
Towards climate friendly development patterns: the role of early action on infrastructure

Sassi O.

CIRED/ENPC

(sassi@centre-cired.fr)



IPCC: challenging physics but good economic news?

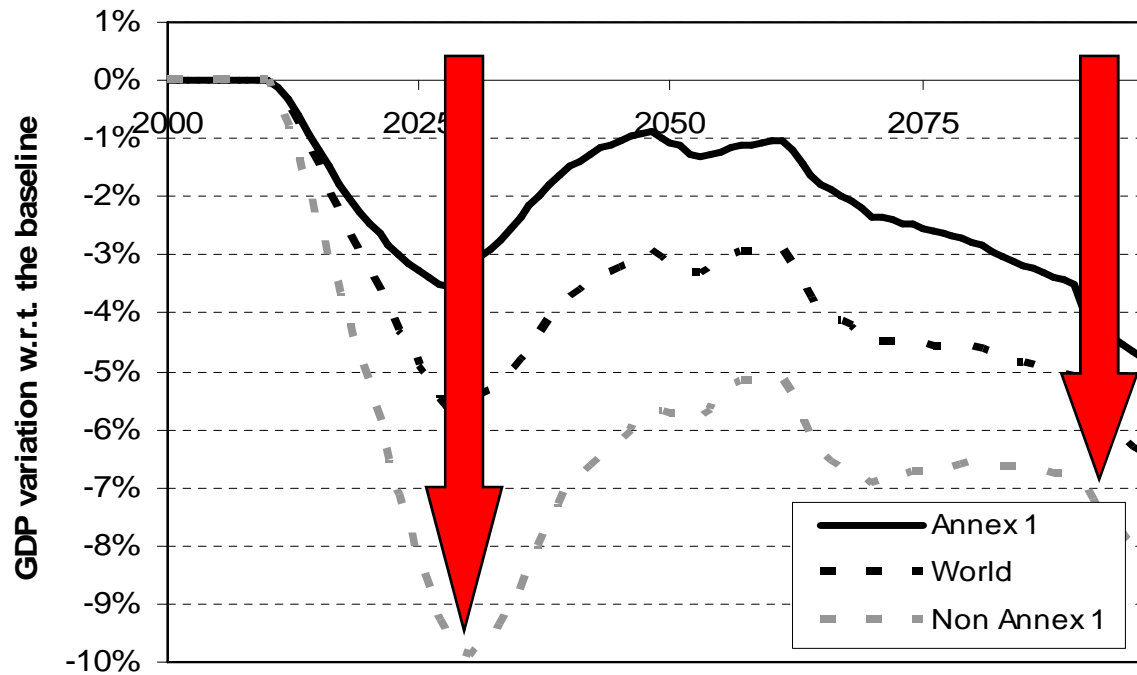
Category	Radiative forcing (W/m ²)	CO ₂ concentration ^{c)} (ppm)	CO ₂ -eq concentration ^{c)} (ppm)	Global mean temperature increase above pre-industrial at equilibrium, using "best estimate" climate sensitivity ^{b), c)} (°C)	Peaking year for CO ₂ emissions ^{d)}	Change in global CO ₂ emissions in 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



Mind the transition and the end point !

(450ppm CO2)



