Climate protection and infrastructure policies

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Making Europe climateproof

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IPCC: challenging physics but good economic (misleading) news?

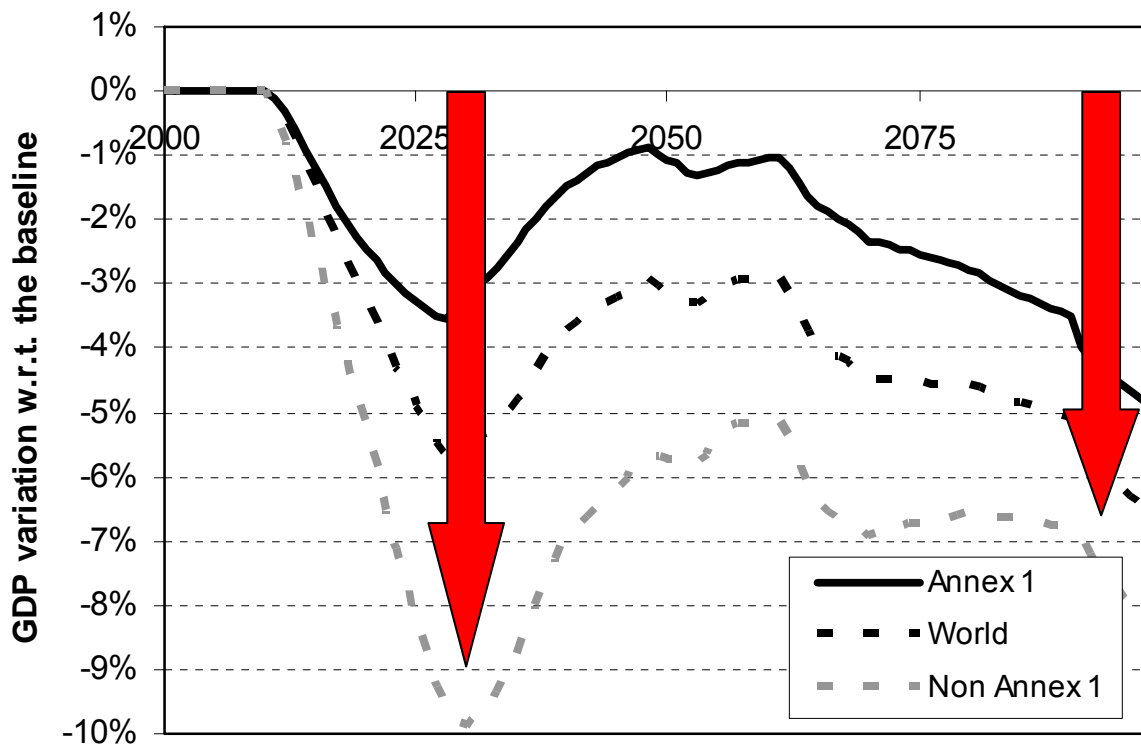| Category	Radiative forcing (W/m^2)	CO_2 concentration[c] (ppm)	CO_2-eq concentration[c] (ppm)	Global mean temperature increase above pre-industrial at equilibrium, using "best estimate" climate sensitivity[b], [c] (°C)	Peaking year for CO_2 emissions[d]	Change in global CO_2 emissions in 2050 (% of 2000 emissions)[d]	No. of assessed scenarios
I	2.5-3.0	350-400	445-490	2.0-2.4	2000-2015	-85 to -50	6
II	3.0-3.5	400-440	490-535	2.4-2.8	2000-2020	-60 to -30	18
III	3.5-4.0	440-485	535-590	2.8-3.2	2010-2030	-30 to +5	21
IV	4.0-5.0	485-570	590-710	3.2-4.0	2020-2060	+10 to +60	118
V	5.0-6.0	570-660	710-855	4.0-4.9	2050-2080	+25 to +85	9
VI	6.0-7.5	660-790	855-1130	4.9-6.1	2060-2090	+90 to +140	5
						Total	177

Stabilization levels (ppm CO_2-eq)	Median GDP reduction[d] (%)	Range of GDP reduction[d], [e] (%)	Reduction of average annual GDP growth rates[d], [f] (percentage points)
590-710	0.2	-0.6-1.2	<0.06
535-590	0.6	0.2-2.5	<0.1
445-535[g]	not available	<3	<0.12

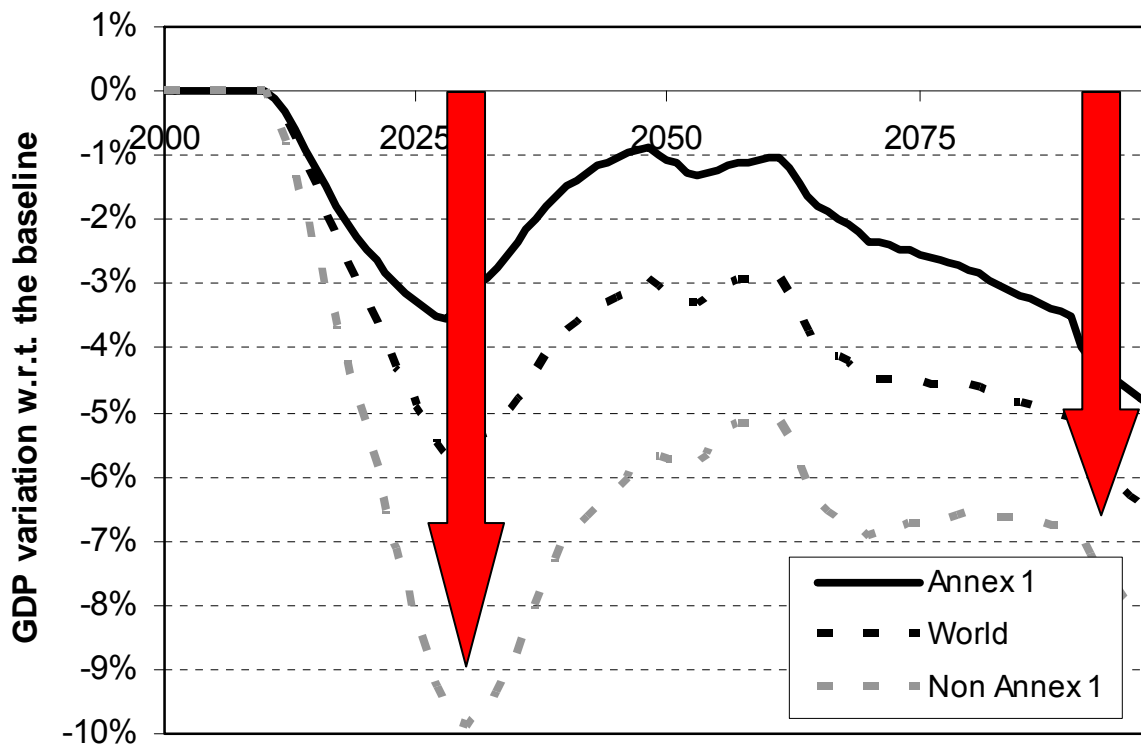| Stabilization levels (ppm CO_2-eq)	Median GDP reduction[b] (%)	Range of GDP reduction[b], [c] (%)	Reduction of average annual GDP growth rates[b], [d] (percentage points)
590-710	0.5	-1 - 2	<0.05
535-590	1.3	slightly negative - 4	<0.1
445-535[e]	not available	<5.5	<0.12

Re-exploring these results in a imperfect world ...

