

Mitigation policies in the context of globalization

REMIND-R

Paris, 1 July 2008

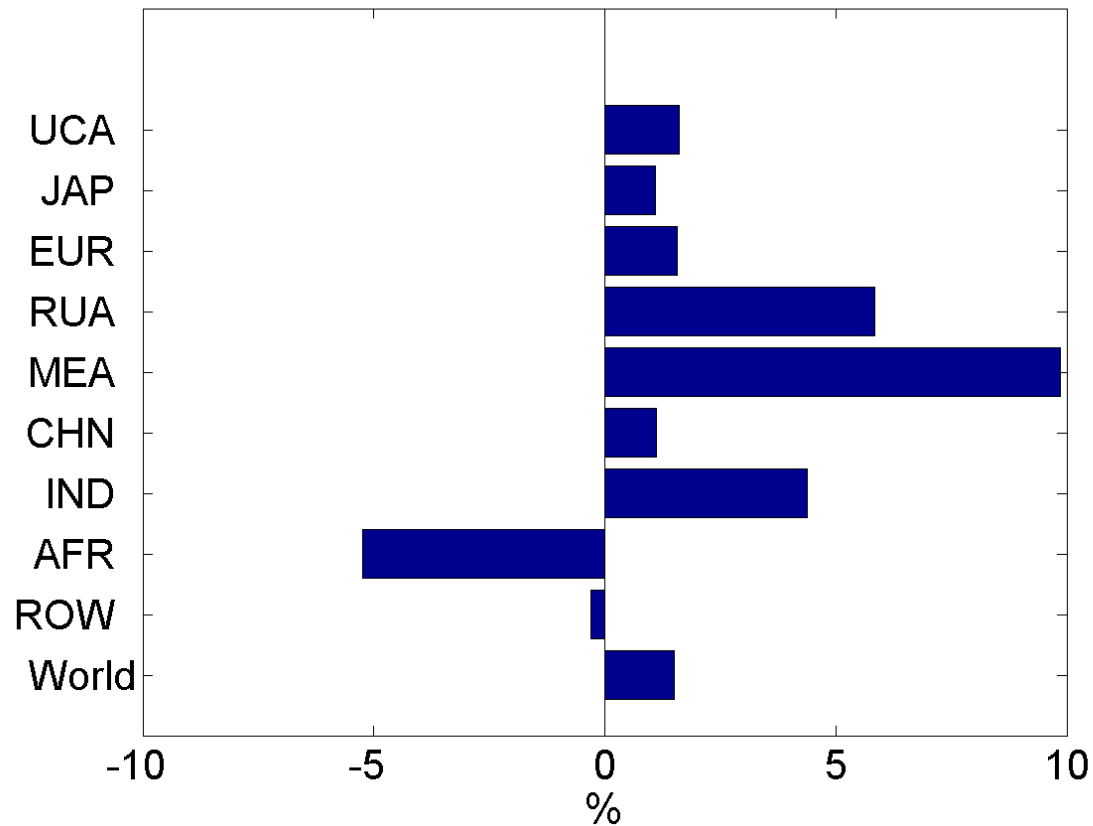


Outline

- 1. Introduction of REMIND-R**
- 2. Policy scenerario**
- 3. Trade results**
- 4. Mitigation wedges**
- 5. Mitigation options**
- 6. Conclusion**



