

A new railway between Turin and Lyon

Is it reasonable?

Angelo Tartaglia

What is a new transport infrastructure for?

- To carry people
- To transport goods
- To generate profit for the builders
- To redistribute revenue (to create employment) during the building and afterwards

Why a new infrastructure when there are already others in operation?

- Because one expects a coming flux of passengers and ware bigger than what the existing infrastructure can carry
- Because the cost for renewal, maintenance and management of the existing connection tends to approach the cost of an entirely new infrastructure in a few years

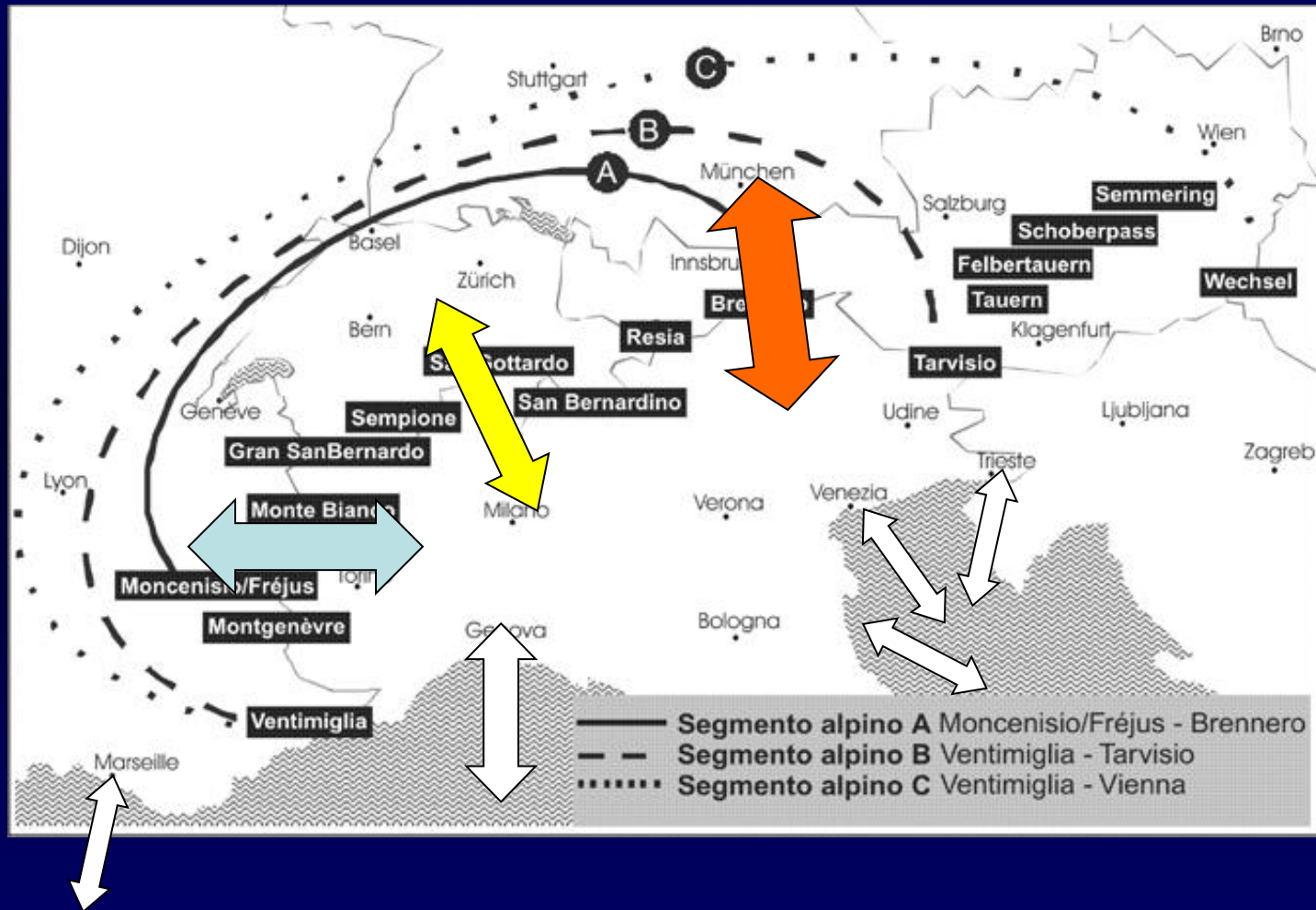
Passengers flux

- In 1992 the proponents claimed that the passengers between Turin and Lyon would grow from 2.000 to 20.000 per day in 10 years
- The offer of seats on the line in 20 years has remained between 2.000 e 3.000 pax/day

Existing High Speed rails

- The Tokyo-Osaka line has more than 400,000 pax/day
- The new Beijing-Shanghai expects more than 200,000 pax/day
- The TGV Atlantique has approximately 40,000 pax/day
- Out of these orders of magnitude a passenger line is a luxury which needs direct or indirect public subsidy

