGVs accounted for 53% of SNCF passenger-km but these passengers were only carried at high speed on a little less than one half of their journey.

However, the overall transformation of railways services has been even deeper. For the majority of ordinary services trav-

elling entirely on the conventional network, the schedules and the services were modified to coordinate with and to feed the high-speed services. Furthermore, frequencies have been increased considerably at the level of regional services and so overall supply has been modified. This has often led to construction of new stations near old ones, or to renovating the latter. For example, in Lyon, Part-Dieu Station, located some 5 km from Perrache, has gone from the status of a secondary station for local services to a main TGV station; a major urban redevelopment accompanied this change in status. In addition, in Lille, the topography permitted construction of a new through TGV station near the old station served by the local high-speed services.

Until now, the financing of all these transformations has been very traditional. At first, SNCF was not involved at all in the town planning associated with new stations, unlike in Japan. These matters were decided by local public authorities and SNCF neither participated in their financing, nor is it profiting from their benefits, which may be regrettable.

The financing of investments in rolling stock was completely assured by long-

term loans; to finance infrastructure, the State and the local communities paid a number of lump-sum subsidies, intended to assure the profitability of the operations. The high profit-earning capacity for the local community justified rapid completion, ahead of what would have been compatible with the SNCF's rate of return as shown in Table 1.

In particular, no recourse was made to shareholder equity. In effect, SNCF is a public enterprise, with very small equity capital. Financing by borrowing does not present any difficulty because these loans, although not guaranteed by the State, are perceived as though they are by the lending financial institutions, based on the relationship of SNCF with the State. Finally, over the course of recent years, the weak operating results have not permitted SNCF to self-finance the new lines.

1992 Master Plan

The official current long-term Master Plan, which dates from 1992, was prepared within the spirit of continuing from both these technical and financial perspectives. It includes a set of new links,

Table 1 Financing of High-Speed Network Infrastructure

Link	Cost (FFr billion at 1989 prices)	Public Subsidy	Projected SNCF Profit	Projected Community Profit
Paris-Lyon (TGV Sud-Est)	8.4	0%	15%	30%
Paris-Le Mans (TGV Atlantique)	11	30%	12%	24%
Paris-Lille/Calais (TGV Nord)	16.9	4%	12%	20%
Lyon-Valence (TGV Rhône-Alpes)	6.3	4%	9%	14%
Paris Loop (Jonction Est)	7.7	0%	14%	22%

The actual results for Paris - Lyon confirmed that projection.