Chaire Modélisation prospective
au service du développement durable

ParisTech
INSTITUT DES SCIENCES ET TECHNOLOGIES
PARIS INSTITUTE OF TECHNOLOGY

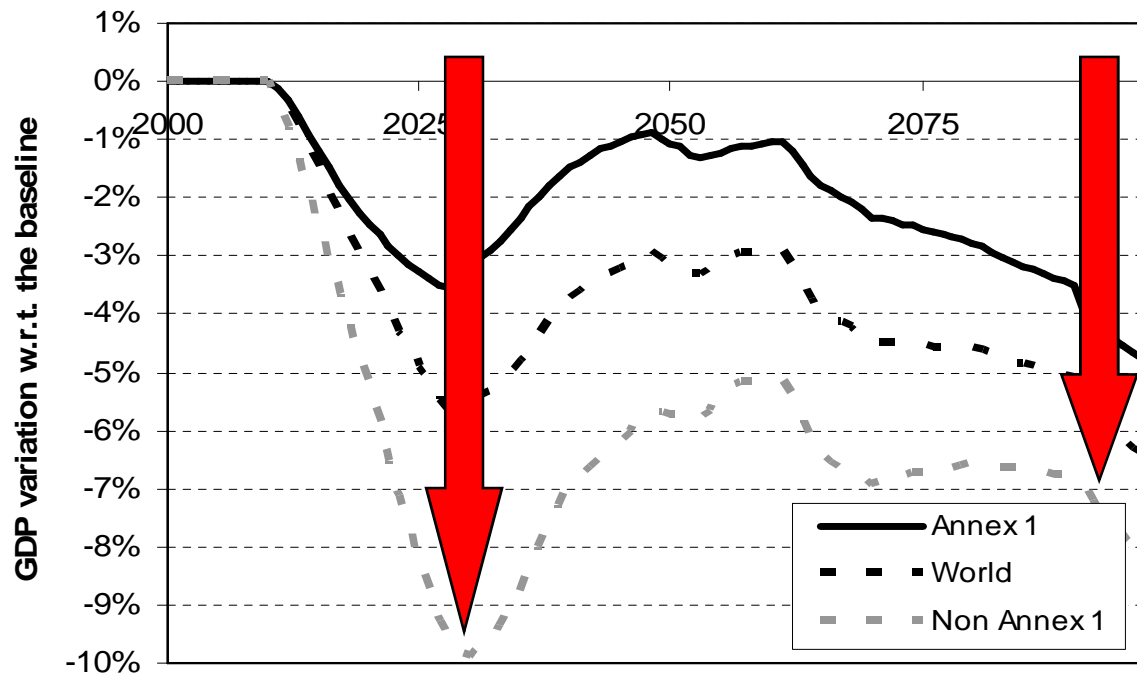
Why such a pessimistic and unconventional cost profile?

- Numerical experiments with IMACLIM-R: an **hybrid** model with a growth engine with **ETC** and **disequilibrium**
- Explicit description of the **inertia** of capital stocks, including infrastructures and end-use equipments
- Explicit description of technical **asymptotes** (expert judgments)
- « **Semi-perfect foresight** » for the energy sector, « **semi-myopic** » for the others
- Carbon price only policies -> shout to attract attention of the short-sighted



Mind the transition and the end point !

