

# The Economics of Climate Change Mitigation

*Economics Department  
and Environment Directorate*

Competitiveness and carbon  
leakage impacts of climate change  
mitigation policies

Stéphanie Jamet

# Competitiveness and carbon leakage impacts of climate change mitigation policies

## Structure of presentation

- What are the concerns?
- How serious are these problems?
- How to design emission trading schemes to limit these problems?
- Other policies?

# Carbon leakage and competitiveness — what are the concerns?

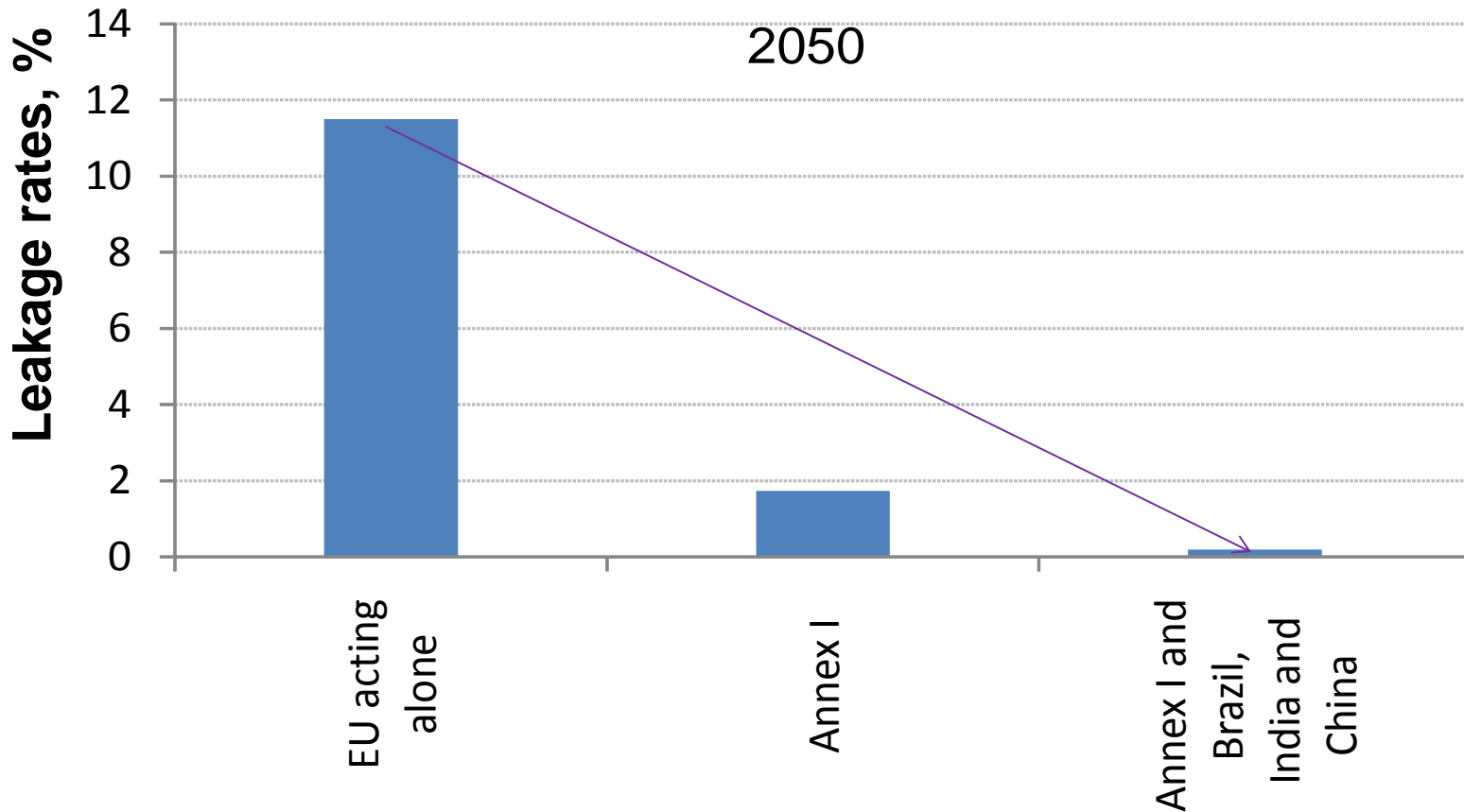
- Unilateral abatements run the risk of being at least partly offset because of leakages
- Two main channels for carbon leakages
  - Non-energy markets: production costs increase → competitiveness of energy-intensive industries is lowered → losses of market shares and shift of the production towards non regulated firms
  - International energy markets: energy demand falls in capped countries → world price of energy falls (if a sizeable group of countries acts) → energy demand and emissions increase in the rest of the world

