TRB2008 – GLOBAL CLIMATE CHANGE SESSION

KEY ISSUES
FOR EUROPEAN TRANSPORT RESEARCH INTITUTES

Guy BOURGEOIS – ECTRI's Chairman

KEY ISSUES
FOR EUROPEAN TRANSPORT RESEARCH INSTITUTES

- **Introduction : Europe and the Kyoto protocol**

- **I – To increase and to rationalize the global effort to develop new technologies reducing the specific emissions of transport**
- **II – To optimize the use of existing networks and to promote inter-modal shift**
- **III – To(try to) decrease the demand for transport**

- **Conclusion : new fields for research**

Reconstructions of the Northern Hemisphere Temperature during the recent 1300 years

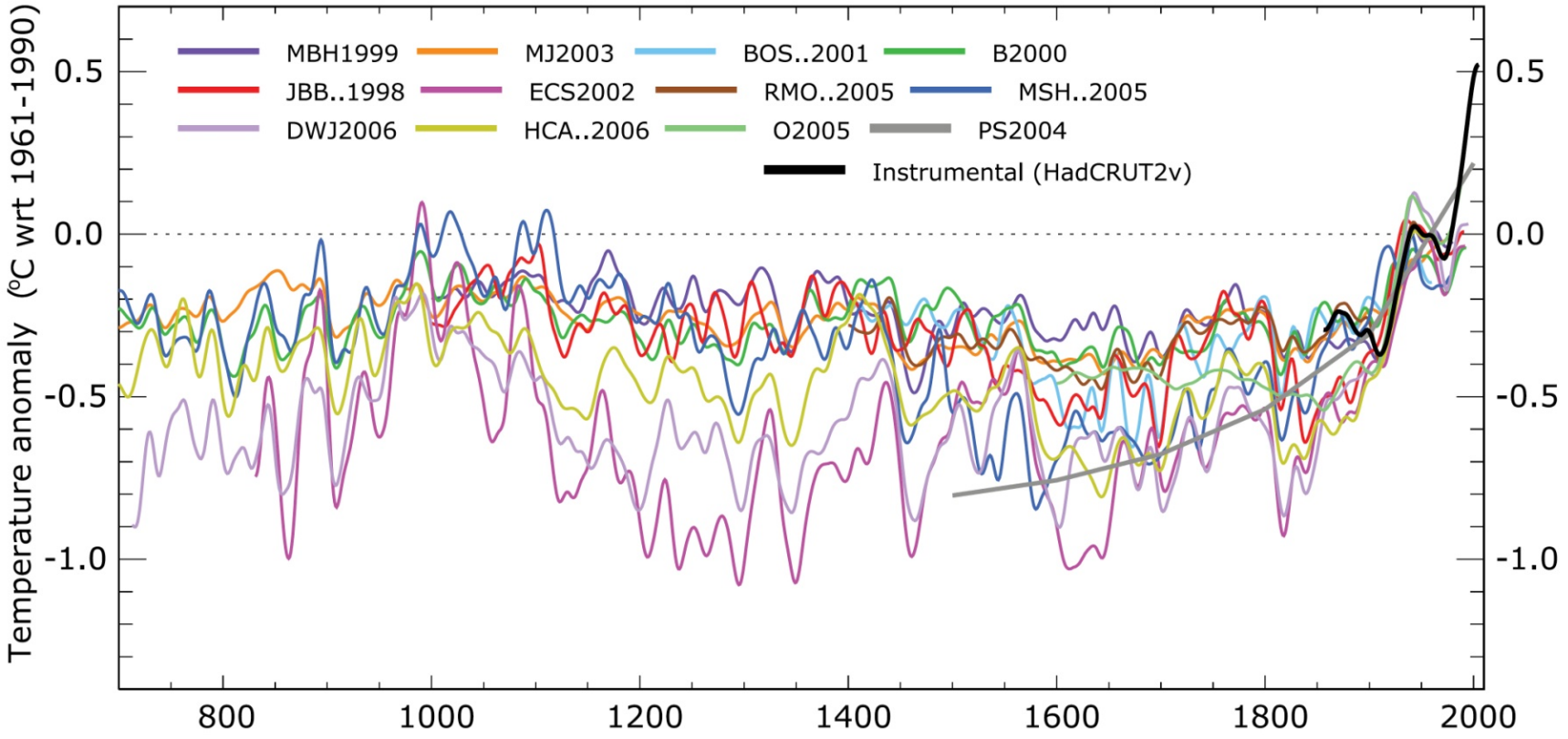

Figure TS.20. *(Top) Records of Northern Hemisphere temperature variation during the last 1300 years with 12 reconstructions using multiple climate proxy records shown in colour and instrumental records shown in black.*