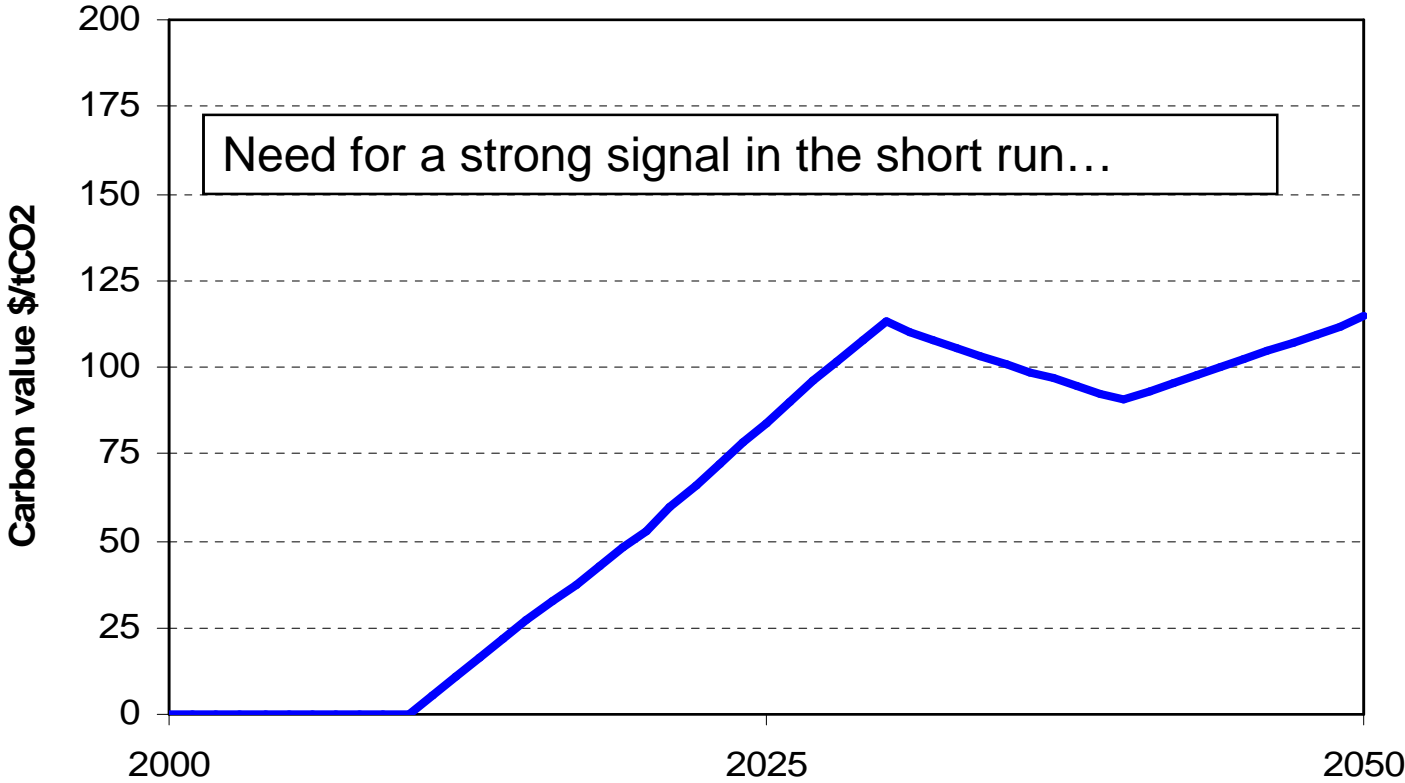
(450ppm CO2)



