4. THE ALTERNATE PROPOSAL TO THE TURIN-LYON

The necessity of supporting the East ⇔ West freights traffic is recognised as a valid objective for the axis passing at the Frejus, the disagreement is over the overestimation made by the promoters, so to show the necessity of a new line.

The attempt to constrain all East-West freight traffic in a single valley, creating a bottleneck in case of natural accidents, is not shared by the opposition as for the northern directions the traffic is split among several axes as Simplon, Gottardo and Brennero.

Several European states grudged the Italian train named "Pendolino" for it peculiarity of adapting its inclination to the turns e running faster; but in Italy its development has been limited between Milan and Rome.

The alternate proposal given herein leads to distribute the traffic over more several directions, constituting a North-West axis (see para 2.7) and henancing the historical line so to take maximum profit of its full capacity.

4.1. The enhancement of the historical line (not to be confused with the CIPE approved)

About 5 years ago, SNCF, FS and RFF have executed a joint study for improving the historical line, envisaging the possibility to get 250 daily tracks through the Frejus tunnel, equivalent to about 27 Mt per year. This does not seem unfeasible being 226 the numbers of daily tracks that according to RFI-LTF are planned to be available at the completion of the first operating phase (see para 2.4), allowing 182 trains per day over the historical line and Frejus tunnel.

An overview of the historical Turin-Modane-Montmelian line is given is Tab 4.1-1, together with its main characteristics and weaknesses.

Parameter	**Montmelian-State border**	**State border -Torino**	**Notes**
Lenght	**96.6 Km**	**91.2 Km**	
Electrical power Slopes up to 1.2% Slopes 1.2 a 1.8% Slopes 1.8 a 3.0%	96 MW 420 KW/Km 940 KW/Km 1750 KW/Km	44MW 480 KW/Km 480 KW/Km 480 KW/Km	Power insufficient in the Italian side Power density insufficient Power density insufficient
Speed	Decrease gradually vs slope increase (Km/h) 140 P 90 M 110 P 60 M 75 P 70 M	Gradually but also sudden decrease 105 P 100 M 90 P 90 M 85 P 75 M	Main bottlenecks: Alpignano turn: 130 -> 105Km/h Auto block absence: 160->**100** Bridges and intersections 100->**90**
Train mass Rise w single locomotor Rise w double locomotor Rise w triple locomotor Falling	600 1000 (2T) – 1150 (1T1C) 1600 (1T2C) 1600 t	650 1150 t (2T) 1300 (1T1C) 1600 (2T1C) 1600 t	Contraints are given by the hooks of the railcars. 1000 t in France - 1150 t in Italy
Gabarit	B	A with some, B+ between Bussoleno and Salbertrand	Gabarit enlargement on going – completion by 2009
Type of Block	Automatic, everywhere	Automatico but for Bussoleno-Bruzolo.	Absence of automatic block slow down train speed.
Legend:	P: Passenger trains M: Freight trains	2T: two pulling locomotives ahead 1T1C: 1 locomotives pulling and 1 pushing on tail 1T2C: 1 locomotives pulling and two pushing on tail	

Tab 4.1-1 Characteristic of the Historical Turin-Modane-Montmelian line [29] [10]

The table provides an insight of the lack technological upgrading in the Italian side. Considering the work in progress for Gabarit enlargement of the original single rail line, the remaining weaknesses are due to the slope of the mountain part Bussoleno-Modane-Saint Jean de Maurienne (to be judged as function of the electrical power) and some local bottlenecks.

The electrical power installed on the France side is such that on the maximum slope of 1.3 to 3%, there power enough to move a 13 MW freight train every 7 KM, while in the Italian side there is only power to move a 13 MW train every 24Km (two trains between Bussoleno an Bardonecchia).

The segment Bussoleno-Torino allows 165 Km/h to fleeting trains and 130 for freight trains, however speed limitations exist due to, a short radius turn at Alpignano, line-crossing devices and the absence of the automatic block between Bussoleno and Borgone, which limits the fleeting trains to 130 Km/h and freight to 100.

Limitations are existing as well between Bussoleno and Bardonecchia, due to line crossing devices, old bridges.