- **Inertia**

- **Semi-myopic**

- **Hybrid energy/economy accounting**

- **Infrastructures policies**

- **450 ppm scenario**

- **'Marshall Plan' metaphor revisited to shift infrastructure investments**

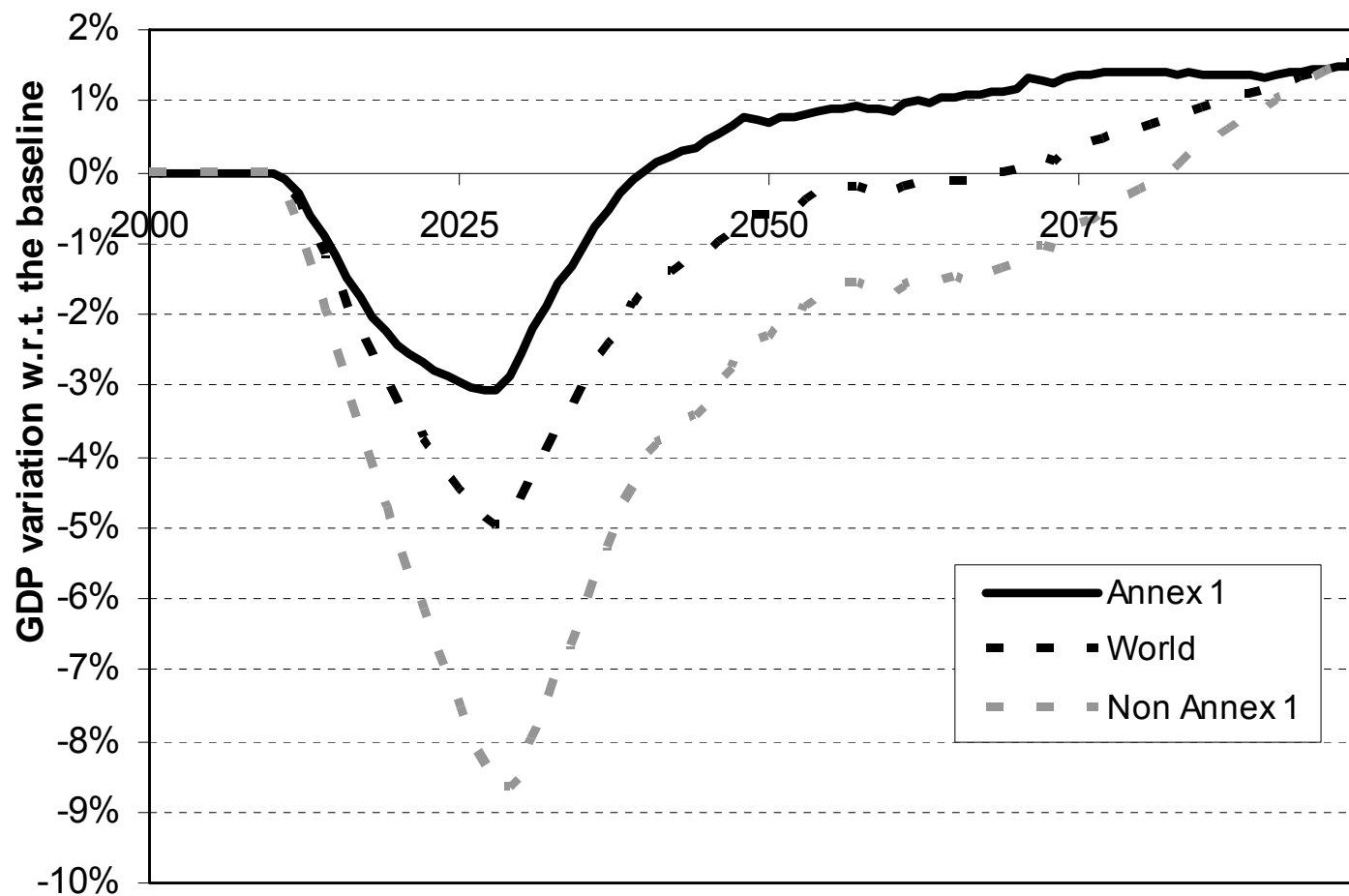- **What « optimal » time profile of Opec's rents**

A cost profile far from the « straight line » !

GDP variation w.r.t. the baseline

Legend:
- Annex 1 (solid line)
- World (dashed line)
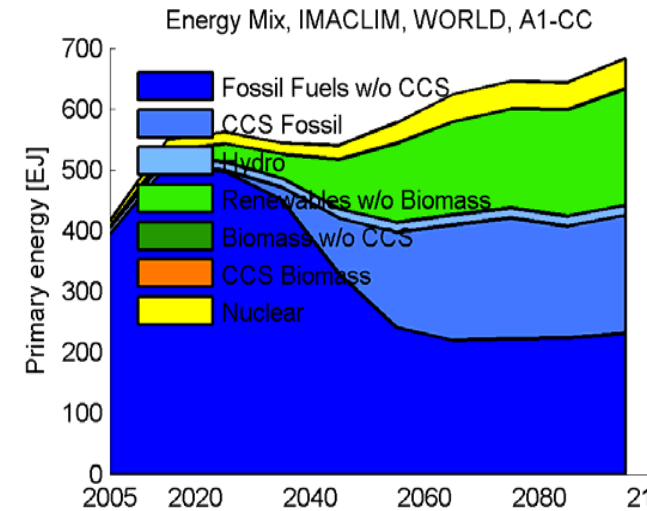- Non Annex 1 (gray dashed line)