IPCC, 2007

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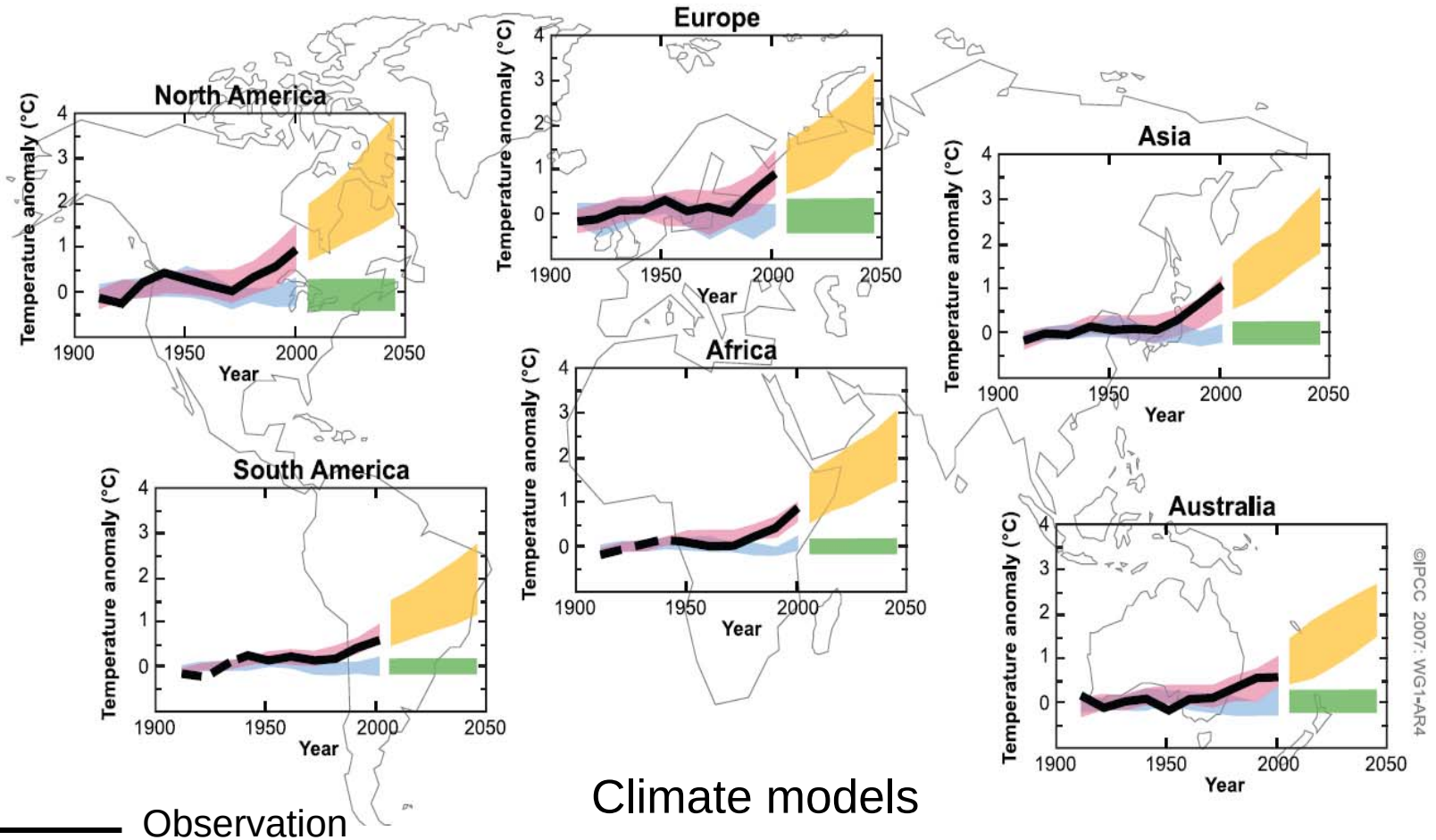
Continental Surface Temperature Anomalies: Observations and Projections