0. Mitigation costs

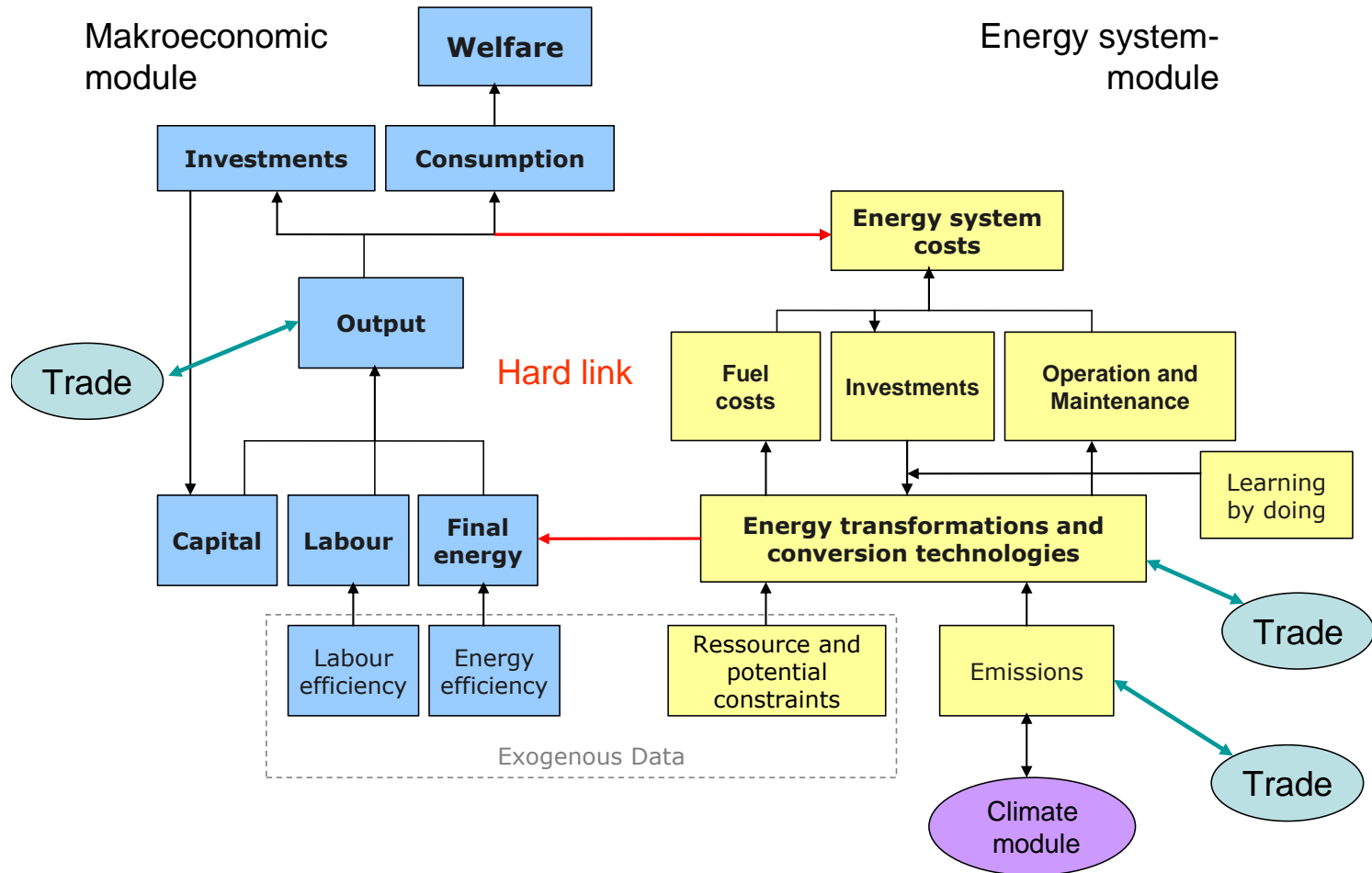


1. Introduction

- Hybrid Model REMIND-R:
Hard link between ESM and economy and climate module
- Multi-regional growth model:
maximises weighted sum of regional utility functions
using the negishi approach
- Connections between regions: trade in...
 1. Resources: coal, gas, oil, uranium
 2. Aggregated good
 3. Emission permits