Figure 1 TGV Network by 1996

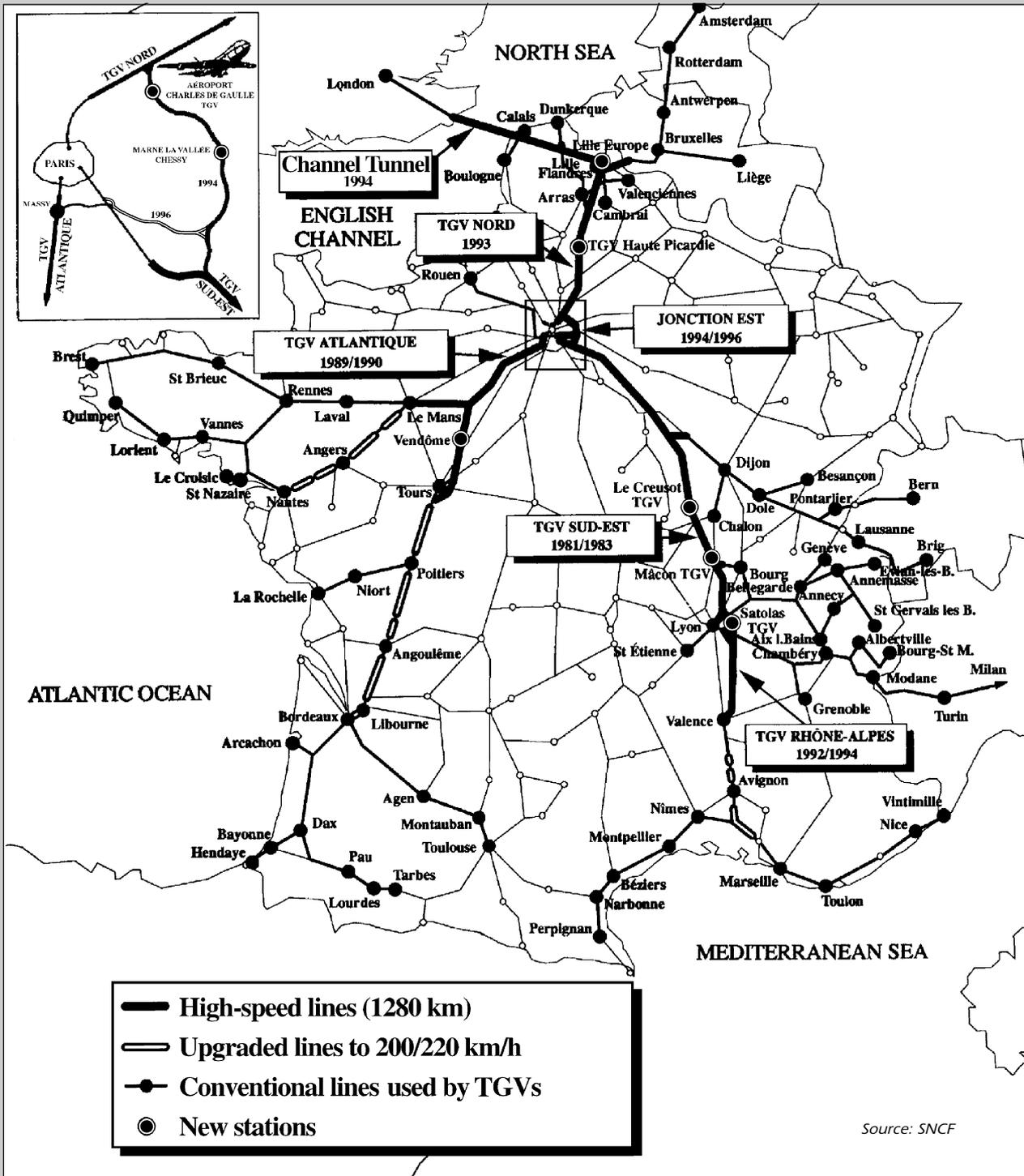


Table 2 Links Projected in 1992 Master Plan

TGV Projects	Link	Length (km)	Cost (FFr billion at 1989 prices)	Projected SNCF Profit	Projected Community Profit
Aquitaine	Tours/Bordeaux/Dax	480	22.2	7.6%	10.0%
Auvergne	Paris/Clermont-Ferând	130	4.6	3.1%	6.7%
Brittany	Le Mans/Rennes	156	5.7	7.4%	13.6%
East	Paris/Strasbourg	460	22.0	4.3%	8.8%
Great-South	Toulouse/Narbonne	70	3.7	5.0%	12.0%
South Interconnection	Interconnection in Ile-de-France	49	3.1	8.2%	9.6%
Transalpin	Lyon/Turin/Chambery/Geneva	261	29.5	6.0%	10.0%
Limousin	Paris/Limoges	174	5.3	2.4%	4.4%
Provence	Valence/Marseille	219	14.3	9.8%	13.0%
Cote d'Azur	Marseille/Nice	132	8.9	8.4%	11.0%
Languedoc-Roussillon	Avignon/Perpignan (Barcelona)	290	14.8	6.1%	9.0%
Midi-Pyrenees	Bordeaux/Toulouse	184	8.7	5.5%	6.5%
Normandy	Paris/Rouen	169	10.1	0.1%	3.0%
Pays de la Loire	Le Mans/Angers	78	3.2	5.4%	7.7%
Picardy	Amiens/Calais	165	6.3	4.8%	5.0%
Rhine-Rhône	Mulhouse/Dijon/Lyon	425	17.8	5.9%	10.7%

the locations, cost and profit-earning capacities of which are shown in Table 2 and Fig. 2.

The plan's time horizon was undated, but it corresponded implicitly to completion for 2020. The corresponding pace for completion is around 125 km per year, compared with 85 km annually for the 1980–1995 period.

The financing methods have not yet been indicated, but taking into account the poor projected profitability of a number of links, as well as the very limited self-financing ability of SNCF, it rests largely on obtaining public assistance.

Projected community profits are certainly greater than projected SNCF profits, which is usual, but are still relatively small—many are under the 8% bar generally permitted in France for public investments. This is attributable to the fact

that this program is justified to a significant extent by public service considerations, such as the objective of assuring a uniform servicing density over the entire territory with no zones isolated from the network, as well as by the hope that the network will contribute to economic development of the serviced regions. Inclusion in the European high-speed network was also an important objective of the plan.

