Chaire ParisTech
Modélisation prospective au service du développement durable

www.modelisation-prospective.org

ParisTech
INSTITUT DES SCIENCES ET TECHNOLOGIES
PARIS INSTITUTE OF TECHNOLOGY

Trois cas d'étude

Plafonnement de la production pétrolière : hypothèses et implications

Jean-Charles Hourcade

Déploiement des énergies renouvelables en Europe : place de la France, question des pays intensifs en carbone

Nadia Maïzi

Chine : adhésion à une politique carbone à quelles conditions ?

Jean Charles Hourcade et Nadia Maïzi

Trois cas d'étude

Plafonnement de la production pétrolière : hypothèses et implications

Jean-Charles Hourcade

Déploiement des énergies renouvelables en Europe : place de la France, question des pays intensifs en carbone

Nadia Maïzi

Chine : adhésion à une politique carbone à quelles conditions ?

Jean Charles Hourcade et Nadia Maïzi

Implications of a downward revision of fossil reserves for economic growth and climate policies

Hourcade J.C., Rozenberg J.

(hourcade@centre-cired.fr, rozenberg@centre-cired.fr)

Présentation à Total SA/DG/Direction Scientifique

18 février 2010

Outline of this presentation

Issues and objectives of the study

Methodology

Results

Issues and Objectives of the study

- **The macroeconomic context is under radical transformation including a fast catch-up of emerging economies**

- **The future of the oil sector is highly uncertain**
  - Physical and institutional constraints on production
  - The OPEC strategy

