LYON TURIN RAILWAY LINK: AN EUROPEAN INFRASTRUCTURE

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Göteborg – 11th of May 2015

TELT
Tunnel Euralpin Lyon Turin
A KEY LINK FOR THE MEDITERRANEAN CORRIDOR

AND FOR THE EUROPEAN NETWORK
A rail network is not only the way to meet traffic demand: it is also an instrument of territorial connection and social cohesion.

**The Core Network constitutes the real backbone of the European single market.**

*Cavour in 1846*, long before the unification of Italy, proposed the rail network as an instrument of national unification.

PASSENGERS: The Lyon-Turin in the European Metro Line

CITIES AS STATIONS - CORRIDORS AS LINES
IT WILL CHANGE THE GEOGRAPHY
AND THE WAY TO CONSIDER DISTANCES (REDUCED)

The new infrastructures cuts travelling time in half for European citizens.

GEOGRAPHY OF DISTANCES
100 km x 100 km

GEOGRAPHY OF TIME
100 min x 100 min
(R. Koolas)

TRAVEL TIME
LYON TURIN RAILWAY
Time reduced by half
The import-export trade along the Lyon-Turin corridor (yellow area) amounts to about 132 billion Euros (2014) and it’s equal to 40% of the Italian exchange with all the other 27 countries of the European Union. The annual total of exports surpasses the value of imports.

Source: Italian Trade Agency
There is a market for rail traffic, but the old Fréjus railway does not match the demand for it.

**The Alpine Convention strategy**: measures to limit negative effects of transport, including the emission of greenhouse gases.

Traffic volumes in Alpinfo B segment (Ventimiglia to Trieste) **more than doubled between 1984 and 2012**.

Freight traffic between France and Italy makes up most of the total, but the railway is able to catch only a little part of it: **9% OF THE TOTAL**, compared with 29% on the German destination and 64% on the Swiss one (2012 data).

**IN THE ITALY-FRANCE CORRIDOR FREIGHT FLOWS ARE PRESENTLY CONFINED TO ROAD TRANSPORT** or deviated to other routes, causing congestion and generating additional costs.
All major Alpine crossing rail tunnels, like the Fréjus, are now being replaced by modern infrastructures built at a lower altitude (Loetschberg, Gotthard, Ceneri, Koralmb, Brenner, Semmering).

The train is competitive when it is able to maintain a suitable and regular speed: the only way to get it going in the plains, where there are mountains, is to construct "base tunnels" through the mountains at the lowest possible altitude.
The Cavour tunnel (i.e. the Fréjus tunnel, built by the political leader of Piedmont, later of the newly established State of Italy) is among the oldest of the Alps: designed in 1856 - opened to traffic in 1871), among the highest (1258 meters), the most penalizing (gradients of up to 32 ‰) and narrowest (341 cm width of the tracks, against the standard of 355). The requirement of additional locomotives imposed by the slope, the reduced module rail (maximum length 550 m maximum load 1150 tons) and the constraints of the tunnel are the cause of 50% higher transport costs, as compared to its competitors. The old line is out of business.
The Lyon-Turin Base Tunnel: 57 km

45 Km IN FRANCE - 12 Km IN ITALY

In France 3 access tunnels already made (9 km) and ongoing work at Saint Martin la Porte
In Italy 1 exploratory tunnel (7.5 km) under construction in Chiomonte (state of drilling: 3 km)
Base Tunnel: construction slots

civil works, equipment and technological buildings
Compliance with the technical infrastructure parameters of the TEN-T guidelines: electrification; track gauges; ERTMS-ETCS; train length; axle load; line speed......

By-passes connect the tubes every 333 m
7% of the total drilling has been accomplished
The cost of the project: 8.6 billion euros (€ 2012)

| PROJECTS ARE SIMILAR FROM THE ECONOMIC POINT OF VIEW (parameter cost/km) |
|-----------------------------|-----------------------------|-----------------------------|

<table>
<thead>
<tr>
<th>UNIT COST (€/mln / km)</th>
<th>LENGTH (km)</th>
<th>COST (for each tube)</th>
</tr>
</thead>
<tbody>
<tr>
<td>CENERI</td>
<td>15.4</td>
<td>83.8</td>
</tr>
<tr>
<td>BRENNER</td>
<td>55.0</td>
<td>83.7</td>
</tr>
<tr>
<td>NEW FRÉJUS</td>
<td>57.0</td>
<td>86.0</td>
</tr>
<tr>
<td>LOETSCHEBERG</td>
<td>35.0</td>
<td>87.0</td>
</tr>
<tr>
<td>GOTHARD</td>
<td>57.0</td>
<td>96.2</td>
</tr>
</tbody>
</table>