A series of minor problems of the historical line, never solved because the lack of founds, will have to be fixed anyhow for achieving a proper fluidity of the line. Such main necessary fixing are:

- Enhancing the Railway stations equipments and systems
- Suppression of road-rail crossing with barriers, by building over/under passes.
- Increase of the available power by improving the power conversion and distribution plants, which are currently limiting the number or running train.
- Enhancement of the aerial electrical line, for carrying more current or passing to 25KV standard.
- Implementation of automatic block between Bussoleno and Borgone.
- Improvement of the sensing, monitoring and signalling system.

Some of the current limitations of the historical line are due to: the different operating voltage, 1.5Kv in France and 3KV in Italy, the organisation of the logistic, the custom operations and the .non-optimal synchronisation of the maintenance period between Italy and France. These are common problems to be solved, some as well for the new line Turin-Lyon and the solutions are the same:

- Making use of interoperating locomotives on all freight and fleeting trains.
- Simplifies the custom operation at Modane
- Giving reciprocal training to Italian and French locomotive drivers avoiding change of personnel at the border.
- Synchronising maintenance period avoiding wasting of useful tracks.

Particularly important is the use of interoperating locomotives, which today are limited to fleeting trains as TGV and ETR and to few freight trains. Without them, also the new line will have the same limitation of the historical one. Such locomotive are one of the outmost mean for easing the Modane station traffic, for increasing globally the use of the line, for saving about 10 minutes for fleeting trains and up to 1 hour for freight trains adopting conventional locomotive. Note that Italian old locomotives could run in France but developing just half of the power, while France locomotive cannot circulate in Italy, except the new ones.

The synchronisation of the maintenance intervals is very important to avoid waste of tracks, but for sure much more difficult to be implemented in the new line because of the long tunnels, without stations or recovery rails.

The problem of the inclination, requiring multiple locomotives (typically 2 or 3), can be solved and in any case the inclination is not the only element limiting the traction, as also the safety load limit of the car-hooks (1600 t) plays a major role. The long 1600t freight trains that the line promoters are advertising on the line, would require also a double locomotive, one pulling the head of the train and the other pushing the tail. This would also cause locomotives re-entry (standalone or grouped), occupying tracks as on the old line.

The fact that on the new line, the 1100 t trains can be pulled by a single locomotive while in the historical line the traction limit for one locomotive is around 600-650t, creates the necessity of returning locomotives, whenever there is a traffic flux unbalance between the two directions. The locomotives return cannot be used as argument for justifying the project because this problem is solvable through a correct logistics organisation of the trains, with an optimised management of the line and with interoperating locomotives on all trains.

Freight Transportation at Frejus

This table is from Rivalta Technical Commission - Model of Exercise document, 13 Dec 05, annex 1

		2000	2001	2002	2003	2004
Italy-France	**Freight trains n°**	8,500	9.529	9,632	8,471	8,654
France-Italy	**Freight trains n°**	8,555	9,638	9.577	9,140	9,038
difference		55	109	55	669	384
total	**Freight trains n°**	17,055	19,167	19,209	17,611	17,692
freight from Frejus	**millions of tons**	10.41	9.68	9.35	8.83	8.21
freight load per train	**tons/train**	610	505	487	501	464
load variation from 2000	**%**	100.00%	*82.79%*	*79.84%*	*82.13%*	*76.07%*
load increment from 2000	**%**	0.00%	*-17.21%*	*-20.16%*	*-17.87%*	*-23.93%*
looad increment from prev year	**%**		*-17.21%*	*-2.95%*	*2.30%*	*-6.07%*
average increment since 2000	**%**		*-17.21%*	*-10.08%*	*-5.96%*	*-5.98%*
Note: Figures does not include the trains returning the empty cars						
A progressive reduction of the average load is observable from 20000 to 2004, evidently due to the good typology (reduction of basic raw material and increase of semi-finished)						
Figures in red-italiaus have been corrected by the autor						

Fig 4.1-1. Freight traffic over the historical line (source: Rivalta Tech Commission).

There is no need to upgrade the historical line to 4 rails. The upward segment can support more than 200 trains per day and the new Turin-Lyon is using the upward segment of the historical line with 182 trains/day between 1st and 2nd implementation phases. The assumption of 200 train/day in the the upward segment is coherent with a downstream capacity of 226 trains/day, because of the regional trains running between Bussoleno and Turin.