# What are the structural determinants?

- Various market factors matter:
  - Market structure of production and trade in energy-intensive products: effects are smaller when products are differentiated and when there is less competition
  - Supply response of carbon producers (energy price channel): emission increases in uncapped countries are larger if energy producers do not lower their supply and the energy price falls → inelastic supply
  - Substitution in the production function: high degree of substitution → lower carbon price to reach a given target → less leakages
- CGE model Analysis → OECD ENV-Linkages model

# How serious is the leakage issue?

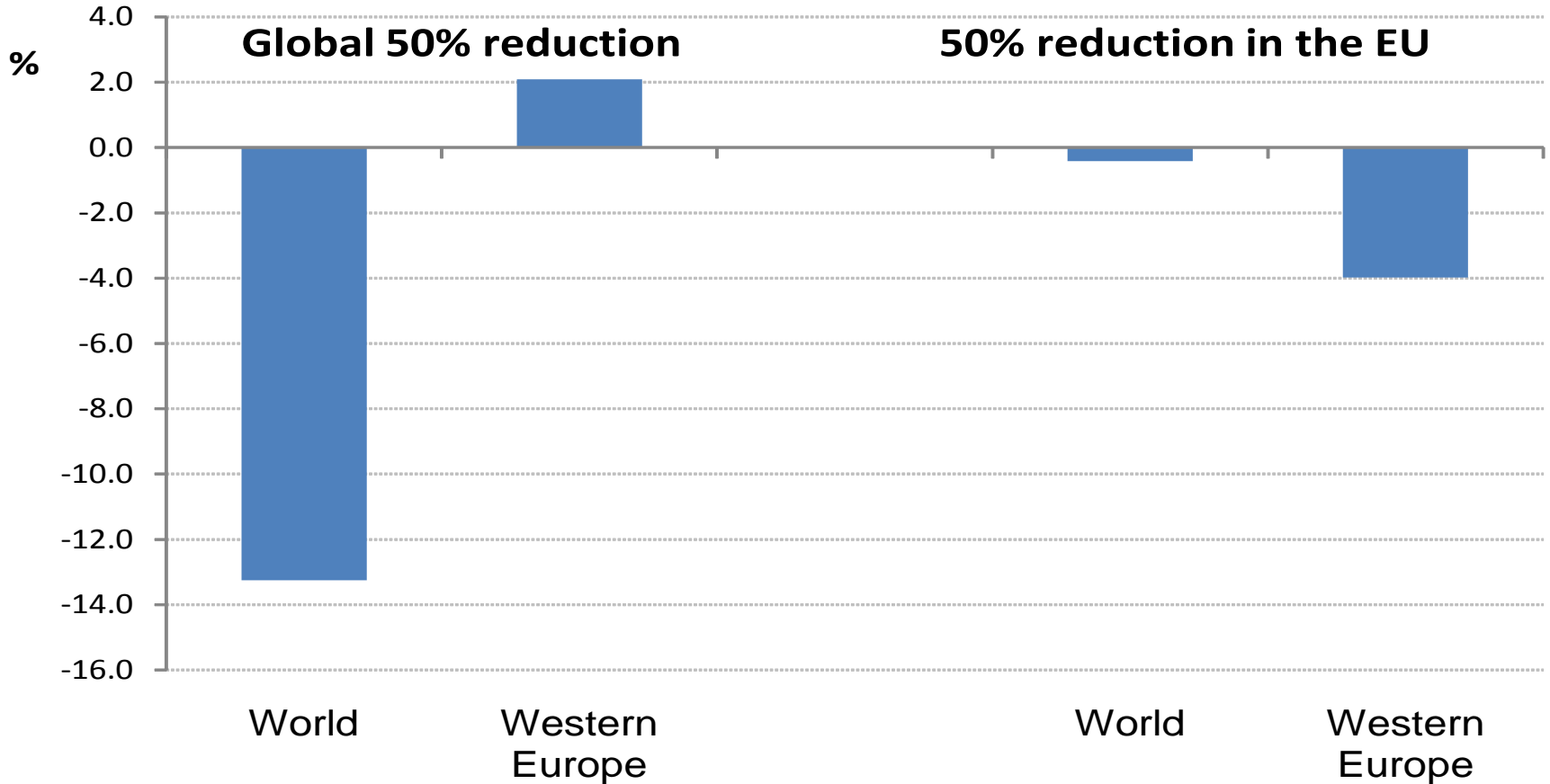
The size of the cut is equivalent to a 50% cut in EU emissions in 2050 relative to 2005 levels