- **What are the impacts of a high pessimism about oil production tensions?**

- **How this changes the views about 'early' climate policies**

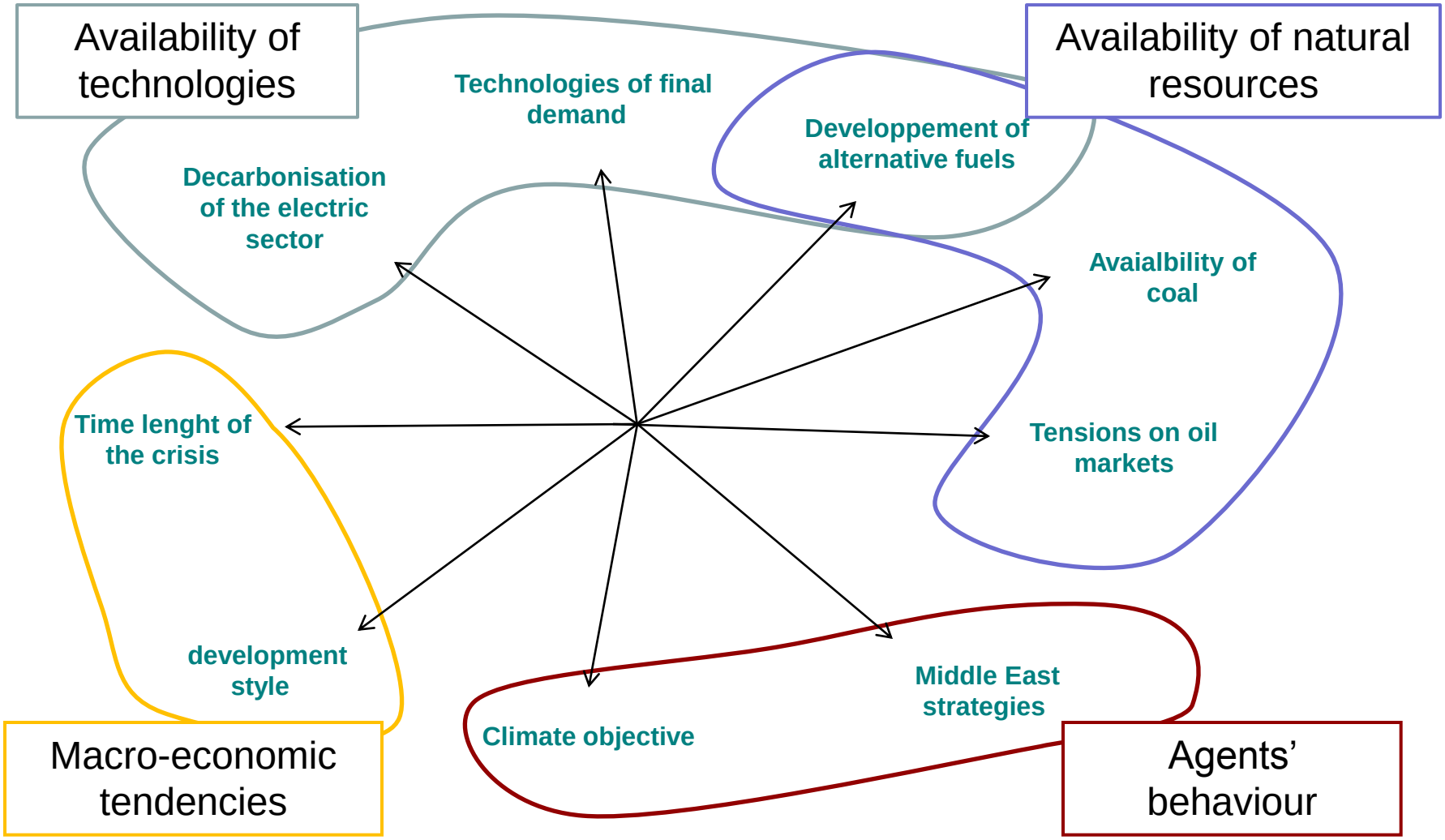
Outline of this presentation

Issues and objectives of the study

Methodology

Results

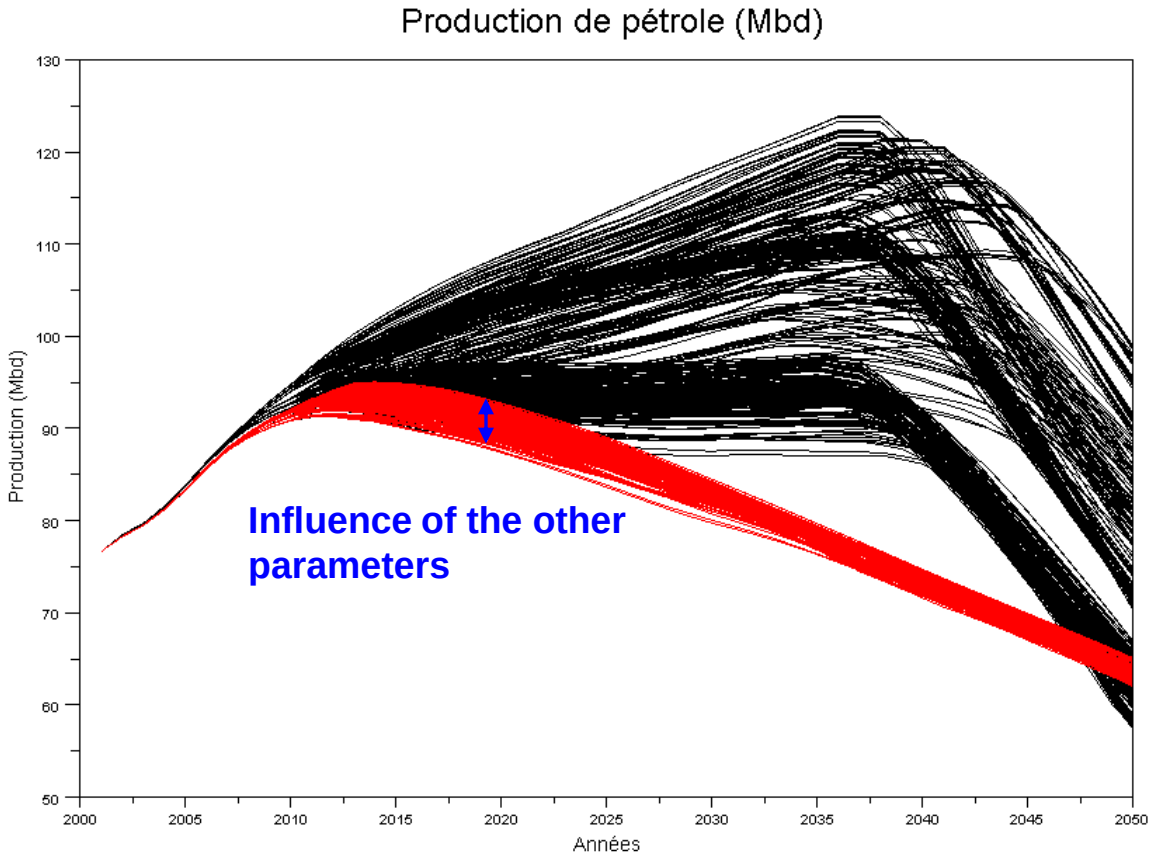
Structuring uncertainty in the energy/economy interface →768 consistent scenarios