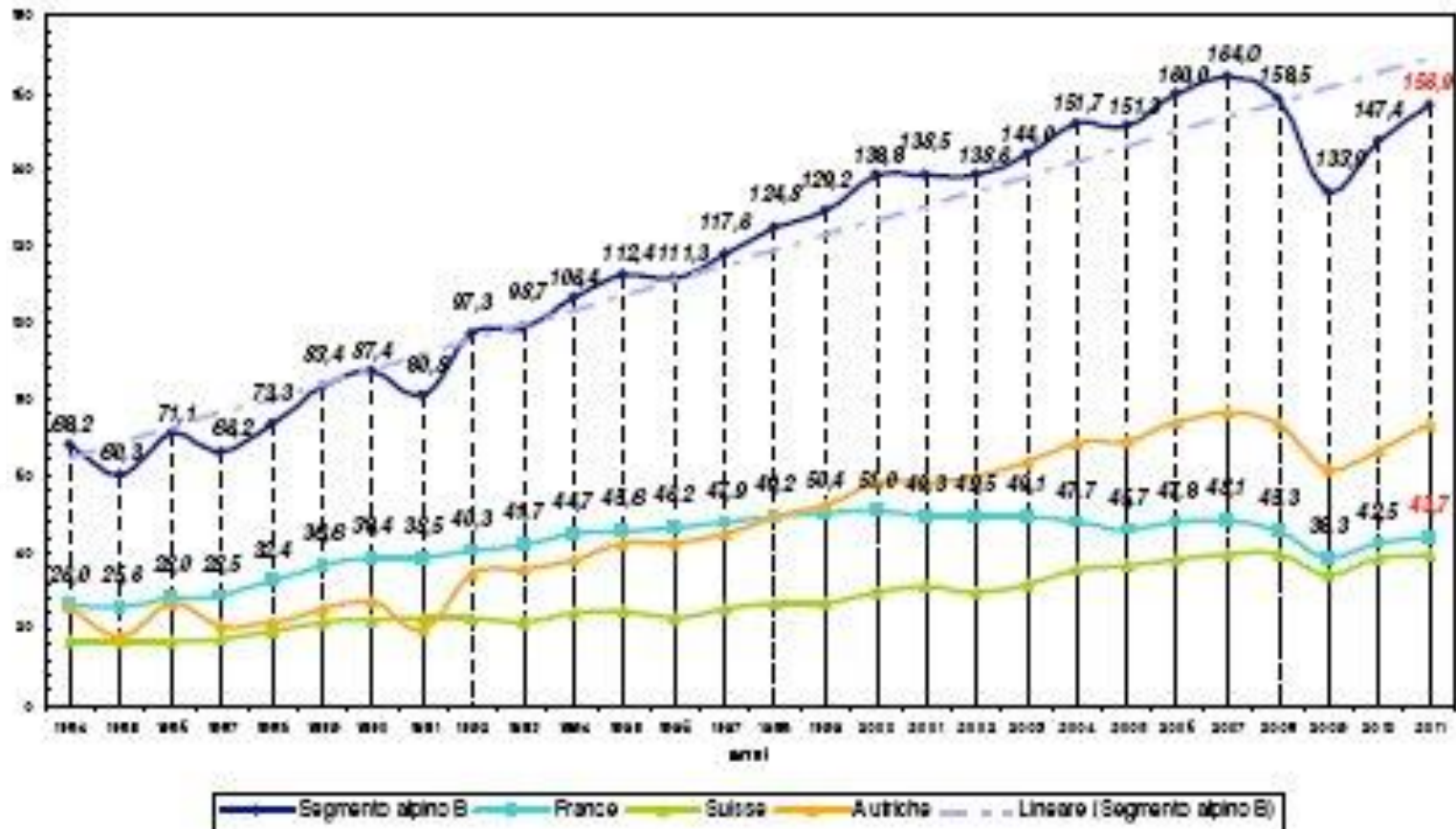
Flux of wares across the Alps



Quantitative data

Border with Italy	1999			2008	2009			2010		
	Road (Mton/year)	Rail (Mton/year)	Total	Total	Road	Rail	Total	Road	Rail	Total
France	37,8	10,2	48	45,3	35,3	2,8	38,1	38	4,5	42,5
Austria	58,7	27,9	86,6	120,7	70,1	32,8	102,9	91,5	44,5	136,0
Switzerland	8,4	18,4	26,8	40,1	13,4	21,0	34,4	14,3	24	38,4
Alpine arch	104,9	56,5	161,4	206,1	118,7	56,6	175,3	143,8	73	216,9