- The table shows the unit cost, length, and cost for each project.
- The projects are similar from the economic point of view in terms of parameter cost/km.
The Cost Benefit Analysis (CBA) of the New Line Turin Lyon

2012 - Overall results of the project, calculated according to the economic parameters defined by State guidelines of both France and Italy. The CBA key results are calculated under three scenarios derived from the EU Study “The 2009 Ageing Report”

<table>
<thead>
<tr>
<th></th>
<th>Permanent shock</th>
<th>Lost decade</th>
<th>Rebound</th>
</tr>
</thead>
<tbody>
<tr>
<td>Millions €</td>
<td>$F^1$</td>
<td>$I^2$</td>
<td>$F^1$</td>
</tr>
<tr>
<td>NPV^3 economic</td>
<td>-8.981</td>
<td>-10.228</td>
<td>1.142</td>
</tr>
<tr>
<td>NPV^3 external effects</td>
<td>7.824</td>
<td>6.974</td>
<td>13.149</td>
</tr>
<tr>
<td>NPV^3 total</td>
<td>-1.156</td>
<td>-3.253</td>
<td>14.291</td>
</tr>
<tr>
<td>IRR^4</td>
<td>3.51%</td>
<td>3.09%</td>
<td>5.09%</td>
</tr>
</tbody>
</table>

1. Financial statement according to the French approach, with external costs parameters varying by country.
2. Financial statement according to the Italian approach, with external costs parameters varying by country.
3. Net Present Value (NPV). Todays referred value, obtained by a reduction at a given rate of estimated values for the years of the project until 2072.
4. Internal Rate Return (IRR). Discounting rate which makes NPV equal to zero.
The Cost Benefit Analysis (CBA) of the New Line Turin Lyon

2014 - The Cost-Benefit Analysis updated in accordance with the construction decision

The ACB analysis has been updated to 2014 in order to reflect some important facts occurred after 2011, that substantial change the reference scenarios:

a) the evolution of the design process
b) a different implementation of the project according to stages of construction, i.e. the new timing of some major components of the project with respect to the time schedule foreseen in 2011.

The change of the project (“initial stage of construction”) has improved the socio-economic impact of 53% in terms of Net Present Value.

<table>
<thead>
<tr>
<th></th>
<th>Approach I2 2011</th>
<th>Approach I2 2014</th>
</tr>
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<tbody>
<tr>
<td>NPV tot</td>
<td>11 533</td>
<td>17 696</td>
</tr>
<tr>
<td>TIR</td>
<td>4.68%</td>
<td>5.63</td>
</tr>
</tbody>
</table>

Updating of the socio-economic analysis and Cost Benefit Analysis of the New Railway Line between Turin and Lyon following the new phasing of construction – CERTeT Bocconi 2014

NPV: Net Present Value - TIR: Internal rate of return
Figures are in euro 2010, constant prices
CBA: The environmental value of rail

Between Italy and France nearly 3.5 million trucks per year (1.5 million trucks through Ventimiglia; 0.8 million through Mont Blanc; 1 million through Fréjus; 0.2 million through other minor crossings) for about 40 million tons: **the opening of the base tunnel Lyon-Turin will cause the shift from road to rail of at least 600,000 trucks/year.**

Heavy vehicle transit through Switzerland is about 1.25 million trucks per year for about 14.4 million tons transported by road: the goal associated to the opening of the Gotthard rail base tunnel is to reduce this figure up to 650,000 trucks/year.

An annual reduction of greenhouse gas emissions equal to $\approx 3$ Mln equivalent tons of CO$_2$ is foreseen, approximately the amount of emissions of a city of 300,000 inhabitants. **The CO$_2$ balance of the project will be positive in 23 years from the beginning of works** and the positive net effect will last for the whole life of the infrastructure (presumably, for centuries).
The Susa Valley today

The territory is respected and valued
The territory is respected and valued

3 KM IN THE SURFACE, ON AREAS ALREADY COMPROMISED

The work site will occupy 8 hectares of land presently not being used and 7 hectares already compromised, which will be turned back over to nature
The work site will occupy 8 hectares of land presently not used and 7 hectares already compromised, that will be naturalized back.
The territory is respected and valued

The new International Susa Railway Station: designed by Kengo Kuma
The new Saint Jean de Maurienne International Railway Station

In analogy with the Susa International Railway Station
Chiomonte: view of the site
The Health Impact assessment will integrate the environmental monitoring plan.

Today, the collected data don’t show environmental changes and are in line with the previous scenario.
1 October 2014: Order of Service for the start of work in Saint Martin La Porte.

