Sustainable inter-urban roads for tomorrow

Interurban Transport and Roads of the Future: new challenges, new balances

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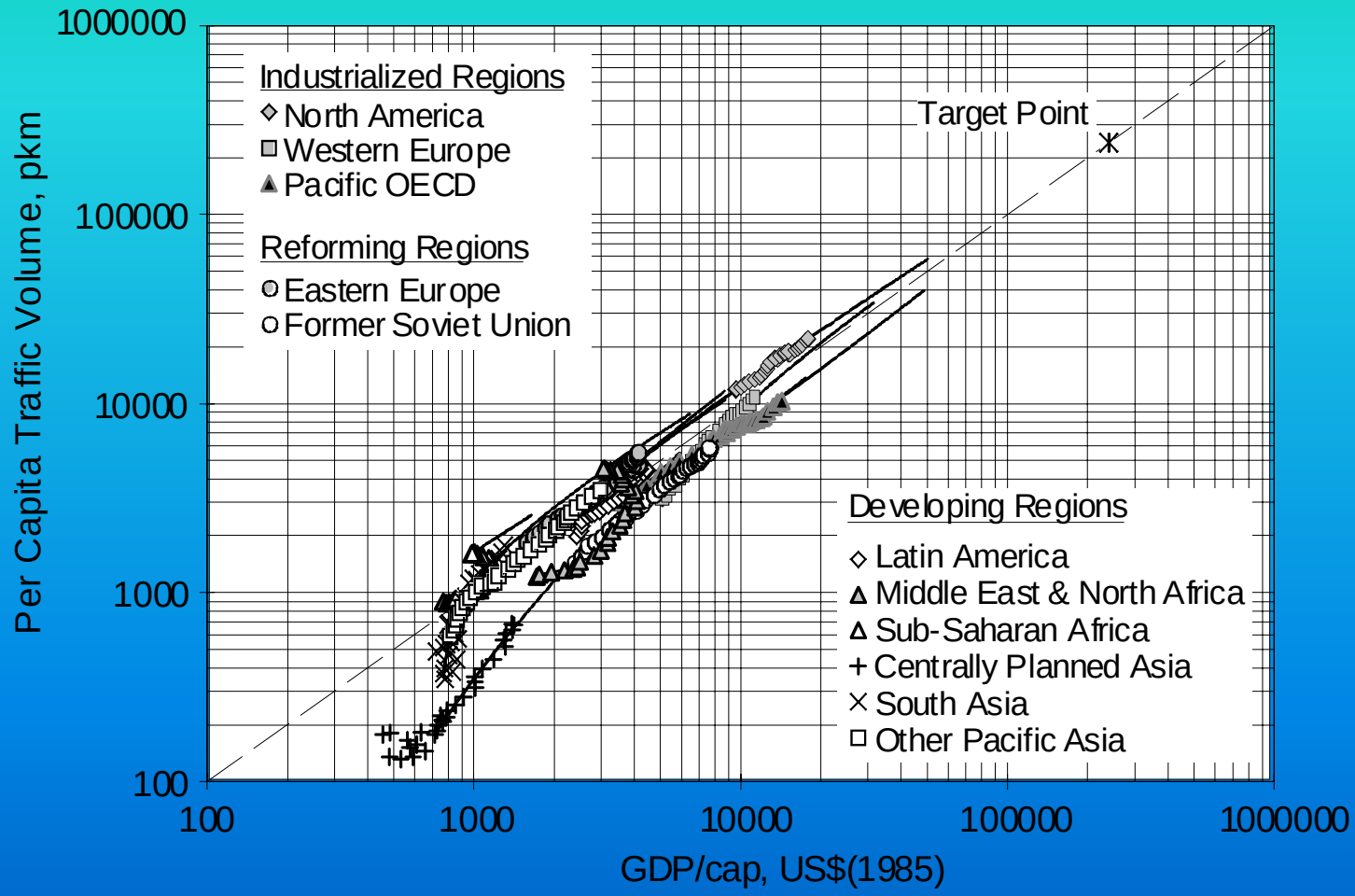
- 1) Global and local Traffic forecasting

- 40, 55, 600 km per day ?
- TTB and speed/gdp elasticity : two crucial variables
- A growing role for high speed modes?
- What about road traffic ?

