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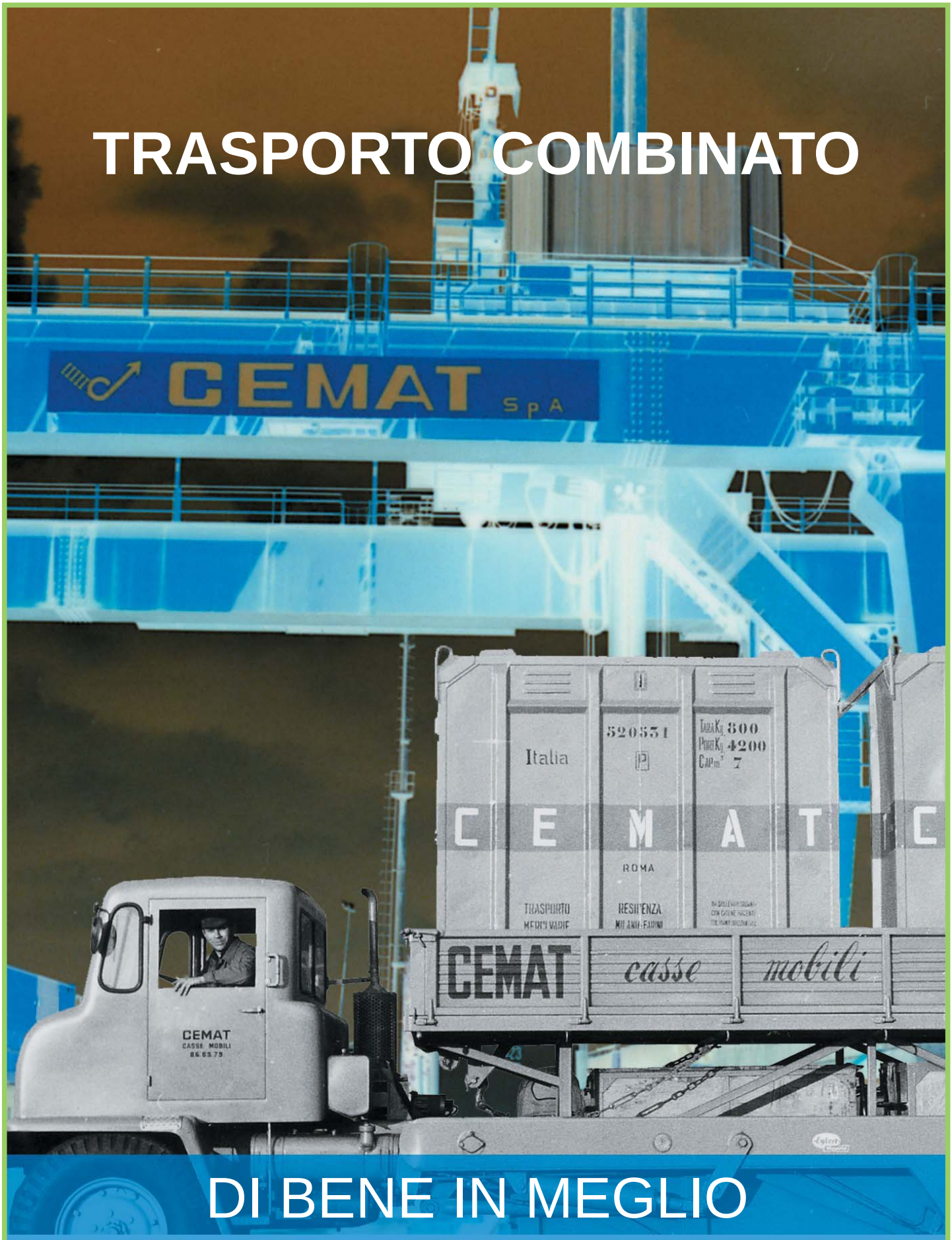
Crossing the Alps

Booklet N° 11
May 2002

TRASPORTO COMBINATO



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EUROPEAN
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Crossing the Alps

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SOURCES: European Commission, Prognos, ECMT, Alpinfo,
F&L, ECTA, Confetra, Amt der Tiroler Landesregierung, EVED (Eidgenossisches Verkehrs- und Energie Department)

Contents

Introduction

The European Commission's "White Paper" and the forecasts of several institutions show a tremendous increase in transport volumes - of passengers and goods - until 2010
We have, in the last decade, already seen together with the creation of one single European market, a over proportional increase in transport volumes, especially of merchandise, across the Alps. According to all forecasts, we can assume that this development will follow the same pattern in the next few years.
The dynamic evolution of the goods exchange in the single European market, the entrance of new member states into the EU and the growing importance of the Italian ports which are serving the Central European Industries as a gateway to the Near and Far East, will boost transport volumes.
The Alps have always been a natural barrier for the mobility of persons and goods, however
the Alpine crossings are limited to very few passes and tunnels and we have seen in recent incidents in the Mont Blanc, Felbertauern and Gotthard-tunnels that this existing infrastructure is very vulnerable.
Furthermore, the new Security Measures are again reducing the capacity of the repaired tunnels.
The big Rail-infrastructure projects will not be ready within the next 10-15 years and new highways for transalpine traffic will not be built - "The Convention on the Alps"!
The European Freight and Logistics Leaders Club (F&L) has confronted this difficult situation and created a special working group, to analyse all aspects of this situation. In this leaflet we want to present short-term, easy to realize solutions where relatively low investment is needed. We want to propose initiatives, that could or even should be realized by the European Commission, the involved railway companies, the politicians and by the operators.
We want to promote intermodality which is currently hindered more by the inefficiency and price policy of the railways than by a lacking infrastructure. Intermodality should obtain the means to be able to compete with road transports.
10 years are too long to solve problems which bring the risk of marginalisation to the economies of the Southern European Countries, or even create serious problems to the European economy as a whole - "It is time to decide!"

Targets of this working-group

- to find short-term, easy to realize solutions
- with a relatively low investment
- by identifying hidden capacities and bottlenecks
- to bring our ideas to the EU commission

Involved Modes

- Road
- Rail
- Short-Sea Shipping

Countries Concerned

- Austria, Switzerland, France, (Slovenia), - transit countries
- Italy - without Alpine CROSSINGS cut off from rest of EUROPE
- Sending/Receiving Countries - Europe as a whole

Problems

- Geographical situation
- Political situation
- Environment
- Infrastructure
- Transport structure

Proposed solutions

- Road - Rail - Short-Sea
- Hidden reserves / capacities
- Bottle-necks
- Interoperability
- Separation of passenger - goodstransport
- Basically the same problems as the cargo transport all over Europe

Visions

- New tunnels
- ⇨ Neat
- ⇨ Lyon - Turino
- ⇨ Brenner
- New Opera

Statistical Data

Increase of transport volumes

38-50% until 2010

10 Mio. employees

€ 1,000 Billion

> 10% GDP

Sources: European Union, Prognos, F&L, ECTA, Kombiverkehr

Each day 7.500 km traffic jam

Sources: European Union, Prognos, F&L, ECTA, Kombiverkehr

Each day 7500 km traffic jam ⇨ 10% of the road network

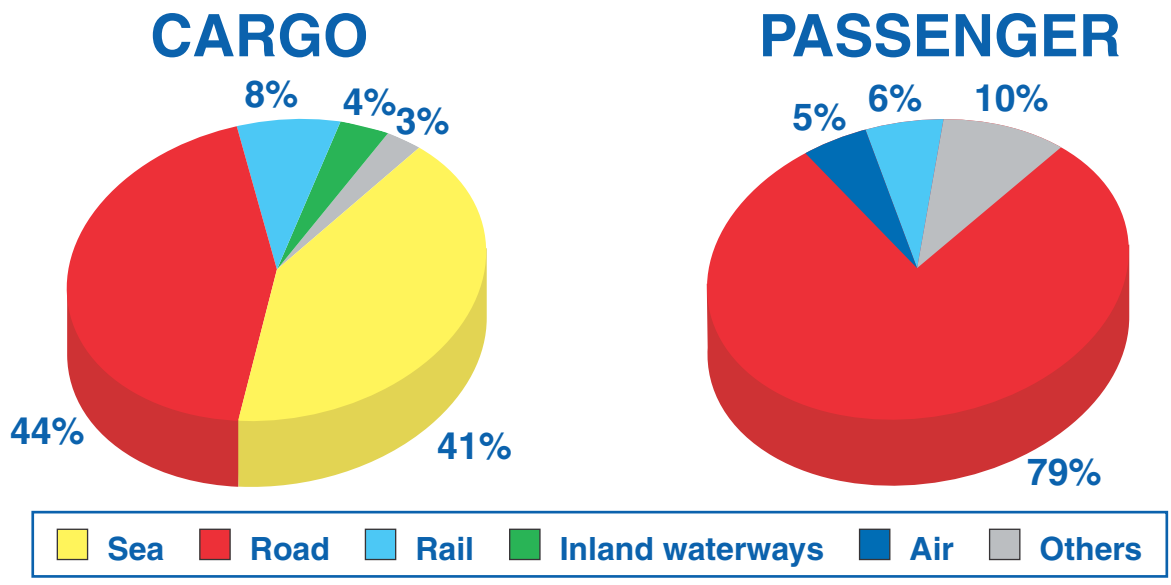
16000 km of railways (20% of the network) ⇨ Bottlenecks ⇨ 0,5% of community GDP

Traffic forecast
- road transport +50% over 1998 level = 60 billion tkm
- road congestion increase by 142% = 80 billion €/year = 1% EU GDP

(IF NOTHING IS DONE!!)