11 February 2015: Start of the excavation at the second branch of the descendery.
Construction costs and financing

€ 8,6 billion, in constant values 2012 (PD approved)

Financing of studies and reconnaissance works

Certification of costs of the Cross-Border Section under way by

UNIT COST (€/mln / km)  
LENGTH (km)  
COST (for each tube)

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<td>83,7</td>
<td>55,0</td>
<td>1,53</td>
</tr>
<tr>
<td>MONT CENIS</td>
<td>86,0</td>
<td>57,0</td>
<td>1,51</td>
</tr>
<tr>
<td>LOETSCHBERG</td>
<td>87,0</td>
<td>35,0</td>
<td>2,49</td>
</tr>
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<td>GOTHARD</td>
<td>96,2</td>
<td>57,0</td>
<td>1,71</td>
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PROJECTS ARE EQUIVALENT FROM THE ECONOMIC POINT OF VIEW (parameter cost/km)

26 February 2015 - Request for European contribution.
3.06 billion euros of planned expenditure for the period 2014-2020 (40% EU cofinancing).
THE GITAV GROUP TO PREVENT AND FIGHT AGAINST ORGANIZED CRIME WITHIN THE TURIN-LYON PROJECT

The PROTOCOL OF LEGALITY:
more precautionary anti-mafia measures signed with trade unions in Turin on September 2012

- Constant interface with the GITAV
- Anti-mafia Information with no threshold limit
- Prior notification to the Prefecture of all ENTERPRISES, PERSONS and EQUIPEMENTS operating in our sites
- Traceability of financial flows

THE FRANCO-ITALIAN AGREEMENT OF 2015:
A body of rules regulating procurement as a tool to fight against mafia infiltration (Art. 2)
The first anti-mafia international agreement in Europe for the construction of a public infrastructure (regardless of national boundaries)
Legality protocols and the fight against mafia infiltration: first results

From 2012 up to now:

**486 ANTIMAFIA INFORMATION REQUESTS FOR COMPANIES** THAT HAVE WORKED, OR ARE WORKING, IN THE MADDALENA SITE.

*(received in all n. 4 "disqualifying" information for the first period of activity, one of which was cancelled by the next release)*

+ CHECKS ON AFFILIATED UNDERTAKINGS:
  All subsidiaries / associates / owners or holders of the share capital.

**TOTAL REQUESTS: 623**
The New Railway Line Turin-Lyon – NLTL: BASIC DATA

- 269.8 km to Turin from Lyon
- 70% in France, 30% in Italy

Base Tunnel: 57 km
- 45 km in France
- 12 km in Italy

ESTABLISHMENT OF THE TECHNICAL OBSERVATORY, GATHERING EXPERTS OF ALL CONCERNED INSTITUTIONS, WITH THE AIM TO DEFINE THE NEW PROJECT:

- 236 MEETINGS FROM 12 DECEMBER 2006 UNTIL TODAY
- 300 HEARINGS OF EXPERTS, INCLUDING 65 INTERNATIONAL ONES
- 10 WORKING GROUPS
- 9 PAPERS SUMMARIZING ALL STUDIES*

* The last book entitled: “Contributions to the decision-making approach to major infrastructures” is being printed.

In Italy the project is the result of a debate with local communities

1 – CCIA,A e FEDERPIEMONTE project - 1996
2 – ALPETUNNEL project - 1997
3 – ATS – Provincia project - 1997
4 – Provincia project - 2000
5 – RFI-LTF project - march 2003
6 – Regione (Grosseto) proposal - 2003
7 – RFI (Cso Marche) proposal- 2003
8 – RFI project - 2004
9 – Osservatorio – Mixed variant
10 – Osservatorio – Studying Alternatives
11 – Osservatorio – The new Preliminary Project

The new project of the Turin-Lyon is radically different from the one of 2005 (left bank of the Dora river), contested by the Valle di Susa. The Observatory worked with all the communities involved and determined a new route (right bank of the Dora river), after evaluating 11 ALTERNATIVES.
On February 23rd, 2015:
BIRTH OF THE NEW PUBLIC PROMOTER

TELT sas
Tunnel Euralpin Lyon Turin sas
It is a point of no return...

....overcoming conflicts

....a new phase of dialogue

...intimidation and any form of violence against people and things cannot be the answer

Employment Opportunities...

...development of the territory

.....conflict-solving under the control of institutions
CAN WE RELY ON A LEGACY FROM THE NINETEENTH CENTURY FOR OUR FUTURE?

IN 140 YEARS TRAINS AND TECHNOLOGY HAVE CHANGED....

1871

... ONLY THE TUNNEL HAS REMAINED THE SAME

2015

THANK YOU FOR YOUR ATTENTION!