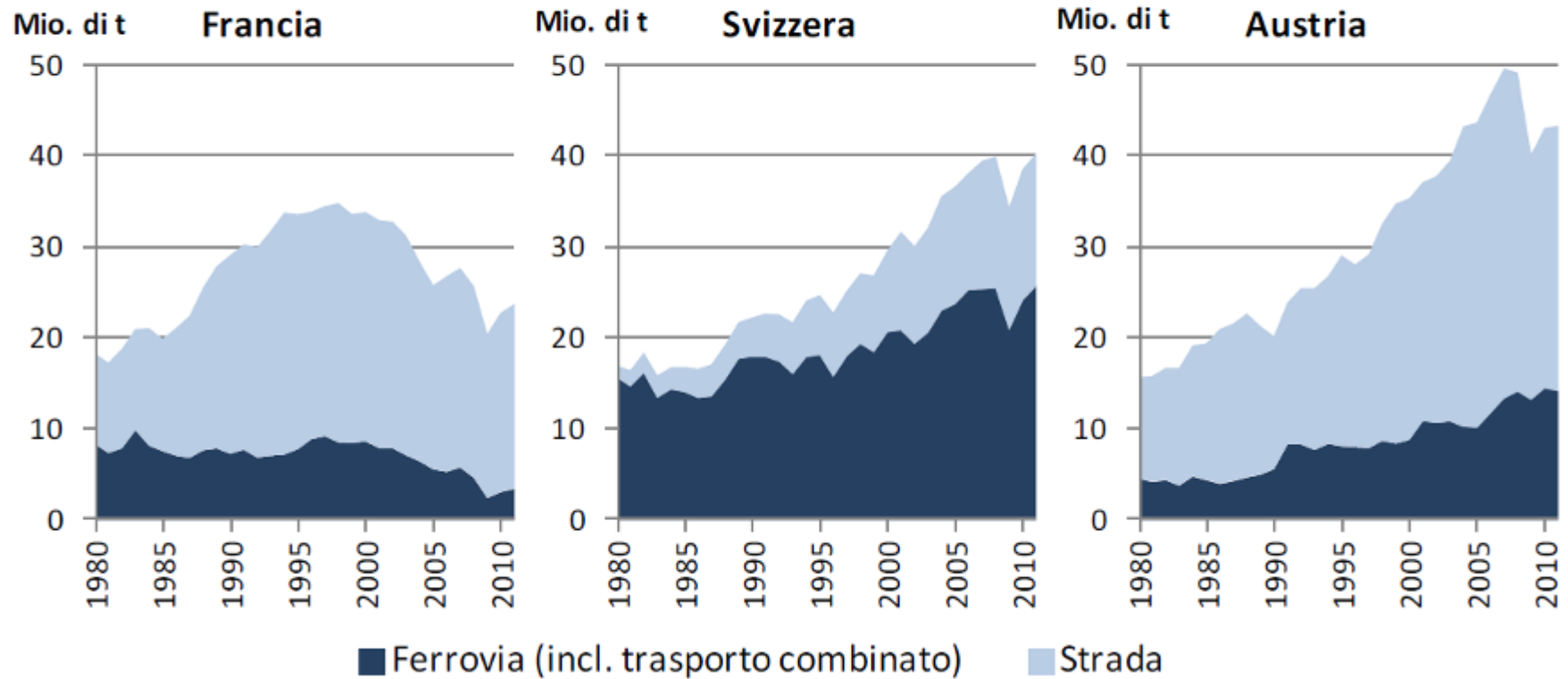
Present trend (28 years)



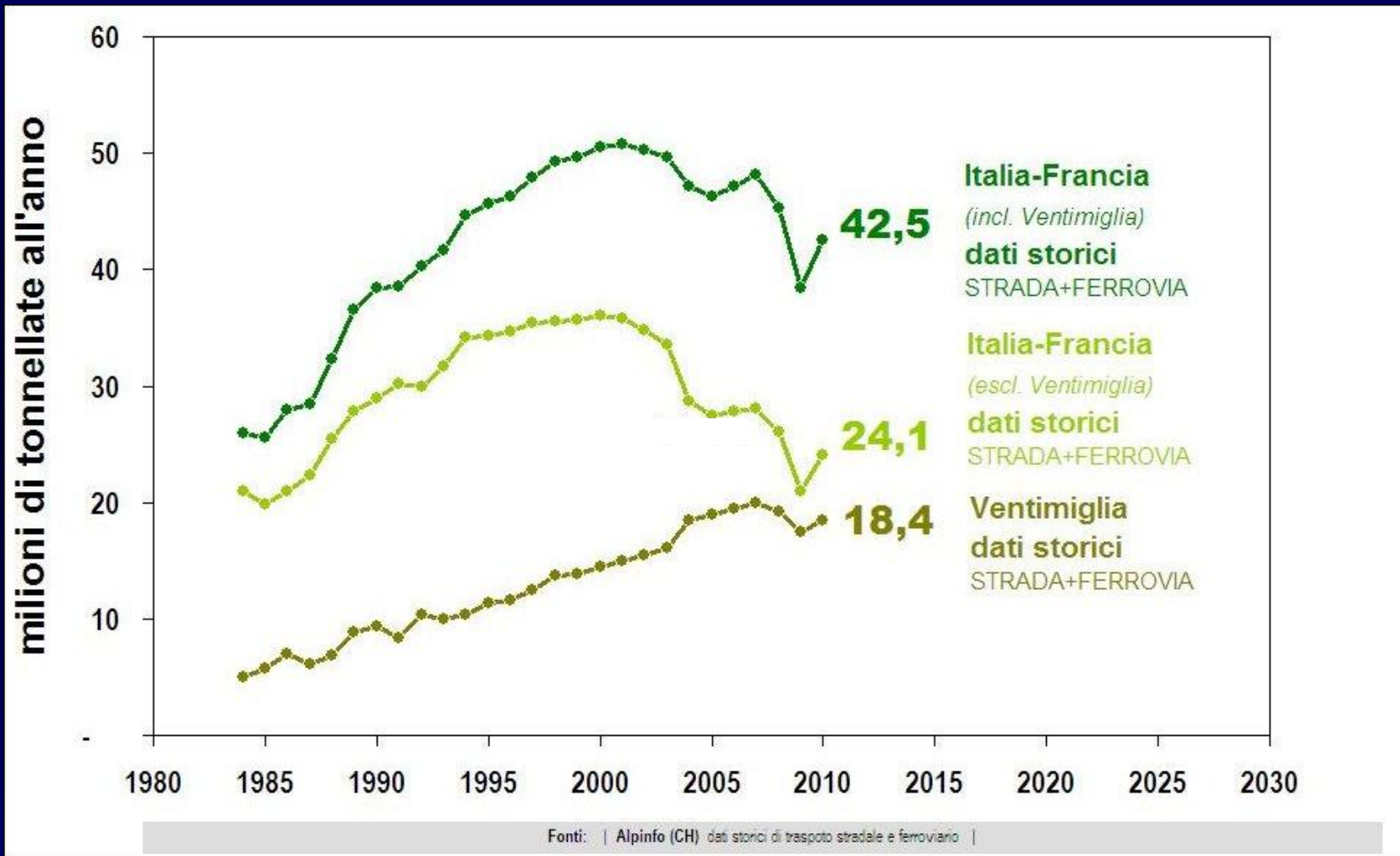
Trends

Traffico merci attraverso le Alpi 1980-2011

Moncenisio / Fréjus - Brennero mio. di tonnellate/anno (nette)