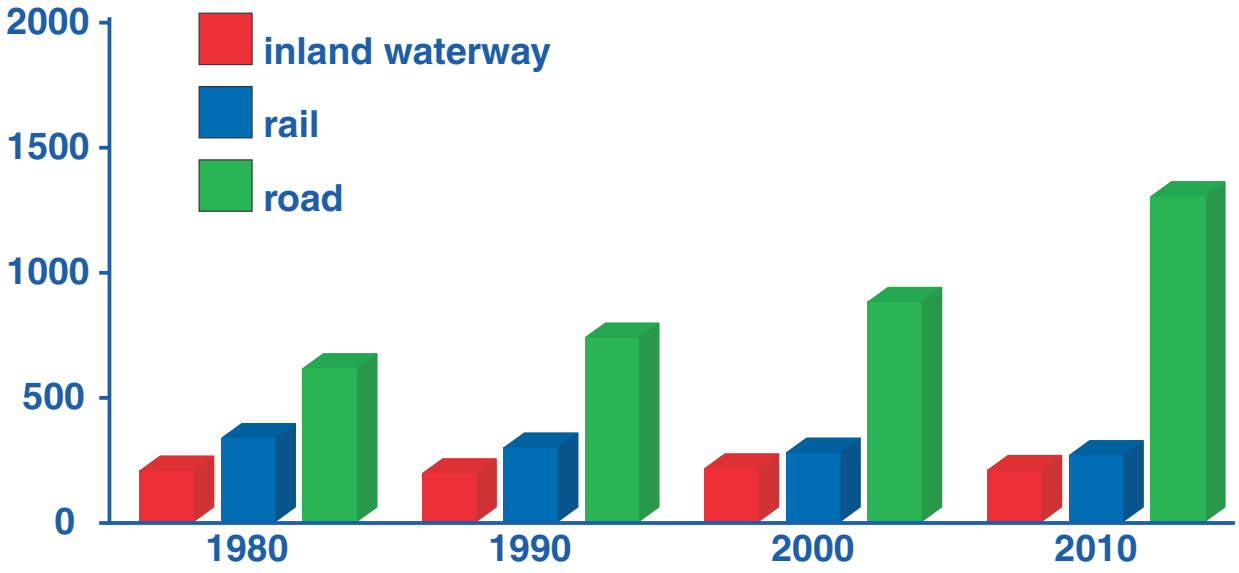
Sources: European Union, Prognos, F&L, ECTA, Kombiverkehr

Current Modal Split



Sources: European Union, Prognos, F&L, ECTA, Kombiverkehr

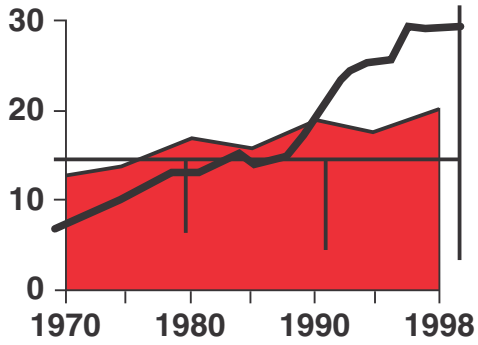
Growth forecast per mode in ECMT countries



Routes across the Alps

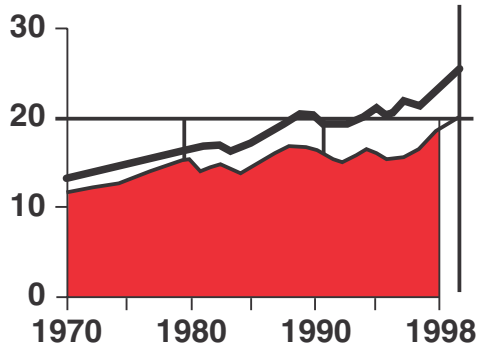
Flow of Goods crossing the Alps 1970 - 1998 over Mt. Cenis/Frejus - Brenner Mil. Tonnes p.a. (Net)

France



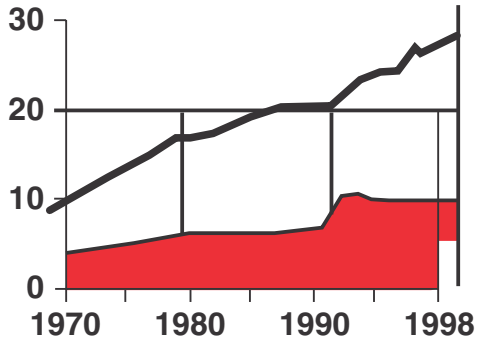
1998	
Road	74%
Rail	26%
Total	35.6 Mil. t

Switzerland



1998	
Road	28%
Rail	72%
Total	27.0 Mil. t

Austria



1998	
Road	74%
Rail	26%
Total	32.5 Mil. t

Goods Transport 1998 Alpine ARCH Mont Cenis / Fréjus /F - Brenner /A

- 88% increase of the transalpine goods transport (Inland, Import, Export, Transit) Road + Rail F, CH, A, within the last 17 years
- Share of Rail 1998 CH 72%, F 26%, A 26 %
- Modal split transit transports
  Rail: CH 81%, F 24%, A 27%,
  Road: CH 19%, F 76%, A 73%
- Totally 1,2 Mio trucks across Swiss Alps
- 645.000 trucks transit

The following new figures have been released for the route between Mt. Cenis/Frejus (F) - Brenner (A):

- There has been an increase of 88% within the last 17 years on the whole alp crossing traffic (inland, import, export and transit traffic).
- In 1998 the railways had a share of 72% of all transports in Switzerland, in France and Austria they had 26%.
- The share of intermodal transport of the whole transit traffic in 1998 shows that 81% of goods travelling through Switzerland are by rail, whilst the share of transports by rail in France and Austria lie at only 24%, respectively 27%. In contrast to this the share of goods transported on the roads in France (76%) and Austria (73%) is very hight compared to Switzerland (19%)
- Around 1,2 Million heavy road transport vehicles crossed the Swiss Alps in 1998, of these 645.000 vehicles were in transit.

Transport: Goods transport

Goods Transport • Traffic through the Alps

Rail

million net-tonnes

	Switzerland		Austria	France	Total
	St. Gotthard	Simplon/ Lötschberg	Brenner	Mont-Cenis	
1985	11,2	2,8	4,7	7,5	26,2
1990	13,6	4,3	5,5	7,2	30,6
1994	13,2	4,7	8,3	7,7	33,9
1995	13,6	4,4	8,4	8	34,4
1996	11,7	4	7,9	9,7	33,3
1997	13,7	4,3	7,8	10,1	35,9
1998	15	4,3	8,6	9,3	37,2
1999	14,9	3,5	8,3	9,2	35,9
	average annual growth (%)				
85-90	4	9	3,2	-0,8	3,2
90-98	1,2	0	5,7	3,3	2,5
1999	-0,7	-18,6	-3,5	-1,1	-3,5