A small increase of freight trains number from 17055 to 17692 transited at the Frejus between 2000 and 2004 is evident from the RFI data in Fig 4.1-1, but limited to 0.7% per year. Curious is the fact the freight mass has decreased from 10.41t to 8.21t, leading to a decrease of the goods density per train. This phenomenon can be explained by an increase of finished or semi-finished products transportation and a reduction of the raw materials and elementary products, which is in line with the current trend of procuring such material from the east market. It is also evident that ferroutage contributes to decrease the density (see para. 3). Despite table 2.8-3 and fig 4.1-1 are coming from the same document [49], they are including slightly different freight masses. The explanation is that table 4.1-1 includes al well the weight of the trucks.

On the motorway the freight density per vehicle is more or less constant around 16.5 t while on the railway the density of 610t/train of the 2004 has decreased to 464t/train into the 2004. The 2004 daily average number of freight trains was only 48 but in some day there has been up to 100 trains per day. These data prove that there is no enough demand, the historical line is under-utilised and the management of the line is not optimised.

4.2. Improvement of other lines

The other piedmont candidate line for both alleviating the future Frejus traffic and for creating an alternate connection with the France is the Nice-Cuneo-Turin.

This line constitute the first priority as it will be a very positive fleeting connection with the France and will remove from the Frejus the freight traffic coming from the southern France and part of the Spanish traffic, might be the low priority. The simple electrification of line will allow 5Mt freight traffic per year.

G. Manfredi and the architect S.Nicola has presented in 2001 a very innovative project, going opposite to the Turin-Lyon and sponsoring an high speed connection between Turin and Nice, via Cuneo. This was as well motivated by solving the intrinsic mobility problem of the area, not yet served by any motorway and for containing traffic over the roads, pushing the Piedmont region role outside the French border. Resuming of the project is envisaged by several parties, as it can be implemented with minimal ambient impact, works duration much shorter than the Turin-Lyon, low cost and with a genuine vocation of an international connection. Perhaps many people ignores that Nice-Turin-Lyon is shorter than Nice-Marseille-Lyon.

There is no need of realising a Turin-Nice TAV infrastructure. A modern ordinary line, with modern and properly maintained locomotives and railcars will make an efficient service for the Piedmont, allowing the goods exchanges respecting the ambient and population, providing furthermore cultural exchanges between two cities, tied by a common history until world war one.

A last general point cannot be forgotten on the status of the Italian railways, to which the AV/AC projects subtracts founds for the ordinary and extraordinary maintenance to lines, cars and locomotives.

The other alternate priority is the enhancement of the single-track railway Casale-Mortara-Novara allowing a good connection of the northwest axis Simplon-Genoa harbour, without transiting to Turin and Frejus.

Also the Turin-Aoste and many other freight and fleeting lines should be subjected to improvement, because as said in the introduction, the Piedmont is the last continental region in terms of electrified railways.

4.3. The results of the proposal

The full picture can now be obtained by combining the effects of the on going enhancements presented at paragraph 2.7 with the alternate proposals to the Turin-Lyon line, namely:

- the improvement alternating the Turin-Modane, allowing a capacity increase to 200 trains/day on the Bussoleno-Modane segment
- the electrification of the Cuneo-Nice line, allowing at least a capacity of 70 daily trains.

The combined effect can be seen in Fig 4.3-1 for the overall traffic of Ventimille-Cune/Nice-Frejus and Simplon, as well as in Figf 4.3-2 for the evolution of the railway traffic at Frejus.