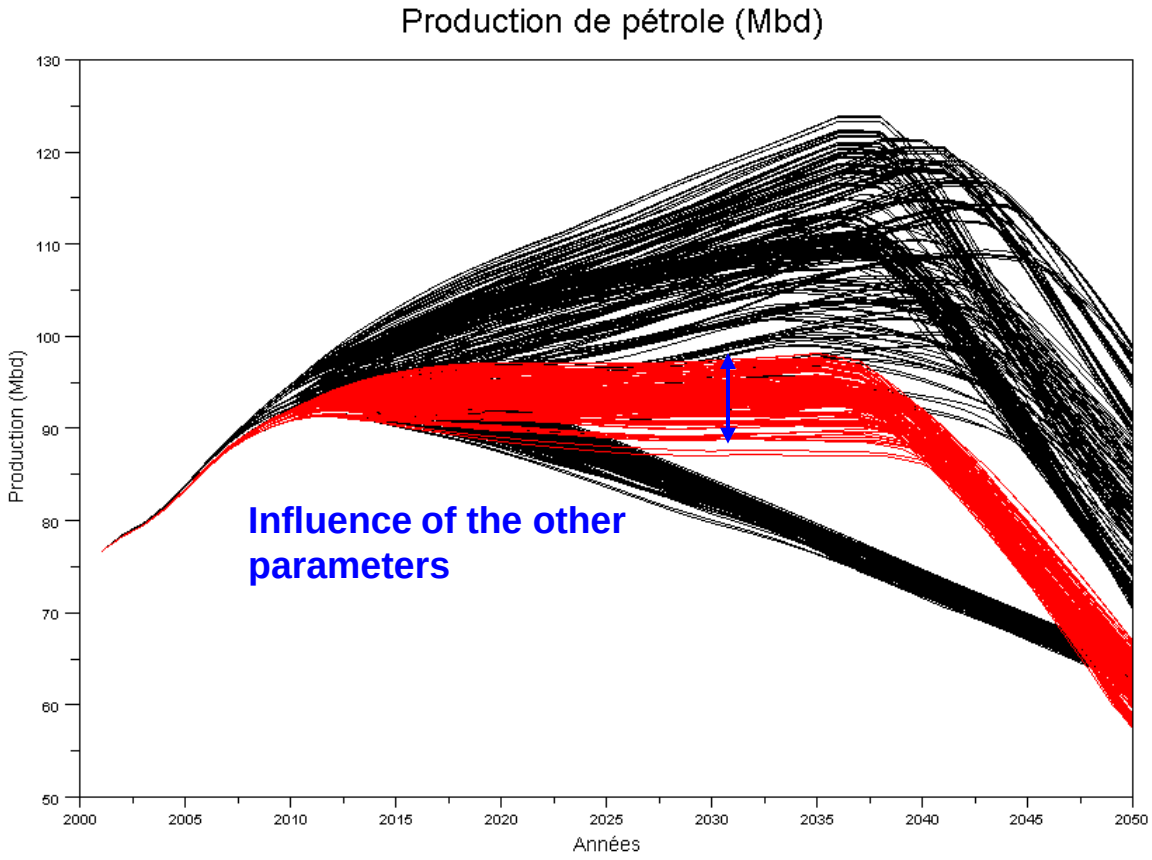
Details of the « oil and gas markets » parameters set

	Profile 1	Profile 2	Profile 3
Resources	Low	Low	High
Sustained investment in oil production capacity	No (bell-shaped production curve)	Yes (production « plateau »)	Yes
Unconventional oil	Inertia	Inertia	No inertia
Gas price indexation on oil price	Gas price always indexed on oil price	Gas price always indexed on oil price	Indexation disappears when oil reaches 80$/bl