Observation

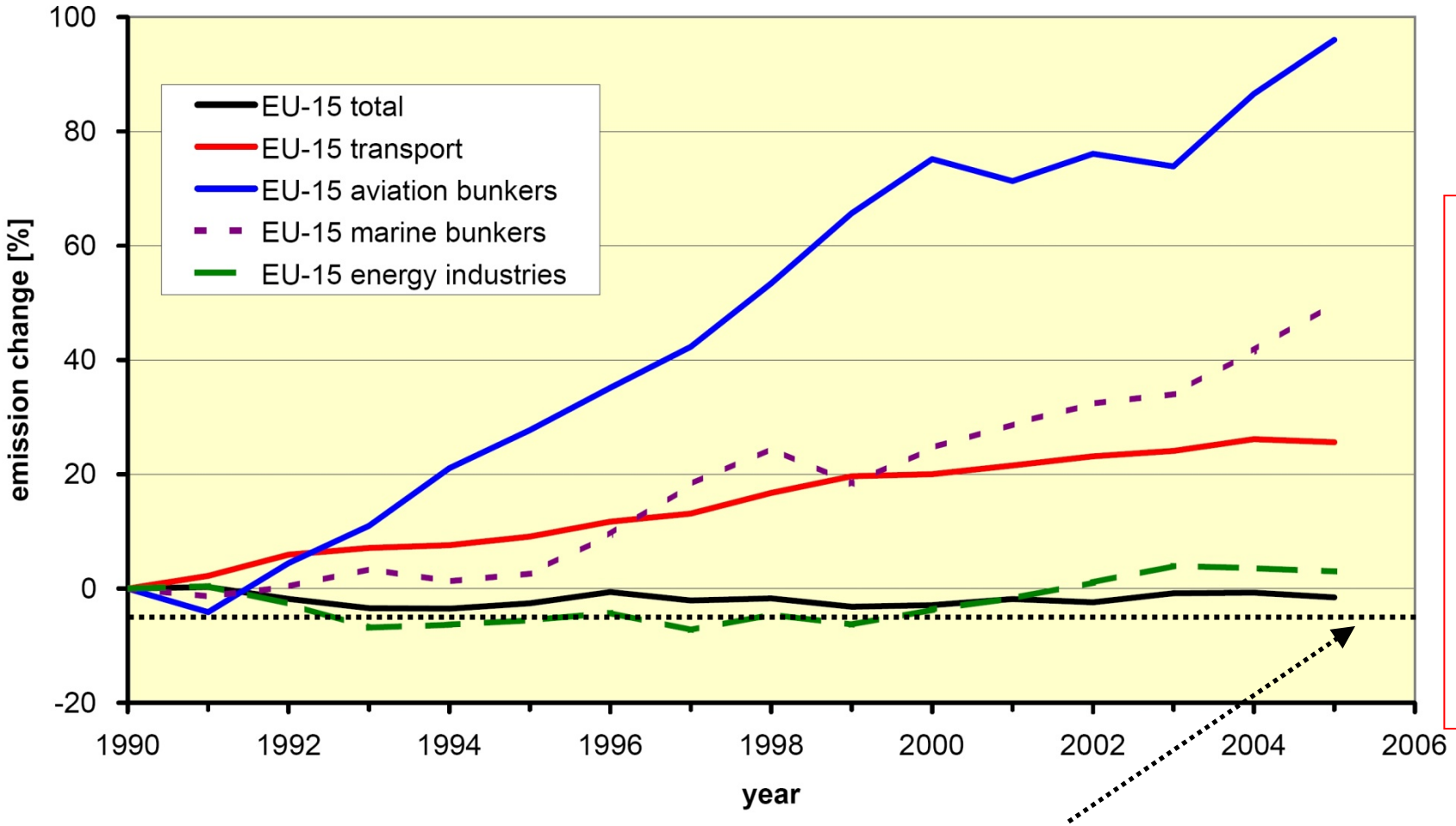
Climate models

natural forcings

natural + anthropogenic forcings

IPCC, 2007

Does EU-15 comply with the Kyoto Protocol ?
Equivalent CO_2 emissions relative to 1990



data: http://unfccc.int

Kyoto target (2012)

EU-15 -8.0%

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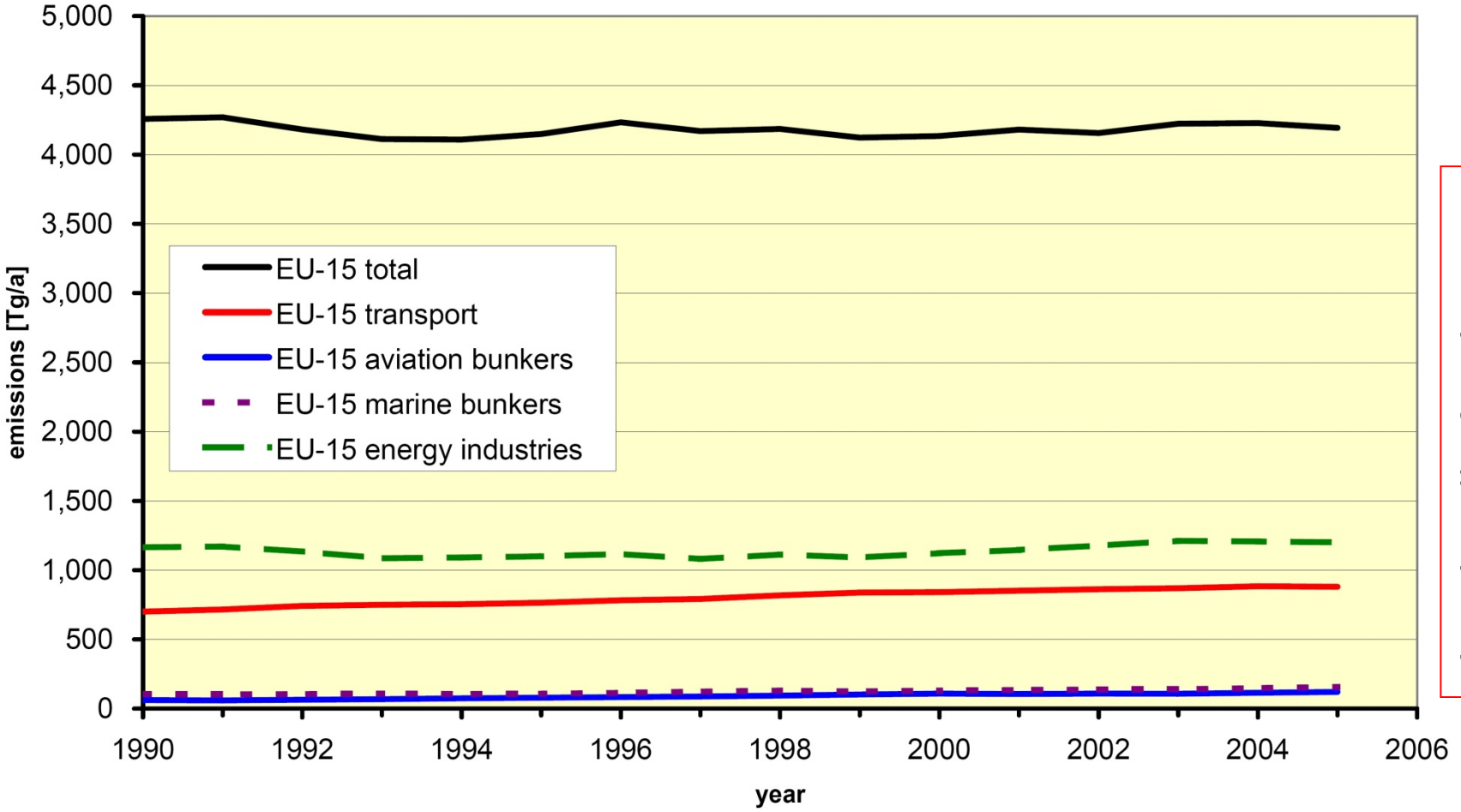
EU-15: Absolute equivalent CO_2 emissions



data: http://unfccc.int

transport fraction (national plus marine and aviation bunkers):