1. Introduction



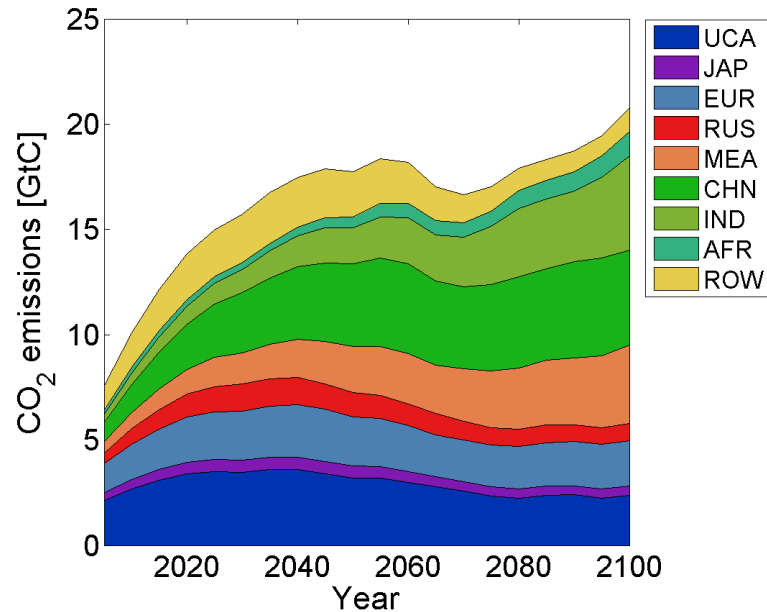
1. Introduction

- 9 Regions:

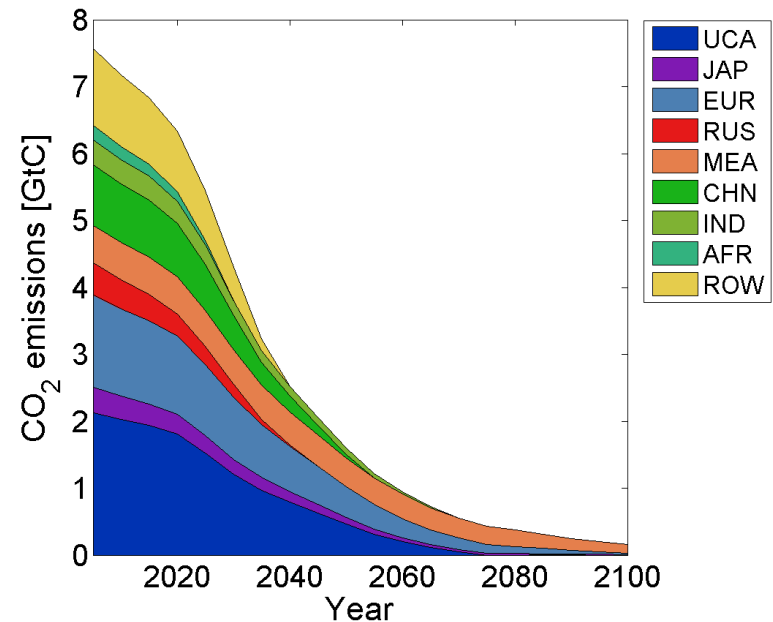
1. UCA – USA, Canada, Australia
2. EUR – EU27
3. JAP – Japan
4. CHN – China
5. IND – India
6. RUS – Russia
7. AFR – Sub-Saharan Africa
8. MEA – Middle East and North Africa
9. ROW – Rest of the World

