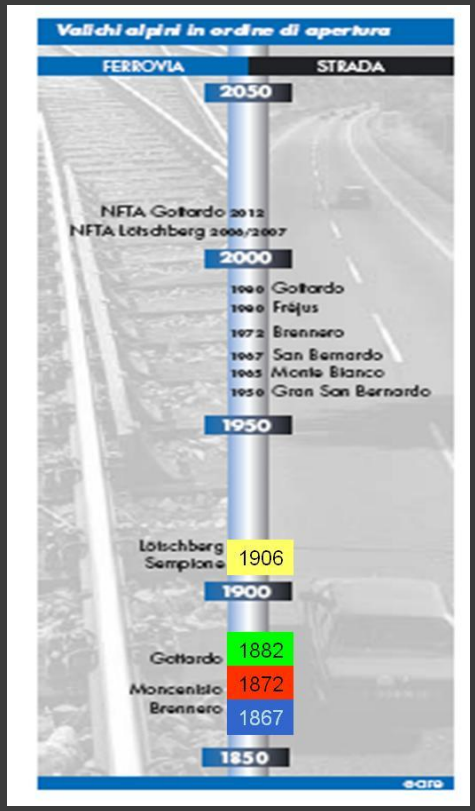
# PORT NET WORKSHOP
# 10 May 07

The Italy- Europe relationships: the problem of the Cross Alpine Freight Transport

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***University IUAV of Venice***

# Freight Mobility in Italy (tons per year - millions)

| | 2003 | | 2004 | | 2005 | | 2005/2004 % |
|---|---|---|---|---|---|---|---|
| | [tons/year] | % | [tons/year] | % | [tons/year] | % | [%] |
| Maritime Transport | 477,00 | 26,47% | 485,00 | 24,33% | 494,7 | 23,82% | 2,00% |
| Road Transport | 1.243,00 | 68,98% | 1.425,00 | 71,48% | 1.496,25 | 72,06% | 5,00% |
| Railway Transport | 82,10 | 4,56% | 83,60 | 4,19% | 85,5 | 4,12% | 2,27% |
| Total | 1.802,10 | 100,00% | 1.993,60 | 100,00% | 2.076,45 | 100,00% | 4,16% |

Source: ISTAT (Italian Statistical Agency)

# Cross Alpine Freight Transit

## Millions tons per year)

| anni | 1987 | 1990 | 1995 | 1999 | 2001 | 2004 | Average rate per year 2004/1987 | % Modal Split 2004 |
|---|---|---|---|---|---|---|---|---|
| Totale strada | 44,2 | 52,7 | 71,2 | 86,4 | 92,7 | 108,0 | + 5,4 % | 70 % |
| Totale ferrovia | 27,6 | 34,7 | 41,0 | 41,3 | 45,7 | 46,2 | + 3,1 % | 30 % |
| TOTALE GENERALE | 71,8 | 87,4 | 112,2 | 127,7 | 138,4 | 154,2 | + 4,6% | 100 % |

Source: Alpinfo statistics data base (Suisse)

# Mobility of freight in Italy in the years 1987 – 2004 in the Cross Alpine Transit – millions tons

**Traffici stradali in milioni di tonnellate** fonte ALPINFO

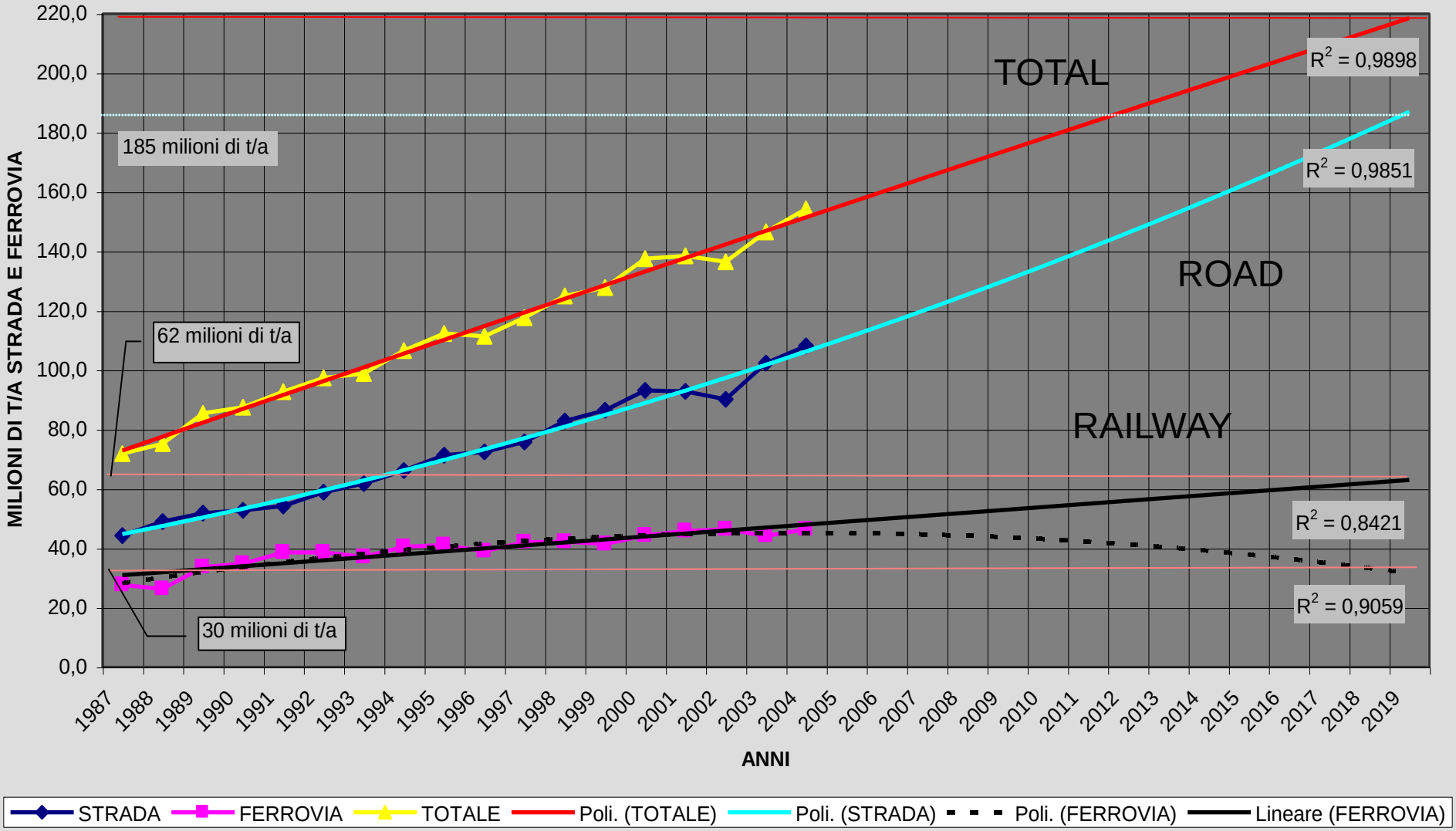
| ROAD | 1987 | 1990 | 1995 | 1999 | 2001 | 2004 |
|---|---|---|---|---|---|---|
| Vintimille | 4,5 | 8,1 | 10,3 | 12,9 | 14,1 | 18,6 |
| **Modane /Frejus** | 5,9 | 8,9 | 12,4 | 22,8 | 25,7 | 18,6 |
| Mont-Blanc | 9,6 | 12,9 | 13,4 | 2,9 | 0,0 | 5,7 |
| Gd St Bernard | 0,3 | 0,5 | 0,4 | 0,4 | 0,6 | 0,6 |
| Simplon | 0,1 | 0,1 | 0,1 | 0,2 | 0,4 | 0,7 |
| Saint Gothard | 2,6 | 3,1 | 5,5 | 7,0 | 7,4 | 9,9 |
| San Bernardino | 0,5 | 0,5 | 0,6 | 0,8 | 2,0 | 1,3 |
| Reschenpass | 0,7 | 1,0 | 1,0 | 1,2 | 1,3 | 2,0 |
| Brenner | 16,6 | 13,6 | 20,0 | 25,2 | 25,0 | 31,5 |
| Tarvis | 3,4 | 4,0 | 7,5 | 13,0 | 16,2 | 19,1 |
| **Totale strada** | **44,2** | **52,7** | **71,2** | **86,4** | **92,7** | **108,0** |