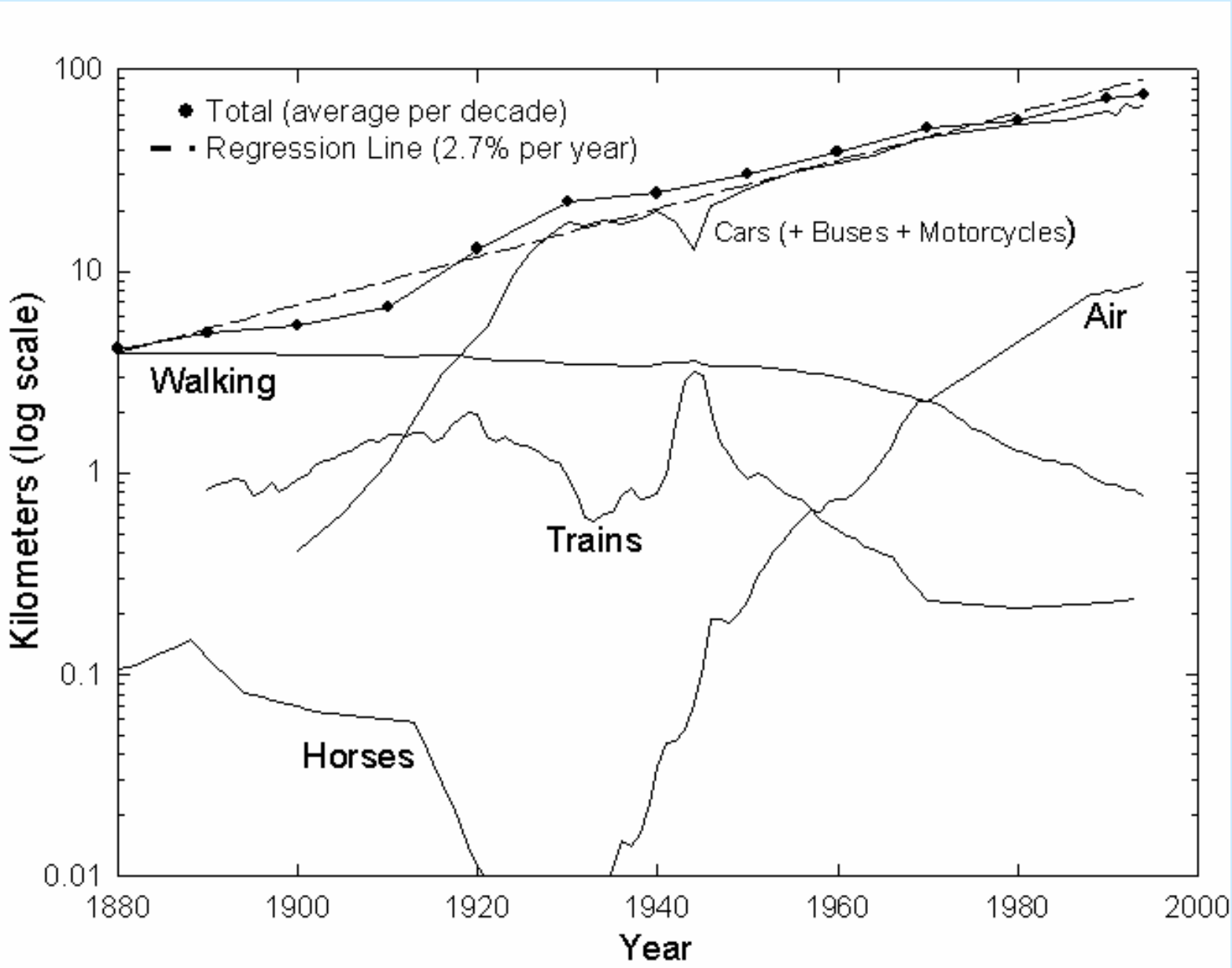
- 2) Road users ? which constraint do you prefer ?

TOTAL MOBILITY

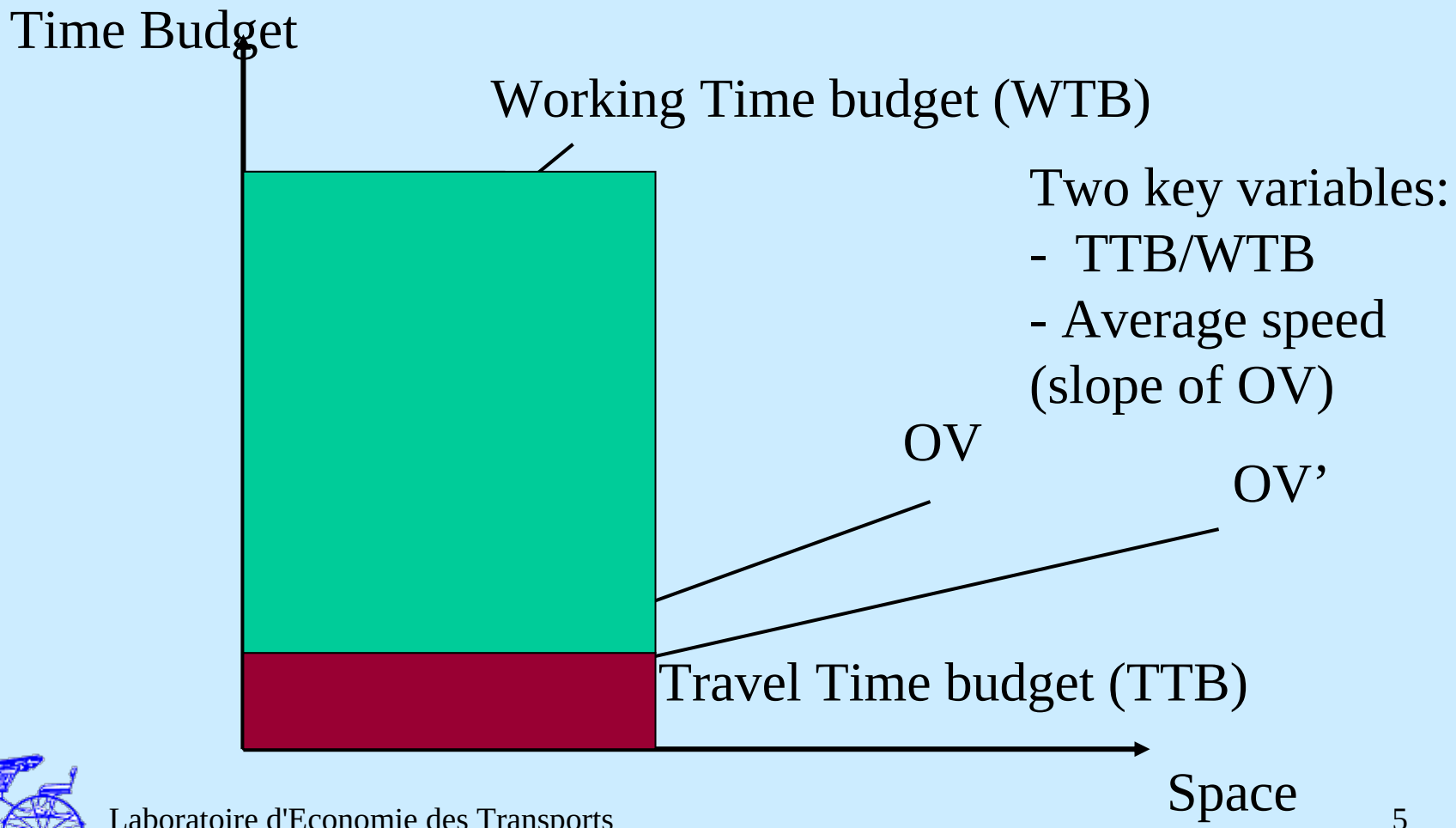
(Data Points: 1960 - 1990; Curves: 1960 - 2050)