X-axis: 2000, 2025, 2050, 2075
Y-axis: 1% to -10%
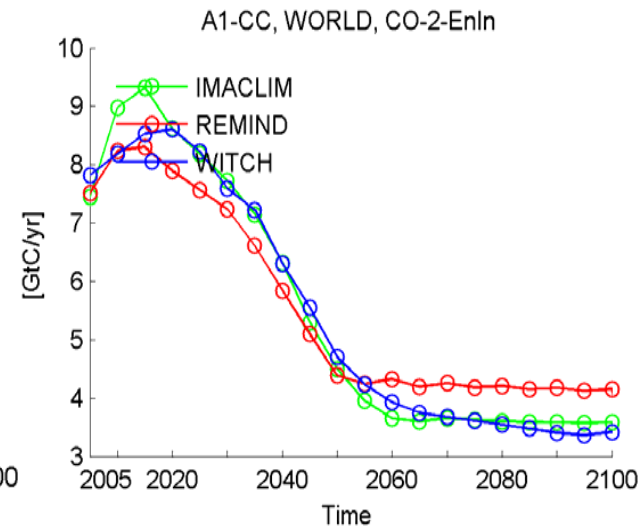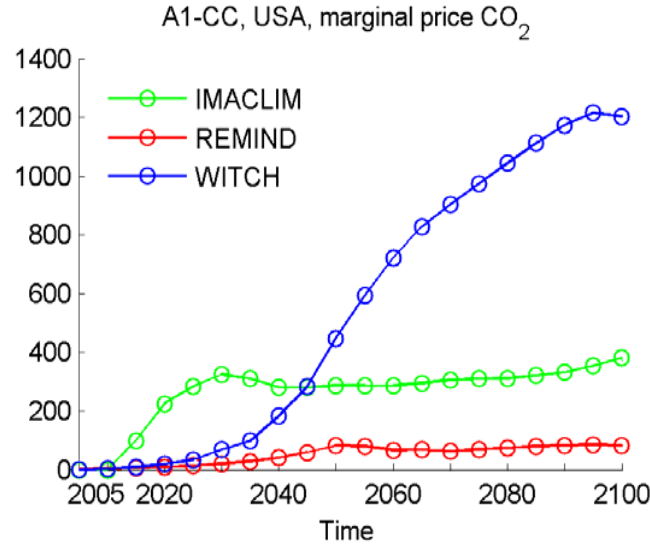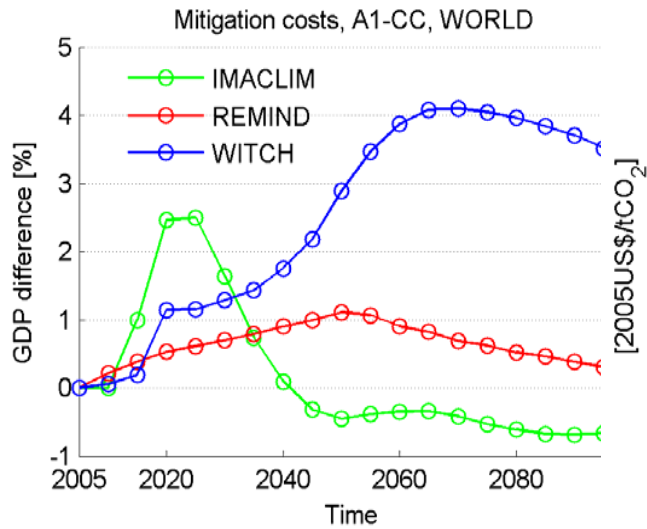
A quick look to the coresponding price signal

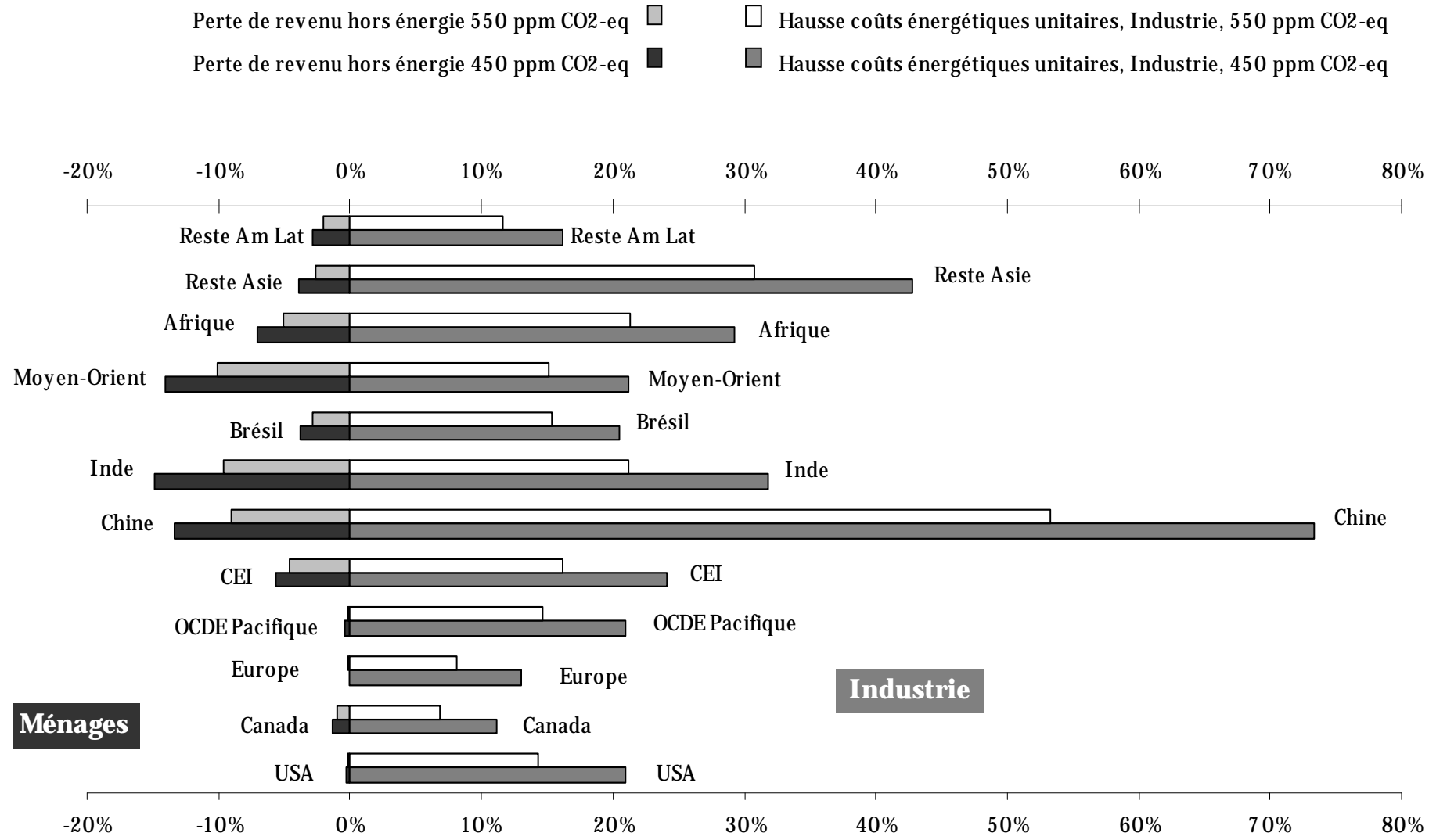# A quick look to the coresponding price signal