**Traffici ferroviari in milioni di tonnellate** fonte ALPINFO

| RAILWAY | 1987 | 1990 | 1995 | 1999 | 2001 | 2004 |
|---|---|---|---|---|---|---|
| Vintimille | 1,6 | 1,3 | 1,0 | 1,0 | 0,9 | 0,5 |
| **Modane** | 6,8 | 7,2 | 8,4 | 9,2 | 8,6 | 6,9 |
| Simplon | 2,5 | 4,3 | 4,4 | 3,5 | 4,8 | 6,8 |
| Saint Gothard | 11,0 | 13,6 | 13,5 | 14,9 | 15,8 | 16,1 |
| Brenner | 4,2 | 5,5 | 8,0 | 8,3 | 10,7 | 10,1 |
| Tarvis | 1,5 | 2,8 | 5,7 | 4,4 | 4,9 | 5,8 |
| **Totale ferrovia** | **27,6** | **34,7** | **41,0** | **41,3** | **45,7** | **46,2** |
| | | | | | | |
| **TOTALE ARCO ALPINO** | **71,8** | **87,4** | **112,2** | **127,7** | **138,4** | **154,2** |

30%

# Trend of Freight Demand on Alpine Crossing at 2020



# Forecast Scenario at 2020 on the Whole Alpine Crossing (trend model)

| | **Year 2020** *Hypothesis of negative trend* | **Year 2020** *Hypothesis of steadiness of the current market share* |
|---|---|---|
| TOTAL | **220 millions of tons/year** *(Year 2004 = 154 millions tons/year)* | |
| ROAD | **185 millions of tons/year** | **158 millions of tons/year** |
| RAILWAY | **35 millions of tons/year (= 16%)** | **62 millions of tons/year ( = 28 % ≡ slightly lower than current 30%)** |

# Disputation on the New Lyon - Torino Railway Line in the UE Corridor V

## Cross Alpine Freight Transport Survey

**[CAFT 2004] was checked from Italian Government**

**Working Group**

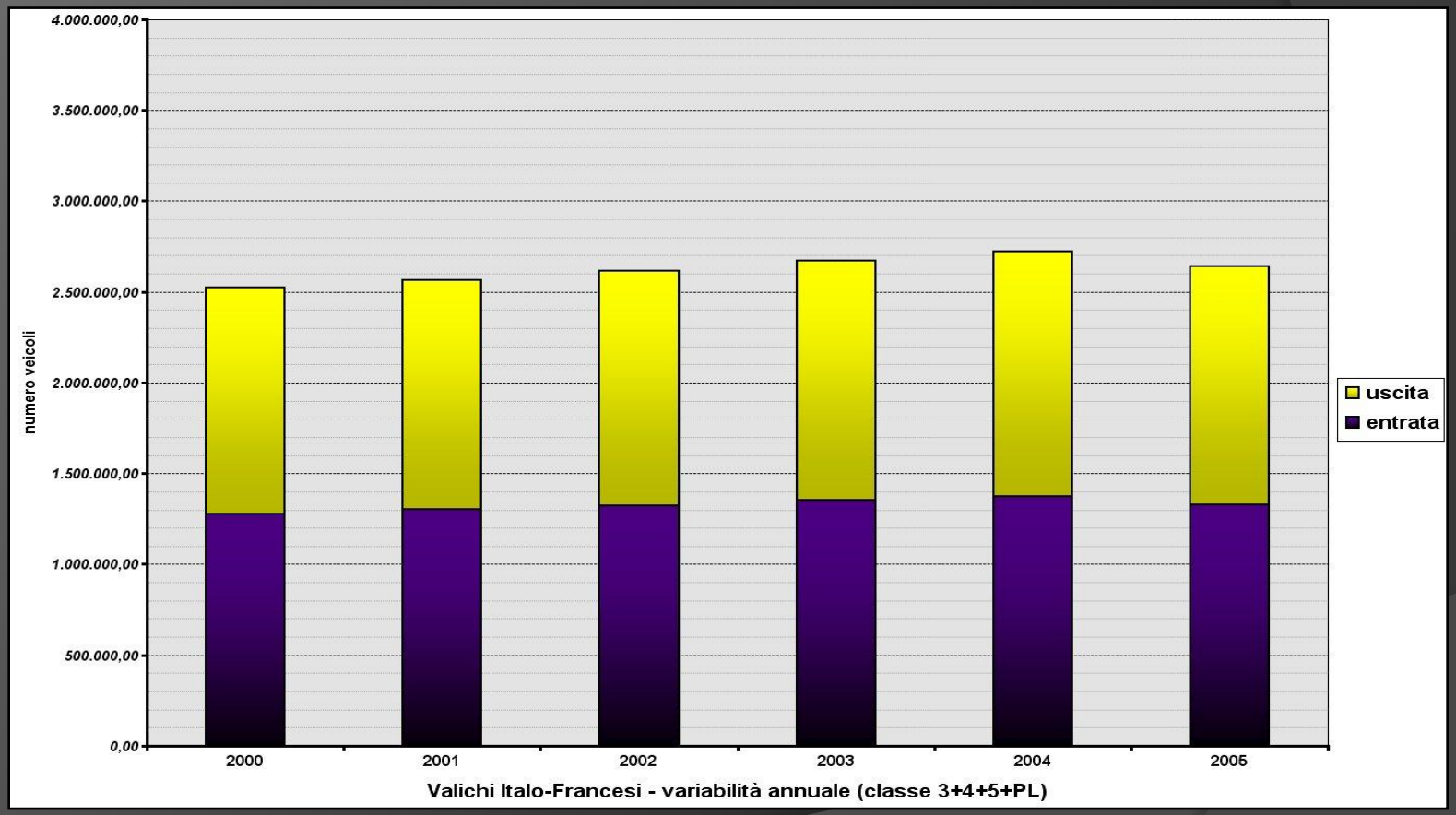
**"Modal surveying"**

**France-Italy Ministry of Public Work Conference**

# Summary

## Freight flows across the border between France and Italy

- Existing flow of **2.700.000 trucks per year** – overall growth of 10% in six years (2000 to 2005) - **average** of about **2% per year**.