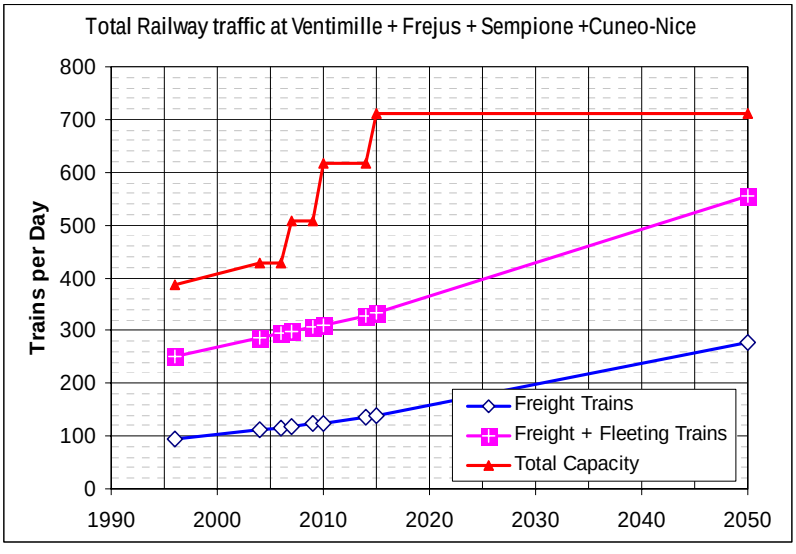

Fig. 4.3-1 Enhancement of Turin-Modane and Cuneo-Nice

For keeping plot simple, the enhancement of the Turin-Modane and Cuneo-Nice are both assumed completed by the 2015, which by the way might not be a bad target.

The overall effect is visible in comparison with the correspondent figures of para 2.7, the total capacity after the 2015 increase from 598 to 710 trains/day and in 2030 there are still 300 free traces.

The situation improves as well at the Frejus and the end effect is that the same traffic load scenario of today will occur again only after 30 years, around 2036 but the utilised capacity of the upward line will be only 55%. In low side of the valley the can increase to 220 trains/days due the existence of priority and waiting rails in many stations of the low side valley.

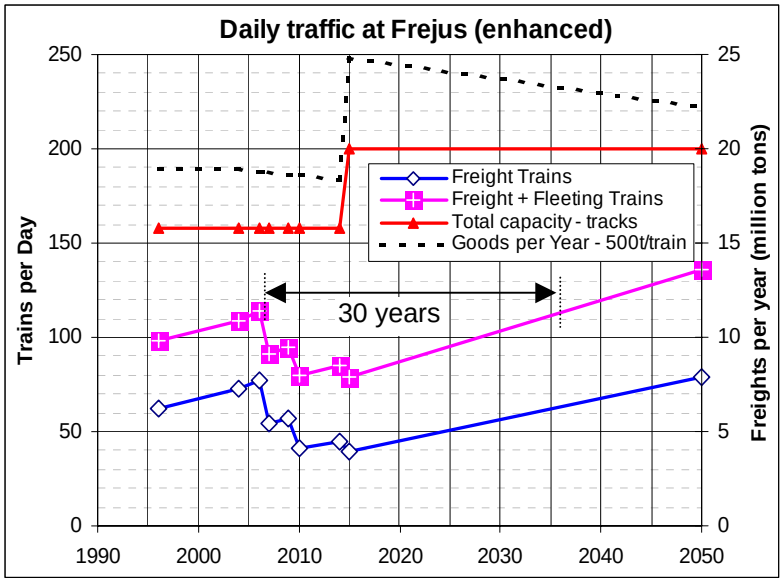

Fig.4.3-2 Enhancements effect over Frejus traffic

The projection is optimistic because at para 2.7 a freight growth of 2% per year was assumed, while according to the official data of the Rivalta Technical Commission (Tab 4.1-1) the freight trains growth has been only 0.7% per year. After the 2015 the net capacity of the line varies between 24 Mt and 21.5 Mt per year, considering 500t per train and 300 days per year. Trains with 650t of freights will make a yearly capacity above 30Mt.

Now also the question of the ferroutage can be simply addressed in terms of allowance of all free traces, but:

How many ferroutage trains can run daily? how much goods volume can be transported ?

Concerning the Frejus, about seventy of Modalhor trains can be added since 2010 to the eight already running between Aiton and Orbassano, achieving as a consequence about 80 ferroutage trains per day, similarly to the wish of the Turin-Lyon promoters, but with the following advantages:

- the service can available 10 years before, right at the conclusion of the gabarit enlargement at Frejus.
- without making a huge and impacting infrastructure
- simply by distributing the railway capacity enhancement over the existing infrastructure across the Alps, **without limiting the vision only to the Piedmont backyard**.