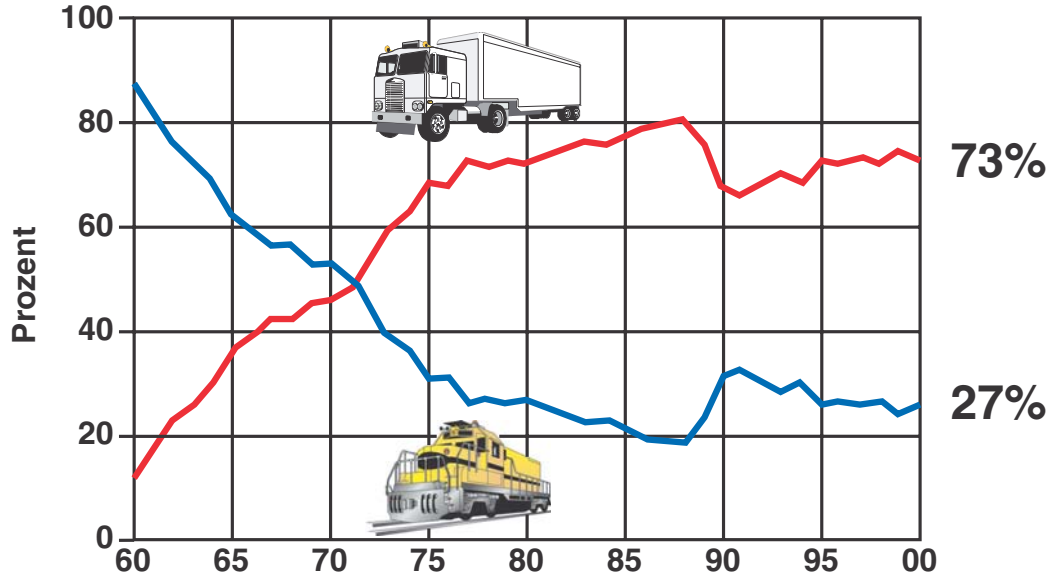
Road

1985	1,9	0,8	14,3	12,3	29,3
1990	3,1	1,1	13,6	21,8	39,6
1994	5,1	1,1	17,6	26,5	50,3
1995	5,5	1,1	20	25,8	52,4
1996	5,9	1,2	19	25	51,1
1997	6	1	20,1	25,3	52,4
1998	6,5	1,2	22,5	26,3	56,5
1999	7	1,4	25,2	25,7	59,3
	average annual growth (%)				
85-90	10,3	6,6	-1	12,1	6,2
90-98	9,7	1,1	6,5	2,4	4,5
1999	7,7	16,7	12	-2,3	5
	Number of heavy goods vehicles (1000)				
1990	548	185	925	1279	2937
1998	1035	200	1380	1551	4166
1999	1101	216	1550	1541	4408

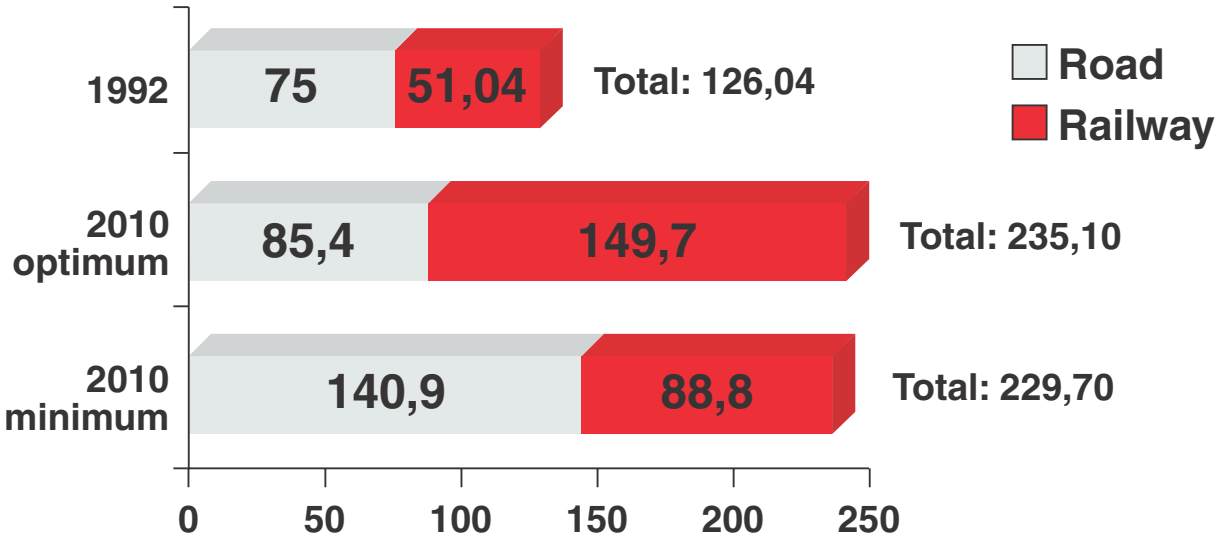
Source: Gesamtverkehrsfragen Switzerland

Note: Internal, import, export and transit traffic

Goods transport
BRENNER ROAD/RAIL 1960 - 2000



Transport Development via the Alps (million tons)

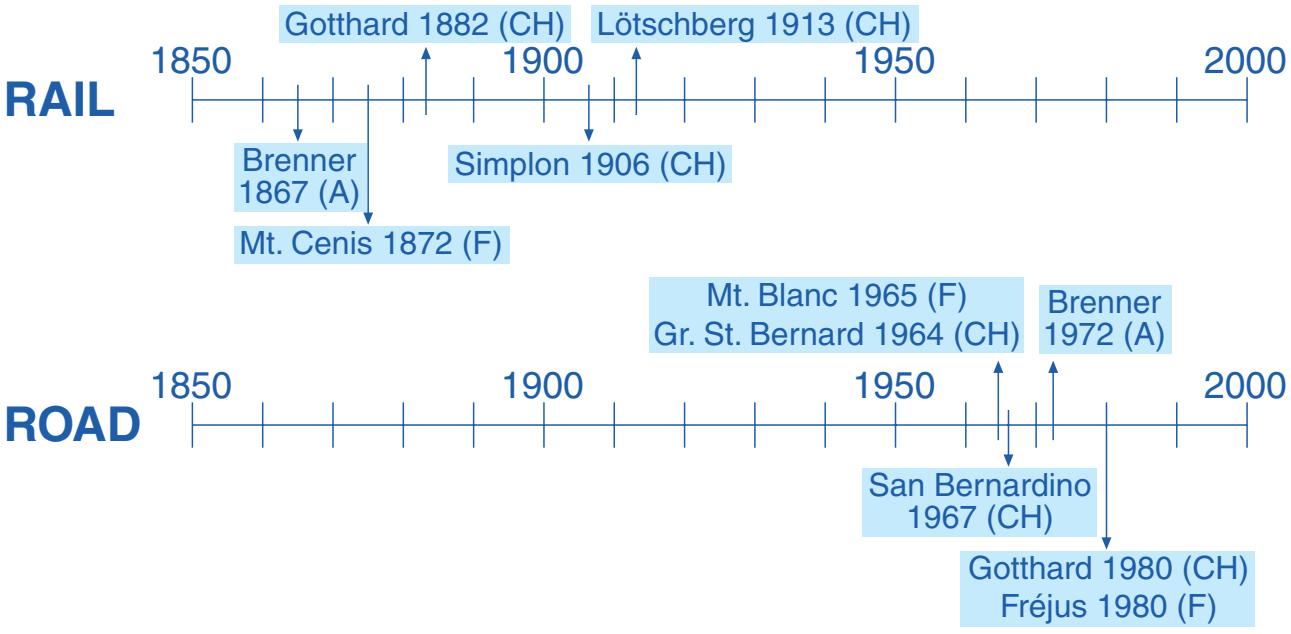


(Source: Prognosis/European Union)

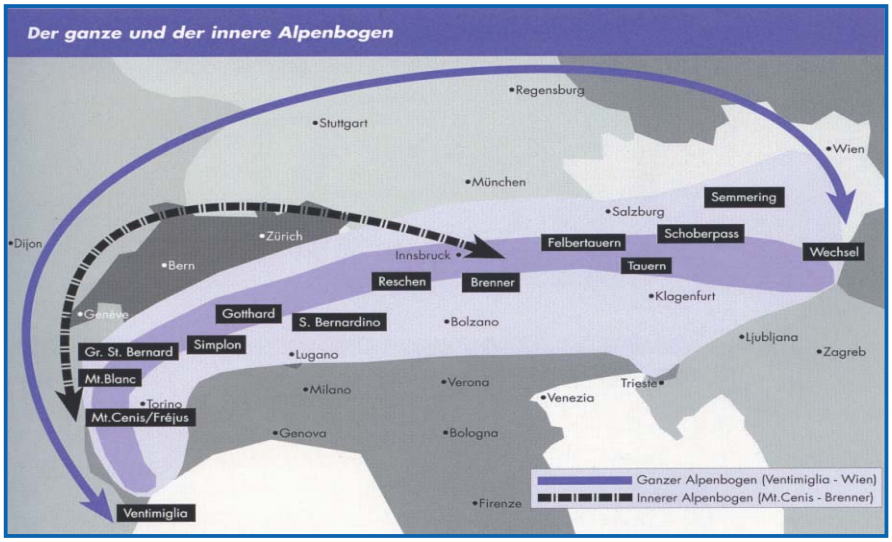
Geographical situation

- The Alps are one of the most difficult to overcome geographical barriers in EUROPE
- Roads follow mostly the old roman roads
- Railway tracks are 100 and more years old
- No inland water ways
- Old monopolistic national railways - especially in the infrastructure management

Alpine tunnels



Routes across the Alps



Ganzer und Innerer Bogen: Alpenquerender Güterverkehr (Schiene und Strasse) 1994 nach Verkehrsart

Verkehrsart	Ganzer Bogen		Innerer Bogen	
1994	Mio t	%	Mio t	%
Binnenverkehr	19,6	15	3,1	3
Import/Export	47,0	35	26,9	32
Transit	66,2	50	54,9	65
Total	132,8	100	84,9	100

Environment

- Transport is a key factor in modern economies.
- Permanent conflict between demands for more mobility ⇨ and the public opinion - congestion, pollution, environment, safety, service quality
- Increased economic activity and prosperity require the increased transport of goods.
- Investment in any ROAD or RAIL Infrastructure Project has to overcome high environtalism pressure and endless environmental compatibility procedures.