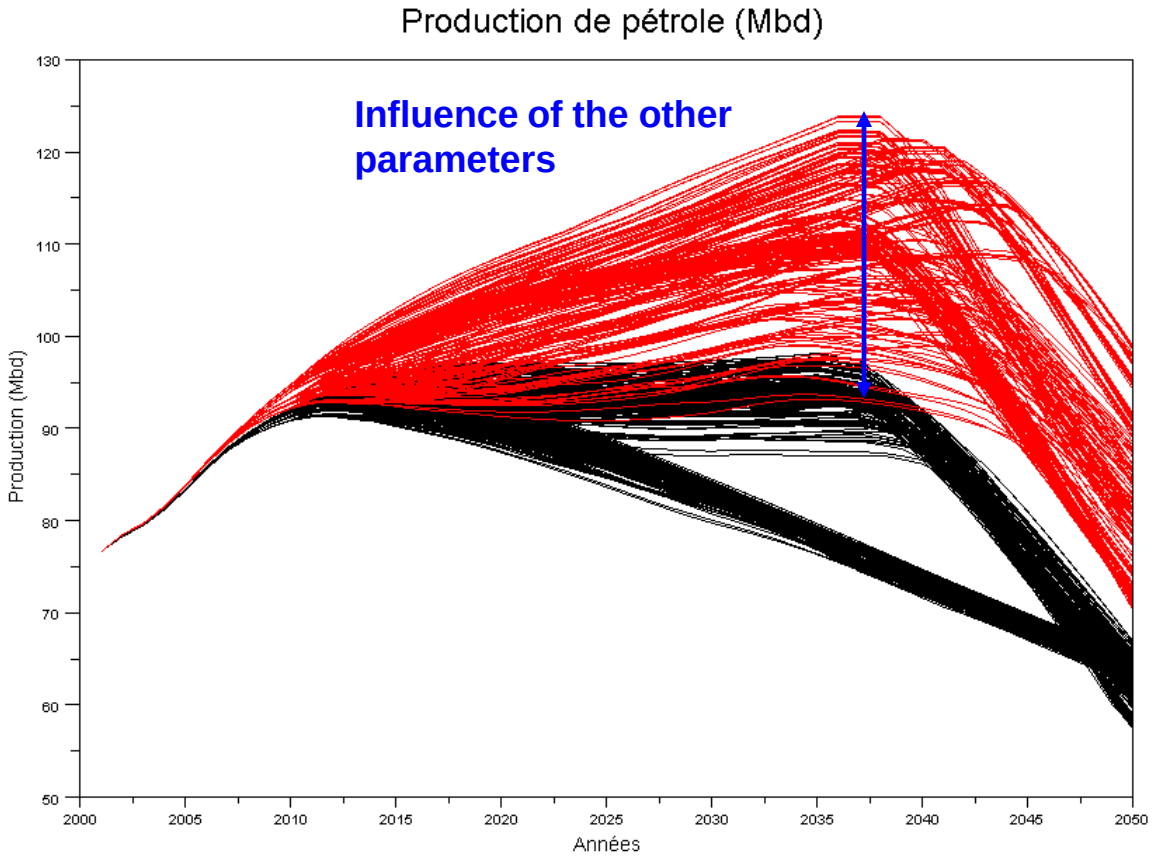
Profile 1: when an “early peak oil” dominates the other parameters



Profile 2: higher margins of flexibility under the “plateau profile”