Behind these curves, a conceptualisation of the real policy challenge

- **Coordinating long term expectations vs short term vulnerability of emerging economies to carbon prices**

- **Finding a climate framework aming at:**

- **Infrastructures policies**

- **450 ppm scenario**

- **'Marshall Plan' metaphor revisited to shift infrastructure investments**

- What « optimal » time profile of Opec's rents

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The real challenge: coordinating long term expectations
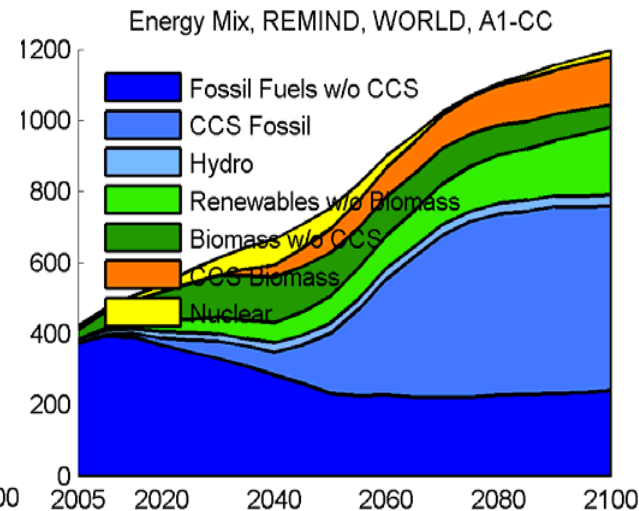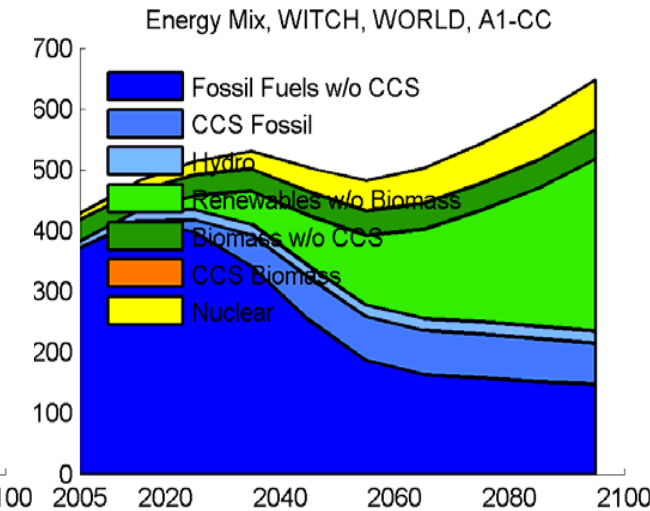
Why such transition costs in emerging economies?

Perte de revenu hors énergie 550 ppm CO2-eq □   □ Hausse coûts énergétiques unitaires, Industrie, 550 ppm CO2-eq

Perte de revenu hors énergie 450 ppm CO2-eq ■   ■ Hausse coûts énergétiques unitaires, Industrie, 450 ppm CO2-eq

Reste Am Lat
Reste Asie
Afrique
Moyen-Orient
Brésil
Inde
Chine
CEI
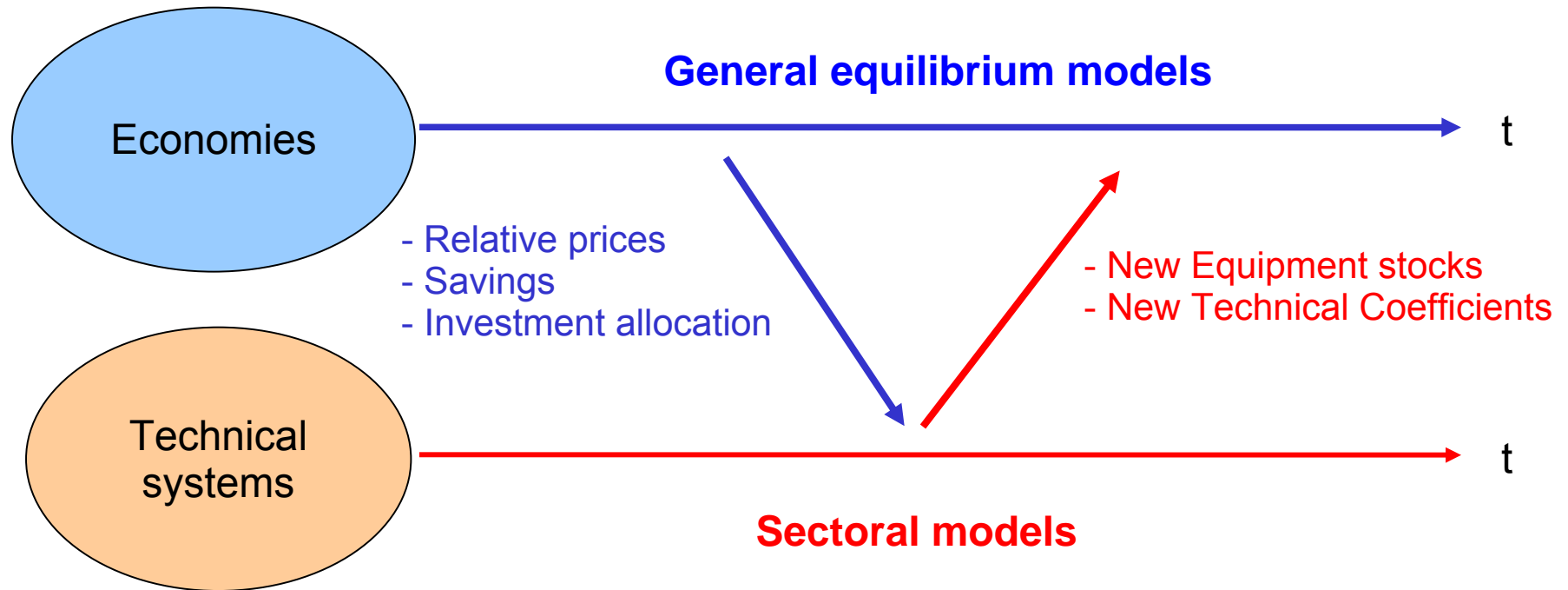OCDE Pacifique
Europe
Canada
USA