1990: 20.3 %

2005: 27.6 %

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Some key figures adopted in Europe as objectives for green house gases reduction

- **On the European level**: the green paper “sustainable energy”, 8 march 2006 – COM December 2007: till 2020, to have reduced the emission of equivalent CO_2 by 20% relative to the 1990 values, and to have introduced up to 20% of renewable energy.

- **In France**: Till 2050, to have divided greenhouse gas emissions by 4.

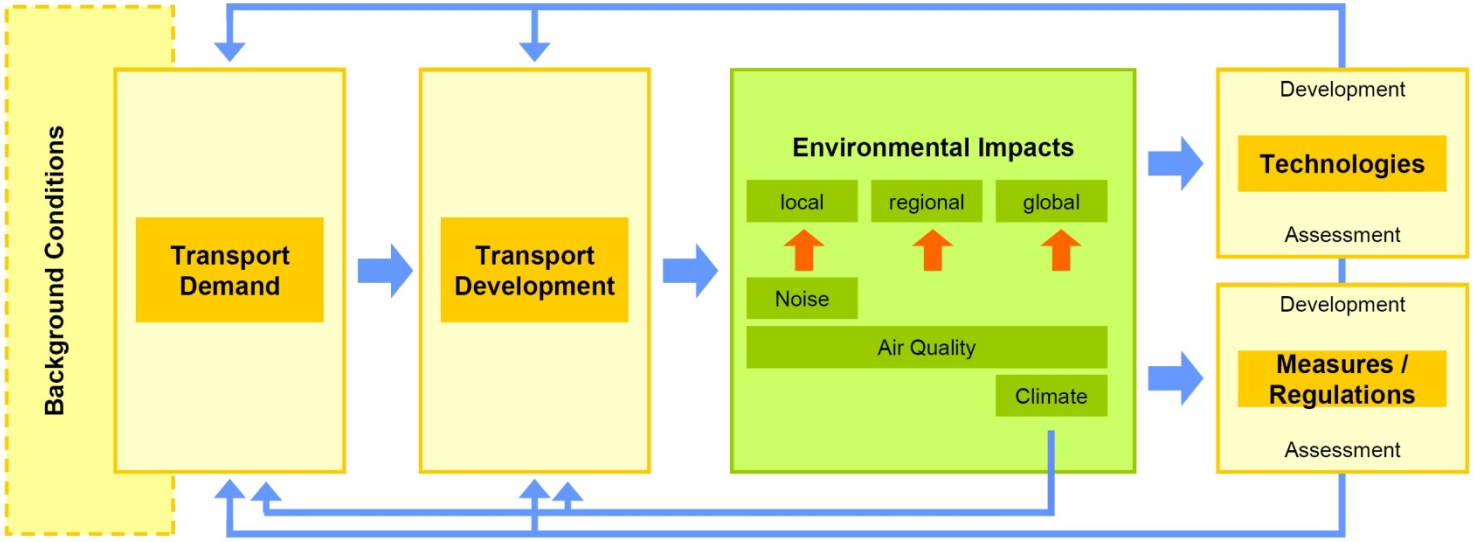
- **In Germany**: Till 2020, to reduce the emission of equivalent CO_2 by 30% - 40 % relative to the 1990 values.

- **In the UK :** the Climate Change Bill will require a 60% reduction in the emissions of equivalent CO_2 by 2050.

ECTRI Thematic Working Group C: "Energy and Climate Change"

Objectives:

- to understand and model the interactions among the various components in the below chain of interactions,
- to analyze the drivers and consequences of various scenarios of potential futures.



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- **To increase and to rationalize the global effort to develop new technologies**