Leakages decrease with country coverage

# How serious is the competitiveness issue?

**Impact of coverage on the output of energy intensive industries**  
 (% deviation from business-as-usual, 2050)

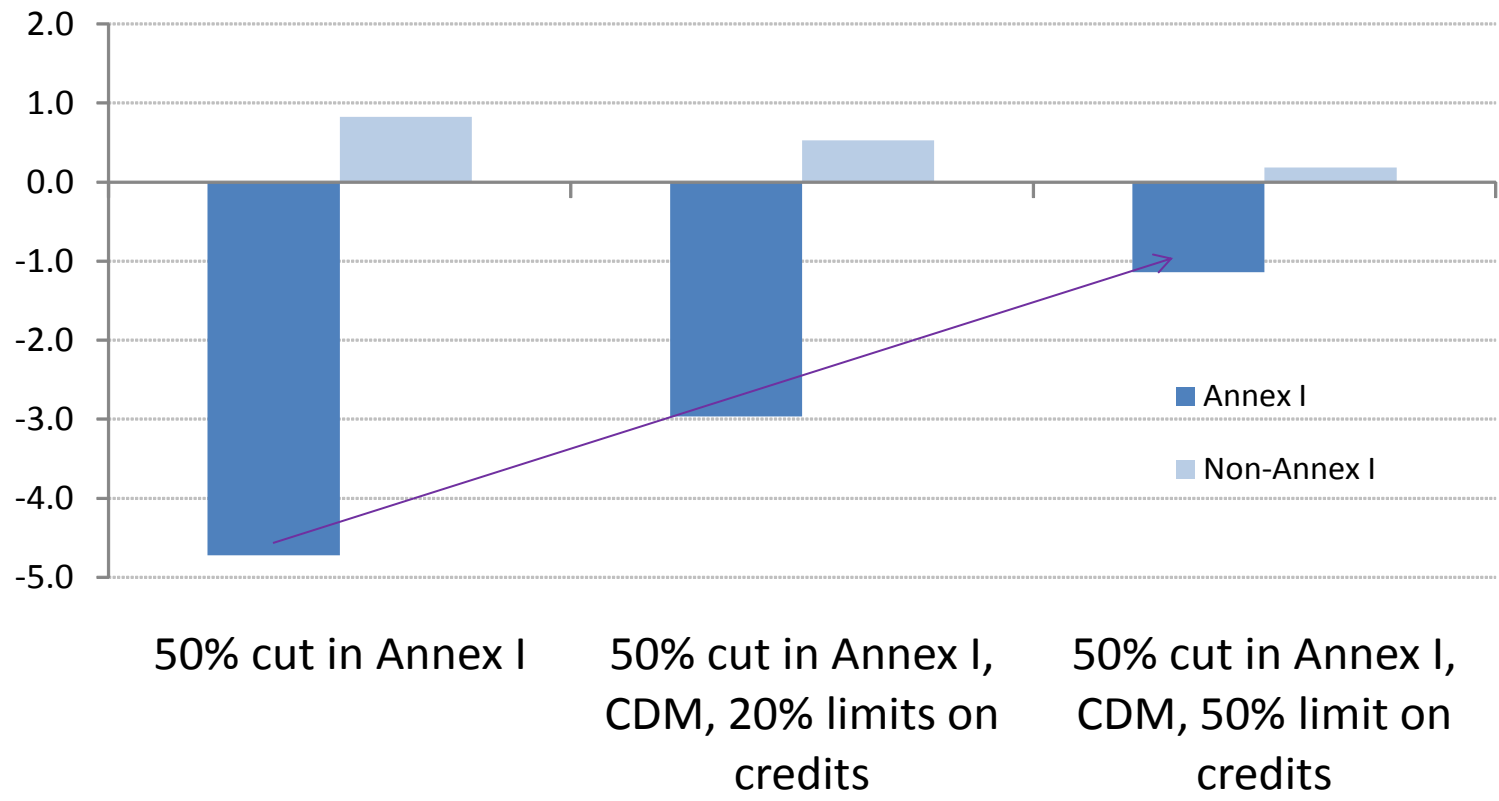


**EIIs output losses can be significant and would be unequally distributed across regions**

# How to design emission trading schemes to limit competitiveness losses?

## Impact of crediting mechanism on output of energy-intensive industries

(2050, gap relative to BAU, in %)