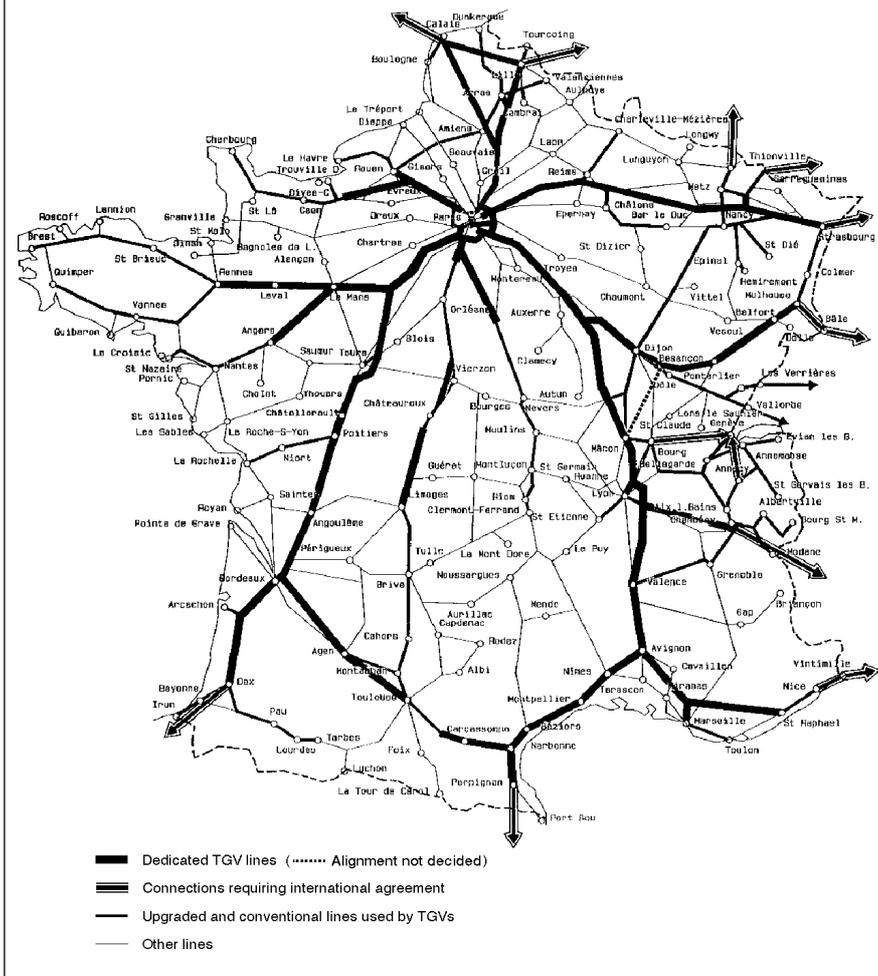
New Master Plan

However, the 1992 plan will have a short life, and will be relegated to the scrapyard due to the provisions of the legislation for improving and developing the French territory passed in 1995. This law provides for preparation of a National Plan

for Improvement and Development of the Territory. The Plan will be a vision for the economic and social future of France from a geographic viewpoint for the 2015 horizon, and will be accompanied by long-term plans for large infrastructure projects permitting its realization; the high-speed tracks certainly rank among these infrastructures.

Preparation of this new Plan is now only at the preliminary stage, and it is all the more difficult to foresee its content due to the numerous uncertainties surrounding it. We are therefore reduced to examining the various factors likely to influence its extent and nature, and to proceed from there to prepare possible development scenarios.

Figure 2 1992 Master Plan for High-Speed Railway Links



The Debate

A primary factor influencing the next Master Plan lies in European Directive 91/440/EEC, which defines a new organization for railway transport to reconcile it with normal markets. Aside from the rules for clarification and financial stabilization, the Directive imposes milestones for separating infrastructure and operation—separate accounting at least—and for introduction of competition into operation. Competition by third parties will be allowed by

international groups of transport companies as will international combined transport. The European Commission is trying to extend the access rights to other operators and services.

Until now, France has complied minimally with the Directive, in contrast to other members, such as the UK or Sweden. However, it intends to take a major step in entrusting the responsibility for outfitting and improving the network to a public body called the French Rail Network (RFF). The financing will be guaranteed by State appropriations or by

borrowing, and RFF will receive the proceeds from the infrastructure charges paid by railway operators—at present SNCF. In addition, SNCF will be placed in charge of maintenance work and will be entrusted with construction of infrastructure, and will be paid by RFF for these services.

The legislation was passed by Parliament in February but can be applied using very diverse methods.