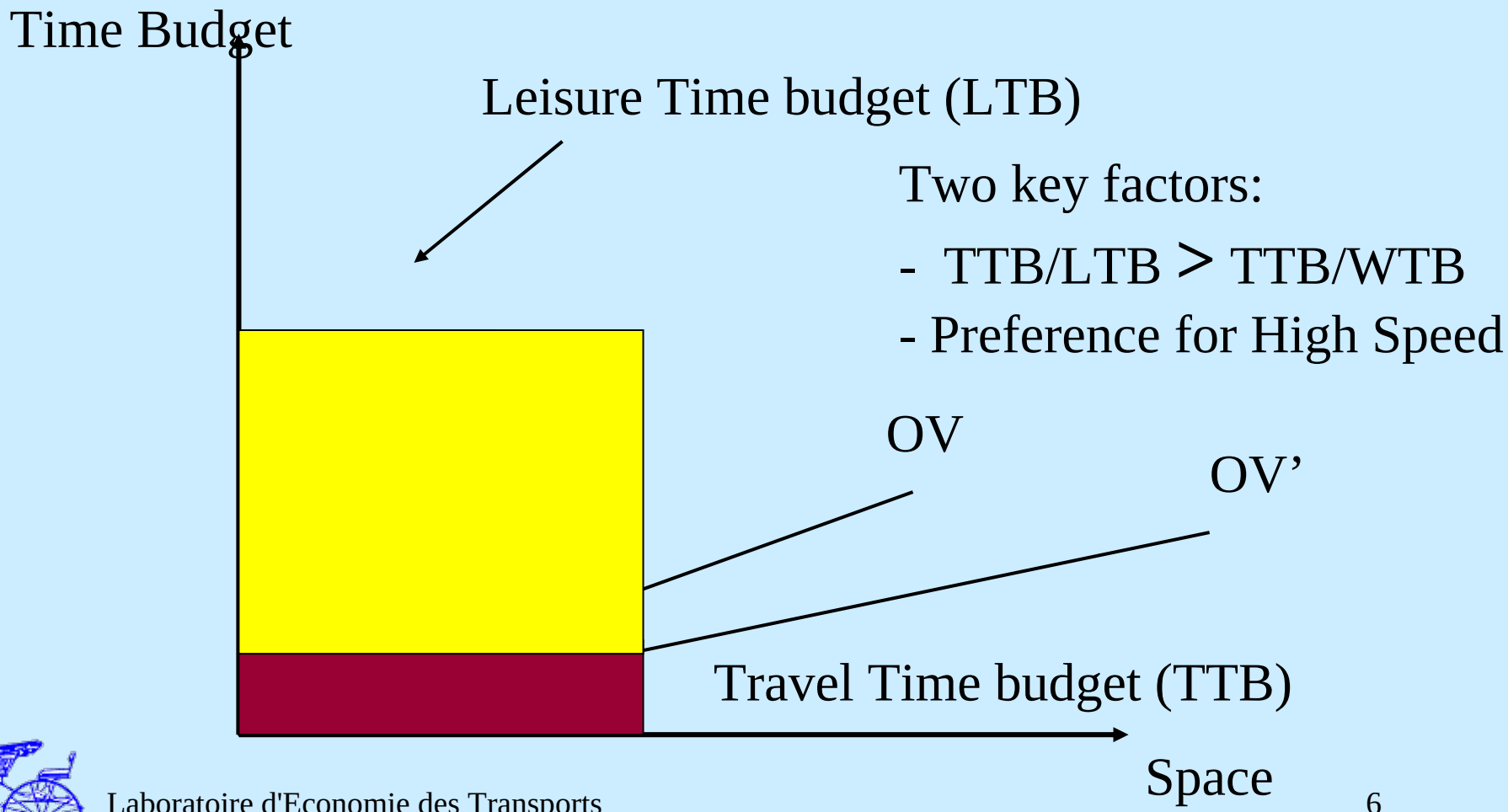
Source: Schafer and Victor (2000); economic growth rates based on IPCC IS92a/e scenario


Total (average per decade)
Regression Line (2.7% per year)
Cars (+ Buses + Motorcycles)
Air
Walking
Trains
Horses
Kilometers (log scale)
100
10
1
0.1
0.01
1880
1900
1920
1940
1960
1980
2000
Year

Speed and Travel Time Budget



Speed and Travel Time Budget



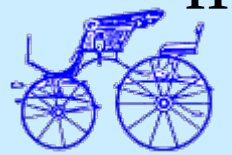
France, 2002 to 2050

- Total Mobility in 2002 = 958 Billions of PK
  - **< 50 Km = 588 Bi PK**
  - **> 50km = 370 Bi PK (74 NR)**
  - **Total = 958 Mds de PK**
    - **Car : 798 (83%)**
    - **PT : 144**
    - **Air (internal traffic) : 16 Bi PK**
    - **(international traffic due to residents. About 90 Bi PK)**