Profile 3: when non oil-related parameters come again into play



Outline of this presentation

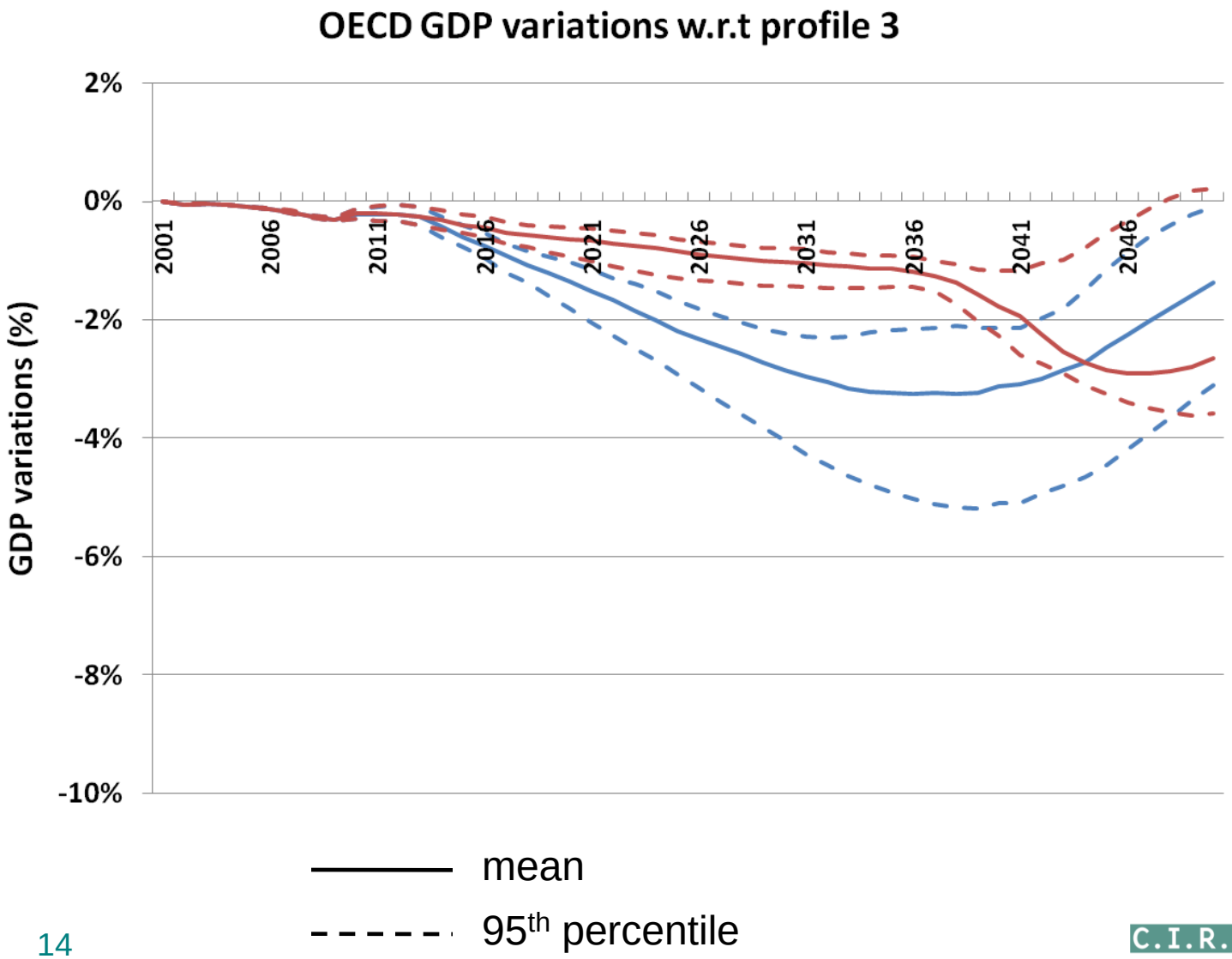
Issues and objectives of the study

Methodology

Results

- **Macroeconomic impacts of oil tensions**
- **Climate policies as a hedge against oil tensions**

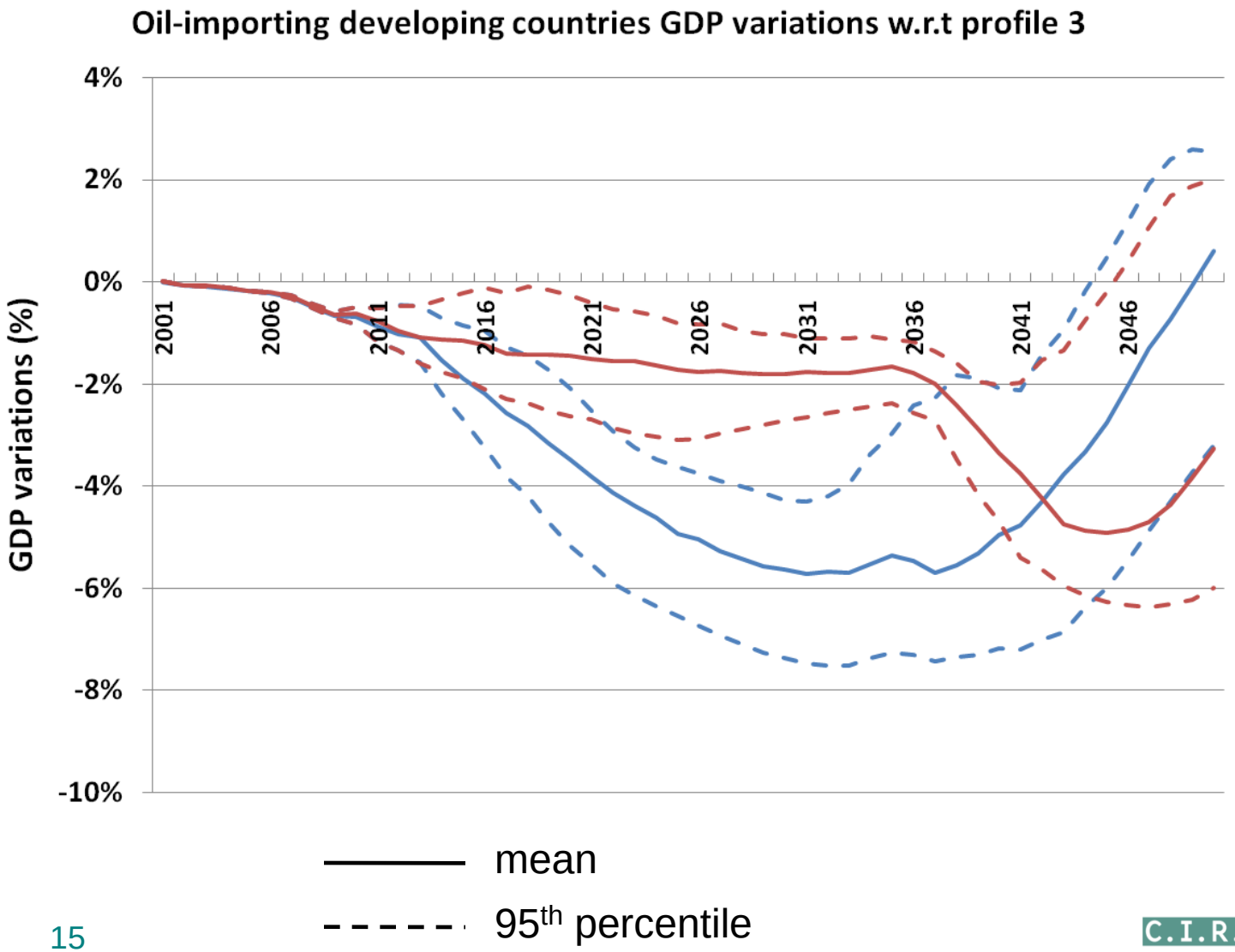
OECD GDP relative variations with low oil resources