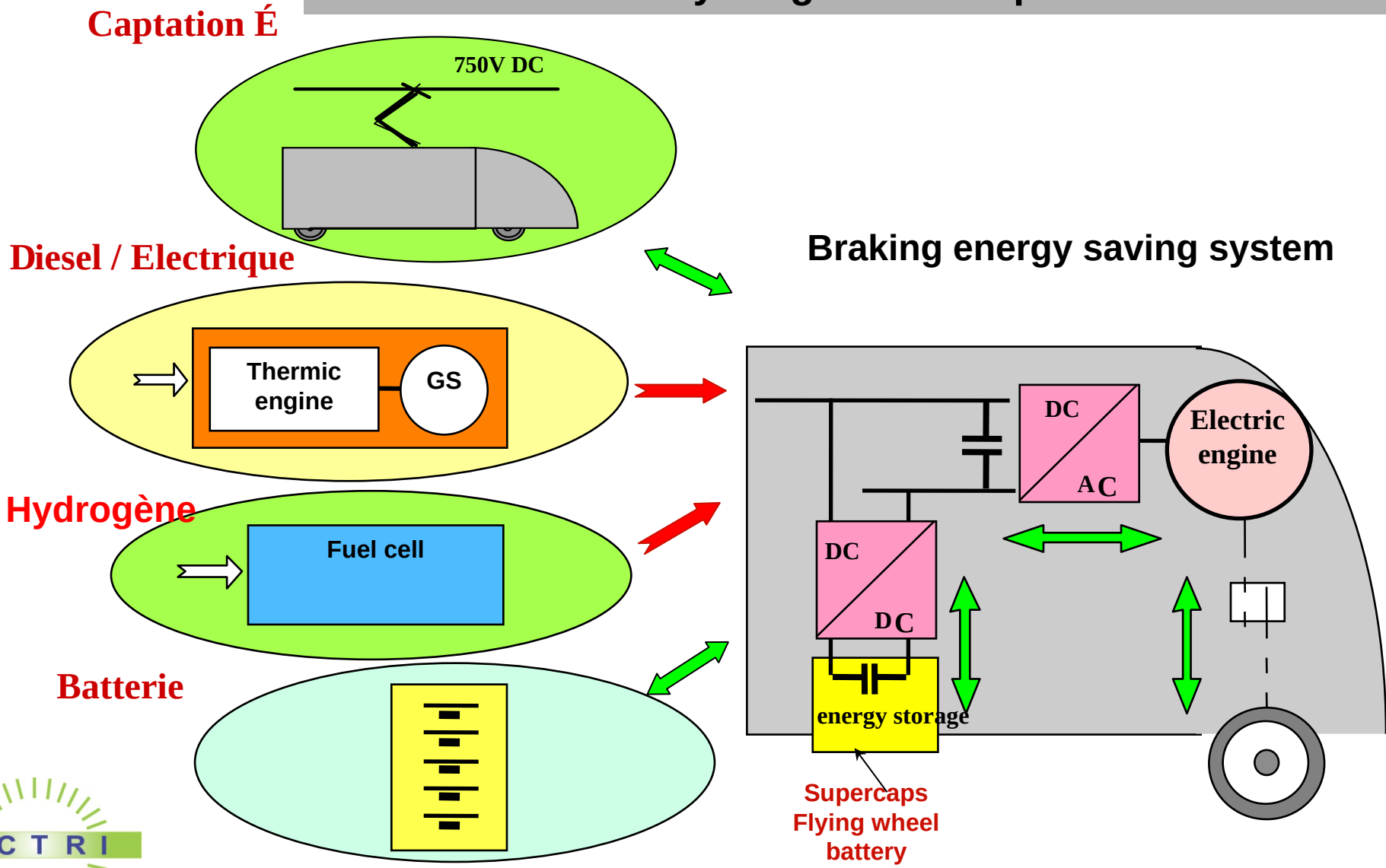
Could electricity be the relevant energy for road vehicles ?

1 - The problem of reliable and durable batteries has urgently to be solved.

2- How will electricity be provided : coal, oil, nuclear, hydrolics, wind, voltaic,…?

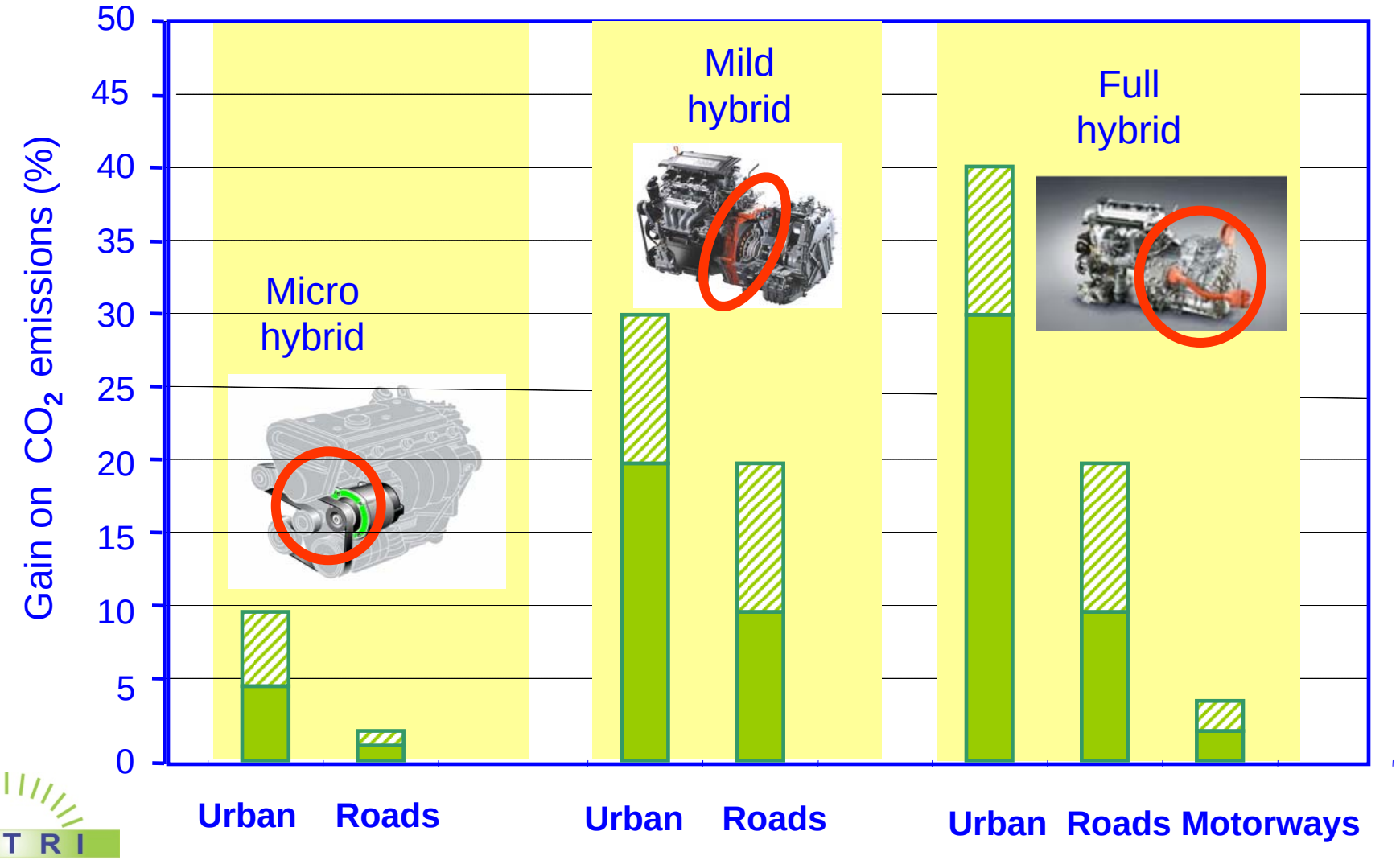
3 – Hybrid vehicles as the best compromise ?