Between France and Italy



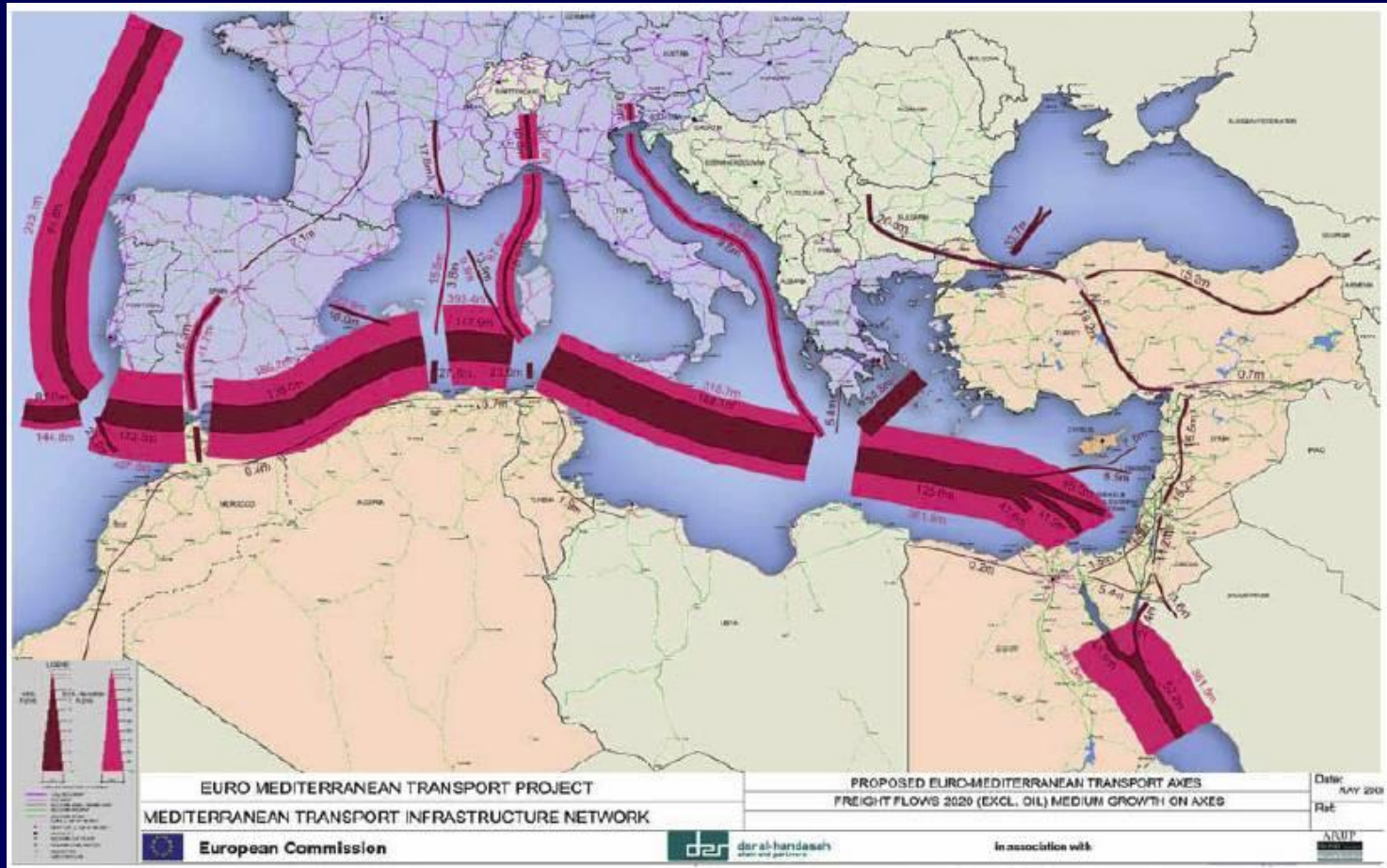
Price and weight

- The Italian government often refers to the price of the transported goods
- Railways and infrastructures are designed referring not to the price but to the volume and weight of the goods to be transported