Ménages

Industrie

- **Climate policies may be beneficial over the long run**

- **But uniform carbon prices (only) will hurt emerging economies over the short run … when the prices remains relatively low!!!**

- **Risks of lock-in in carbon intensive development pathways**

- **Non negotiable « equity » of the burden sharing and compensations**

- **'Marshall Plan' metaphor revisited to shift infrastructure investments**

- **What « optimal » time profile of Opec's rents**
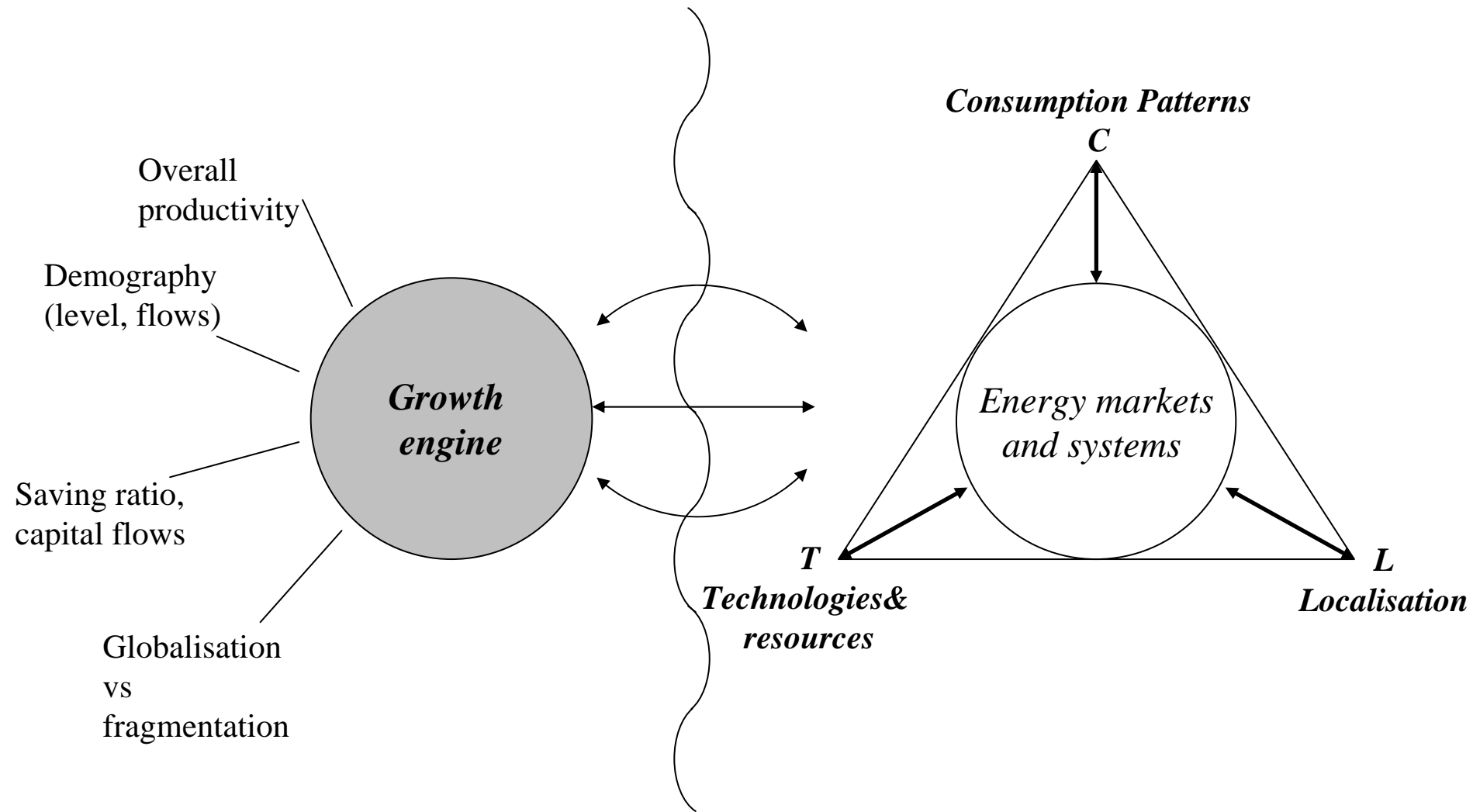
A contribution with a twofold purpose

- Revisiting the plausibility of very **carbon intensive** baselines

- Demonstrating some **key features** of the Imaclim-R modeling framework that may provide new insights to clarify the terms of a question raised by some empirical evidences :

  - Current emissions profile is to exceed upper SRES bound
  - Raupach et al. (2007) shows saturation in carbon intensity gains
  - Growth dynamics in China and other emerging countries is higher than expected some years ago
  - Gasoline from fossil fuels has a large competitiveness margin
  - Transportation demand seems to grow impassively despite tensions on oil prices