Red : sustained investment (production « plateau », option 2)

Blue : no sustained investment (bell-shaped curve, option 1)

Developing countries GDP relative variations with low oil resources



Red : sustained investment (production « plateau », option 2)

Blue : no sustained investment (bell-shaped curve, option 1)

Outline of this presentation

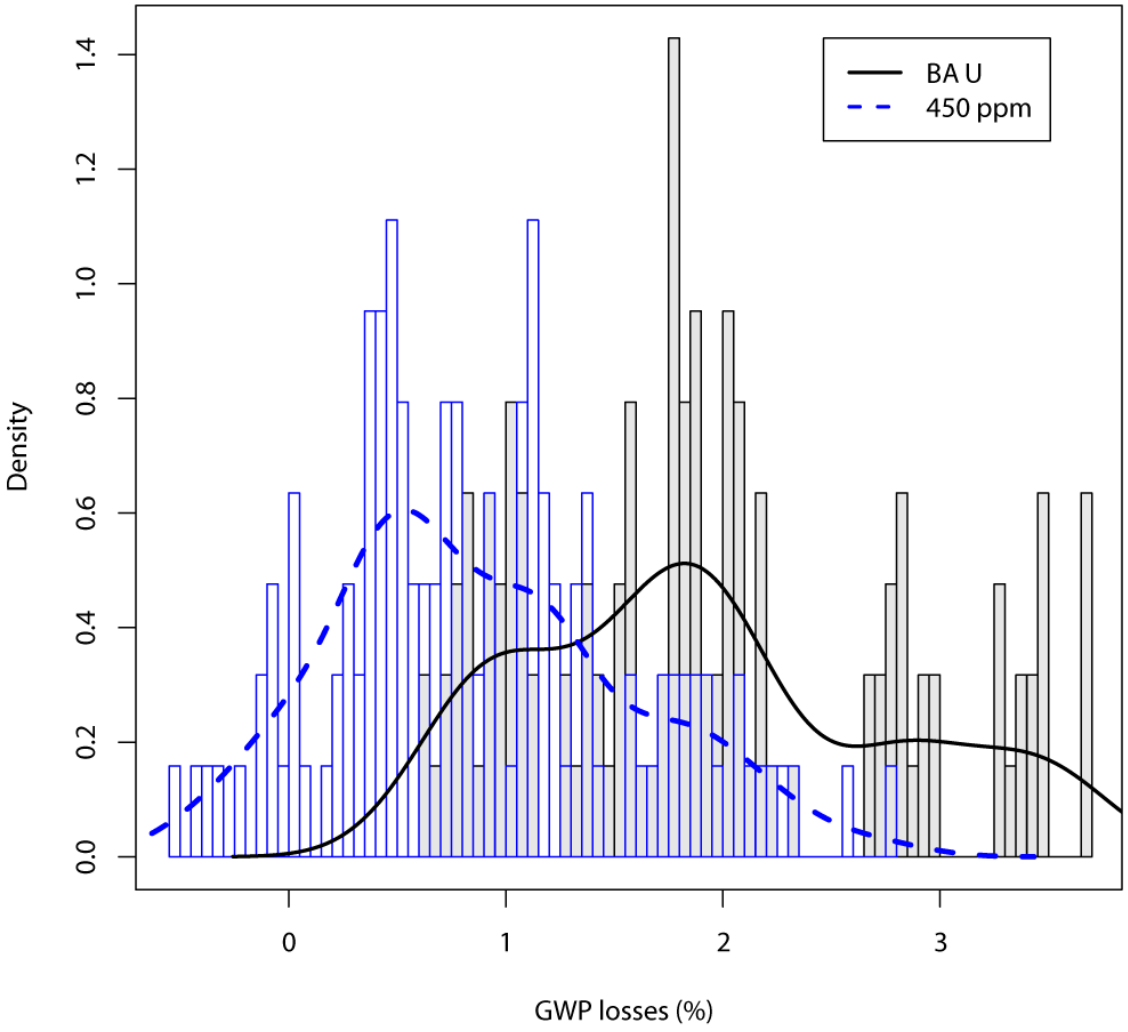