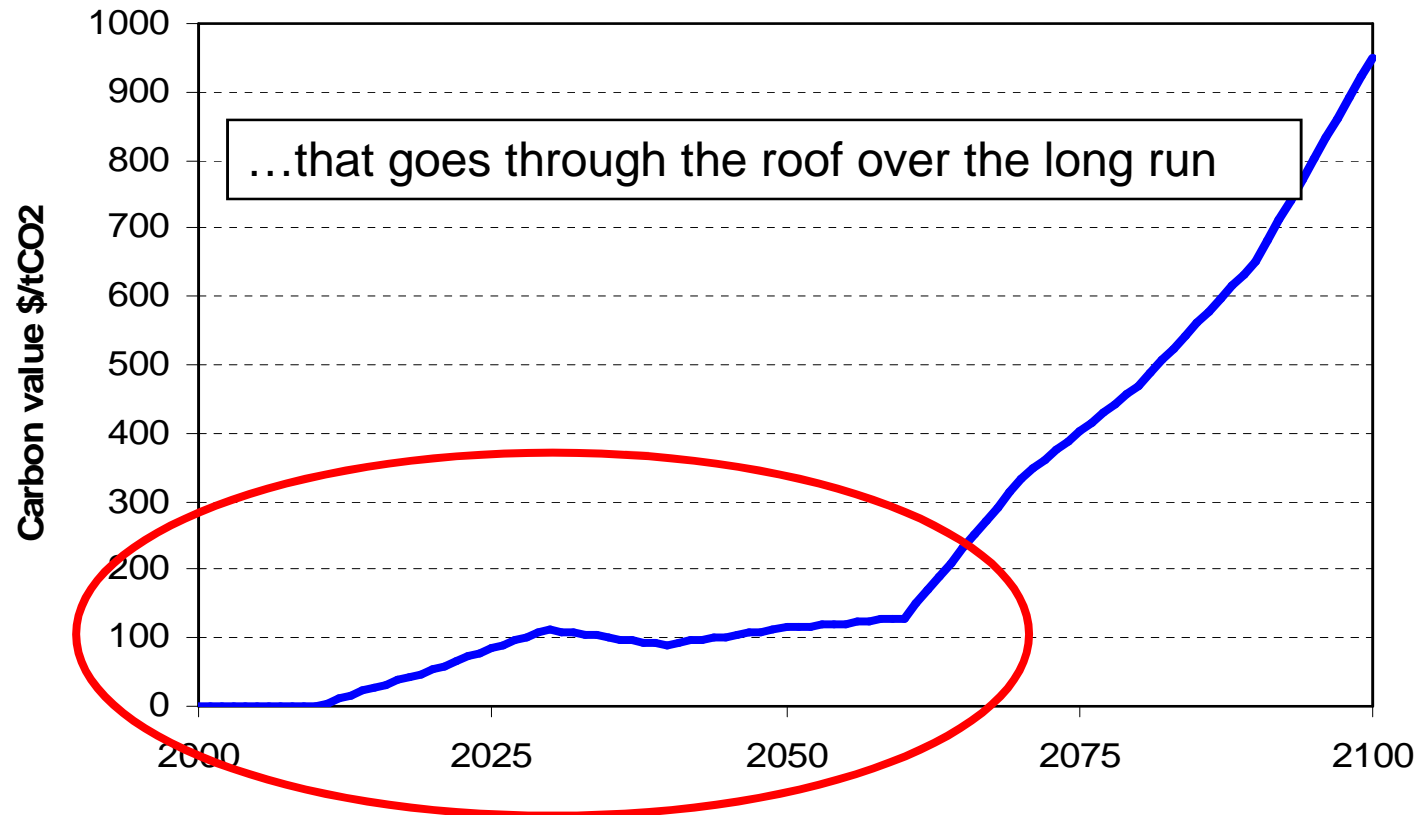
Chaire Modélisation prospective
au service du développement durable