# Summary

## Freight road flows across the border between France and Italy

**CAFT 2004: O/D Italia-Francia - *NUTS0***

| ORIGINE | | DESTINAZIONE | | CAFT 2004 | | | | |
|---|---|---|---|---|---|---|---|---|
| | | | | andata *(VP 2004)* | ritorno *(VP 2004)* | totale (a) *(VP 2004)* | % sul totale | % cumulata |
| FR | **Francia** | IT | **Italia** | 834.017 | 808.630 | **1.642.647** | ***60,04%*** | ***60,04%*** |
| ES | **Spagna** | IT | **Italia** | 296.615 | 328.145 | **624.760** | ***22,83%*** | ***82,87%*** |
| IT | **Italia** | UK | **Regno Unito** | 82.523 | 57.866 | **140.389** | ***5,13%*** | ***88,00%*** |
| BE | **Belgio** | IT | **Italia** | 71.401 | 44.054 | **115.455** | ***4,22%*** | ***92,22%*** |
| IT | **Italia** | PT | **Portogallo** | 42.807 | 30.547 | **73.354** | ***2,68%*** | ***94,90%*** |
| FR | **Francia** | GR | **Grecia** | 17.579 | 6.746 | **24.324** | ***0,89%*** | ***95,79%*** |
| IT | **Italia** | NL | **Olanda** | 15.183 | 23.155 | **38.339** | ***1,40%*** | ***97,19%*** |
| AT | **Austria** | ES | **Spagna** | 13.879 | 9.008 | **22.887** | ***0,84%*** | ***98,03%*** |
| ES | **Spagna** | GR | **Grecia** | 9.837 | 3.177 | **13.014** | ***0,48%*** | ***98,51%*** |
| DE | **Germania** | IT | **Italia** | 7.780 | 9.105 | **16.885** | ***0,62%*** | ***99,12%*** |
| AT | **Austria** | FR | **Francia** | 3.096 | 3.303 | **6.399** | ***0,23%*** | ***99,36%*** |
| CH | **Svizzera** | IT | **Italia** | 3.083 | 1.969 | **5.052** | ***0,18%*** | ***99,54%*** |
| GR | **Grecia** | PT | **Portogallo** | 1.942 | 678 | **2.620** | ***0,10%*** | ***99,64%*** |
| CH | **Svizzera** | FR | **Francia** | 871 | 1.094 | **1.964** | ***0,07%*** | ***99,71%*** |
| GR | **Grecia** | UK | **Regno Unito** | 834 | 991 | **1.826** | ***0,07%*** | ***99,78%*** |
| DE | **Germania** | FR | **Francia** | 700 | 1.534 | **2.234** | ***0,08%*** | ***99,86%*** |
| AT | **Austria** | PT | **Portogallo** | 530 | 170 | **699** | ***0,03%*** | ***99,88%*** |
| DE | **Germania** | ES | **Spagna** | 524 | 339 | **863** | ***0,03%*** | ***99,91%*** |
| GR | **Grecia** | NL | **Olanda** | 183 | 1.907 | **2.090** | ***0,08%*** | ***99,99%*** |
| FR | **Francia** | UK | **Regno Unito** | 89 | 177 | **266** | ***0,01%*** | ***100,00%*** |
| | | | **totali:** | **1.403.473** | **1.332.595** | **2.736.068** | ***100%*** | |

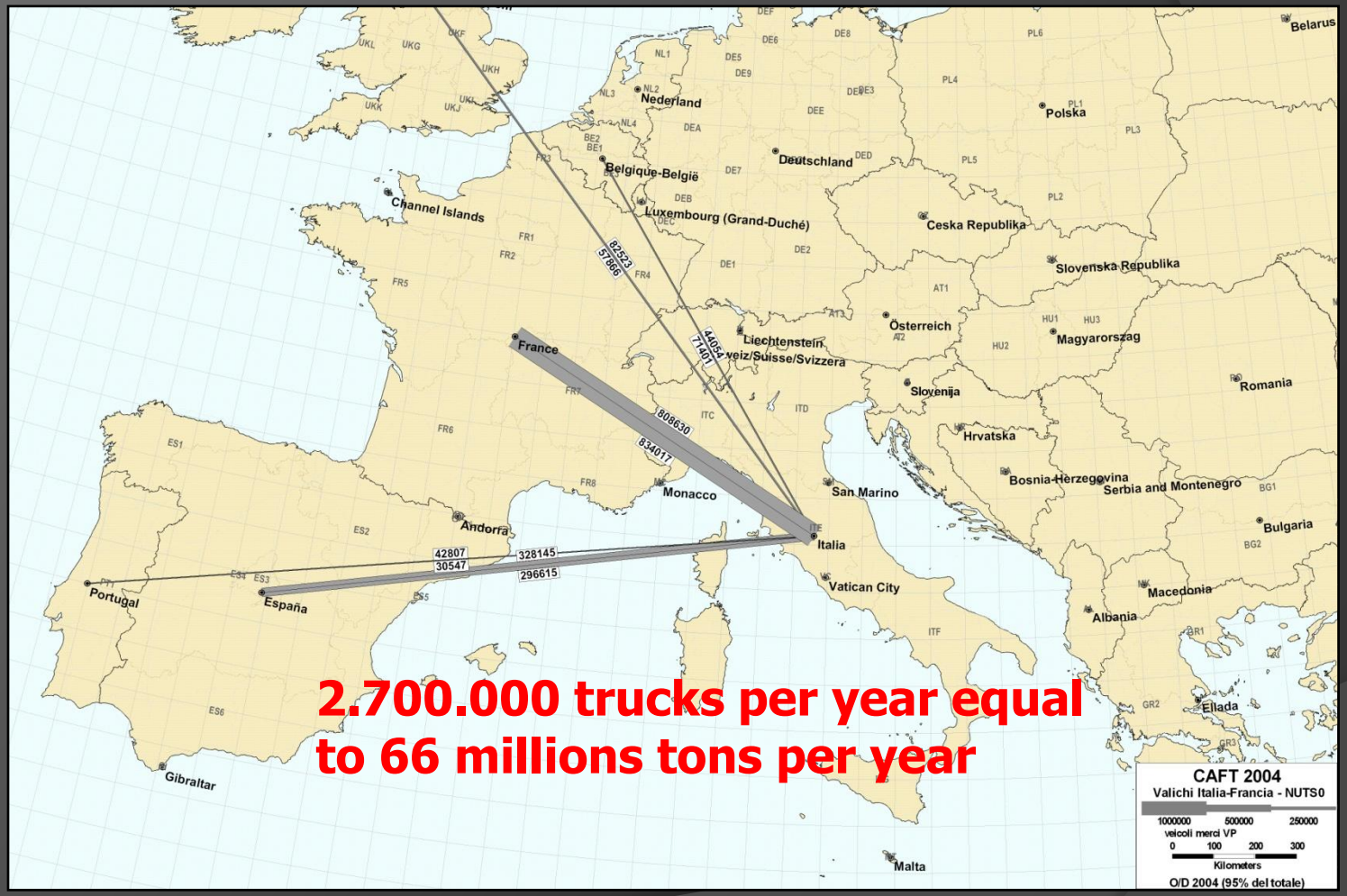
# The observed data

- The freight demand between Italy and France is mainly concentrated on only four links [CAFT, 2004]:

- **Italy – France** → **60%;**
- **Italy – Spain** → **23%;**
- **Italy - England** → **5%;**
- **Italy – Belgium** → **4%.**

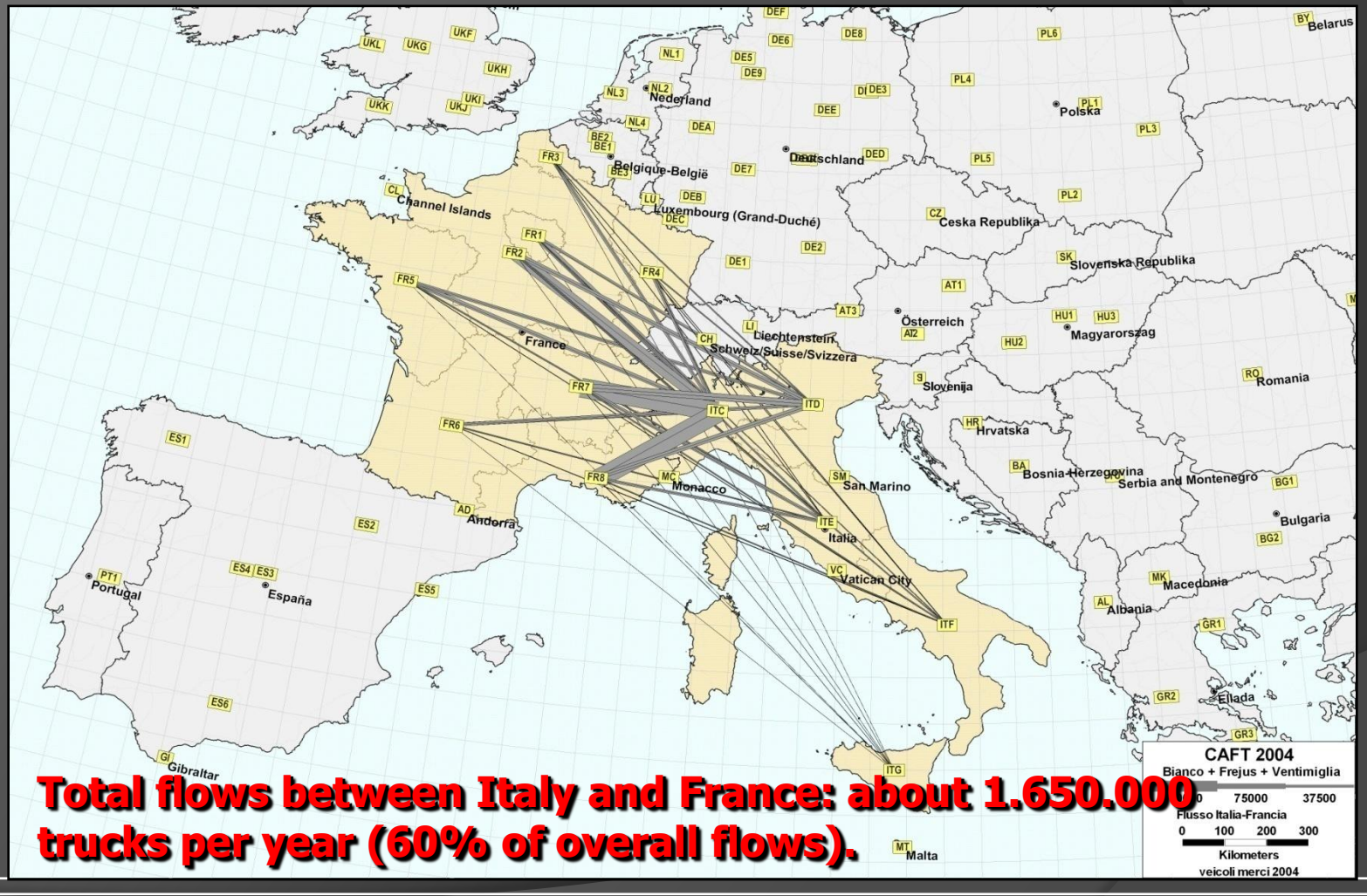
# Summary

## Freight road flows across the border between France and Italy



# Summary

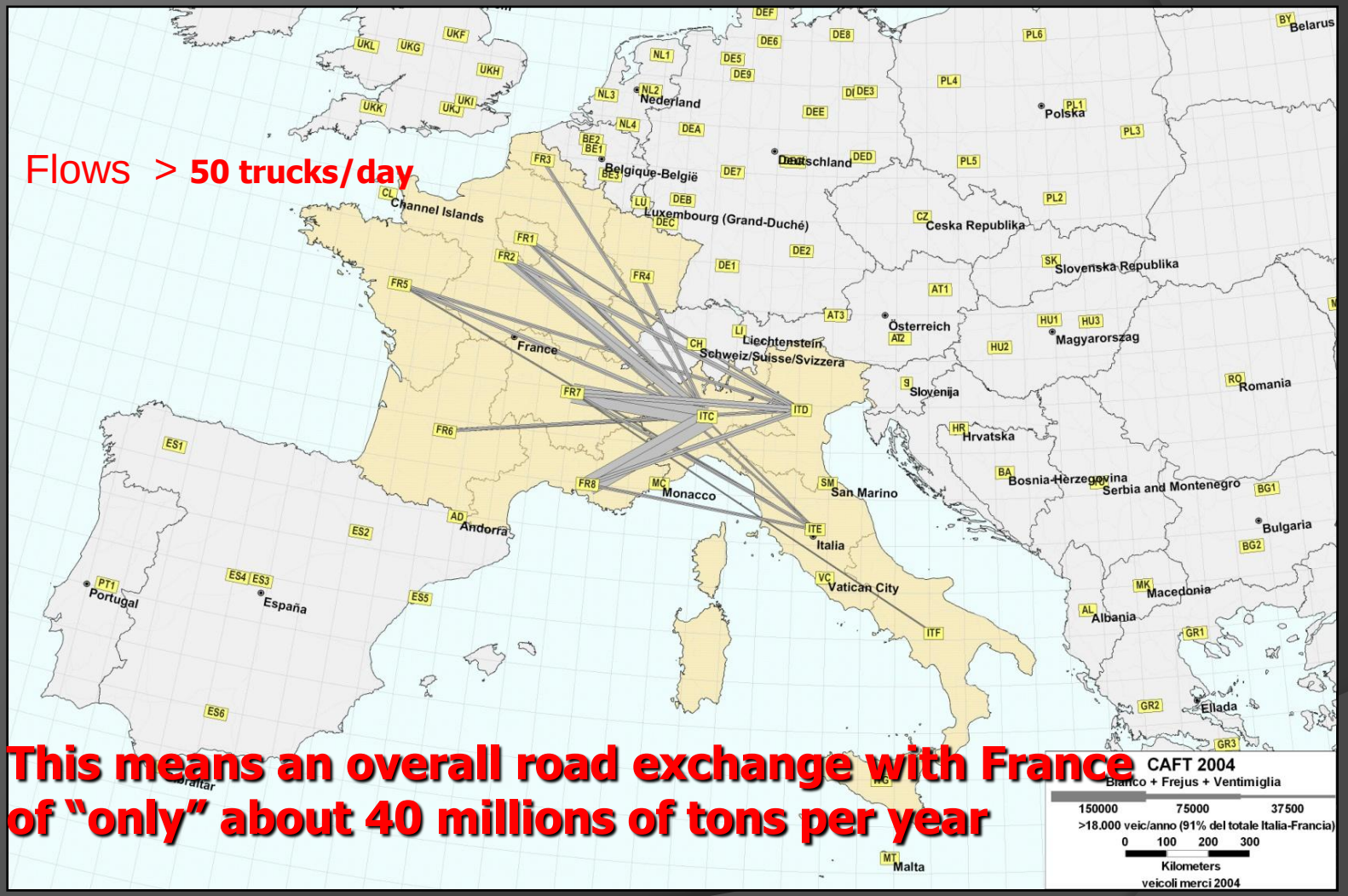
**Freight road flows across the border between France and Italy**