Probable future growth



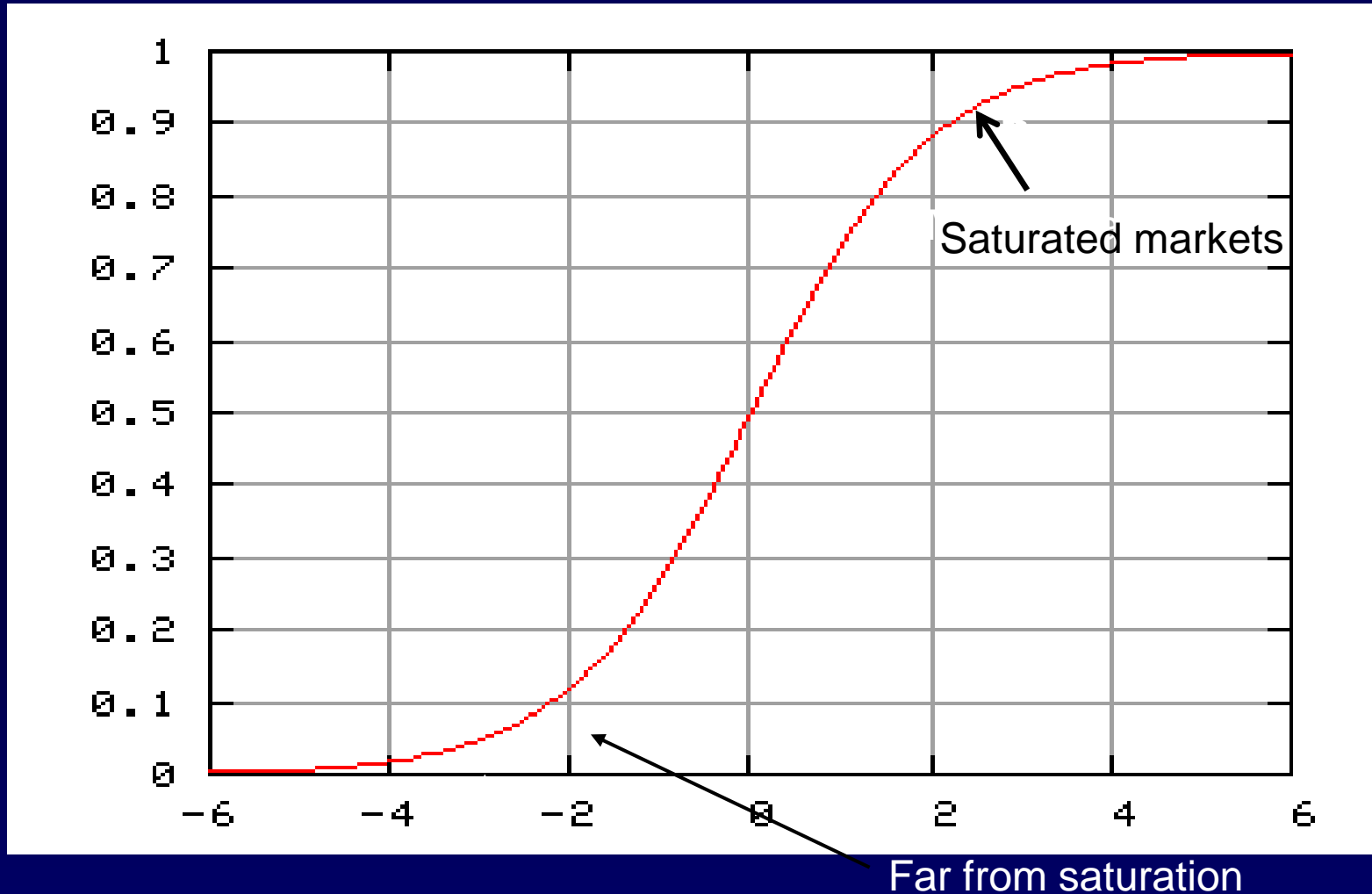
North-South terrestrial corridors



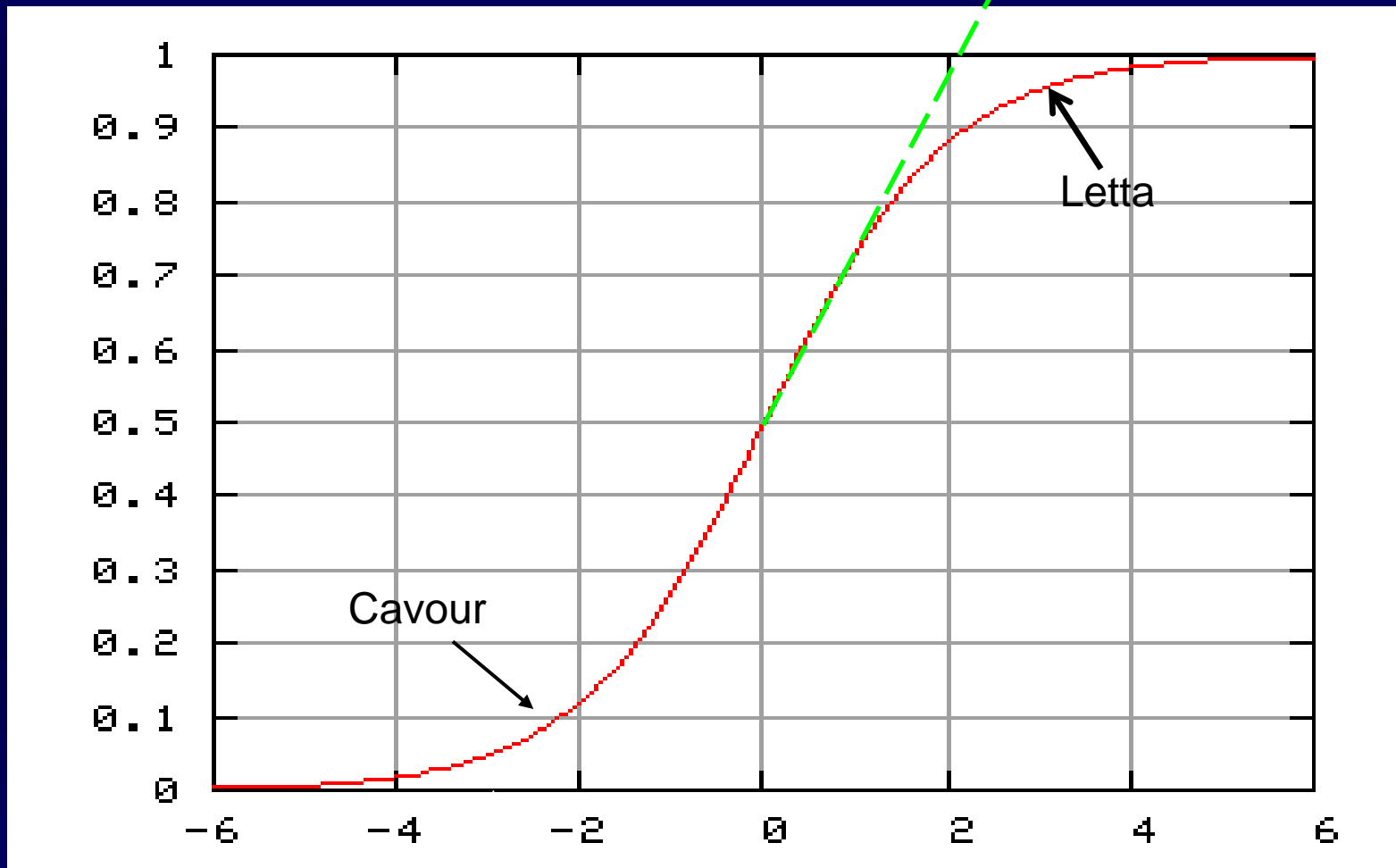
Active links for Italy

- East/West: mainly intra-European (stationary)