The quantity of goods transportable by 80 daily Modalhor of the same type of the currently used between Aiton and Orbassano, will be just a bit below 7 Mt per year (80 trains, 288 t /train, 300 days), more or less 50% of the goods transiting over the Frejus motorway tunnel. The problem remains a proper mechanism to force goods from roads to rails, which has not easy solution as stated by "*Prevision de Trafic d'un service de ferroutage entre la France et l'Italie dans un cadre du projet Lyon-Turin – Rapport Final Novembre 2000*". For now the 8 daily Modalhor remains poorly used and the important verification will be in 2009 at the completion of the Frejus gabarit enlargement.

As stated at para 3, the ferroutage is an inefficient and expensive compromise, drawing a lot of energy, while freights should travel as long as possible over trains, not just for crossing the Alps. **This is the true challenging objective for the future. Transportation growing should be limited as well.**

5. THE REASONS OF THE OPPOSITION

The opposition to the TAV in Val Susa, risen in 1989 with the committee Habitat, then has extended to all local public institutions, CMBVS, Commons, Legambiente, Pro Nature, Agriculture association and so on. By getting motivation from university, independent institutes of research, the consensus has increased and expanded to most population, which now recognise themselves through the guards, the anti-TAV committees, and into a technical knowledge, consolidated by attending to discussion and informative events.

Since years and years the opposition reasons are always the same, because:

1. It will bring beneficial effects neither to the valley nor to Piedmont, but only to the constructors.
2. It is not true that the Piedmont would remain cut outside from exchanges with the foreign countries. The truth is the opposite, as the huge cost will deviate founds which would be beneficial for the other regional scopes, moreover wealth for the region will not come from the transit of freights.
3. It concentrates the traffic towards the west in a single corridor, it is not far-sighted and it does not take advantage of the works recently executed for the Orbassano goods site.
4. The project, initially born as high speed line for fleeting trains (AV), it was not and it is still not justified, as emphasized from studies executed by institutes for the same TAV promoters and French government.
5. The speed for the fleeting trains will not be as advertised but much lower (around 100 Km/h).
6. The current justification of the project as high capacity (AC) cannot be even supported by freight transport.
7. The estimation of the freight traffic trend prepared by promoter has been exaggerated for the scope of justifying the project., not accounting for the traffic decrease once the new North-western Switzerland passing will be operational and not accounting the Genoa-Ventimille ongoing rail doubling.
8. The existing line, technologically abandoned since years, can support all the traffic of next the 50 years and together with the enhancement of the Nizza-Cuneo-Turin it is possible to get a better result respecting people and ambient.
9. International institutes have established that it will not be able to decrease the number of trucks that are crossing daily the Frejus motorway tunnel.
10. Although the European Union asks for an engagement over the project 6 (Turin-Lyon), it is not true they are requiring a so costly and invasive work.
11. The European Union has not yet approved the project which is still in the feasibility study and several specific investigation have to be performed prior to arrive to its the final definition.
12. The impact during its construction is highest for both health and the living conditions of the inhabitants of the Susa valley as well as of the Turin northern surroundings.
13. An entire generation of children will grow until the adolescence in a atmosphere polluted by powders, gas, asbestos, noise, etc, etc, with the risk of having later on a generation of sick people.
14. Our sons will inherit an area degraded by a mastodontic and useless infrastructure.
15. Unless the adoption of very wide bands of respect, it will be almost impossible reduce the noise of the fast trains to a level allowing a comfortable life but on the other way around wide bands are not compatible with the residential and industrial territories crossed by the line.
16. Its cost will be of 3 or 4 times higher than the initial estimate and it will be entirely paid by the Italians through taxes or via reduction of the welfare, social services, instruction and anything the magician of the creative finance will be able to find out, selling and mortgaging.
17. Because founds are not available and if initiated it will be abandoned as many other projects, while such founds could been used and invested in a better way, e.g. for promoting and maintaining the research.
18. It will not be economically profitable and it would require continuous financing from the government through mechanisms similar to the ones used to cover the gap during its construction.
19. The status of the Italian railroads and fleeting railcar in a normal period (i.e. not during popular events as the Olympic games) is merciful, in terms of availability of the service, capability of maintain the train scheduling, cleaning and car and locomotives maintenance, avoiding breakdowns. The money sucked in the future by such TAV projects will just make them worse.
20. Because with the excuse of the safety there is a wish for implementing the second tube of the T4 Frejus motorway tunnel, this in contrast with the objective of transferring freight traffic from road to rail.
21. The project is useless under all points of view and will create only damages to the ambient and economy.