What will be the real weight of RFF? Will it truly have an autonomous role within the management of the infrastructure, or will it only be a puppet of the State, which in any case remains responsible for the make-up of the network? Will it take sides with SNCF and behave as a branch? For financial reasons, perhaps this agency must remain very dependent upon the State. In effect, RFF will take over a major part of the SNCF debt corresponding to the financing of past infrastructure, and estimated at FFr134 billion out of a total of FFr198 billion of indebtedness. SNCF will finally find itself with an audited debt and will present an operating balance sheet that is easier to balance. However, for the nation, this is only a transfer of the burden from SNCF to RFF and which RFF certainly cannot meet with its current resources. The taxpayer will have to shoulder it in one way or the other.

The railway debt weighs heavy on the public debt even if an artifice of definition excludes it from criteria required for joining the European single currency under the Maastricht Treaty. The French public debt is substantial; it burdens economic development and the budget of the State, which is already straining under increasing social costs. Likewise, the burdened public authorities are seeking to reduce it.

This will weigh on the chances for building the new lines, because the projects have a low profit-earning capacity as shown by the calculations for the 1992 plan. From Table 2, we see that apart



The first-generation TGV introduced in 1981 on Sud-Est Line

(SNCF-CAV: Jean Marc Fabbro)

from a limited number of short sections, no link in the chain can reach the bar of 13% to 15% representing the minimum for attracting private financing.

A substantial amount of public money will be necessary, all the more so because current projections are even lower than calculated in 1992. Two main reasons support this argument. The first results from the competition with other transport modes, notably airplanes invigorated by deregulation. The second arises from the consequences of the separation of operations and infrastructure. Any future builder and manager of infrastructure no longer has the same assurance that the infrastructure will be used effectively, and is thus subject to increased risk. This risk may be reduced if possible operators sign a long-term commitment contract, but this procedure is limited due to the obligation for competition imposed by the European Commission.

Consequently, the financing possibilities are limited; they can be increased by sophistication of the procedures and contracts and by recourse to more original financing methods, but this complication increases transaction costs.

Hence, the managers will be forced to turn their attention to the network links which can be reduced in two ways. The first is reducing the length by suppress-

ing less-profitable links. From this viewpoint, some supporters of such links, notably local elected assemblies, admit that their projects are superfluous. The second possibility is to reduce the speed requirements, using pendulum trainsets instead of TGVs over less-frequently-used sections.

But such reductions would mean fewer benefits than expected from development of the high-speed network—benefits that are not all represented by the projected community profits in Table 2.

Among the poorly-evaluated benefits are the direct and indirect impacts on the environment. The projected profits in Table 2 take little account of the effects on the environment when a high-speed network diverts some users from roads or airplanes to the railways. The consequences in terms of reduced pollution are not negligible, especially because nearly all the electricity used by trains is nuclear in origin. Preliminary estimates suggest that the projected community profits in Table 2 should be increased by about 2% for this sole reason.

Other benefits cannot be easily quantified. They concern the effects on economic development. Transport networks, and high-speed train networks in particular, permit better communication, and hence the faster spread of ideas and progress. In this sense, they permit improved economic productivity. The European Union developed the Trans European Network concept particularly in expectation of these effects. What holds true for Europe as a whole, is also true at the national level and constitutes justification for an extensive network of high-speed trains.



TGV Paris-Brussels-Amsterdam (Thalys PBA) - This TGV uses three current systems.

(SNCF-CAV: Jean-Jacques D'Angelo)

Conclusion

It appears we are at a crucial point in construction of the French high-speed railway network. However, the future is not fixed and the outcome is still unclear, because it depends on several contradictory considerations. On one hand, the projected profits of the future projects are weaker than previous projects. Private financing is more demanding in terms of profitability and will only make a marginal contribution to these projects. Consequently, they will require substantial public funds. However, public funds are increasingly difficult to find in view of the macro-economic constraints burdening the authorities.

Reduction of the initial plans by cancellation of some links, and by use of pendulum trains for others, might be possible. But, how far can we go in this direction without losing the benefits of the rail network on the environment?

Will the next Master Plan be inspired by clear political will, or will it be simply the result of a poorly-arbitrated compromise between constraints and interests?

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TGV 2 Niveaux (Duplex) - This double-decker TGV is designed to replace old rolling stock on TGV Sud-Est. (SNCF-Patrick Leveque)



TGV Paris-Brussels-Cologne-Amsterdam (Thalys PBKA) - This TGV is similar to the PBA but uses four current systems. (SNCF-CAV: Jean-Jacques D'Angelo)



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