Consistency between economic and engineering based information: The challenge of hybrid modelling
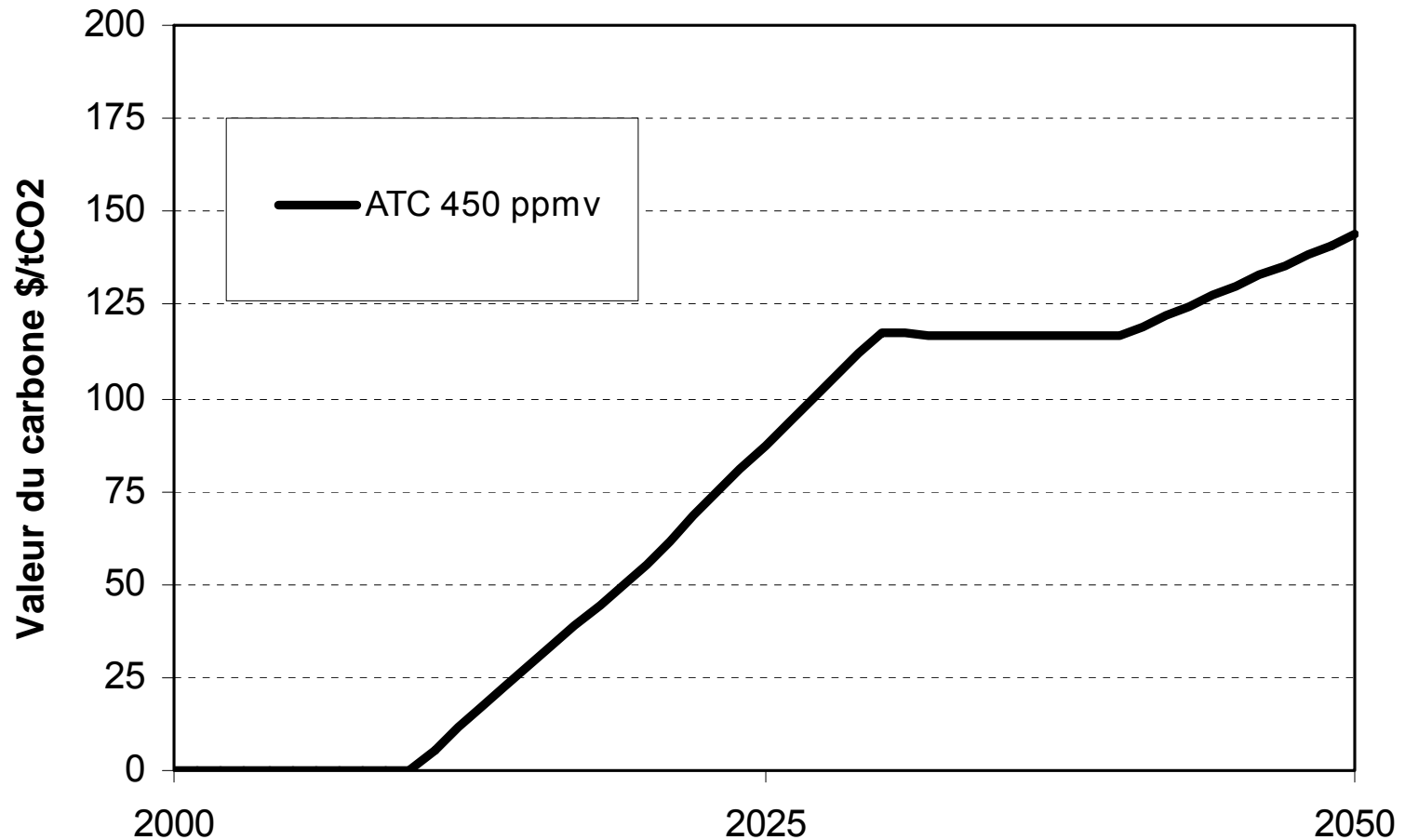
General equilibrium models

Economies

Sectoral models

Technical systems

- Relative prices
- Savings
- Investment allocation

- New Equipment stocks
- New Technical Coefficients

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What would we like to represent?

Overall
productivity

Demography
(level, flows)