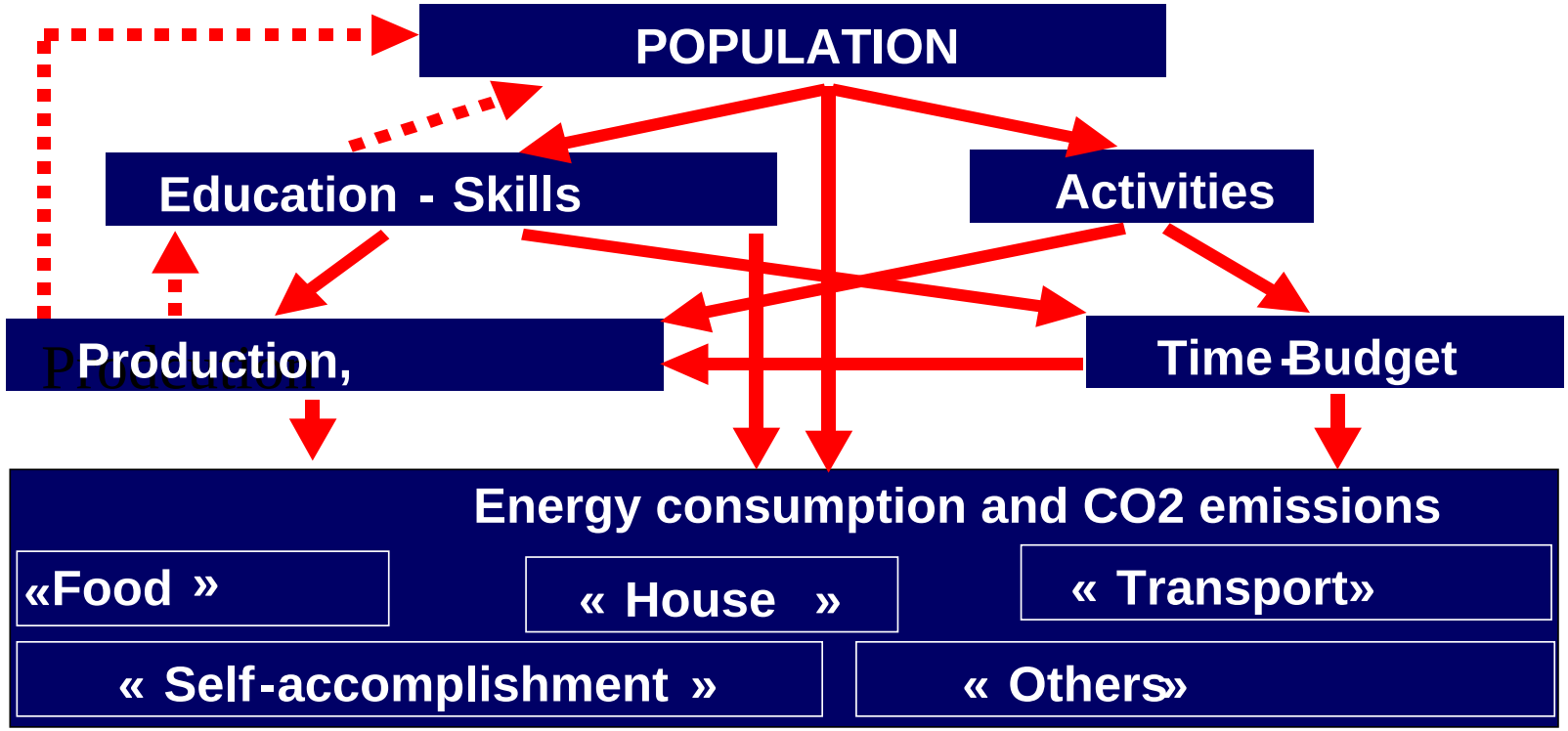
- Total mobility in 2050 scenario "BAU" of CGPC = 1554 Billions of PK
  - **< 50 Km = 770 Bi PK (+31%)**
  - **>50km = 784 Bi PK (194 NR) +111%**
  - **Total = 1554 Bi PK (+62%or +1% per year)**
  - **What does it mean ?**