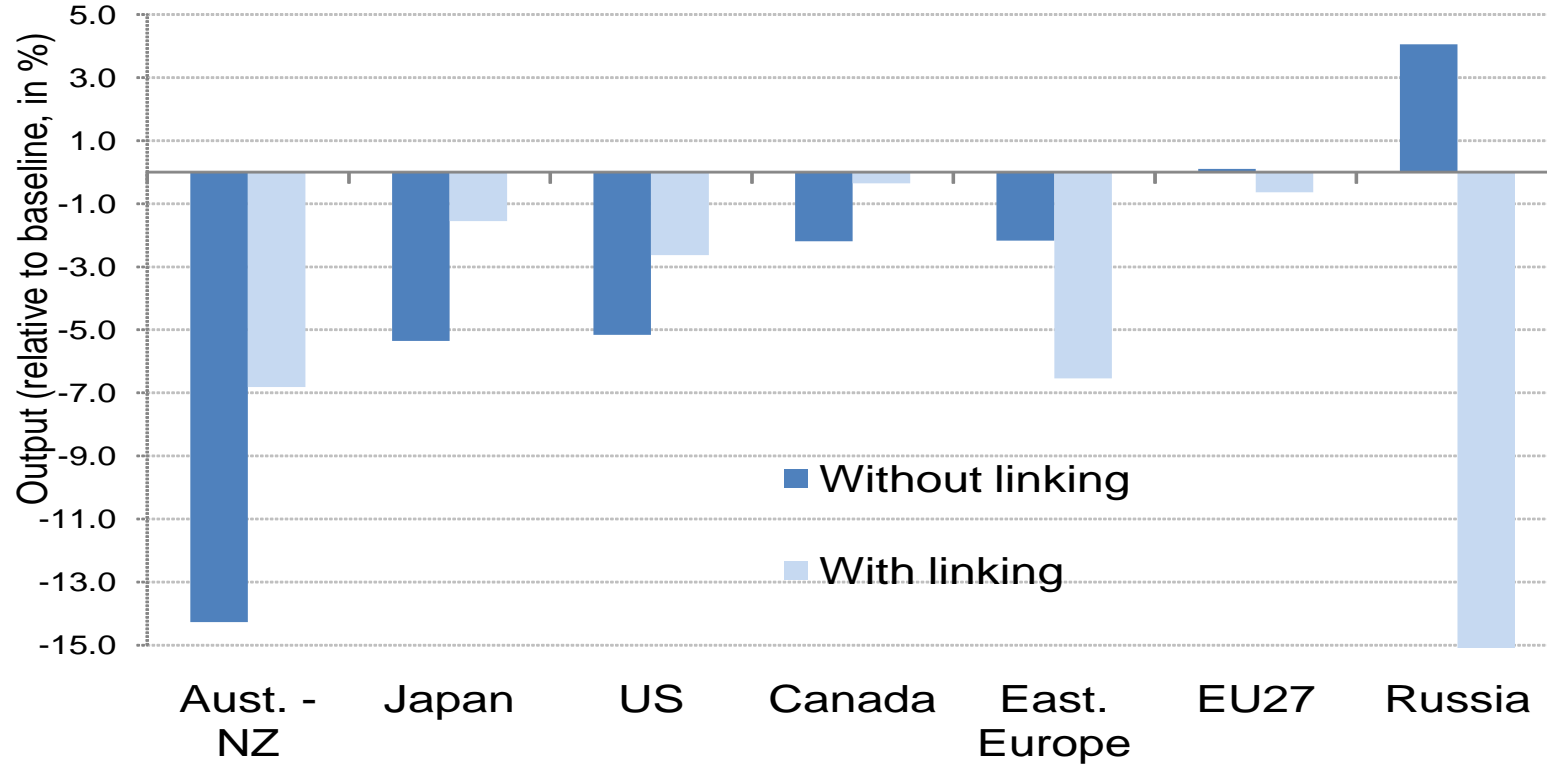


Crediting mechanism can significantly limit energy-intensive industries output losses