Issues and objectives of the study

Methodology

Results

- **Macroeconomic impacts of oil tensions**
- **Climate policies as a hedge against oil tensions**

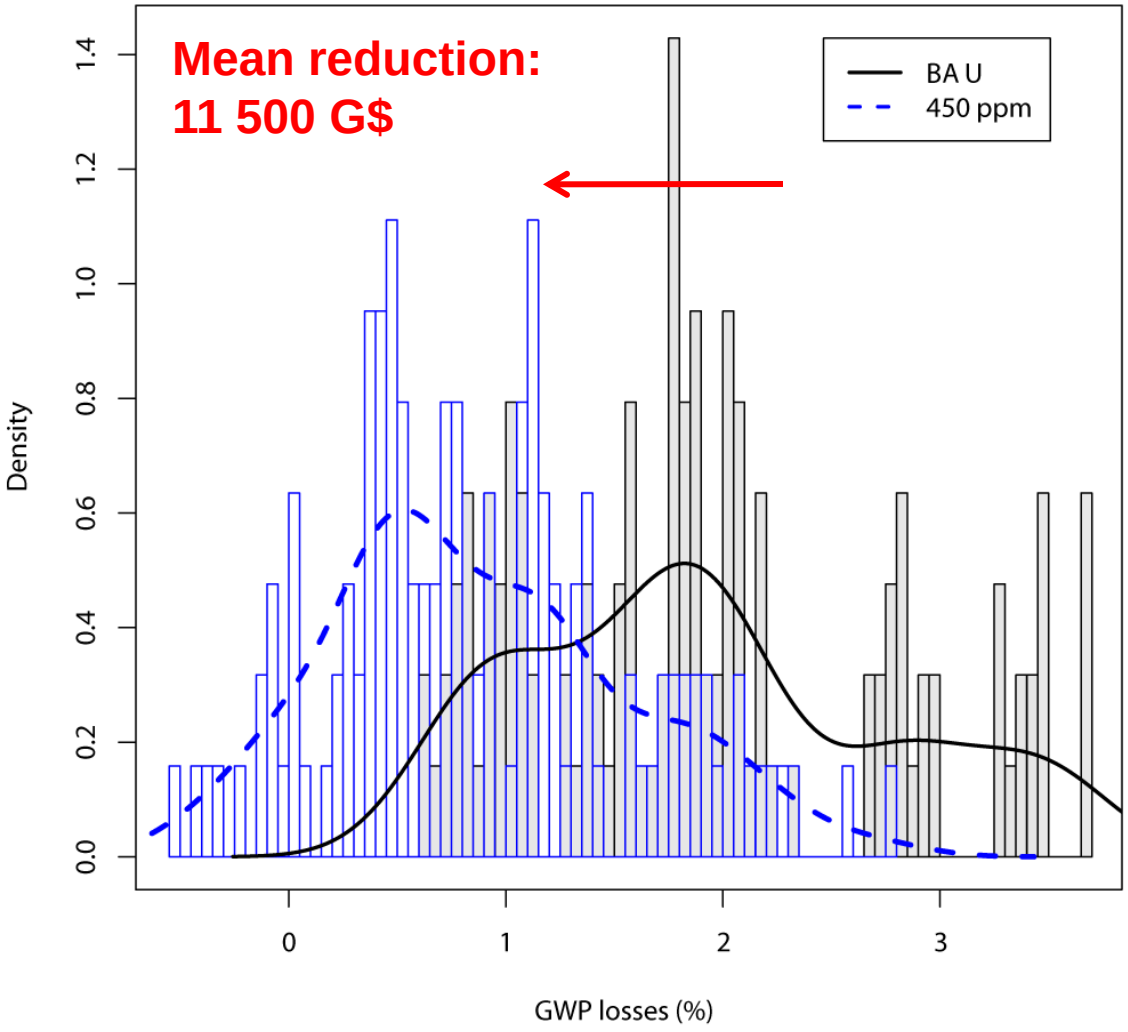
World GDP relative losses (2010-2050) due to oil tensions w/wo climate policies



Black : BAU (no climate policies)

Blue : climate policies to reach a +3°K target

Climate policies as an insurance against oil tensions?