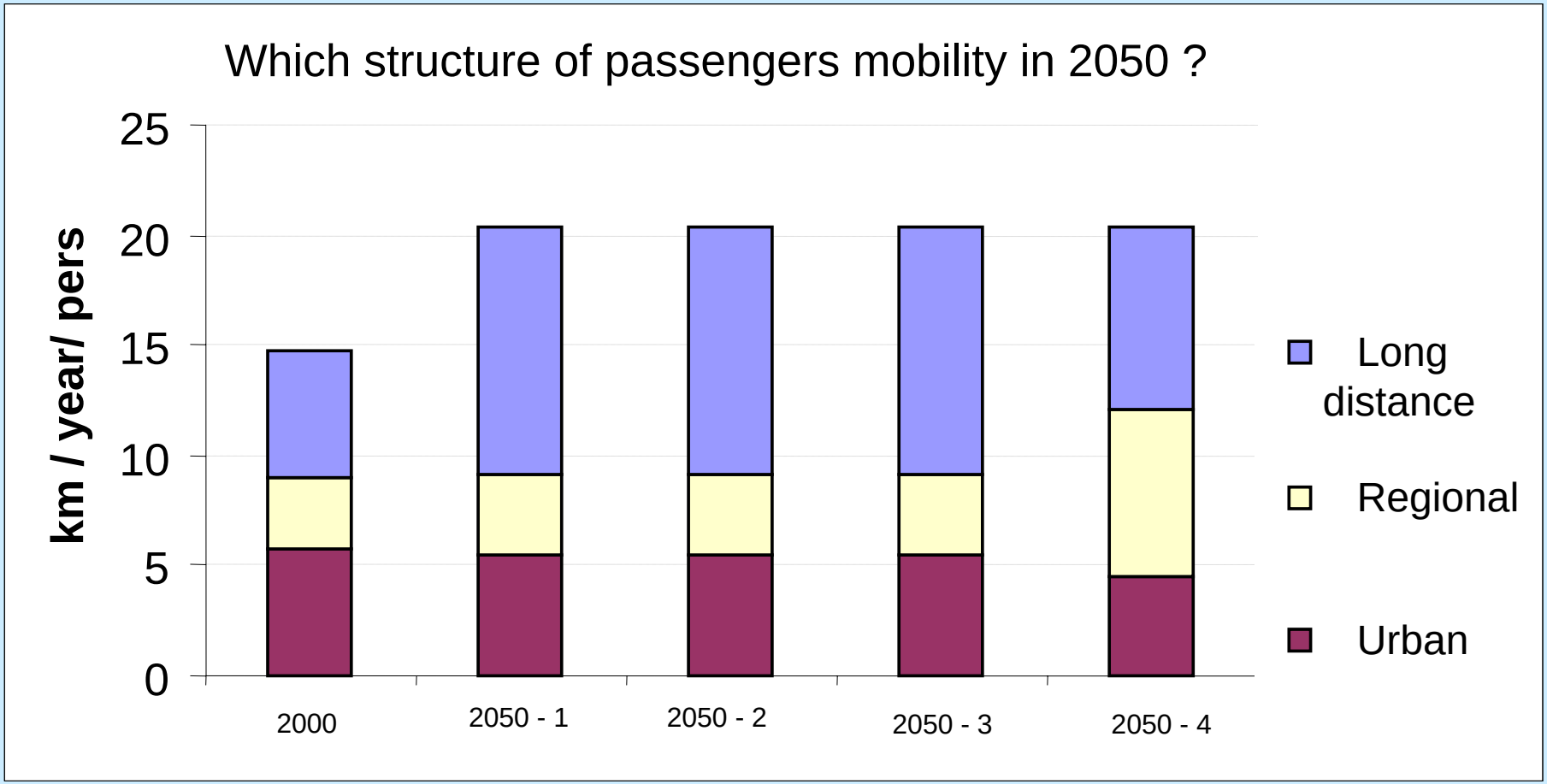
Some questions

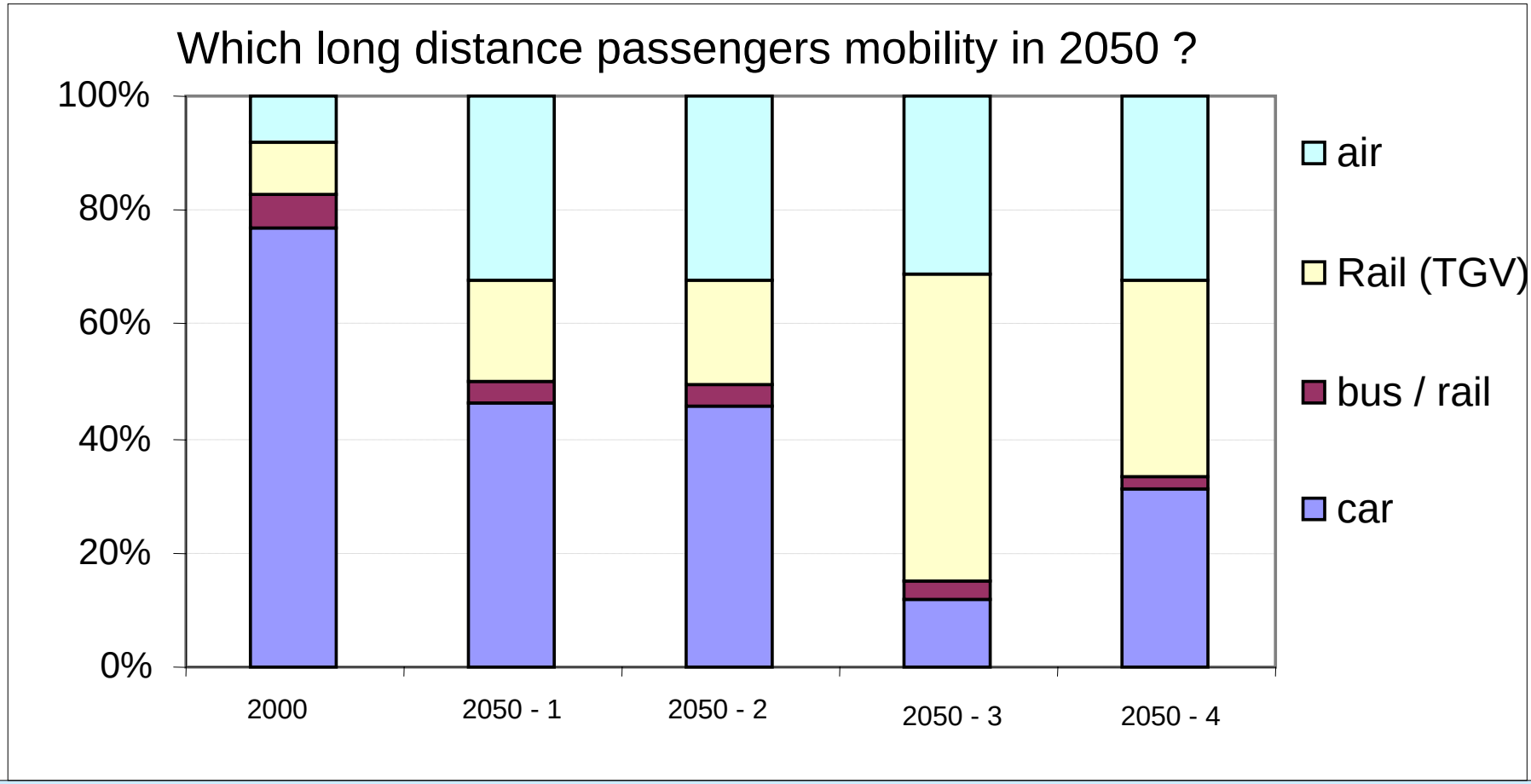
- 1360 Billions of km for 67 millions of inhabitants = 20 300 km per year or 55 Km per day (in 2002 : 14 733 per year and 40 per day)
- But how to do that if we still have 80% of PK by car ?
- Could we increase the average speed on roads ? That is to say more infrastructures ?
- Or should we increase the Travel Time Budget ?
- Or operate a modal shift in favour of high speed modes?