Political Situation

- EU-Directive 91/440 - only on paper?
- New White Paper of the EU ⇨ Hopes for the future
  - Cross - subsidization ROAD ⇨ RAIL
  - Alpine Crossings as priority projects
  - EU-participation 20% of infrastructure projects
  - External costs (the environmentally related costs) included in ROAD TOLLS
  - Interoperability of toll - road pricing systems
  - Uniform fuel taxation
  - Shift the balance between modes of transport
  - Marco Polo (30% subsidies promoting intermodal systems
- Galileo

Road

- New highways - impossible
- Second tunnels necessary (see the terrible tunnel-accidents)
- Enlargement (3rd lane) of existing highways very difficult to realize
- The Convention on the Alps

Hidden capacities - Road

- Night-ban Brenner-Kufstein ⇨ unused infrastructure for 7 hours every night (only 10% trucks at night)
- Harmonisation of European legislation (weight-limits, driving times, driving bans on holidays, environmental standards etc.
- Standardisation of equipment ⇨ interoperability between all modes
- Harmonisation of business procedures e.G. Loading / unloadingtime, safety regulations, performance measurement etc.
- Harmonisation of software and IT
- Galileo - 2008 - satellite navigation and positioning system - avoiding traffic jams, reducing drivingtime and petrol consumtion by 15 - 20%
- Switzerland - increase of max. weight for trucks 28t to 40t ⇨ theoretical extra capacity - 40%

Road - Existing bottlenecks

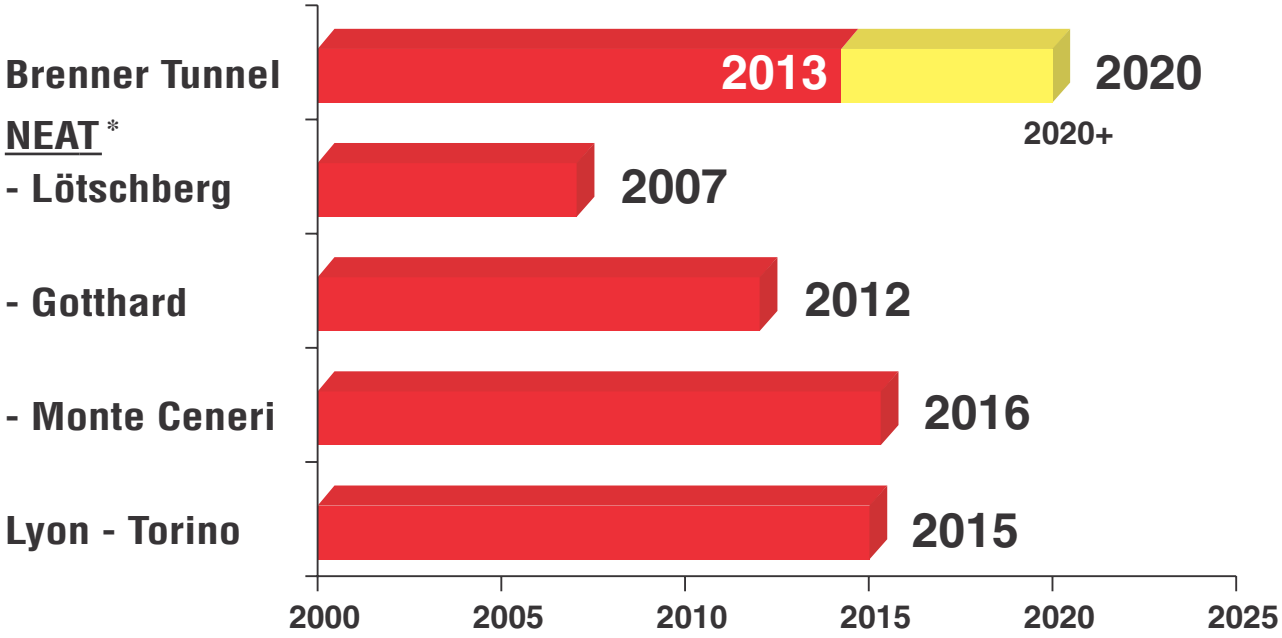
- **France, Italy, Montblanc Tunnel**
  Planned one-way traffic alternating Frejus-Montblanc

- **Switzerland - Italy**
  Road transport + 30% since 1.1.2001
  Lack of parking areas (500 trucks) in Basel and Chiasso
  Daily traffic jams at the borders (Chiasso - 30 km)
  ⇨ extreme long transit times
  Gotthard tunnel closed at least 6 month
  ⇨ Swiss road infrastructure close to collapse

- **Austria - Italy**
  Highway Kufstein - Verona mostly only 2 lanes
  – Öko-Points - future regulation unknown
  – Road transport is near to ist limit - suffocation by its own growth

But to let road pay for the inefficiency of rail is economical nonsense.

Railway projects of the EU



Rail

HOW TO BRING EUROPE´S INFRASTRUCTURE INTO THE 21ST CENTURY

- Realisation of the Trans-European network infrastructure (400 billion € estimated cost 1994!)
- Railway lines dedicated exclusively to goods services *NEW OPERA*
- Revitalising the railways (European railfreight-services are facing marginalisation Europe 8% (USA 40%) - average speed 18 km/h)

* Neue Alpentransversale
(NRLA: New Raillink through the Alps)

The railway service across the Alps suffers of the same problems as railway service all over Europe and particularly on the lines providing the connection to the goods origin / destination areas.

- no Paneuropean infrastructure network - monopolistic national organisations still existing
- realisation or liberalisation?
- Discrimination of goods transport
- railways need better capacity management
- non competitive pricing policy
- harmonisation of security rules and labour contracts
- interoperability - no national solutions but europe-wide-systems
- harmonisation of signals and techniques

European Railway System

- 3 different gauges
- 12 different power systems
- 18 different safety systems
- 9 different signalling systems
- 5 different couplings
- Locomotive change at every border

Hidden capacities

A) Better operative solutions lead to better use of tight resources

- Longer trains, heavier trains
- Priority of cargo trains against passenger trains
- Same speed of cargo and passenger trains (120 km/h) ⇨ higher capacity on track
- Use of less attractive time slots lead time A-B ⇨ A-C (more attractive rates)
- Interoperability - no national solutions but Europe-wide systems
- Harmonisation of signal systems, security rules, labour contracts
- Free access
- Use of multivoltage locomotives
- Mixed trains - more shuttle trains
- Better use of empty equipment travelling in both directions
- More modern waggons with modern brake-systems (less maintenance-costs)
- Industrialisation of rail
- Better use of tight RESOURCES (average use of cargo trains 60% or less, intermodal trains 85%!!) - better capacity management
- Competitive pricing policy

B) Hidden capacities of the Rail Network

Austria

Theoretical capacity via Brenner 240 trains / per day
ACTUALLY RUNNING 140 trains / per day

Switzerland

- Cooperation of SBB with Trenitalia and HGK, Cologne
- "Rolling highway" Novarra - Freiburg - max height of trucks
- Waiting for the new railway tunnels

France

- Modane Tunnel - increased capacity by French locomotives ⇨ Torino / Italian Locomotives ⇨ Chambery
- Until 2008 Lyon - Chambery

Rail bottlenecks

Italy

- Bypasses of overcrowded areas like Torino and Milano (border Chiasso or Luino - no problems)

Bottlenecks for:

- Modane crossing between Bussoleno and Torino
- **Swiss** crossings near Milano
- **Brennero** between Trento and ALA
- Tarvisio between Treviso and Conegliano
- Mainly because in that points you have local passenger traffic, long distance passenger traffic and freight traffic / transport
- Reactivation of unused paths

Future Railway capacities NEAT* / CH

CAPACITY INCREASES OF INFRA-SLOTS

Transit-Axe via	actual 01/02	2006/07	2012
Gotthard	about 140	160 + 16%	206 + 47%
Lötschberg/Simplon	about 45	90 + 100%	104 + 115%
Total	about 185	250 + 35%	310 + 67%

- Reduced height differences ⇨ faster, longer, heavier cargotrains less production problems
- Newest safety systems ⇨ further capacity increases, reduced production costs
- Request to get higher priority for transit cargotrains
- Connected rails to these tunnels will be increased - also by the neighbouring states (promise!?)