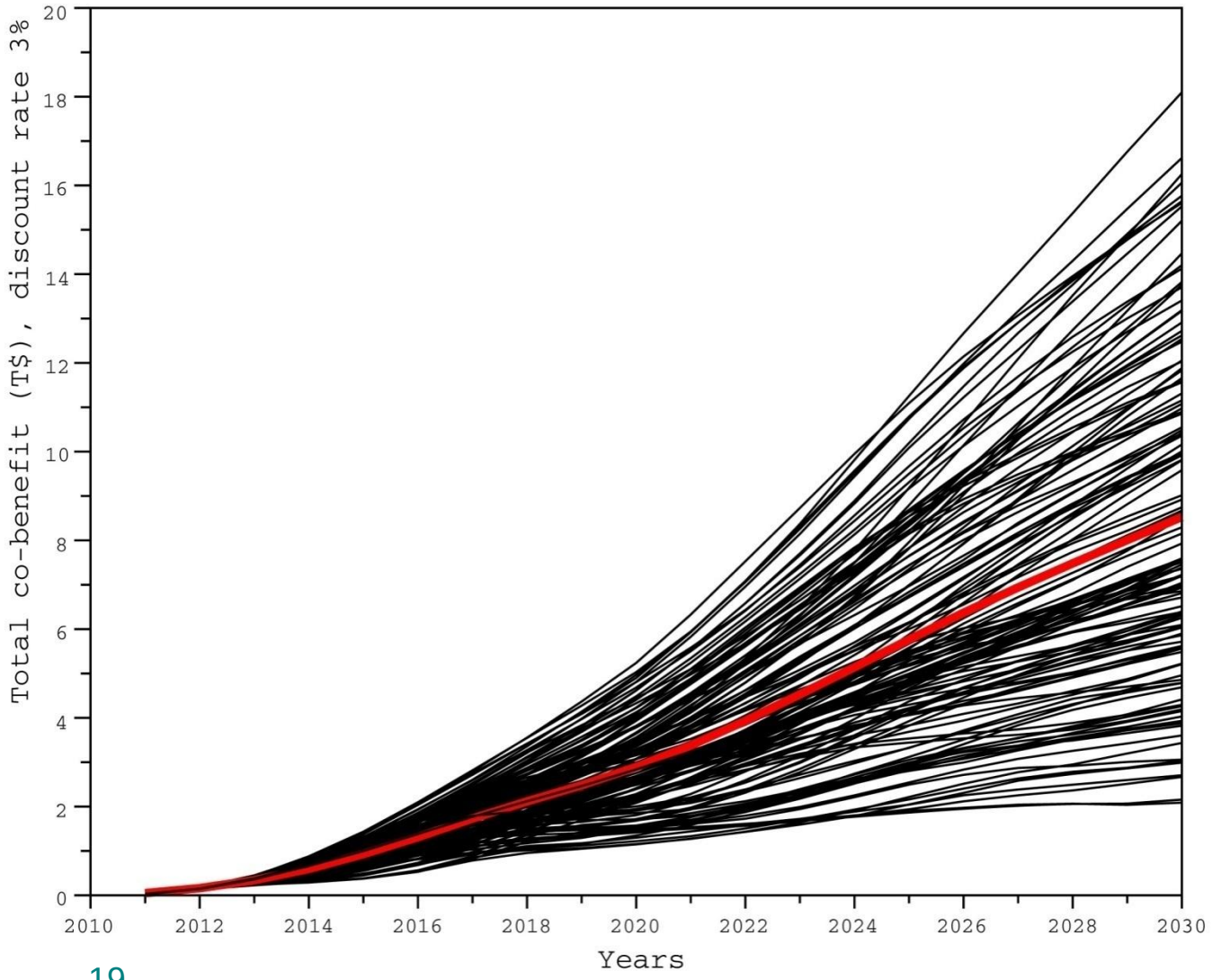


Black : Business As Usual (no climate policies)

Blue : climate policies to reach a +3°K target

Co-benefit of climate policies : hedge against oil tensions

An insurance benefit which grows with time



8 000 G$ in 2030

Conclusion

- Oil tensions generate important GDP losses, especially in oil-importing developing countries
- Sustained investments in production capacities diminish and postpone this macroeconomic effect
- Early climate policies significantly reduce the GDP losses due to oil tensions

Thank you for your attention