**Total flows between Italy and France: about 1.650.000 trucks per year (60% of overall flows).**

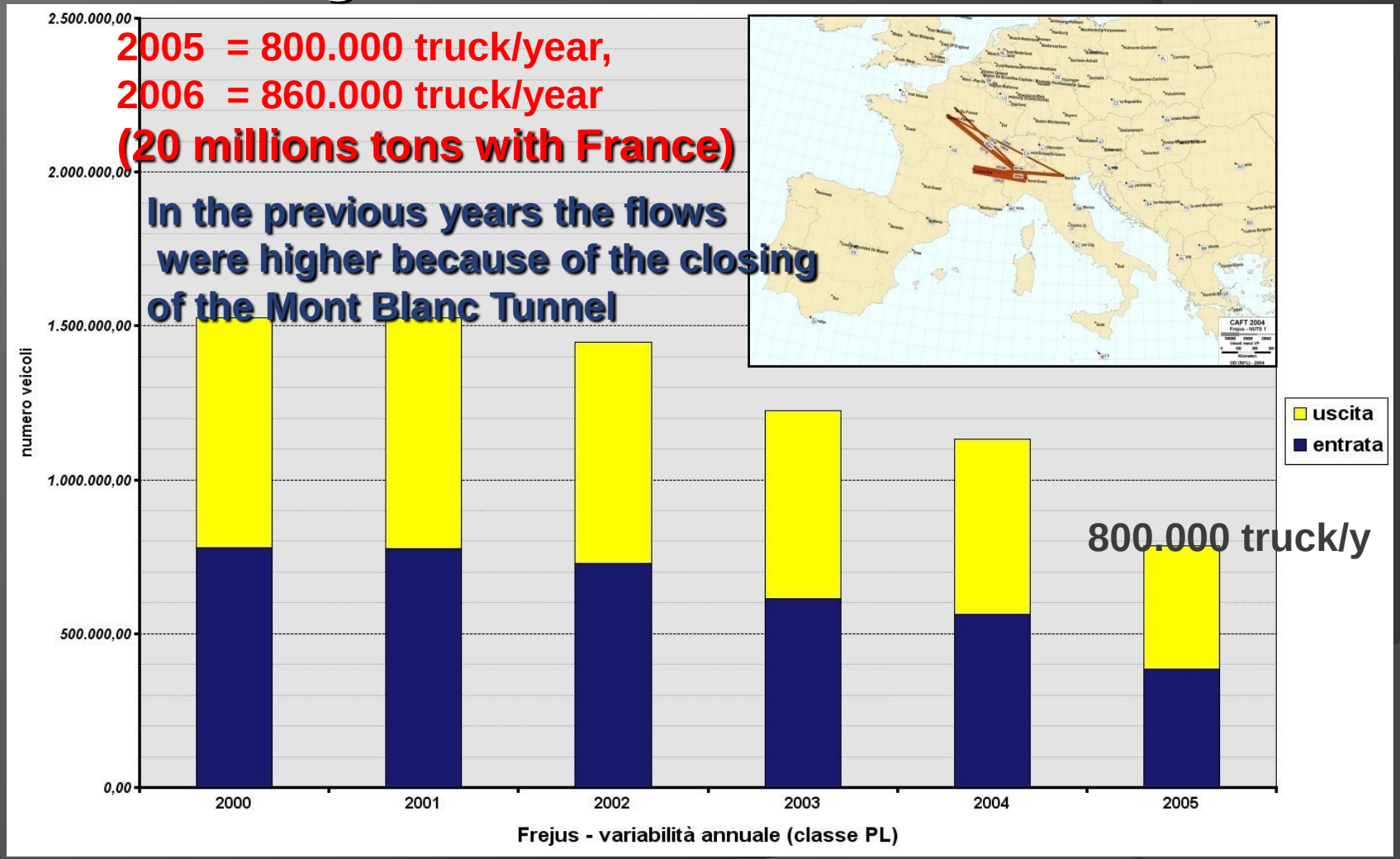
# Summary

## 91% of total flows is generated or attracted from Northern Italy



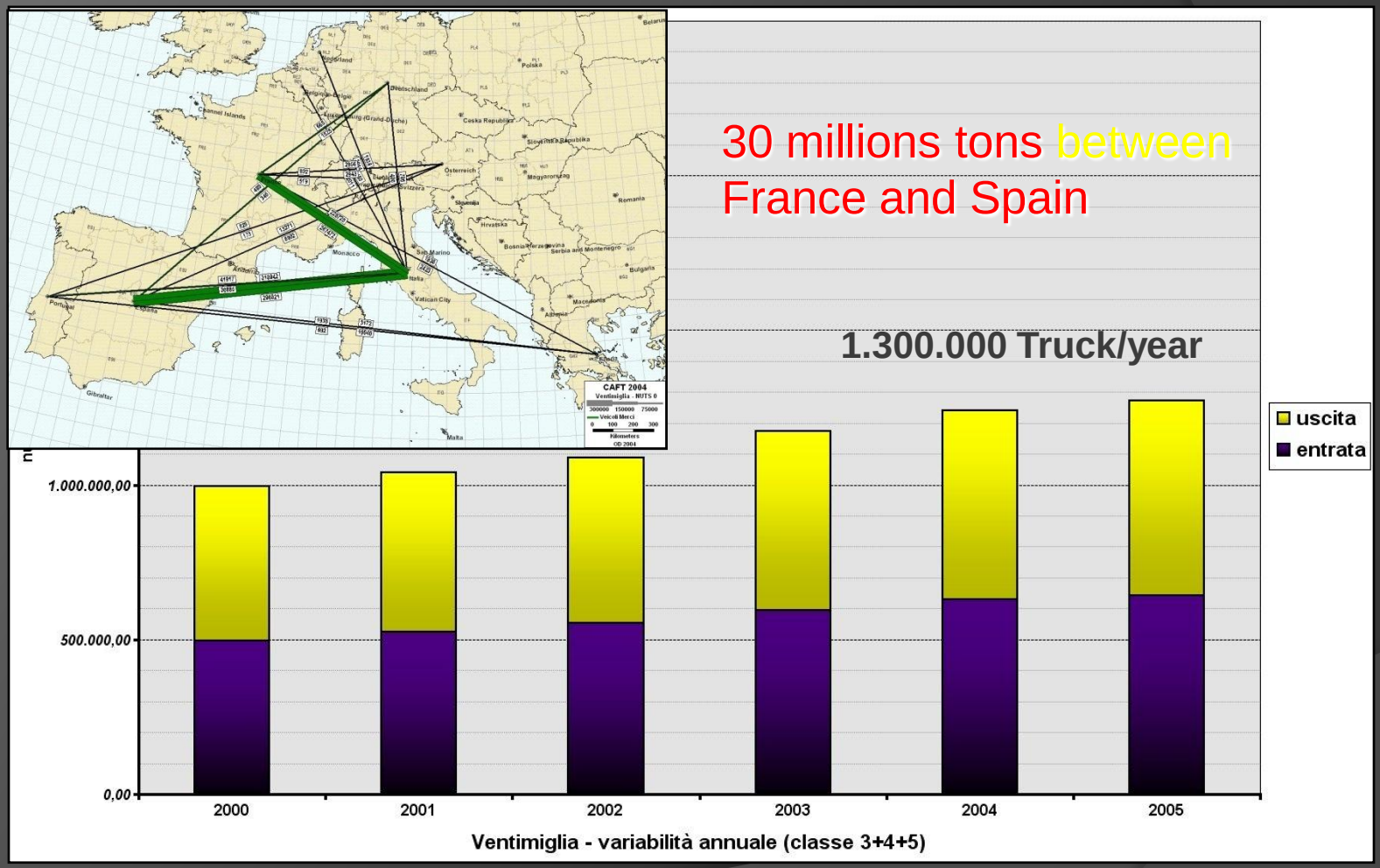