The concept of hybrid vehicle : When everything becomes possible !



Which results ?

Gains which depend on technology and vehicle use



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Microbus :hybrid +stop&start+ braking energy saving with supercaps

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To increase and to rationalize the global effort to develop new technologies

- **Fuel cells ? It works, but …**

  - cost
  - reliability
  - hydrogen production and storage ???

- **Biofuels ? It works, but…**

  - conflict between human food and vehicles fueling
  - global efficiency (from dust to dust)
  - waiting for the second generation…

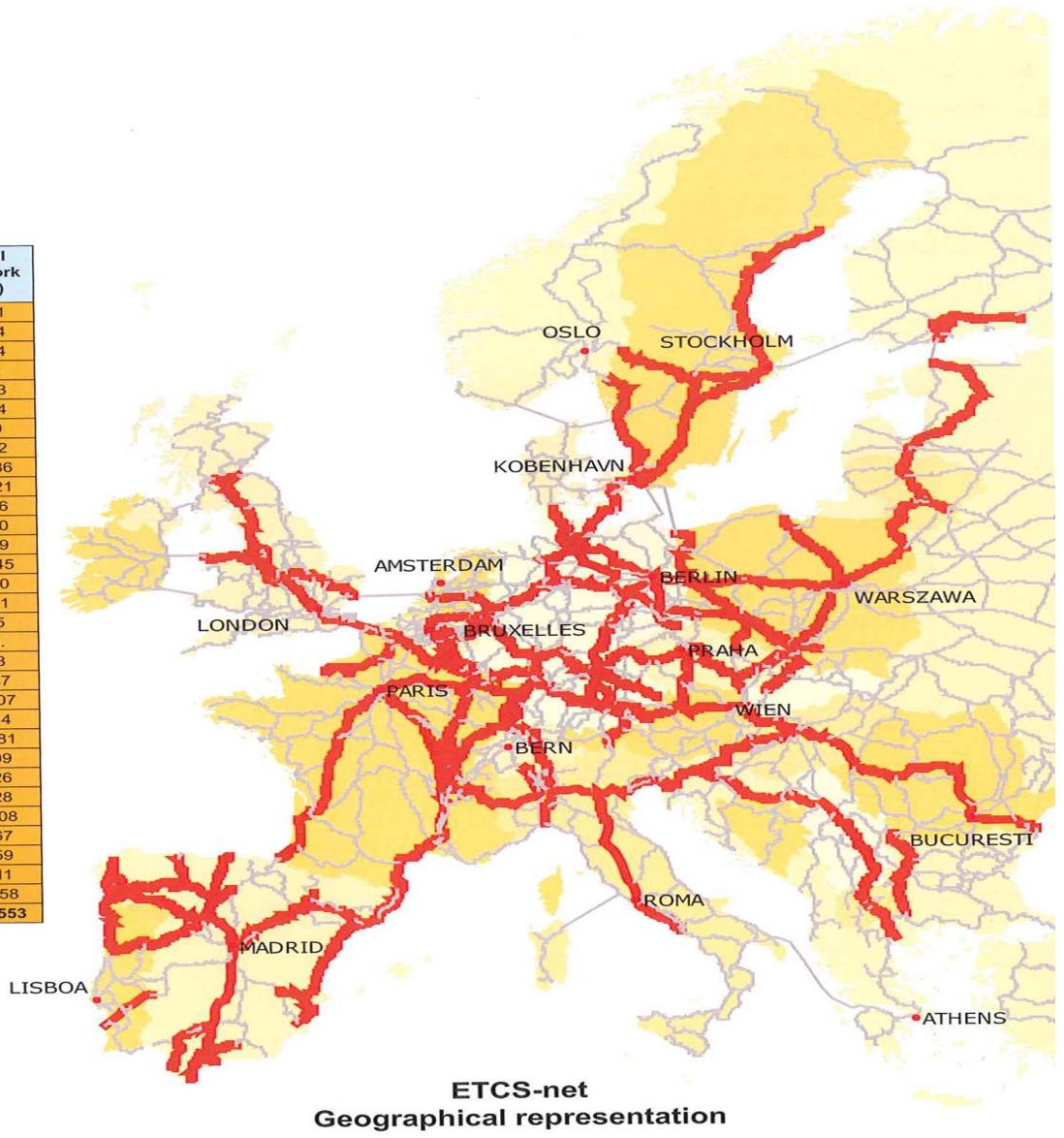
To optimize the use of existing networks and to promote intermodal shift