# How to design emission trading schemes to limit competitiveness losses?

**Output of energy intensive industries with and without linking across Annex I regional ETS, 2020**

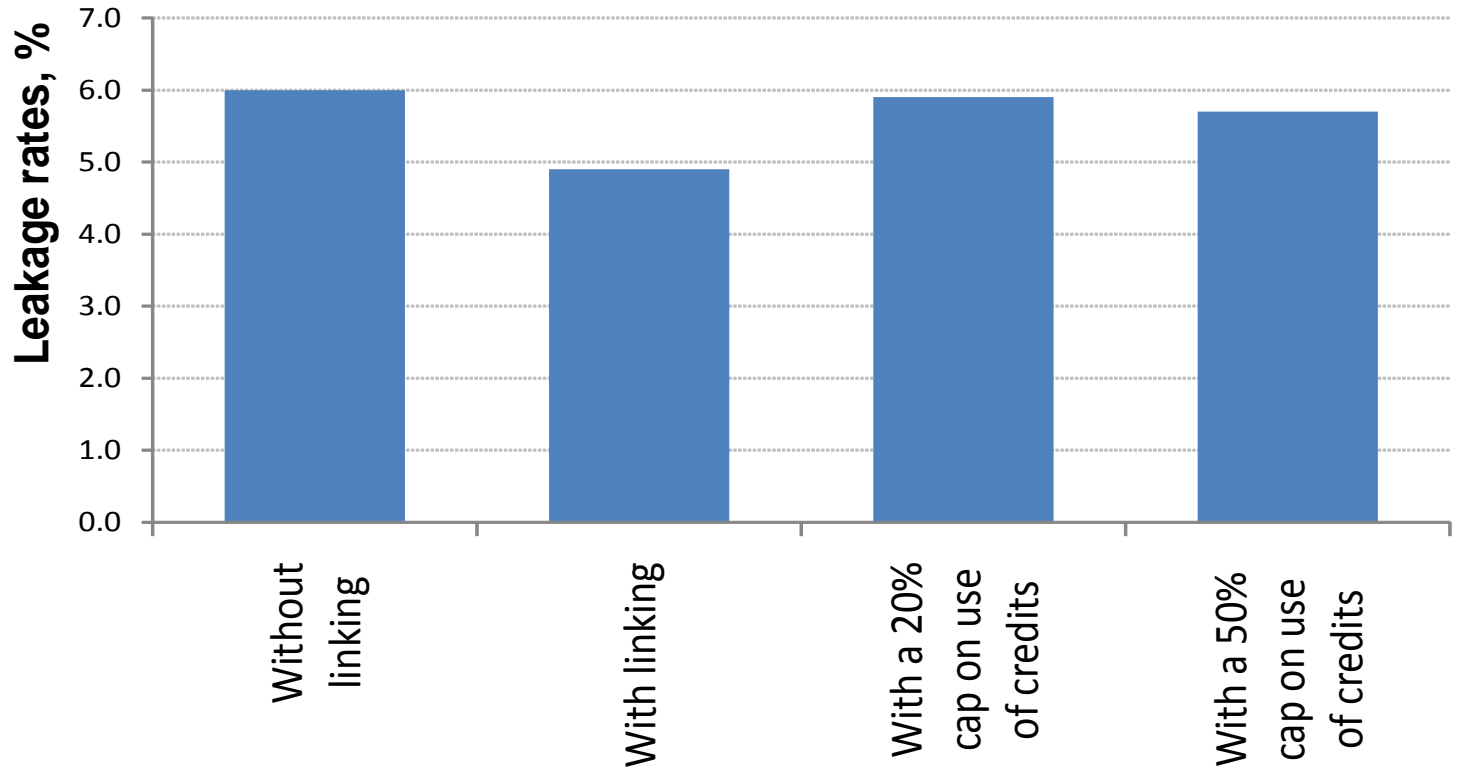
Under a 50% cut by 2050 relative to 1990 levels



Linking schemes “levels the playing fields” and affects the distribution of EIs output losses

# How to design emission trading schemes to limit leakages?

50% cut in Annex I regions, 2020



Linking Annex I schemes and extending the CDM would have a limited impact on leakages