# Data Analysis for FREJUS pass:

## Annual Freight Truck Flows: Years 2000-2005



# Data Analysis for VENTIMIGLIA pass

## Annual Freight Truck Flows: Years 2000-2005



# Data Analysis for MONT BLANC pass

## Annual Freight Truck Flows: Yeas 2000-2005

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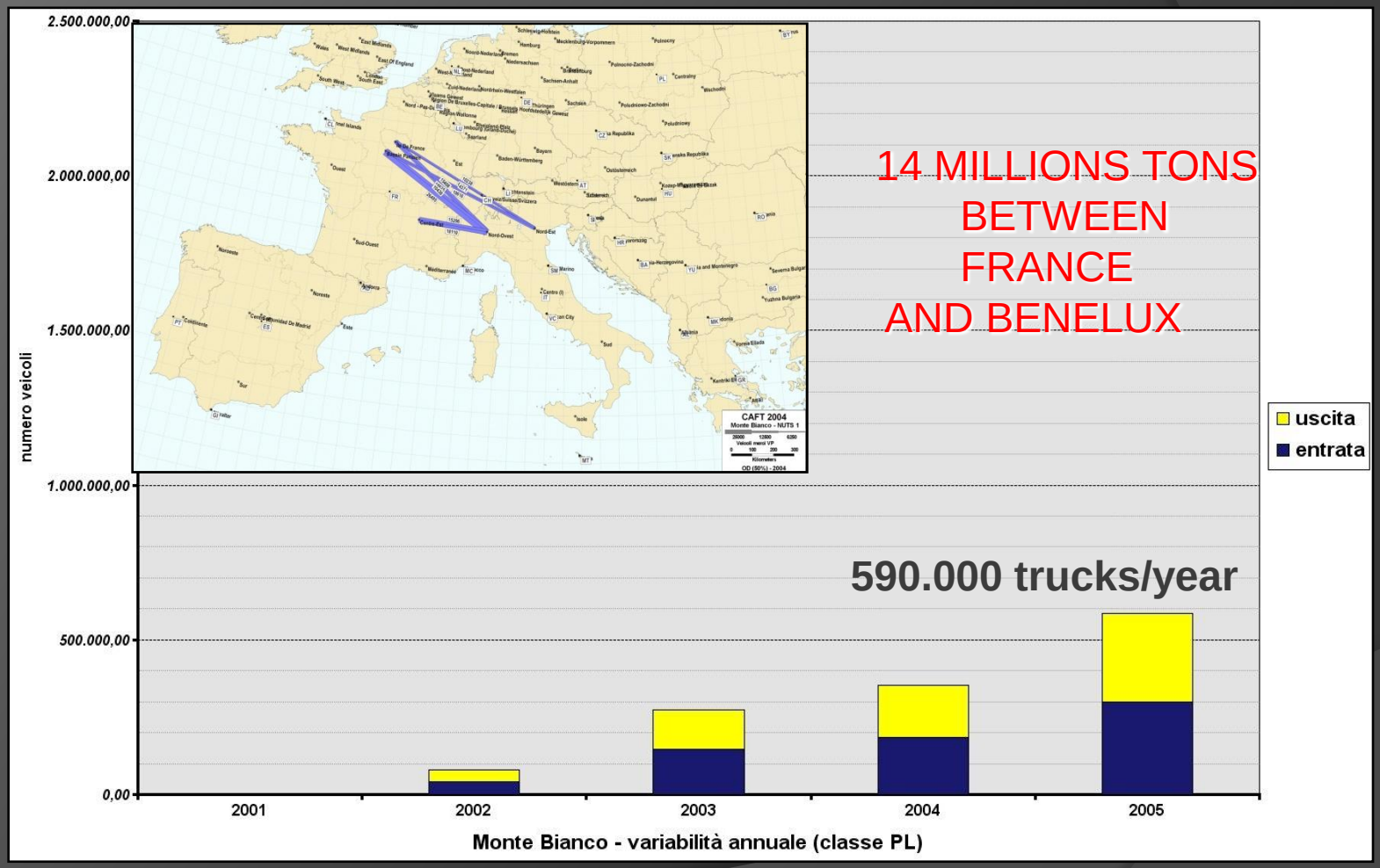