- North/South: both intra-European and towards Far and Near East and Africa through the ports of the Mediterranean (growing)

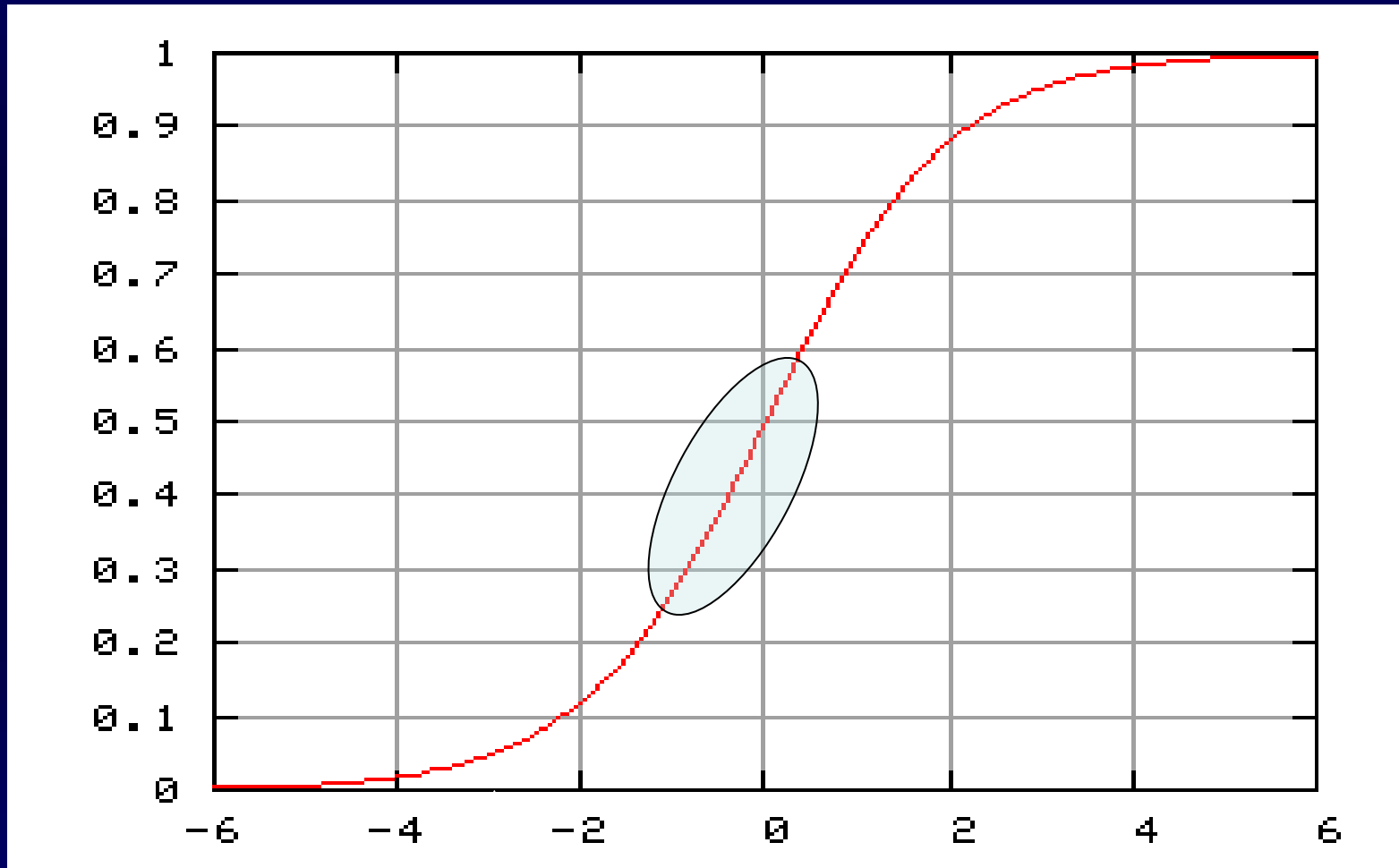
Flux of goods between two finite markets



Italy-France (East-West)