The message of the Susa valley people is not limited to the environmental aspects, has nothing to do with NIMBY syndrome “a political way for escaping problems resolution” and can be very clearly stated as follows:

The Susa valley population is simply not available to accept the huge impacts deriving from a useless AV/AC line, damaging the local environment and the economy of whole Nation.

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54. *Parere del Comitato economico e sociale europeo in merito al Libro verde sui partenariati pubblico/privato e sul diritto comunitario degli appalti pubblici e delle concessioni COM(2004) 327 def. (2005/C 120/18).*
55. *Parere del Comitato delle regioni in merito al Libro verde sull'approccio dell'Unione europea alla gestione della migrazione economica (2006/C 31/09)*
56. *REGOLAMENTO (CE) n. 1159/2005 DEL PARLAMENTO EUROPEO E DEL CONSIGLIO del 6 luglio 2005 che modifica il regolamento (CE) n. 2236/95 del Consiglio, che stabilisce i principi generali per la concessione di un contributo finanziario della Comunità nel settore delle reti transeuropee*
57. *REGOLAMENTO (CE) N. 807/2004 DEL PARLAMENTO EUROPEO E DEL CONSIGLIO del 21 aprile 2004 recante modifica del regolamento (CE) n. 2236/95 del Consiglio, che stabilisce i principi generali per la concessione di un contributo finanziario della Comunità nel settore delle reti transeuropee*
58. *DECISIONE N. 1692/96/CE DEL PARLAMENTO EUROPEO E DEL CONSIGLIO del 23 luglio 1996 sugli orientamenti comunitari per lo sviluppo della rete transeuropea dei trasporti*
59. *DECISIONE DELLA COMMISSIONE del 30 maggio 2002 relativa alle specifiche tecniche d'interoperabilità per il sottosistema energia del sistema ferroviario transeuropeo ad alta velocità di cui all'articolo 6, paragrafo 1, della direttiva 96/48/CE [notificata con il numero C(2002) 1949]*
60. *DIRETTIVA 2001/14/CE DEL PARLAMENTO EUROPEO E DEL CONSIGLIO del 26 febbraio 2001 relativa alla ripartizione della capacità di infrastruttura ferroviaria, all'imposizione dei diritti per l'utilizzo dell'infrastruttura ferroviaria e alla certificazione di sicurezza*
61. *DIRETTIVA 96/48/CE DEL CONSIGLIO del 23 luglio 1996 relativa all'interoperabilità del sistema ferroviario transeuropeo ad alta velocità*
62. *DIRETTIVA 95/19/CE DEL CONSIGLIO del 19 giugno 1995 riguardante la ripartizione delle capacità di infrastruttura ferroviaria e la riscossione dei diritti per l'utilizzo dell'infrastruttura*
63. *COMMISSION DECISION of 30 May 2002 concerning the technical specification for interoperability relating to the rolling stock subsystem of the trans-European high-speed rail system referred to in Article 6(1) of Directive 96/48/EC (notified under document number C(2002) 1952)*
64. *Oggetto: Aiuti di Stato N 810/2002 – Italia Piano di incentivazione per il trasporto di merci per ferrovia -articolo 38 della legge 1° agosto 2002, n. 166 - C(2003)4538fin*

Local Administration and Associations documentation:

In addition, all comments, observations and petitions prepared from 2002 until now and sent to Institutions, by:

- *Local administrations as Comunità Bassa Val Susa e Val Cenischia (CMBVS), Communs,*
- *Environmentalists associations, e.g. Legambiente, WWF, Habitat, Pro Natura Torino,…*
- *Spontaneous committees against the Turin-Lyon*
- *Letters of solidarity of associations and institutions*