# Traffic Flows at France – Italy Border

- **In the 2005 the revealed transit amount with France crossing the border was about 40 millions tons, split up as follows:**
  - **24% Mont Blanc**
  - **31%  Frejus**
  - **45 % Ventimiglia**
- **In the year 1998 the ratio between the crossing flows of Mont Blanc and Frejus was nearly 50%**
- **In the year 2005 Frejus reached the share of 57%  of the total flows of the two crossed link (24 millions tons on few relationships between Italy and France)**

# FREIGHT ROAD FLOWS BETWEEN ITALY AND FRANCE

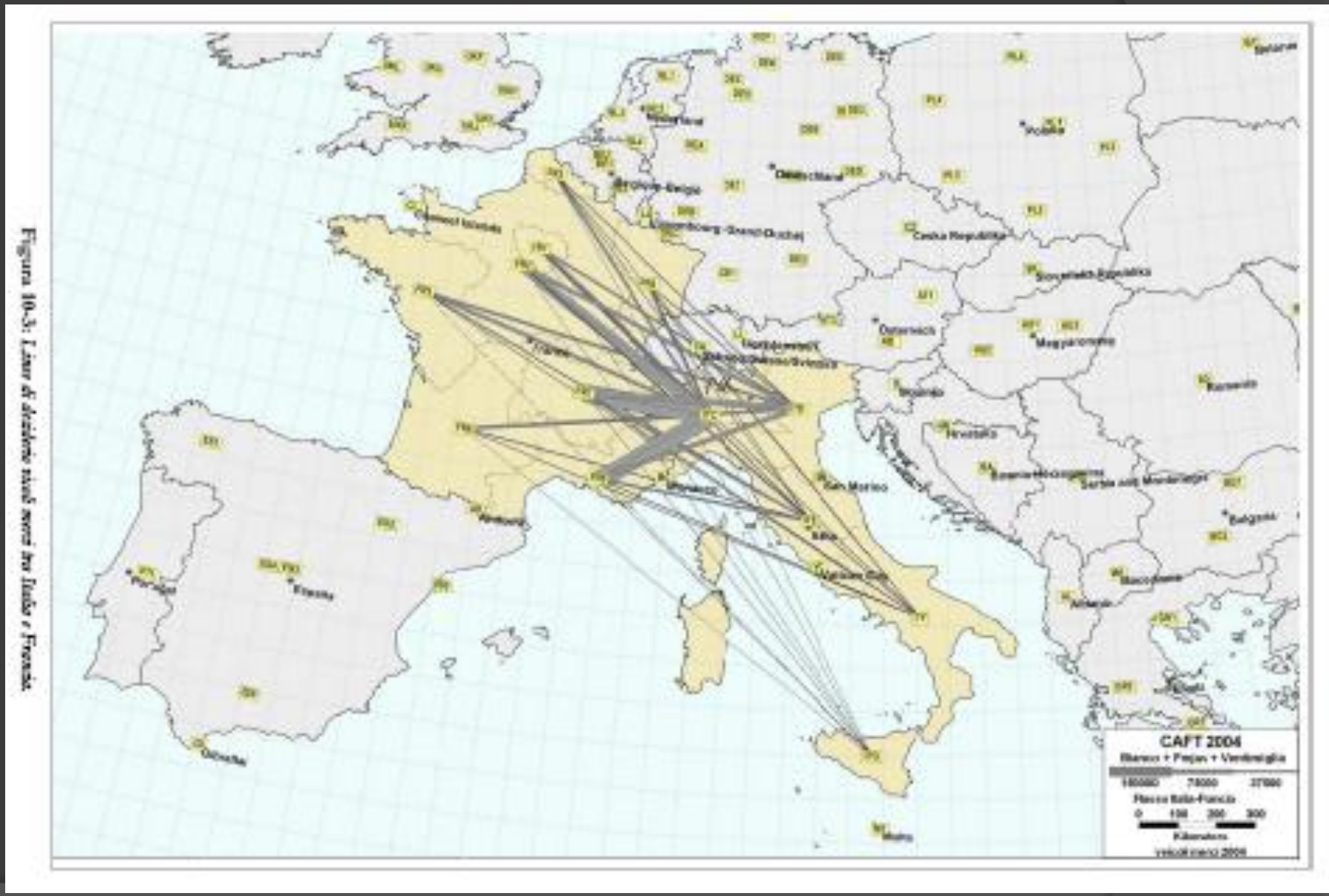



Figura 10-3: Linee di desiderio tassi scorsi tra Italia e Francia

# The modal split in the France- Italy relationships

**ROAD = 40 MILLIONS TONS (2005)**

**(MEDIUM AND LONG RUNS)**

**RAILWAY = ONLY 7,5 MILLIONS TONS (MODANE = 7; VENTIMIGLIA = 0,5)**

**Traffici ferroviari in milioni di tonnellate** fonte ALPINFO

| | 1987 | 1990 | 1995 | 1999 | 2001 | 2004 |
|---|---|---|---|---|---|---|
| Vintimille | 1,6 | 1,3 | 1,0 | 1,0 | 0,9 | 0,5 |
| **Modane** | 6,8 | 7,2 | 8,4 | 9,2 | 8,6 | 6,9 |
| Simplon | 2,5 | 4,3 | 4,4 | 3,5 | 4,8 | 6,8 |
| Saint Gothard | 11,0 | 13,6 | 13,5 | 14,9 | 15,8 | 16,1 |
| Brenner | 4,2 | 5,5 | 8,0 | 8,3 | 10,7 | 10,1 |
| Tarvis | 1,5 | 2,8 | 5,7 | 4,4 | 4,9 | 5,8 |
| **Totale ferrovia** | **27,6** | **34,7** | **41,0** | **41,3** | **45,7** | **46,2** |
| | | | | | | |
| **TOTALE ARCO ALPINO** | **71,8** | **87,4** | **112,2** | **127,7** | **138,4** | **154,2** |