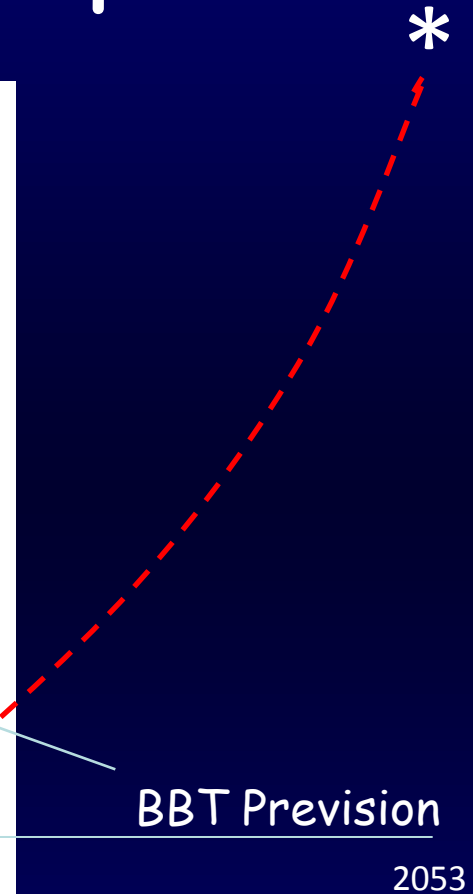
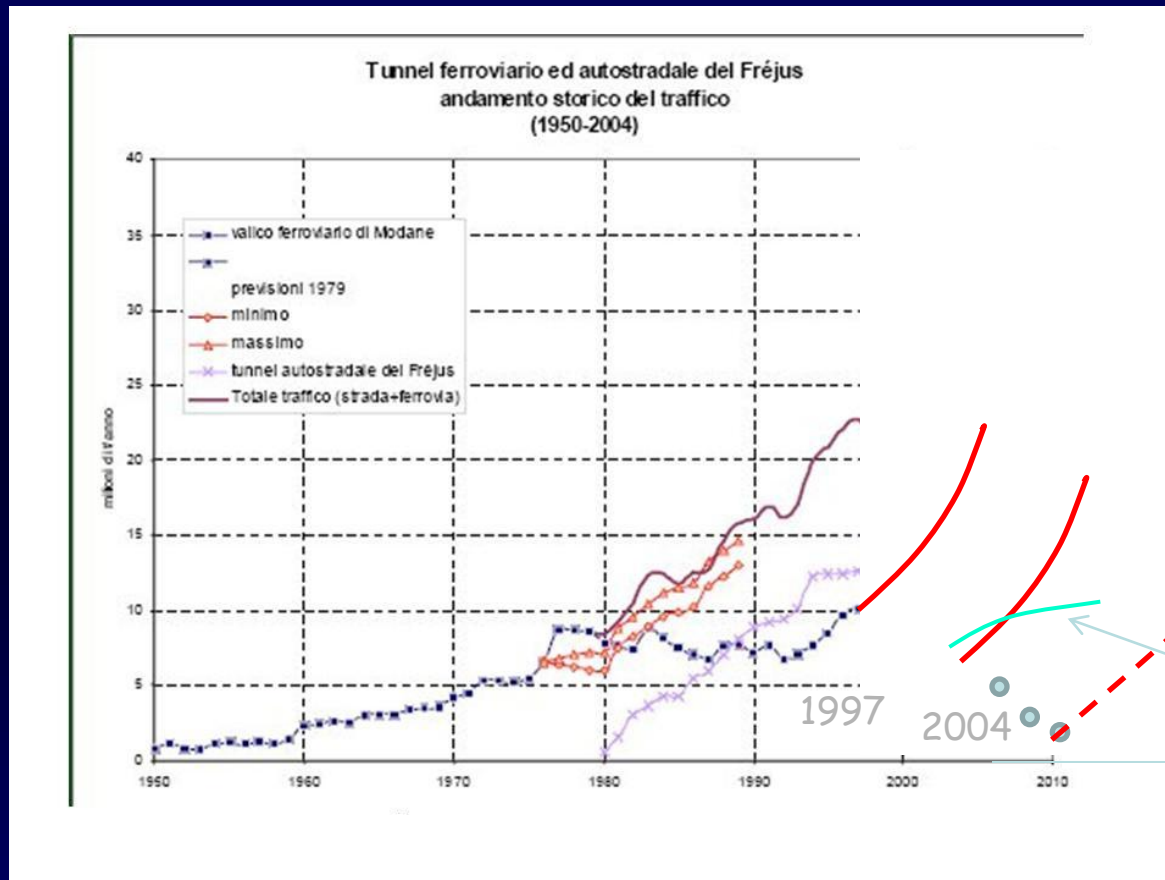
Europe-Asia, -Africa... (North-South)



Prevision models

- According to the proponents the flux of goods across the Susa Valley will multiply by 15-20 within some forty years
- If so, this would imply:
 - Either a generalized increase of the traffic of goods across the whole Alpine arch
 - Or a substantial transfer from other corridors to the Susa Valley
 - Or both

"Prevision" by the proponents



Generalized growth

- The "predicted" growth of traffic through the Susa Valley would bring about the saturation of the entire Alpine arch in a few decades.
- The internal Italian transportation network would saturate in turn
- The growth of traffic is based on two hypotheses:
 - Generalized growth of GNP in Europe
 - "Elasticity Factor" k equalling 1.7 in weight and value.