Saving ratio,
capital flows

Globalisation
vs
fragmentation

**Growth
engine**

Consumption Patterns
C

*Energy markets
and systems*

T
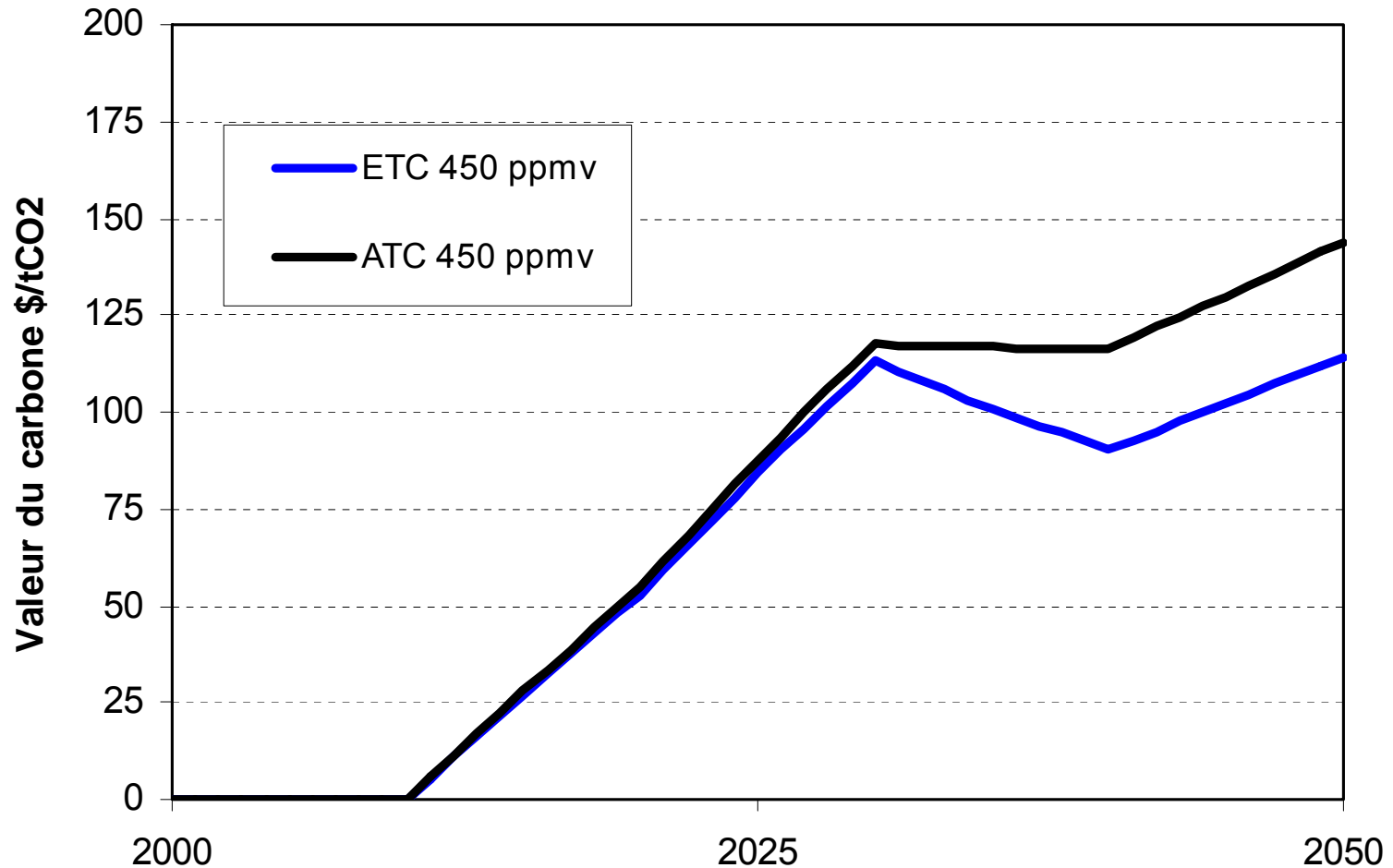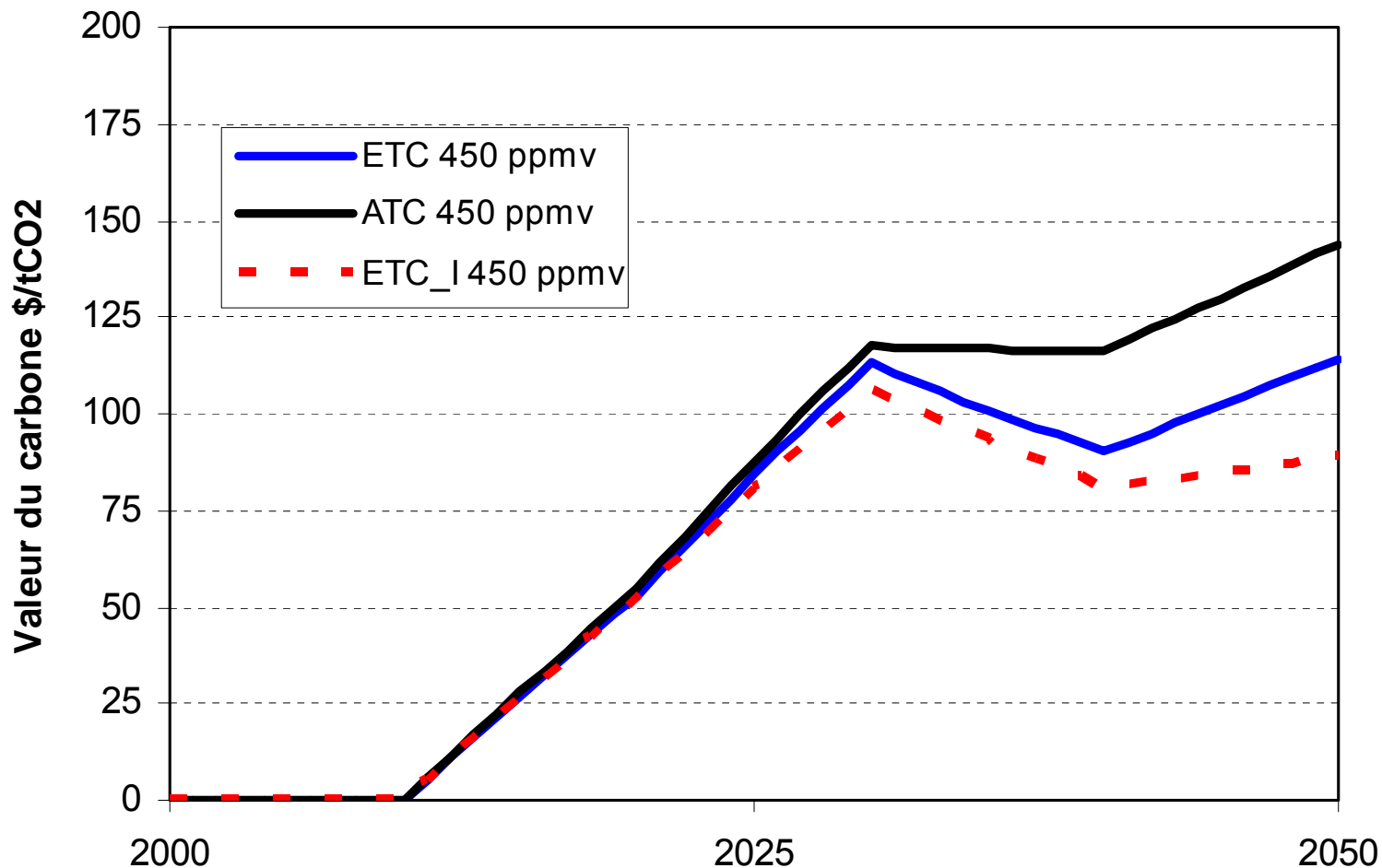**Technologies&
resources**

L
Localisation

Leçon n°5 :
Des politiques d'infrastructures nécessaires pour stabiliser sur le long-terme