* Neue Alpentransversale
(NRLA: New Raillink through the Alps)

Short Sea Shipping

- 41% Intra-Community goods transport - growth rate 27%
- "Motorways of the sea" ⇨ sea links around bottlenecks (Alps, Pyrenees)
- 11 Mio t could be shifted to short sea shipping (study of 1991)
- Sea transport from Northern Europe to Italian harbours is already an alternative to road or rail transports via the Alps
- Only possible for goods transports in huge quantities - Steel, Paper, Wood
- Appropriate distribution centres needed
- A pipeline flow of goods could solve the problem of longer transit times (Belgium-Italy 8-9 days) and low frequency

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- short sea shipping needs
  - new marketing concepts
  - more modern technology for ships and harbours
  - speeding up of "Hinterland Transports" to and from the harbours
  - introduction of logistic chains
- unbalanced cargo flow N ⇨ S versus S ⇨ N
- competitive disadvantage of big volumes + no lead time versus smaller volume + high frequency

Shippers - positive approach shipping companies - rather negative:

Low frequencies, unbalance of cargo and generally speaking not enough cargo to build up a system, which really can unburden the Alpine transit.

What is to be done?

Sources: European Union, Prognos, F&L, ECTA, Kombiverkehr

Intermodality

- Future potential for railways to get more volumes from today´s traditional road clients ⇨ the typical rail cargo like steel and paper is already transported to a high percentage by rail!!

- Intermodality allows the collection of cargo from different shippers ⇨ consolidation to block or shuttle trains

Intermodality

- From competition to cooperation

- Combining advantages of transport modes

Sources: European Union, Prognos, F&L, ECTA, Kombiverkehr

Intermodality

- The market share of intermodal transport will increase considerably

⇨ Increased traffic congestion

⇨ Road pricing

⇨ Environmental pressure

⇨ Higher road and diesel taxes

Turning Intermodality into Reality

- New EU support programme “Marco Polo” (30%)
- New EU funding rules (20%)
- Revitalizing of the railways
- Competitive price and service policy of the railways.

Turning Intermodality into Reality

- New EU support programme “Marco Polo” (30%)
- New EU-funding rules (20% - 2004)
- Use of all modes
- Price- and service-policy of the “revitalized” railways
- Commitment of the shippers - long term decisions
  - ⇨ Basis for investments in equipment, new developments and new trade lanes (fewer stranded investments!)
- Better use of available time slots + corresponding pricing policy

A new way of developing intermodality by commitment of Industry to intermodal transport

- No short term decisions - switching back to road due to minor price advantages
- Giving the transport providers the basis for investments in equipment, new developments and new trade lanes.
- Fewer “standed” investments - it is very costly and takes time to bring transports back from the road to the rail
- Better use of available time slots by 24-hour-loading or drop trailer/drop swap body yards - throughout the whole industry

New ways of developing intermodality

- Modernisation, privatisation and liberalization of the existing railway system
- Price- and service-policy of the railways
- Use of waterborne transport - short sea shipping
- Switching from competition between transport modes (e.g. rail/road) to competition between transport systems (e.g. road transport / sea transport)
- Commitment of the shippers

Conditions for fullfilling the great potential of intermodal transport

- One European timetable
- One communication network
- IT-Technology, tracking and tracing systems
- Multi-voltage or diesel engines
- Trains with adjustable gauge (for E/P)
- Improvement of available paths and speed
- More efficient methods of trans-shipment
- Mixed-trains - conventional/intermodal

Conditions for fulfilling the great potential of intermodal transport

- price-policy and service-policy of the railways
- PAN-EUROPEAN railway cooperation
- Modernisation of the railway systems
- No fragmentation - block/shuttle trains only
- TERFFS-TRANS EUROPEAN Freight Freeways
- Standardisation - equipment, infrastructure, signalling network
- European standards in training of railway personnel

SUMMARY

- Combining advantages of all transport modes - also short-sea-shipping
- Switching from competition between transport modes to competition between transport systems
- Better balance of modes
- Break the link between economic growth and transport growth

SUMMARY

REVITALISING THE RAILWAYS:

- offering quality at market prices
- concentrate on shuttle trains
- interoperability european wide
- giving preference to intermodal transport
- open access

IT IS TIME TO DECIDE

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Main measures to speed up and to increase the capacities for the rail transport of goods in Italy

Annex 1

Project	Due date
Link Genoa - Ventimiglia	
Completion of duplication of the section Ospedaletti - S. Lorenzo	2001
Completion of duplication of the section S. Lorenzo - Adora	2007
Route Torino - Modane (The Frejus-Line)	2006
Prolongation of the precedence - track Restructuring of the command centre in Bussolengo Infrastructure of communication train - ground Security equipment in the tunnel Alignment to profile PC 60	
By-pass North Torino	
First phase: Conjunction Torino Settimo - Alpignano with integration into the existing Line of Frejus	2006
Second phase: Section Alpignano - S.Ambrogio - Bussolengo with integration into the existing Line of Frejus	2010
Connection of the New „Tunnel of Frejus"	2015
Feasibility study have been effected, the project of effectuation has been defined as well as a time scheduling which forsees the availability of the tunnel by 2015	
Route Domodossola - Novara - Ovada - Genova e Luino - Gallarate	
- Alignment to codification P 80 on the route Novara - Domodossola - Iselle	2001
- Alignment to codification PC 45 on the routes Genova Borzoli - Ovada - Alessandria - Novara and Arona - Premosello	2001
- Alignment to codification PC 50 on the route Vignale - Oleggio - Sesto Calende - Laveno	2002
- Link between Sesto Calende and CTC on the route Gallarate - Laveno - Luino	2002

Main measures to speed up and to increase the capacities for the rail transport of goods in Italy