# Other policies? Countervailing duties...

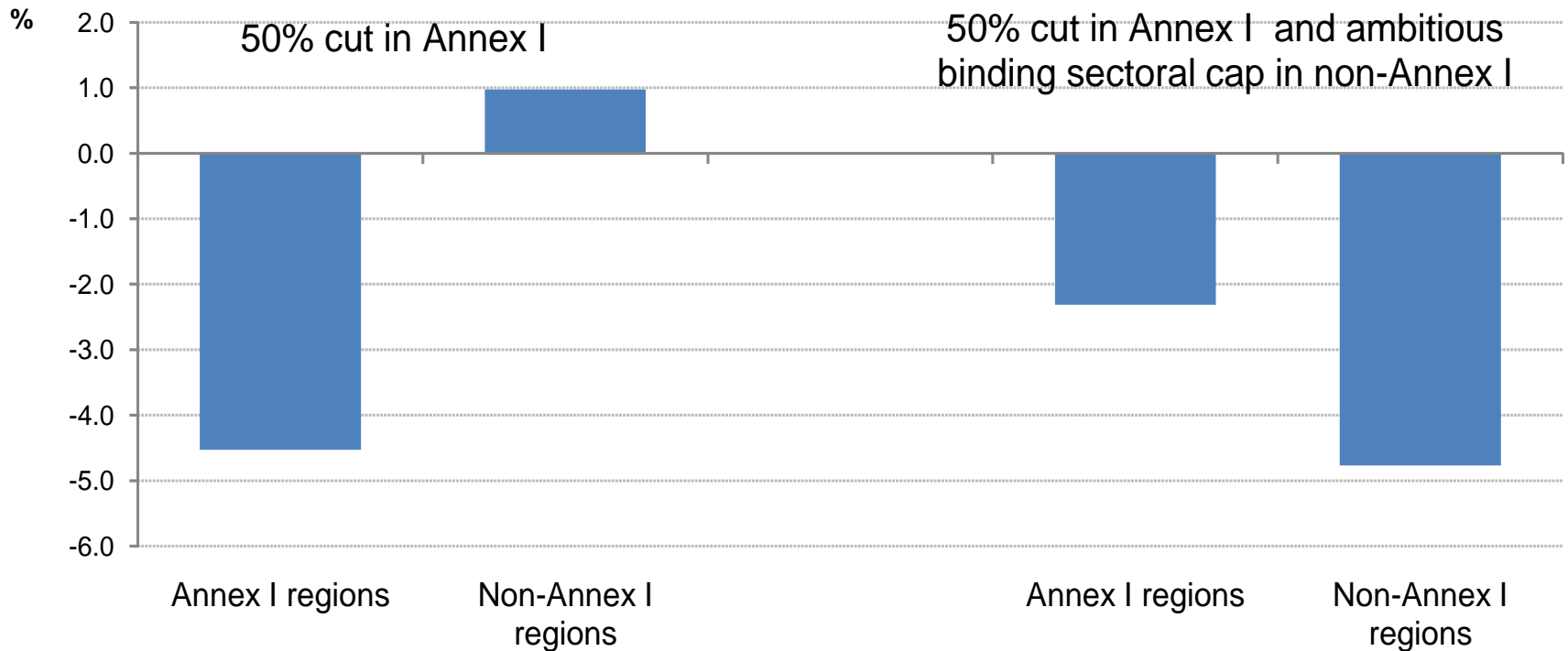
## Effect of countervailing import tariffs in the case of a 50% reduction in EU countries by 2050

	without countervailing tariffs	with countervailing tariffs
Leakage rates (%)	11.5	2.9
Output of EIs (% deviation from BAU)		
EU	-4.0	-4.6
Rest of the World	0.2	0.1
GDP effect (% deviation from BAU)		
EU	-1.5	-1.8
Rest of the World	0.0	-0.1

...would reduce leakages for small coalitions but not EIs output losses and would entail GDP costs

# Other policies? Sectoral caps...

**Impact of binding sectoral caps on output of energy-intensive industries**  
(2050, gap relative to BAU, in %)



...would reduce output losses in the Annex I, but need to find incentives for non Annex I countries

# Main messages

- Extending country coverage is key to mitigate leakage and competitiveness concerns: as the coalition of acting countries increases, the leakage rate falls rapidly
- Sectoral approaches, if designed well, is a promising option to limit leakages
- Linking ETS and extending the CDM would limit competitiveness problems by “levelling the playing field”...
- ...but would not eliminate output losses for EITs → permit allocation rule, other appropriate policies
- Countervailing duties would only partially limit leakages and would entail some GDP costs



Thank you