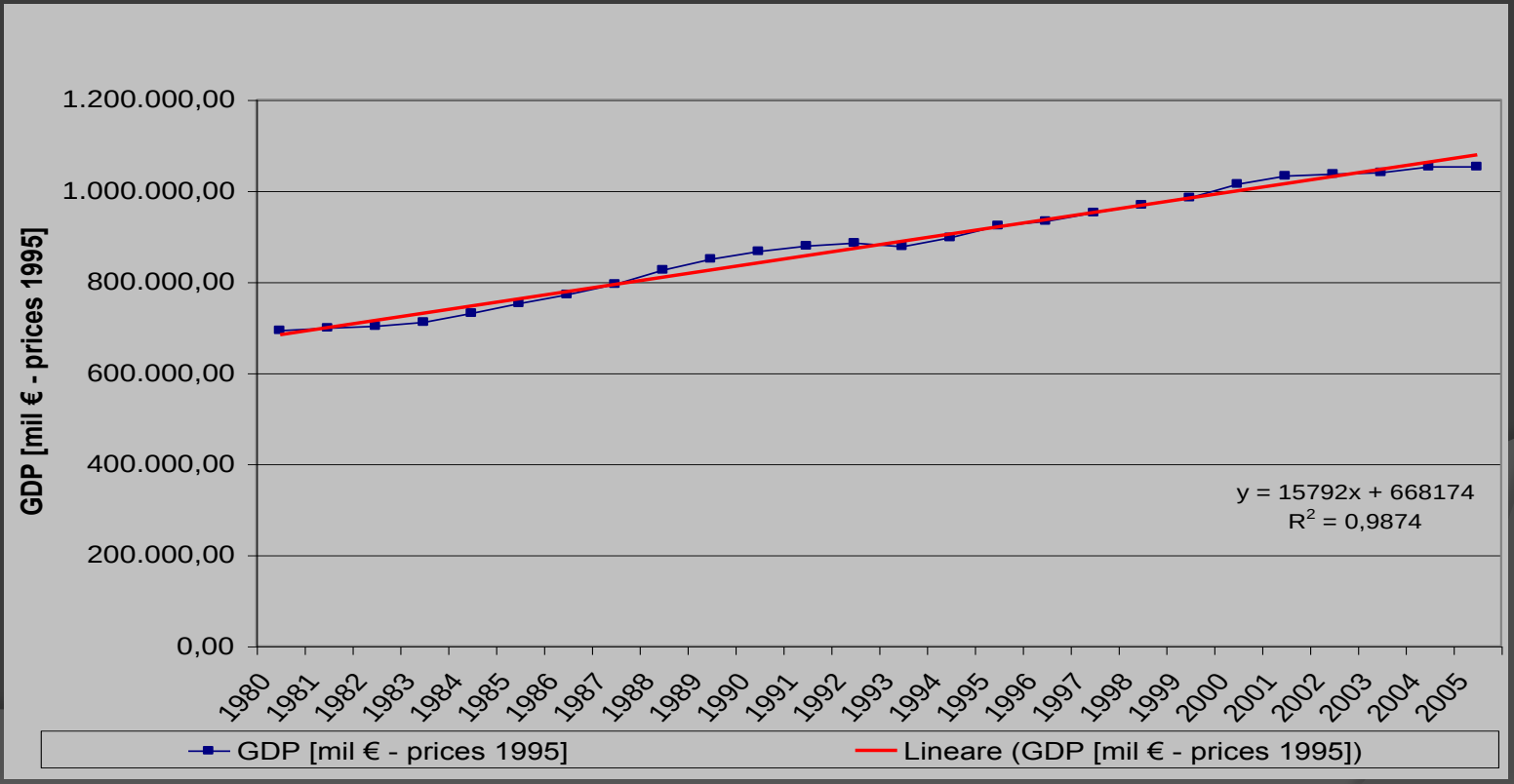
# Forecasted Scenario in 2020 on the Turin-Lyon Alpine pass (derived from Frejus Trend Model)

| | **Year 2020** *Hypothesis of negative trend* | **Year 2020** *Hypothesis of steadiness of the current market share* |
|---|---|---|
| Total | **50 millions tons** | |
| Road | 40 millions tons | 36 - 29 millions tons |
| Railway | 10 millions tons | 14 - 21 millions tons (28 to 42 % of overall flows) |

**This is the Question**

# Relations between traffic demand and GDP for Italy

- The overall evaluation of the fluctuation of Italian GDP over time shows that the growth of this indicator can be approximated by a linear equation. The average annual growth in the period at issue is 1.62%.



# The forecast of traffic demand through elasticity

Growth of transportation demand and GDP for Italy – [years 1980-2005]

| | GDP | Passengers - road | Passengers - railway | Freight- road | Freight - railway |
|---|---|---|---|---|---|
| Growth overall percentage | 51,97 | 161,66 | 16,33 | 93,37 | 18,99 |
| Growth average rate per year | **1,62** | **3,77** | **0,58** | **2,57** | **0,67** |

**Elasticity coefficients for Italy – years 1980-2005**.

| | Passengers – Road / GDP | Passengers – Railway/ GDP | Freight – Road / GDP | Freight – Railway /GDP |
|---|---|---|---|---|
| **Ratio** | **2,33** | **0,36** | **1,59** | **0,41** |

# THE PROBLEM OF THE FORECAST OF TRAFFIC DEMAND

**The freight railway elasticity is very low !!**

**It involves a loss of competitiveness of railway services on transport market,**

**also in presence of high potential market !!**

# The macro economic analysis shows the problems of the railway competition

| 2004 | | | Forecast to 2020 Total Alps | | | | | |
|---|---|---|---|---|---|---|---|---|
| | (MILLIONS TONS) | % | Macro-economic Model | % | Trend Model minimum (tons/year) | % | Trend Model Average (tons/year) | % |
| FREIGHT ROAD | 108 | 70,04% | 177,23 | 78,02% | 185 | 84,09% | 158 | 71,82 % |
| FREIGHT RAIL | 46,2 | 29,96% | 49,94 | 21,98% | 35 | 15,91% | 62 | 28,18 % |
| Total | 154,2 | 100,00% | 227,17 | 100,00% | 220 | 100,00% | 220 | 100,00% |

# The problem

- Is it possible to reach at least the middle hypothesis showed by the trend models?
- In other words, is it possible to maintain at least the 2004 share market on railway transport?
- Which measures are necessary for this simplest objective?

# Forecasted scenarios for Frejus Corridor

| **Macro Economic Model** | |
|---|---|
| minimum | 7,3 mil tons/year |
| average | 11,4 mil tons/year |
| high | 14,7 mil tons/year |

| **Trend Model** | |
|---|---|
| minimum | 10,0 mil tons/year |
| average | 14,0 mil tons/year |
| high | 21,0 mil tons/year |

# The strategy

- We retain  possible the achievement of at least 14 millions tons on the Frejus railway corridor
- It means for the railway transport to capture only 7 millions of tons currently belonging to road long distance links;
- It means to transfer from road to railway only 35% of long distance road flows currently on Frejus highway

# SCENARIOS EVALUATION/1

The scenarios don't evaluate:

- The effects of the new railway projects and of the improvement of the service's performances (like new combined transportation infrastructures);
- The proposed measures by the European Commission for the environment preservation (increase of the road transport costs, Eurovignette, etc);
- The road network congestion and the increasing of the socio economic costs of the road transportation

# SCENARIOS EVALUATION / 2

- The high flows counted at the road cross alpine transit going to few important destination: this is the market of the railway services, if the operators will capture the market and the infrastructure will offer suitable share of capacity
- In this scenario the new railway link is essential! The historic link, realized at the end of 1800s , provides standards out of the market and puts in evidence high capacity limits
- In other words it will be impossible not to realize new Highways, against every social and European objective !