ParisTech
INSTITUT DES SCIENCES ET TECHNOLOGIES
PARIS INSTITUTE OF TECHNOLOGY

Time profile of the price signal at first period



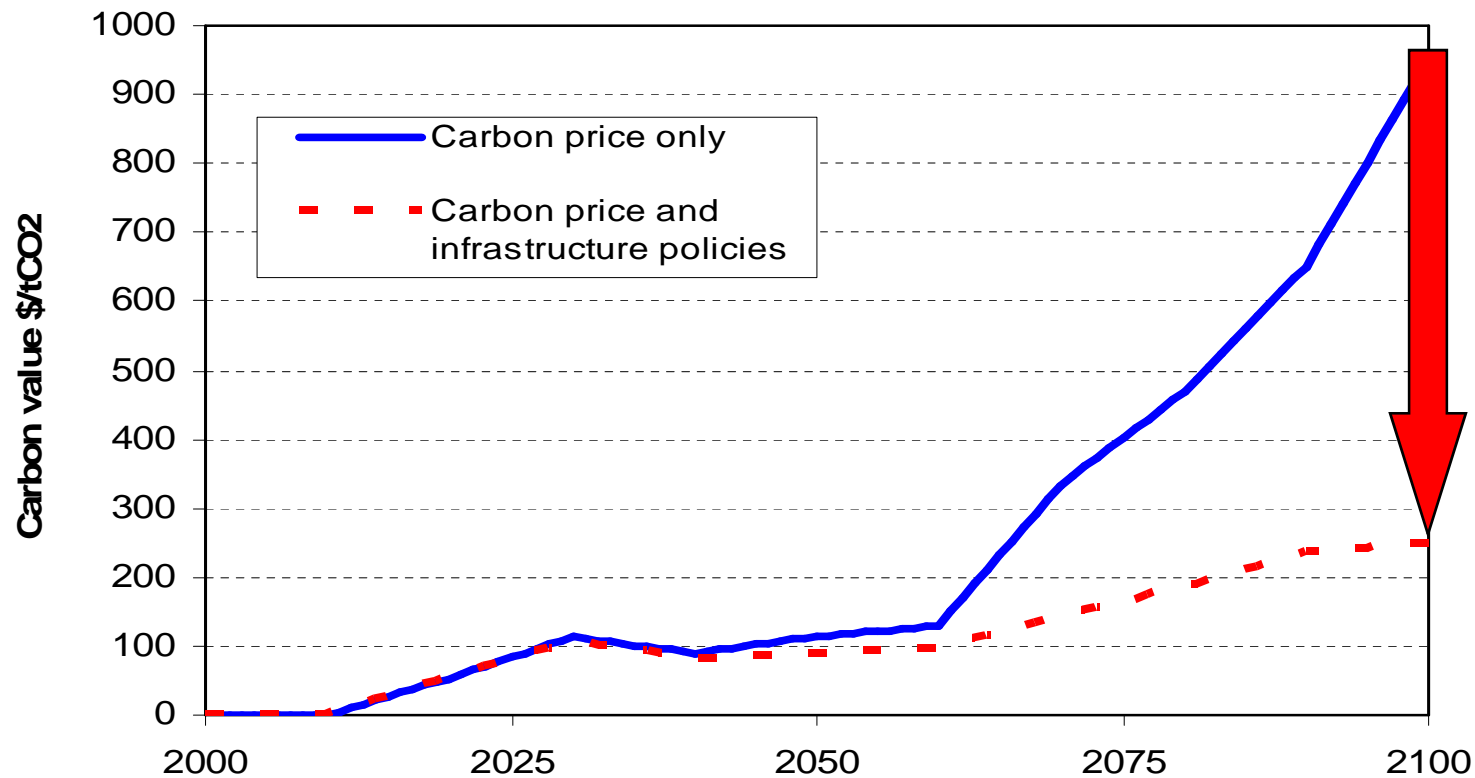
Time profile of the carbon price at second period: really bad news?