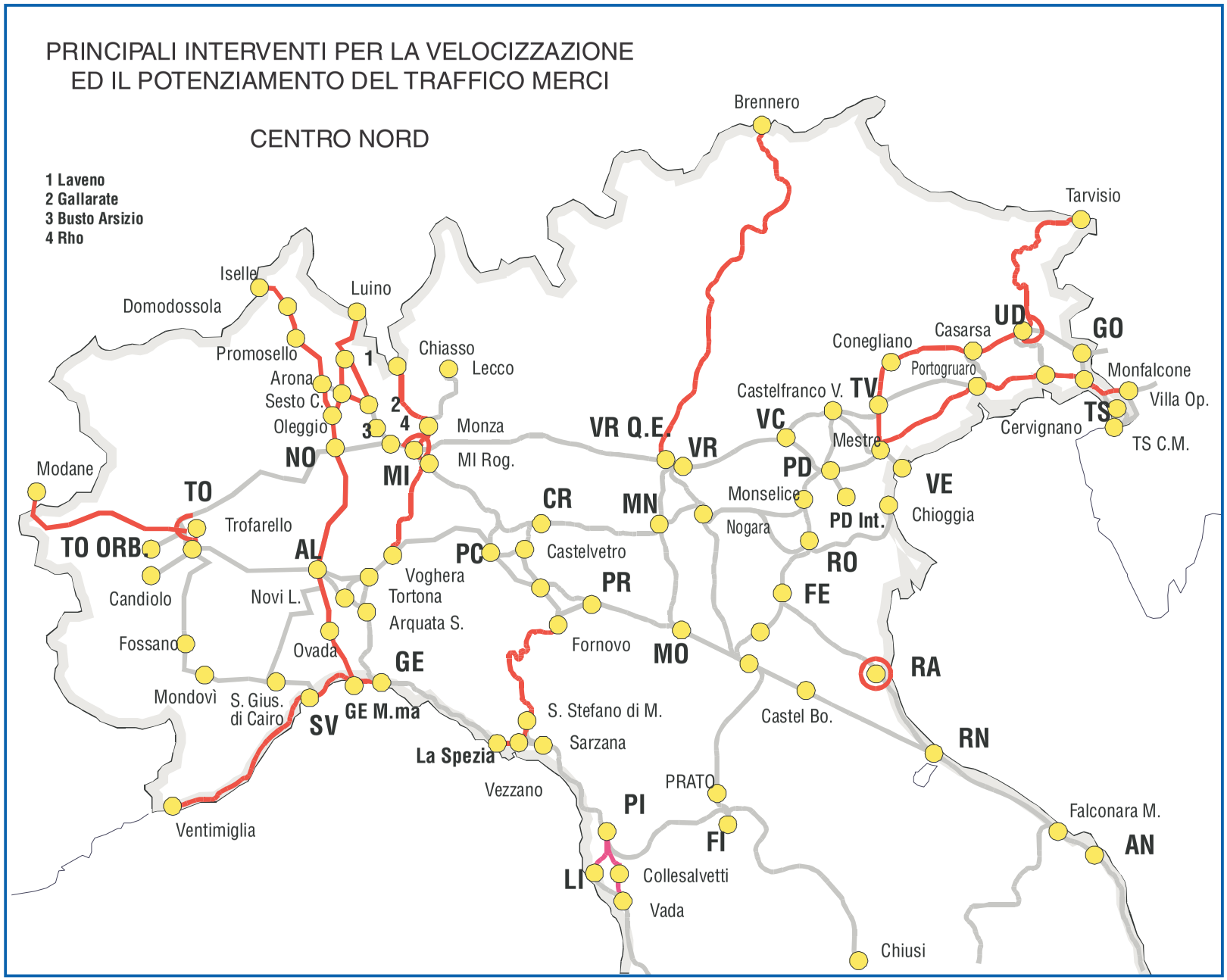
Project	Due date
Conjunction between Genova Borzioli and the Voltri port	2001
Line Milano - Chiasso	near compl.
Alignment to profile B P60	
By-pass North Milan	2010
Forsees the combination between the lines Milano - Chiasso (branch Rasoles) and Bergamo - Treviglio (Verdello) by reinforcing the existing tracks and the realisation of new pieces of lines	
Interventions during 1st phase:	
- Duplication Bergamo - Treviglio; reinforcement of facilities on the line Milano - Chiasso	
Line Verona - Brennero	
Variation of the trail with realisation of profile C	near compl.
New goods-station of Trento Roncfort	2006
Brenner Basis-Tunnel	
1st phase GEIE: update study of feasibility of the project 'basis-tunnel', cartography, geological explorations, traffic-previews, operative models etc. Conclusion of the activities	2001
2nd phase GEIE (not financed): complete elaboration of the project of the 'Brenner Basis Tunnel', obtaining of building permission, economic and financial analysis	
Routes Tarvisio and Villa Opicina	
Reinforcement of the corridor-links leading from the Venice junction to the axis Udine - Tarvisio and Portogruaro - Trieste/Villa Opicina for the future fifth corridor Venice - Trieste - Lublijana.	
- Reinforcement of the links afferent to the axis Udine - Tarvisio	2006
- Reinforcement of the network in Friuli - Veneto	2006
-Rationalization of the Udine-junction	

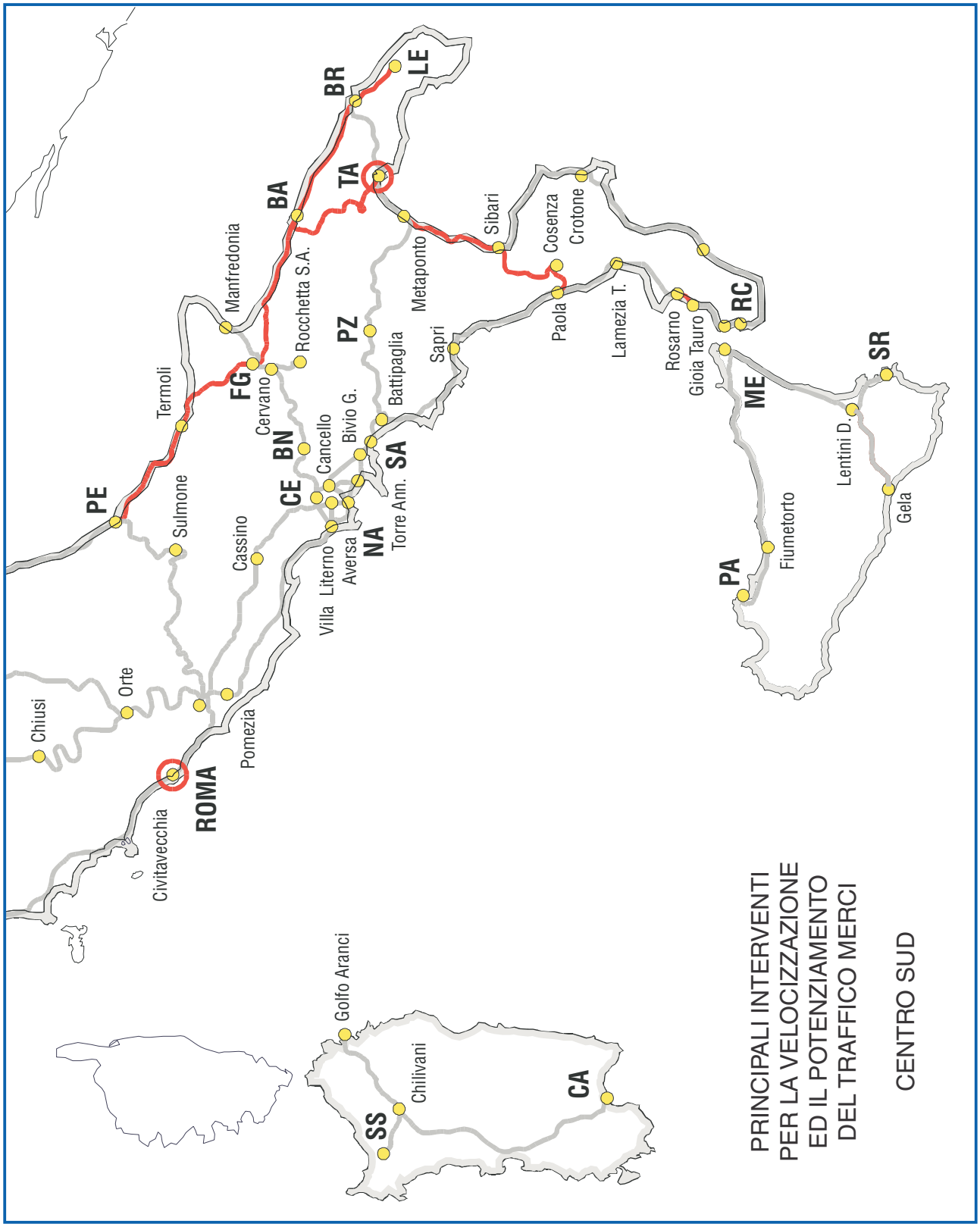
Main measures to speed up and to increase the capacities for the rail transport of goods in Italy

Project	Due date
Line Venice - Udine - Tarvisio (Pontebbana)	
Completion of duplication and tecnical equipment	2003
Pontremolese	
- Completion of duplication of the piece S. Stefano - Aulla - Chiesaccia, duplication of the route Solignano - Fornovo	2004
- Realization of 3rd track between Vezzano L. and La Spezia Migliarina	
- Realization of a new ‚goods-bundle' in the station of La Spezia Marittima	
Axis Livorno - Pisa	
- Electrification of the line Pisa - Collesalvetti - Vada and rationalization of the goods- and harbour-installation in the area of Livorno.	
- Realization of intra-portual infrastructure at Livorno Guasticce	2003
Ravenna - Removal of the dangerous goods quai and prolongation of the embankment on the left of the Canale Candiano	2003
Adriatic guidance	
- **Duplication of the line Pescara - Bari** - completion of the duplication Ortona - Casalbordino, Port of Vasto - Vasto S. Salvo, streamlining of the junction of Pescara as well as duplication of the links Lesina - Apricena - S. Severo and Termoli-Lesina	2006
Bari - Lecce: Completion of duplication with the routes Mola - Fasano and Tuturano - Surbo as well as electrification	2005

Main measures to speed up and to increase the capacities for the rail transport of goods in Italy

Project	Due date
Route Reggio Calabria - Gioia Tauro - Bari	
Line Bari - Taranto Completion of duplication with the routes Bari S. Andrea - Bitetto, Acquaviva - Gioia del Colle, Castelaneta - Palagianello - Massafra (including by-pass of Palagianello) and Massafra - Bellavista - Taranto	2006
Line Paola - Cosenza - Sibari - Metaponto - Electrification and speeding-up - new track on the col S. Marco Rogino - Mongrasso	2001
Gioia Tauro - connection of the port with the railway-station Rosarno	near compl.
Taranto - connection of the multisectoral quai with the line Taranto - Metaponto	2001
Civitavecchia - Connection of the port with the railway-station Civitavecchia Porta Tarquinia	near compl.