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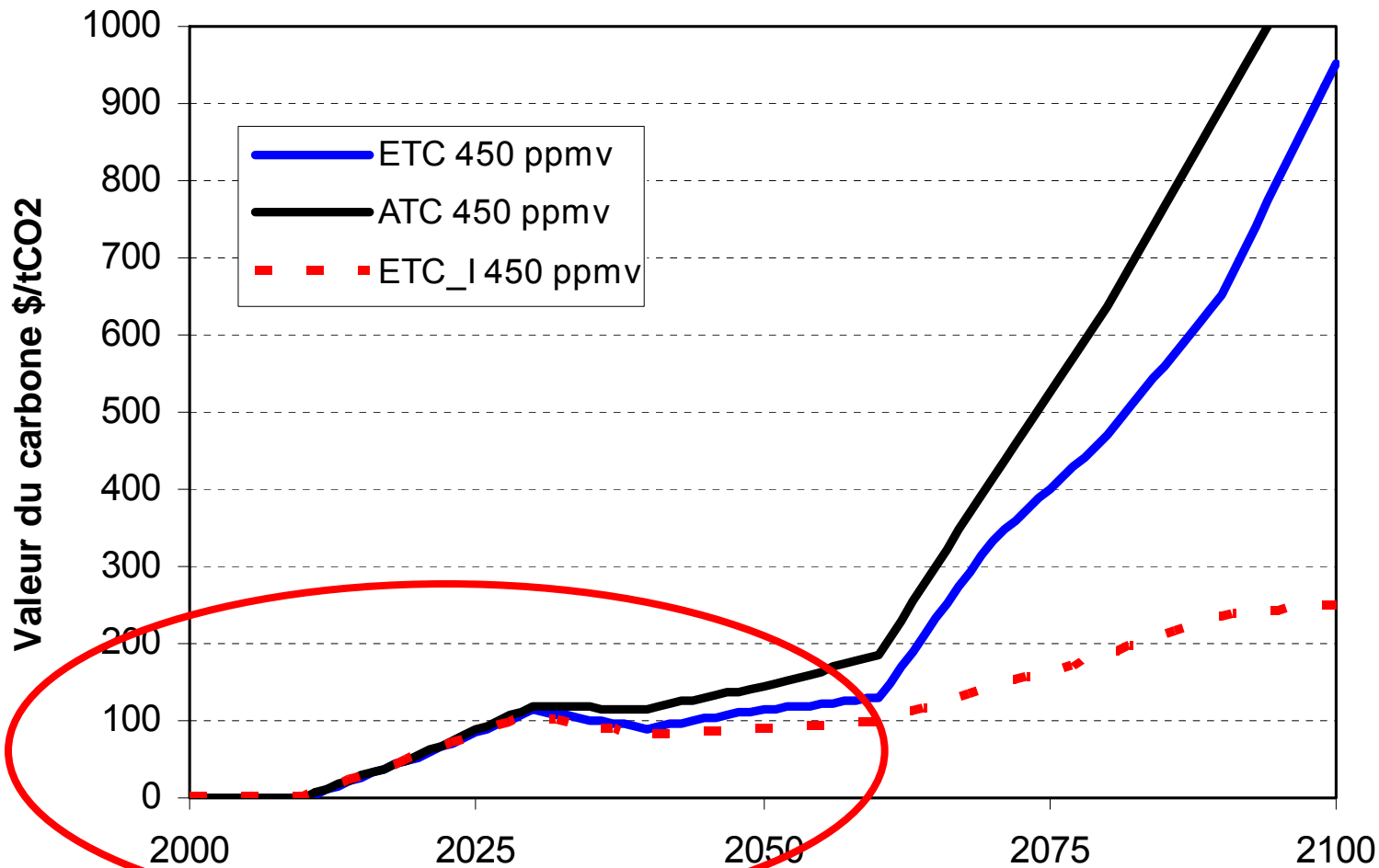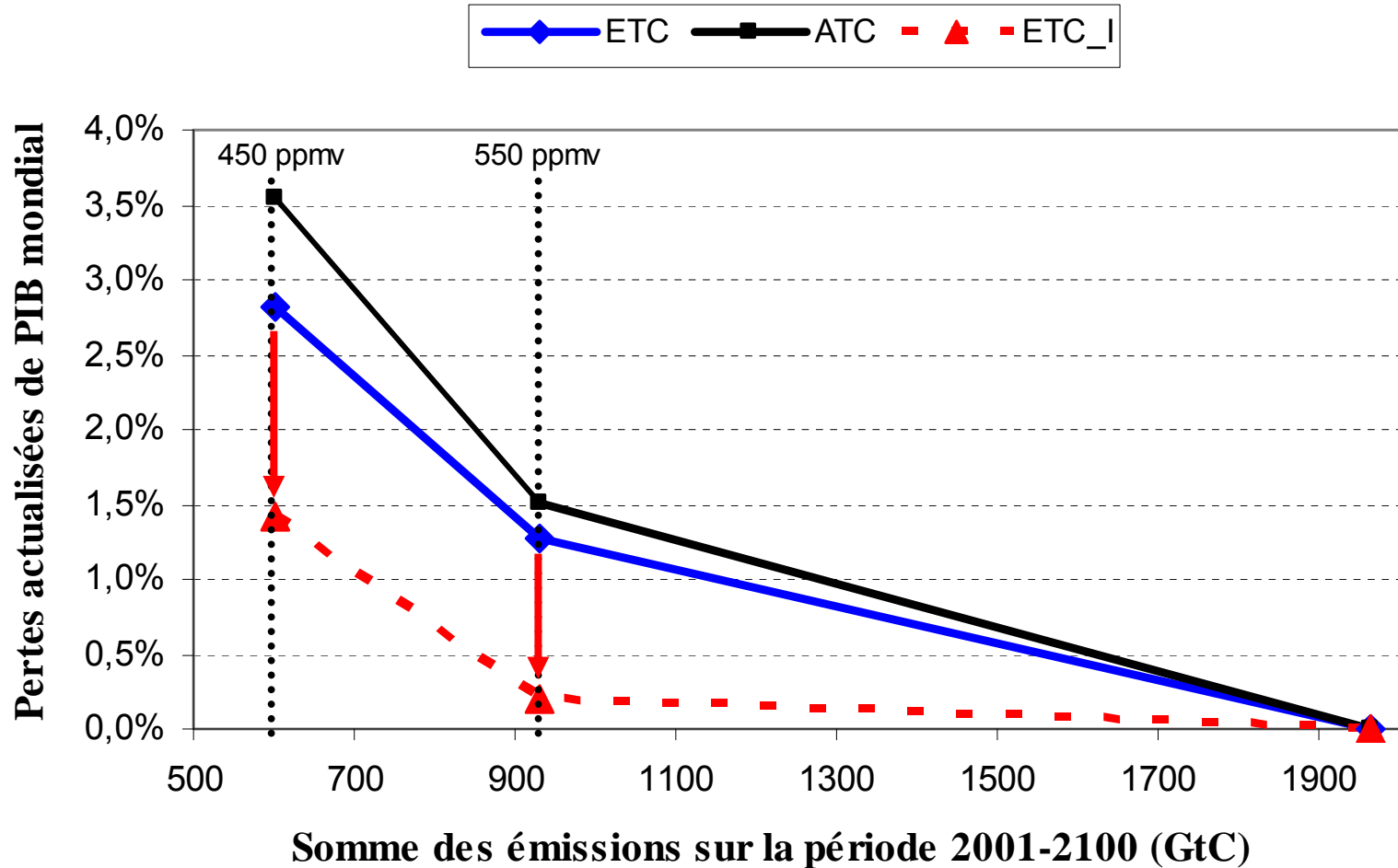stabiliser sur le long-terme

- **Where are the obstacles in front of current development patterns? -> from what baseline are we talking about?**

- **Which of them can be removed synergistically with the search for low carbon development pathways?**

- **Which aspects of climate policies intrinsically cannot but result in an obstacle to development?**

- **One intellectual pre-condition: beyond carbon prices …**
  - ➢ **what governs infrastructure policies? prices, standards, urban policies and …. local political bargaining**
  - ➢ **what domestic and international policies to compensate for short term adverse distributional impacts?**

- **domestic differentiation of carbon and energy prices (allowed by a correctly interpreted Kyoto framework)**

- **Laying the foundations of a "climate friendly" fiscal system**

- **Fostering the penetration of efficient end-use equipments for emerging middle classes …**

- **Developing support to low income classes**

- **Aligning the increase of domestic carbon prices to the penetration of energy efficiency**

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Aid or Financial Innovation ?

- Changing context for overseas aid and funding
  - Decreasing amounts
  - Emerging countries ≠ LDCs
  - upgraded monitoring and «good quality money»

- This less a problem of amount of investment and capital shortage than a problem of direction of investment flows

- Risk mitigation instruments and public-private initiatives (from exchange rate risks to project risks)

- In search of a short term macroeconomic leverage effect …. and of calming down erratic capital flows