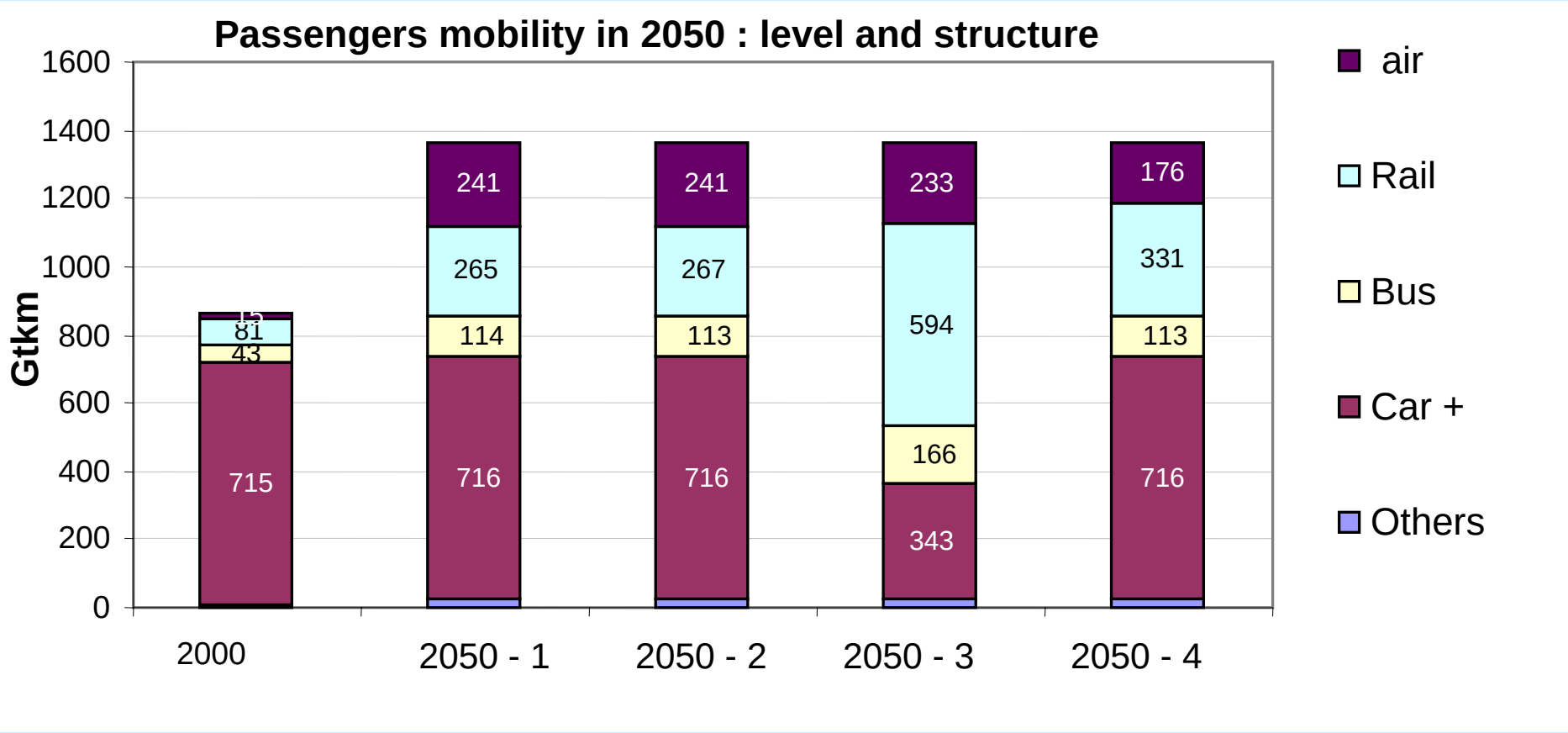


The "TILT" Model
Transport Issues in the Long Term




Which structure of passengers mobility in 2050 ?
km / year/ pers
25
20
15
10
5
0
2000
2050 - 1
2050 - 2
2050 - 3
2050 - 4
Long distance
Regional
Urban