PRINCIPALI INTERVENTI PER LA VELOCIZZAZIONE
ED IL POTENZIAMENTO DEL TRAFFICO MERCI
CENTRO NORD
1 Laveno
2 Gallarate
3 Busto Arsizio
4 Rho
Brennero
Tarvisio
Iselle
Domodossola
Luino
Promosello
Arona
Sesto C.
Oleggio
Chiasso
Lecco
Monza
MI Rog.
Modane
TO
Trofarello
TO ORB.
Candiolo
Fossano
Mondovì
S. Gius.
di Cairo
Ventimiglia
SV
GE M.ma
GE
Ovada
Novi L.
AL
Voghera
Tortona
Arquata S.
NO
MI
PC
CR
Castelvetro
PR
Fornovo
S. Stefano di M.
Sarzana
La Spezia
Vezzano
MN
VR Q.E.
VR
Nogara
Monselice
PD Int.
PD
VC
Castelfranco V.
TV
Conegliano
Casarsa
UD
Portogruaro
Mestre
VE
Chioggia
RO
FE
RA
MO
Castel Bo.
RN
GO
Monfalcone
Villa Op.
TS
Cervignano
TS C.M.
PRATO
PI
FI
LI
Collesalvetti
Vada
Chiusi
Falconara M.
AN


PRINCIPALI INTERVENTI
PER LA VELOCIZZAZIONE
ED IL POTENZIAMENTO
DEL TRAFFICO MERCI
CENTRO SUD
PE
Termoli
Sulmone
Manfredonia
BA
BR
LE
TA
Sibari
Cosenza
Crotone
FG
Cervano
Rocchetta S.A.
PZ
Metaponto
Paola
Lamezia T.
Rosarno
Gioia Tauro
RC
BN
Cancello
Bivio G.
Battipaglia
Sapri
CE
Cassino
SA
Torre Ann.
NA
Villa Literno
Aversa
ME
SR
Lentini D.
Gela
PA
Fiumetorto
Chiusi
Orte
Pomezia
ROMA
Civitavecchia
Golfo Aranci
Chilivani
SS
CA

Annex 2

NEW EUROPEAN WISH

Operational Project European Rail Axes

for

CARGO MOBILITY ⇒ ***The Market***

Wants

- Capacity to grow market requirement
- Competitivity of services on global scenario
- Reliability
- Sophisticated information and internet as facilitator
- Safety
- Environment protection
- Sustainability over time

CARGO MOBILITY *Where we are*

Constraints reflecting on employement and social

- Impossibility of coping with growing volumes of traffic
- Complication in moving existing products due to congestion
- Higher costs of logistics and transportation
- Loss of competitivity for european products
- Impossibility of migration of personell into new economy
- Industries relocation
- Welfare threat

CARGO MOBILITY *Safety and Environment Resources*

People Perceptions

- Congestion caused by commercial vehicles
- Polution CO_2 emissions / carbon monoxide
- Negative urban effects
- Worsening health hazards on population
- Worsening accidents rotations on roads
- Greenhouse effect
- Climate change

CARGO MOBILITY ⇒ ***Service Economy Evolution***

New Trends

- Developing economies will create increased demand of new capabilities in transport capacities and transhipment facilities
- Globalization e/commerce – internet – B2B facilitators
- Finished goods require sophisticated services
- Competitivity based on total supply chain (phisical + virtual)
- Production migration increasing volumes exchanged
- Logistics evolution to value added services

CARGO MOBILITY ⇒ ***Developing Scenario***

Influencing

- Technological shift + know how
- I.T. acceleration (emerging economies develop faster)
- Cost per unit produced will reduce
- Labor internationalization reduce barriers
- East European Countries + Russia a deciding factor
- Growth due to shipping + ports + distribution
- Booming on coast / poorer interior

CARGO MOBILITY

Long Term Consequences

Failing Correction

- Umbearable congestion
- Progressive de industrialization
- Increase unemployment
- Cultural and natural environment violation
- Health hazards
- Wealth destruction
- Europe becaming poorer and decading

New Opera is...

A New Rail Infrastructure

- Totally dedicated to cargo and pan european
- Double track – Two european axes:
  - North/South
  - West/East
- Axes of about 2.000 km each, totalling 4.000 km
- Compatible to existing infrastructure to make it interoperable
- To connect into low developed areas to attract new industries
- Hubs for trains interchanges

Technical Fundamentals

- Max tech speed 100 km/hour 8‰ gradient
- Up to 30 tons axle capacity
- Gauge double stack
- Train up to 2.250 mt length (750 mt x 3)
- Diesel traction

Finance Fundamentals

- Self financed (or partially financed for environmental benefits)
- Based on 30 years payback + interests 5% year + maintenance
- 200 trains per direction by 2 axes equal to 800 trains on 300 days/year equal to 240.000 trains/year using new railtracks
- If double stack cost per train should be 50% of today's cost

Cost Estimate / Toll Estimate

Construction cost € 6.000.000 kmt x 4.000 kmt = € 24.000.000.000

Mortage costruction
Interest 5% including capital restitution ⟹ Total 1.560.000.000 €

€ 1.560.000.000 = trains 240.000

trains = 200 x 20 (a/r) x 2 axes x 300 / 240.000 trains/year

6.500 € x train x 2.000 kmt length / equal to 3,25 € kmt train each direction

3.000 € x train x 2.000 kmt / equal to 1,5 € kmt train

} € 4,75 kmt say € 5 kmt train

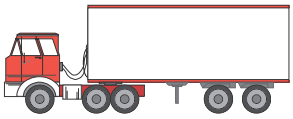
- maintenance cost (3% on original investment) = 720.000.000 / 240.000
- average trains length = 1.500 meters (double than today): train kmt/today's actualization € 5 : 2 = € 2,5
- if double stack is achieved cost is about 50%: € 2,5 : 2 = € 1,25

Average TEU Lifting Capacity

- 200 trains x direction = 400 x 2 axes = 800 trains x 300 days = 240.000 trains/year
- Average length 1.500 mt x train equal to about 50 waggons of 30 mt each (to accomodate 2 x 40 or 2 x 13,60)
- Each train of 50 waggons could lift 100 by 40 cts equivalent single stack (200 TEUs) or 200 if double stack (400 TEUs)
- Weight should not be an issue if axel weight designed for 30 tons waggon axle
- Average confortable TEU lifting capacity of the network is between:
  - a) 240.000 trains by 200 TEUs = 48.000.000 TEUs/year
  - b) 240.000 trains by 400 TEUs = 96.000.000 TEUs/year
- To which one could add a multiplicating factor for the freight connecting into the hubs interchange originating from/going into the tradizional network

Rail Versus Road Emission Comparison

ROAD



- Energy consumption kg/gasoil @ t/km – (FS) 0,031
- Associated CO_2 emission @ 3.1 CO2/kg gasoil (Federchimica) 0,096
- 24.000.000 TEU x axe x 13 ton t/km = 312.000.000 x 2.000 = 624.000.000.000 t/km x 1.1 (10% more) 686.000.000.000 t/km x 0,096 per axe single stack — tons 64.000.000