To build the european railways network

- To build one european network starting from 25 different networks…rail safety, interoperability as specific european key issues
- To develop the TGV network (Thalys, Eurostar,…)
- To create freight rail corridors

ERTMS under deployment in Europe

COUNTRY	ETCS-Net (km)	Total Network (km)
Austria	596.5	5691
Belgium	893	3544
Bulgaria	420	4154
Croatia	434	n.a.
Czech Rep.	1090	9513
Denmark	222	2134
Estonia	274.77	959
Finland	548	5732
France	4827	29286
Germany	6279	34221
Greece	77	2576
Hungary	698	7730
Ireland	400	1919
Italy	1786.5	16545
Latvia	243.2	2270
Lithuania	332.84	1771
Luxembourg	48	275
Macedonia	216	n.a.
Montenegro	-	248
Norway	-	4087
Poland	2842.4	19507
Portugal	1039.2	2844
Romania	1420	10781
Serbia	613	3809
Slovakia	256	3626
Slovenia	505	1228
Spain	7419	12808
Sweden	2285	9867
Switzerland	313	3059
The NL	285	2811
UK	1404	19558
Total	37,767.41	222,553

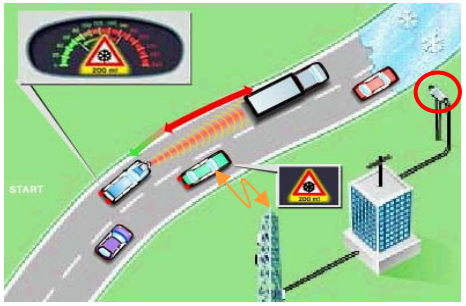


ETCS-net
Geographical representation

TGV, the competition with cars and planes
After France and Germany, Spain

Road pricing technologies

1. ***Télécommunications***
2. ***Localisation***
3. ***Dynamic databases***



Examples of european projects founded through FP6

- CVIS : Cooperative systems, medium time response assistance,
- SafeSpot : Cooperative systems,short time response assistance

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Self-service cycling systems in Europe 1/2

Les systèmes de vélos en libre service

	Ouverture	Nombre de stations	Nombre de vélos
DECAUX			
Vienne (A)	2004	70	1 000
Gijon (E)	2004	8	53
Cordoue (E)	2004	4	35
Lyon	2005	250	3 000
Bruxelles	2006	23	250
Aix-en-Provence	2007	16	200
Paris	2007	1 451	20 600
Séville (E)	2007	250	2 500
Besançon	2007	30	200
Mulhouse	2007	20	200
Marseille	2007	130	1 000
Toulouse	2007	135	1 470
Rouen	2008	20	250
Luxembourg	2008	20	200
CLEAR CHANNEL			
Rennes	1998	25	200
Drammen (N)	2002	23	350
Oslo (N)	2003	70	1 200
Trondheim (N)	2005	10	120
Göteborg (S)	2005	11	150
Stockholm (S)	2006	160	2 000
Barcelone (E)	2007	400	6 000
Washington (EU)	2007	10	120
Dijon	2007	40	400
EFFIA			
Orléans	2007	28	300

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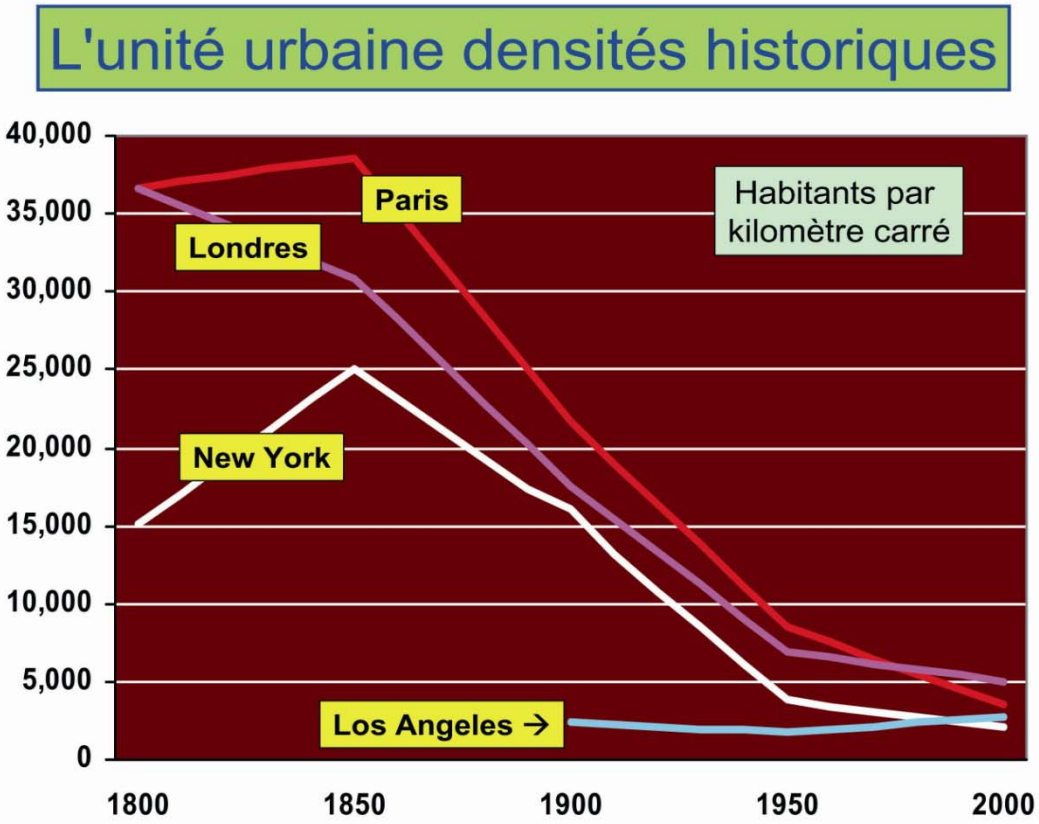
Self-service cycling systems in Europe 2/2