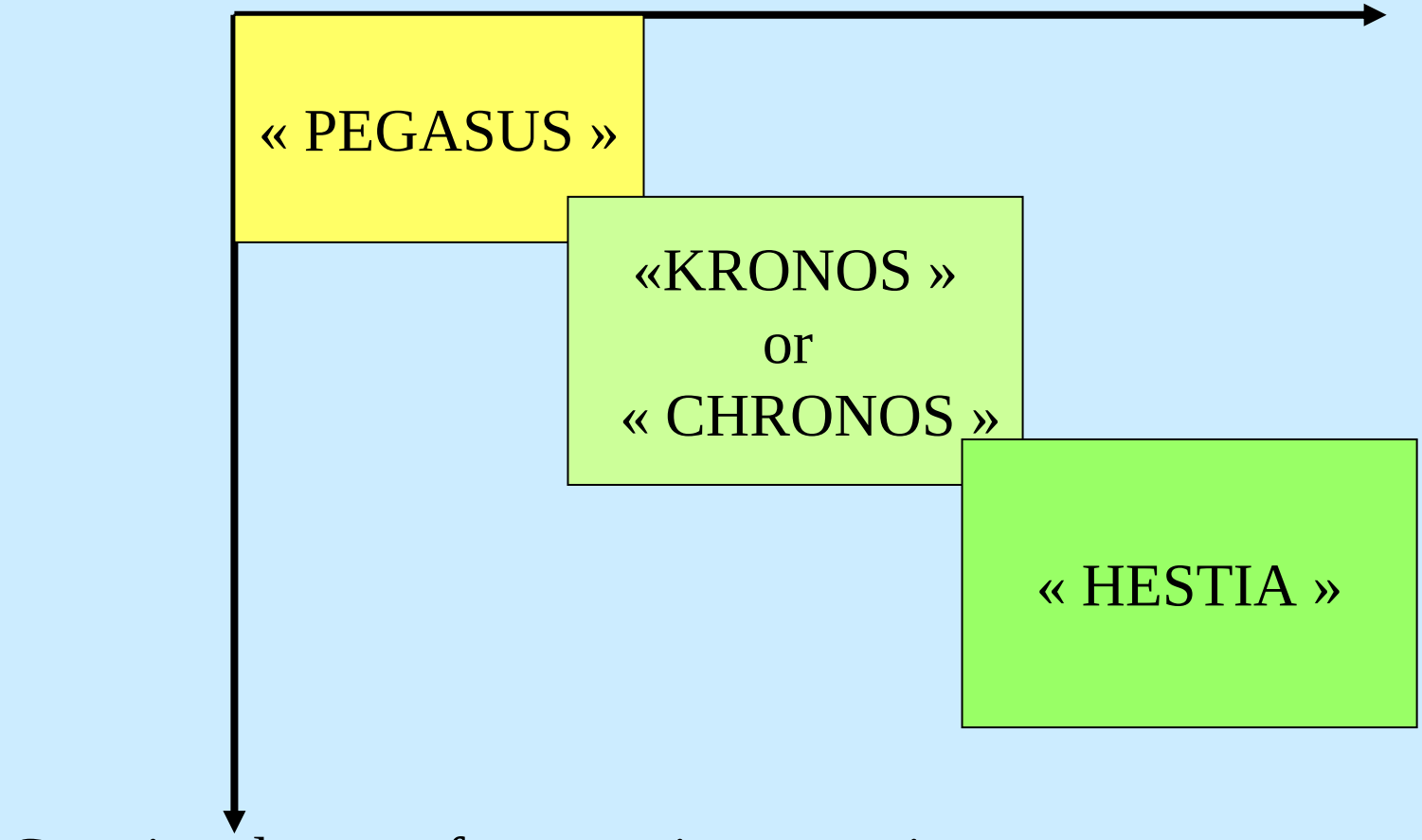

Which long distance passengers mobility in 2050 ?
100%
80%
60%
40%
20%
0%
2000
2050 - 1
2050 - 2
2050 - 3
2050 - 4
air
Rail (TGV)
bus / rail
car


Passengers mobility in 2050 : level and structure
Gtkm
1600
1400
1200
1000
800
600
400
200
0
2000
2050 - 1
2050 - 2
2050 - 3
2050 - 4
715
43
81
15
716
114
265
241
716
113
267
241
343
166
594
233
716
113
331
176
air
Rail
Bus
Car +
Others

2) Road Users : which constraints do you prefer ?

- Economic and regulatory constraints
- Be optimistic !
- Toll or/and speed limitation ?

Three families of scenarios



PEGASUS : Interregional Traffic

Year 2000

Total 363 B Pk

- Car (77%) = 280
- Bus+Train (6%) = 22
- TGV (9%) = 32
- Air (8%) = 29

Year 2050 (TILT)

Total 765 B Pk

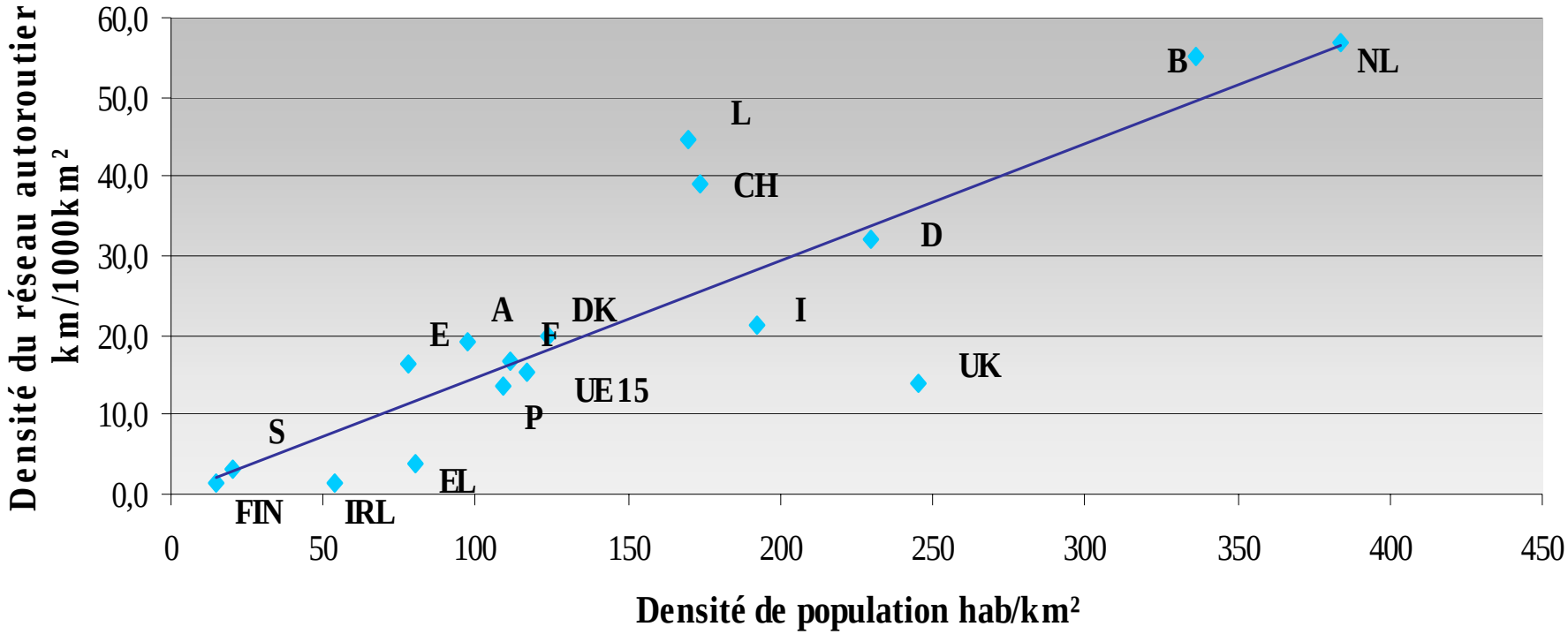
- Car (46%) = 352 (+0,5%)
- Bus+T. (3%)= 23
- TGV (17%) =130 +3%
- Air (34%) =260 + 4,5%