Chaire Modélisation prospective
au service du développement durable

ParisTech
INSTITUT DES SCIENCES ET TECHNOLOGIES
PARIS INSTITUTE OF TECHNOLOGY

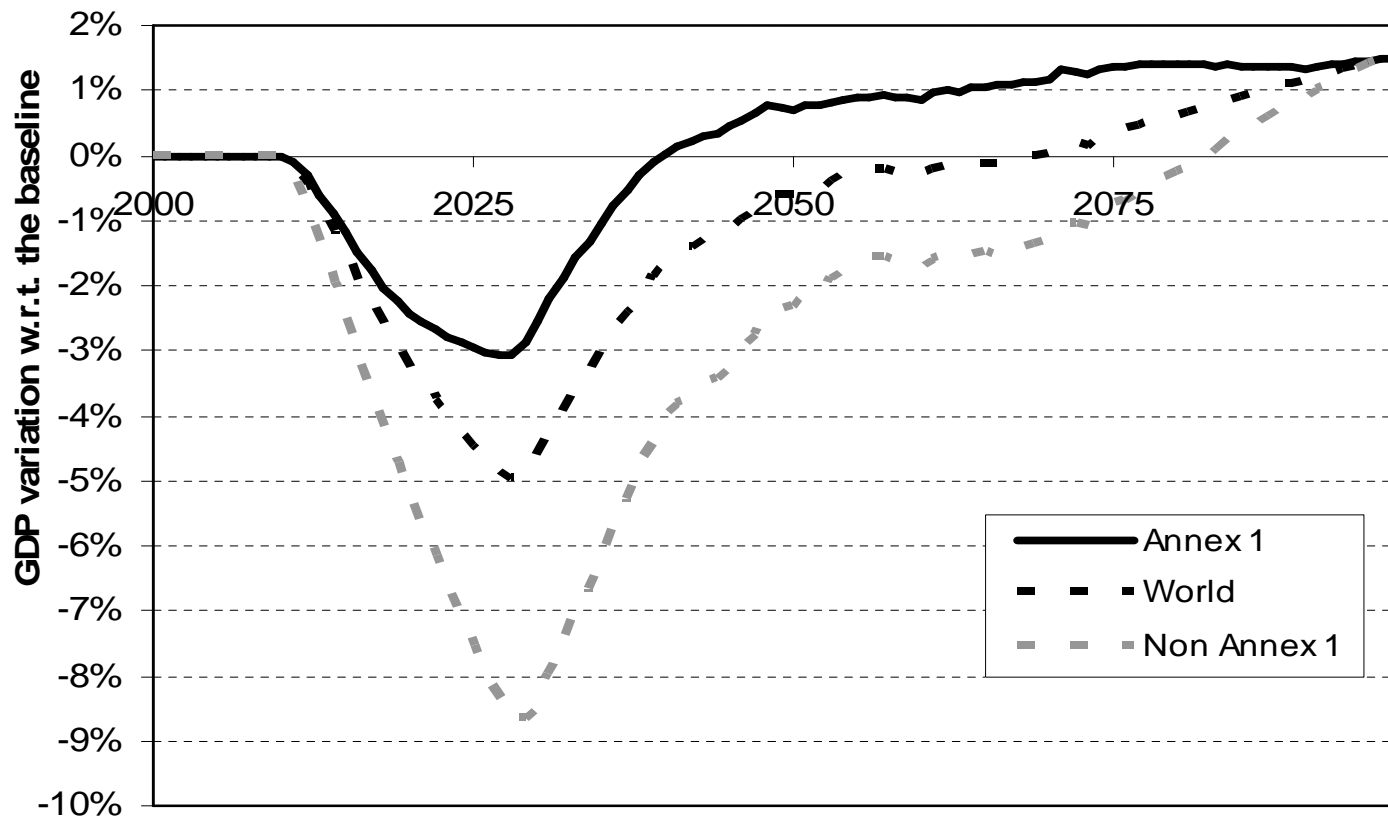
The same 450ppm with early action infrastructure and diversification of policy signals



Chaire Modélisation prospective
au service du développement durable

ParisTech
INSTITUT DES SCIENCES ET TECHNOLOGIES
PARIS INSTITUTE OF TECHNOLOGY

Reassuring end-points but still transition problems



Lessons: re-framing the conventional wisdom

- Climate policies may be **beneficial** over the **long run**
- The **squeeze** of uniform carbon prices (only) policies:
 - **Hurt emerging economies** over the short run (when the carbon prices are low relatively low!!!)
 - Without preventing **risks of lock-in** in carbon intensive development pathways
- Non negotiable « **equity** » of the burden sharing and compensations
- Need of **early action** to shift infrastructure investments



Policy and research agenda

- 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?
- A well designed overlapping of **short and long term** measures
 - Laying the foundations of a “climate friendly” fiscal system
 - Fostering early penetration of efficient end-use equipments for emerging middle classes (electric vehicle, efficient air-conditioning)
 - Developing support to low income classes
 - Early action in infrastructure policies
 - Domestic differentiation of carbon and energy prices and climate policies

Chaire Modélisation prospective
au service du développement durable

ParisTech
INSTITUT DES SCIENCES ET TECHNOLOGIES
PARIS INSTITUTE OF TECHNOLOGY

Rethinking international cooperation: Aid or Financial Innovation ?

- Changing context for overseas aid and funding
 - Decreasing amounts
 - Emerging countries \neq 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



Towards climate friendly development patterns: the role of early action on infrastructure

Sassi O.

CIRED/ENPC

(sassi@centre-cired.fr)