PARIS VELIB'

- The greatest program in the world
- 20600 bicycles
- 200000 daily users
- 90Meuros investment
- Can be used with the « navigo pass »

To (try to) decrease the demand for transport

How to react against urban sprawl ?



If urban sprawl is the result of low cost transport, then higher price of energy will generate urban reconcentration ???

URBAMOVE

A non-technical research agenda for urban mobility
An ECTRI initiative

An urban mobility research programme at European level is vital because :

- evolution of public transport systems
- evolution of the car
- the issue of buses
- urban mobility and the local economy
- competition between transport operators

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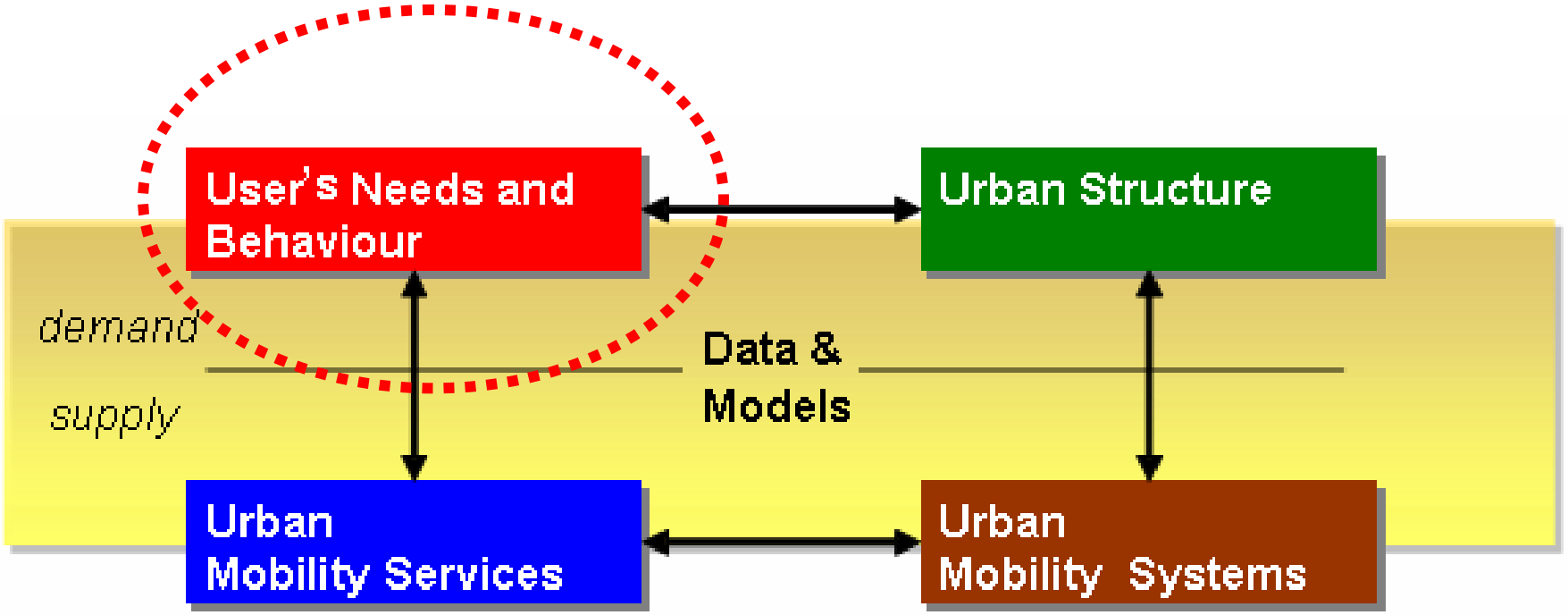
The Structure of EURFORUM's Strategic Research Agenda



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To (try to) decrease the demand for transport

Tourisme and leisure : more than half of the mobility market in developped countries !

Freight : not only a matter of transport, the question of organisation of supply chains becomes crucial.

Freight : Urban platforms & the last kilometer

- ECHO survey : 72% of good movements are from or to cities – 60% of packages less than 30 KG
- The way to operate the last kilometer can save a lot of energy :

- CHRONOPOST : **84 g CO2 saved for each delivered parcel**
- « Petite Reine » : **370 g of CO2 saved for each delivery**

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CONCLUSION
New fields for research : to understand how transport systems will be affected by climate change and to develop tools to respond.

- To develop risk management tools
- To promote new guidelines, standards, materials and processes to cope with changed climatic conditions
- To develop vulnerability assessments for transport infrastructure

Thanks for your attention BUT…

- …we always have to remember that the competitiveness of its transport system is a key factor for the global competitiveness of a country.
- …we have now to be convinced that energy saving is a key issue, not only for climate change, but also for competitiveness !