Year 2050 (CAS)

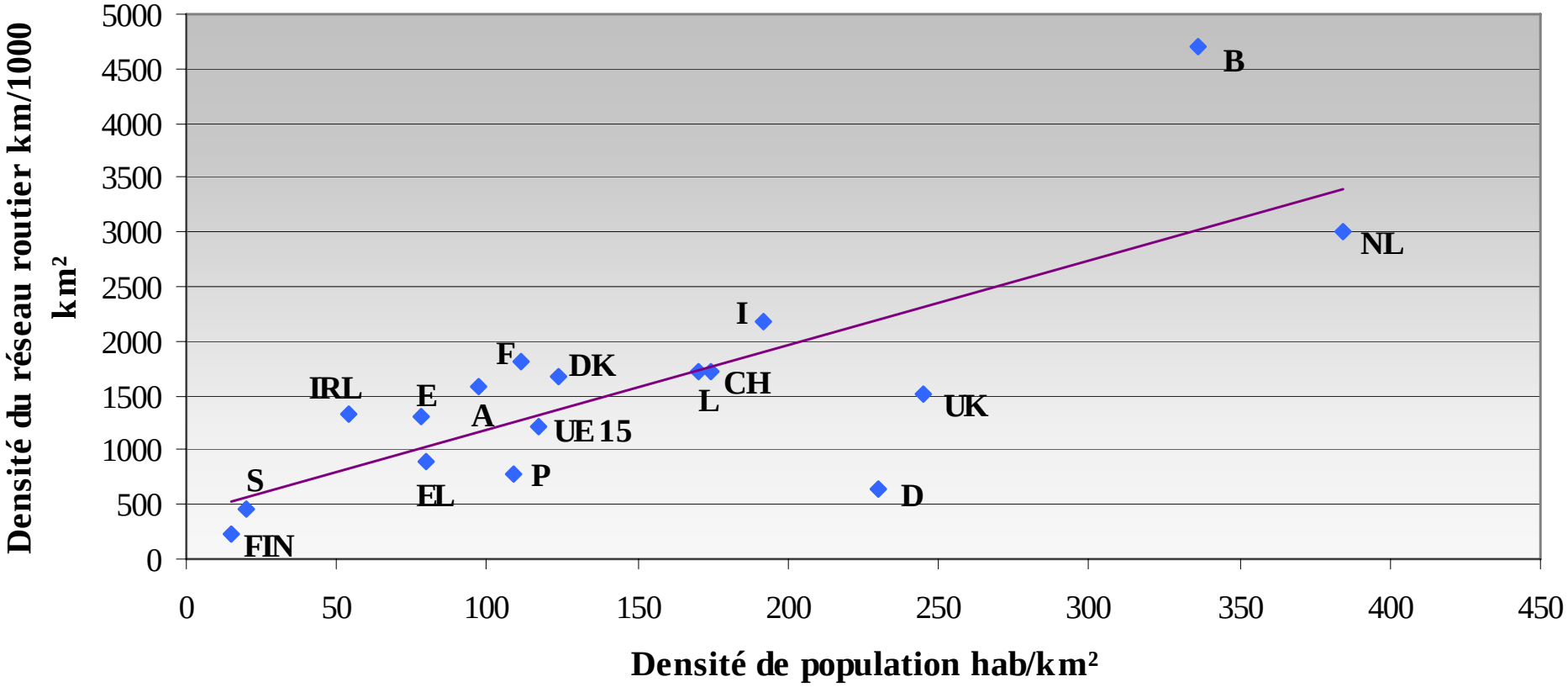
Total 1021 B Pk

- Car (56%) = 572 + 1,5%
- Bus+T. (2%)= 20
- TGV (12%) =123 +3%
- Air (30%) =306 +5%

RESEAU AUTOROUTIER 2000



RESEAU ROUTIER 2000



The future of road: more and more constraints as a result of economic growth !

- What about average speed ?
- Fuel Price ?
- New infrastructures ?
- Smart roads and smart cars ?
- Towards more and more toll roads with congestion charge ?

	base 2000	Référence S1	KRONOS MINI	Baseline CAS V6
PIB		1,5%	1,5%	2,3%
POP		67	67	71
élasticité vitesse/PIB		0,327	0,000	0,356
btt	1	1,0	1,0	1,0
saturation km vp	14000	13500	9300	17800
vit vp globale		53,9	53,9	53,9
TOTAL gpkm	**959,4**	**1449**	**1181**	**1741**
dt modes individuels	728	*805*	*555*	*1145*
dt collectif route	41	*112*	*155*	*71*
dt Fer (hors TGV)	45	*121*	*225*	*72*
TGV	37	*127*	*118*	*128*
dt air	104	*260*	*104*	*325*
dt modes doux	4	*24*	*24*	*0*
gpkm URBAIN	**283**	**350**	**350**	**368**
% vp	93%	33%	35%	62%
modes doux	-	7%	7%	0%
tc	7%	60%	58%	38%
vitesse vp	*23*	*20*	*25*	*20*
vitesse ts modes	*20*	*23*	*23*	*23*
gpkm REGION	**208**	**334**	**334**	**353**
vp	83%	100%	50%	99%
ts modes	17%	0%	50%	1%
vitesse vp	*58*	*55*	*67*	*55*
vitesse TM	*58*	*65*	*58*	*65*
INTER REGION	**363**	**765**	**497**	**1021**
vp	77%	46%	53%	56%
bus / train normal	6%	3%	2%	0%
tgv	9%	17%	24%	13%
avion	8%	34%	21%	32%
vitesse vp	110	*115*	*95*	*163*
vitesse bus train normal	80	*96*	*74*	*154*
vitesse tgv	250	*315*	*315*	*333*
vitesse avion	500	*768*	*768*	*768*
kpkm/hab	14,7	**22**	**18**	**25**
Urbain	5,8	5,2	5,2	5,2
Régional	3,2	5,0	5,0	5,0
Longue distance	5,7	11	7	14