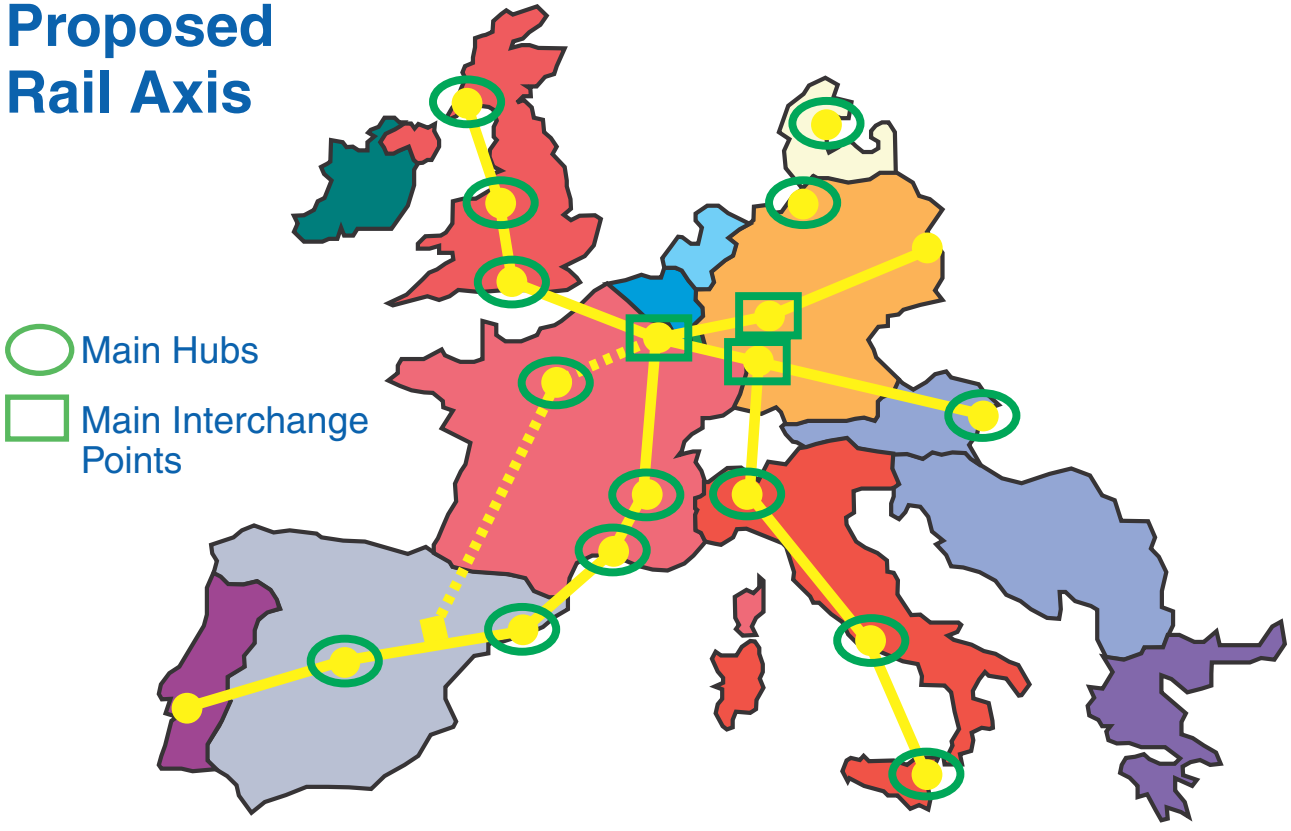
RAIL

- Energy consumption kg/gasoil @ t/km – (FS) 0,0072
- Associated CO_2 emission @ 3.1 CO2/kg gasoil (Federchimica) 0,022
- 24.000.000 TEU x axe x 13 ton t/km = 312.000.000 x 2.000 = 624.000.000.000 t/km x 0,022 saving on emission — tons 14.000.000

▲ tons/year/axe 50.000.000
Two axes x 2 100.000.000
Potential for double stack tons/year 200.000.000

ENORMOUS

Proposed Rail Axis



Further Motivations

- If not result will be totale caos
- Logistics drives GNP not viceversa
- East countries need *Infrastructuring & Job Sharing*
- Russia as rail transit towards east
- Trucks to retain existing traffic
- Defence purposes

Operational Public / Private Ownership

- Concession:

BUILDING OPERATING MARKETING

- Incentives at railheads:

TAX RELIEF ACCESSES

PAY LOADS MOVEMENTS

- How much subsidy if any
- How much can tolls provide

Operational

- Closed system
- Feeder trains
- Lateral transfer
- 3/4 terminals feeding

From Theoretical to Practical Capacity

- Construction of 500 kmt trunk double track
- 200 trains x 2 = 400 x 25% = 100 trains/day
- 300 days/years = 30.000 trains of 1.500 mt length
- capacity = $\frac{\text{100 swap bodies x train}}{\text{100 trains day}}$
- capacity = 10.000 swap bodies = day

From Theoretical to Practical Capacity

- Alps crossing nearly doubled in 8 years from 1992 to 2000
- 7.600 mlns vehicles in 2000
- 8.000 (estimate 2001) / 300 days = 26.500 vehicle x day
- This means that to saturate 25% operativity it is necessary 40% of market share.

Marketing Approach

How much money can be saved:

- By using new infrastructure against road benchmark
- Shipper pays for a truck of 13.60 mt on 500 kmt about 750 €
- This leaves, deducting haulage + ancillaries, a traction of 200 €
- € 200 x 100 sw x 100 trains x 300 = 600.000.000 €/year
- 600.000.000 less
  200.000.000 mortcage
  150.000.000 maintenance
  350.000.000 = 250.000.000 year / 30.000 trains → € 8.000 x train

Matrix Swot Analysis

	PRO			AGAINST		
COUNTRIES						
RAIL COMPANIES						
ASSOCIAT						
GROUPS ECONOM INTERESTS						
SECTOR ANALYSTS						
TRUCK MANUFACTURERS						
TRUCKING COMPANIES						
CONSTRUCTING COMPANIES						
GOVERNMENTS						
LOCOMOTIVES CONSTRUCTORS						
WAGGONS CONSTRUCTORS						
BANKS						
MILITARY (NATO)						
POLITICAL PARTIES						
ENGINEERING COMPANIES						
FORECASTING COMPANIES						
PRESS						
UNIONS (MORE EMPLOYMENT)						
CONSULTANTS						
LOGISTICS						
CONSUMERS						
ENVIRONMENTARISTS						
LAND OWNERS						
RURAL INTEREST						

Annex 3

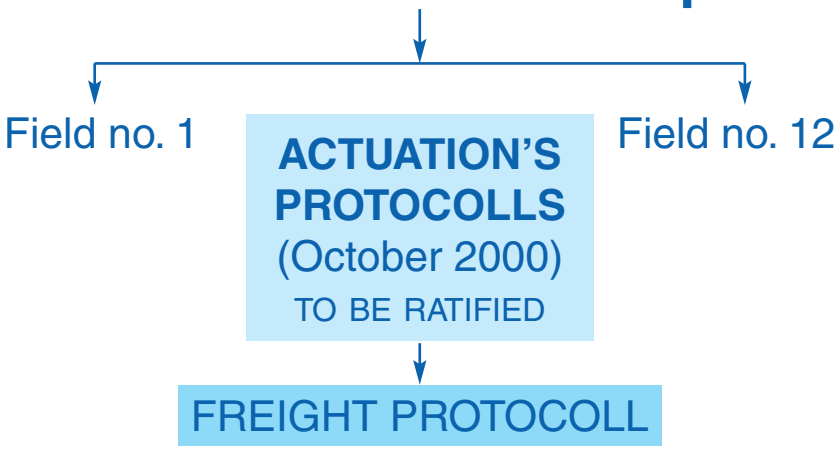
The Convention on the Alps (7/11/91)

AIMS OF THE CONVENTION:
PROTECTION AND DEVELOPMENT
OF THE ALPINE ARCH

Participants

AUSTRIA, FRANCE, GERMANY, ITALY,
LIECHTENSTEIN, MONACO PRINCIPATE,
SLOVENIEN, SWITZERLAND, AND ECC

Convention on the Alps



Freight protocoll

The arguments

- Relinquishment to the building of new highways for transalpine traffic
- Hard conditions for the realization of new highways for the intra-alpine traffic
- Necessary and preliminary meetings in case of projects that should have great effects on the alpine traffic
- Agreement between the government in order to promote the realization and the finishing of public freight transport that have to respect of course the environment and the necessities of the society
- The improvment of the rail infrastructure, the modernization and the optimization of the rail net
- The progressive introduction of a graduated taxation system on freight, that could cover in an equal way the real costs (truth on costs)
- The other sectors' policies has to consider the Freight Protocoll's aims
- The direct partecipation of the local institutions to the Freight Protocoll
- The creation and the preservation of limited traffic zones and zones completely closed to the traffic

Freight protocoll's purposes

- The countries are involved in a policy destined to increase the alpine traffic following these purposes:
- The safe of the enviroment
- A better use of the infrastructures at their disposal
- The guarantee of a balanced concurrence between the different carriers

General strategy

The involved countries try to put in practice a rational and safety programm of transport in an integrated net:

- Coordination of the different kinds of carriers, of means of transport with the aim of improving intermodality
- Each government of the involved countris tries to give a push to the transport affair in connection with the development of industry and economics

Rail transport

- Give an improvment to the building and development of the great alpine axes including private sidings and terminals
- Modernize the rail net

Road transport

- Any new project connected to the road infrastructure has to consider the environment impact

Truth in transport's costs

In order to consider in a deep way the real costs of the different kinds of means transport, the governments try to locate the infrastructures' and the external costs' of every carrier. This has the aim to improve those kinds of carriers that respect the environment.

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