The real world

- Structural economic crisis with unknown outcome (stagnant or decreasing European GNP)
- Material growth of fluxes impossible for saturated markets
- 1.7 multiplier chosen ad hoc and without material justification
- Growing energy costs
- Growing cost of raw material

Elasticity factor

- $k=1.7$ "explained" by the trend of 11 months in 2011
- In 2006 LTF model it was $k=1.4$
- The correlation between two phenomena whose reason is unknown can give any result depending on the set of data one uses.

Paradox of the application of a long lasting $k > 1$ to a transport system

The cost of transport would increase faster than the volume of the exchange



The available wealth would decrease in time, so ceasing to be the engine of the growth of the exchange

Transfer from other corridors

- Transfer could be the consequence of a forthcoming saturation of other corridors which brings again to a generalized exponential growth
- What would the advantage be of having on the Turin-Lyon rail goods that are already entering or exiting Italy by other paths?

Modal split

- Europe asserts the need of reducing the road transport to the advantage of the rail
- The NLTL is presented as substantially having that purpose
- The LTF model which "predicts" an extremely strong growth of commercial fluxes also predicts an *increase* of road transport through the valley of Susa

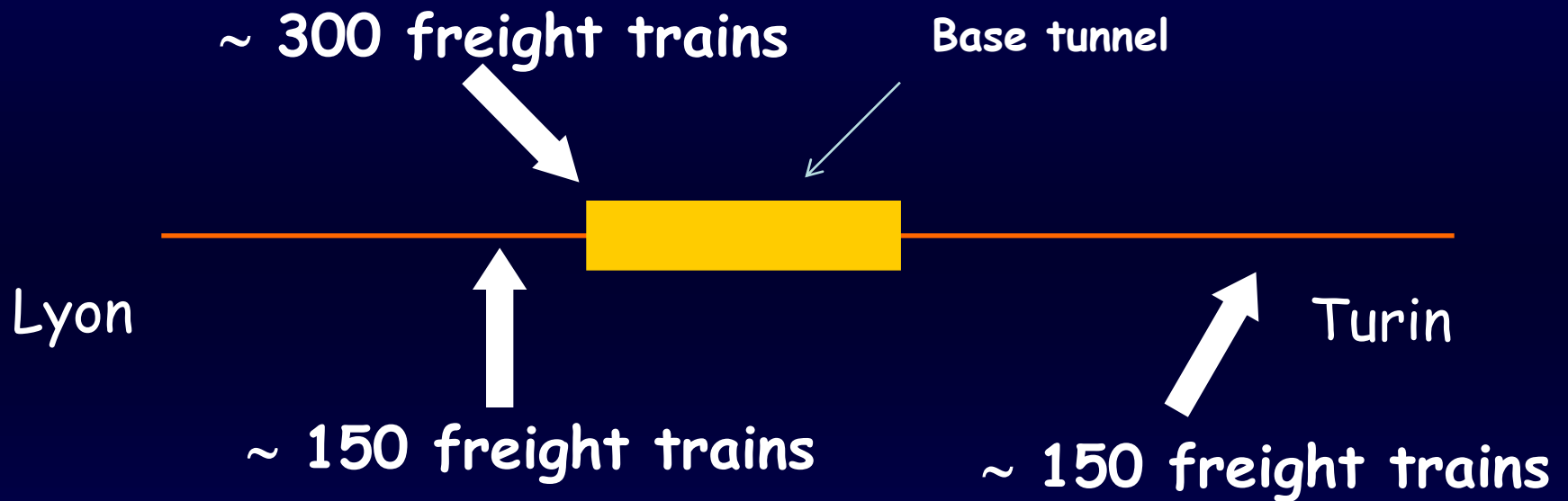
Trends in Europe (rail/total)

	2000	2007	2008
Europe (27)	20%	18%	18%
France	21%	16%	16%
Switzerland	53%	54%	54%
Italy	11%	12%	12%

European environmental objectives

- Proclaimed European goals require absolute *decreases* (CO_2 emissions, energy consumption) expressed as percentages of quantities that should stay *fixed*.
- Percent reductions of growing quantities can correspond (and indeed they do in the models) to absolute *increases*.

The "low cost" project



"Predictions" of the proponents for 2035

- 39.9 Mton on the NLTL (10 times the 2010 flux)
- 32.4 Mton on the road (1.6 times the 2010 flux, including Mount Blanc)

~ 800,000 trucks more than today

However...

According to the proponents, in 2035 the only low cost will be in operation (base tunnel and historical railroad)

- The capacity of the line will remain the one of today: ~ 20 Mton
- 19.9 Mton more will pour out on the road
- ~ 2.1 million trucks (including the Mont Blanc) more than today on the road

2035 Scenario (according to the promoters)

- Total flux on the corridor: **72.3 Mton/year**
- NLTL “low cost”: **20 Mton/year (saturated)**

- On the road: **52.3 Mton/year**

2.75 times 2010 → 2.1 million trucks more

2.75 times the present number of accidents

2.75 times the present fuel consumption

2.75 times the present emissions in the atmosphere

"Social benefits"

- The proponents assume that for each *gram* of spared CO_2 there would be an economical advantage of 0.006-0.008 €, i.e. 6000-8000 €/ton. But...
- The European Commission recommends to use values of the order of 30-100 €/ton (about 100 times smaller)

In the coming decades

- The price of oil will increase considerably
- The price of many raw materials will increase considerably
- The price of food will increase considerably
- It is not clear what the world financial instabilities will bring about.

- Motivation
 - Substantial doubts
 - Ideological stretching
- More problems
 - Revenue account
 - Energy balance
 - Technological and operational inconsistency
 - Impact

- There are no reasonable motivations for building the new line
- There are many reasonable motivations for NOT building the new line