2. Policy scenario

Reference scenario



Policy scenario

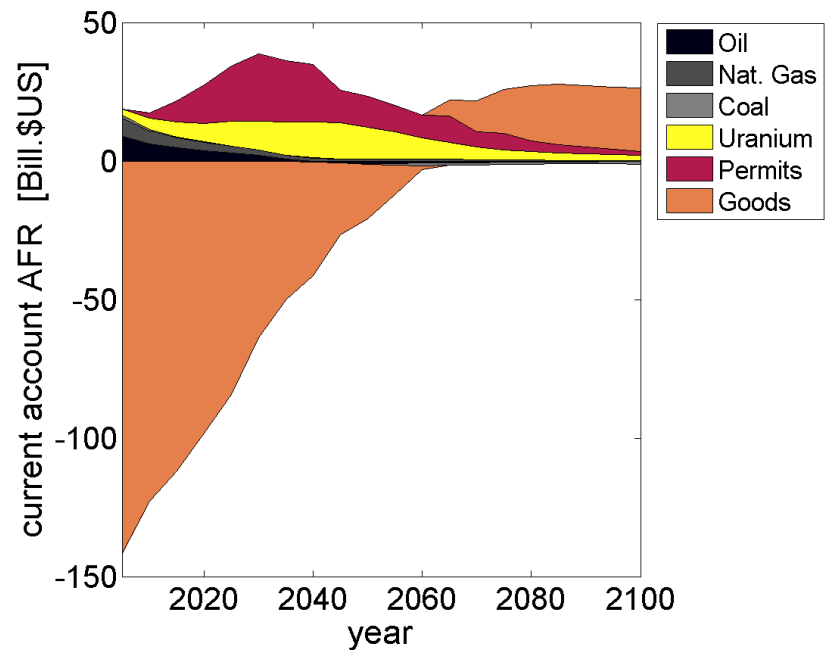
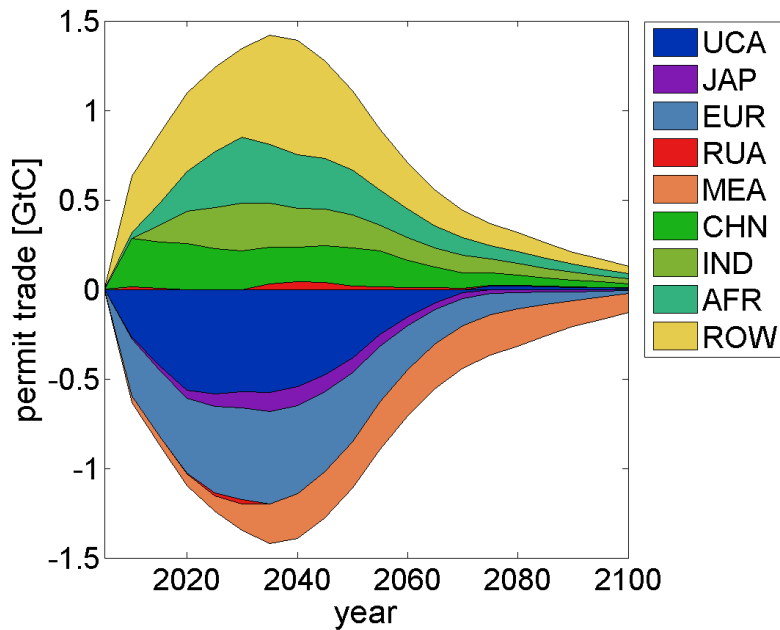


Reaching a 2°C target requires
a fast and drastic decrease of emissions of all regions.

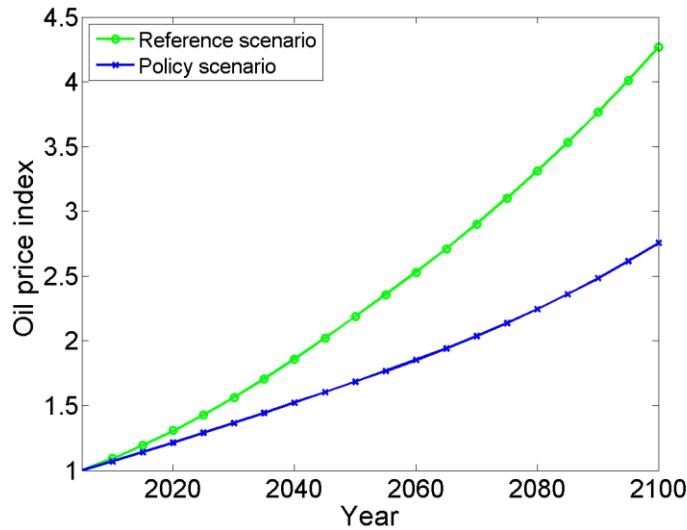
Allocation scheme: Contraction & Convergence

3. Trade results: Permits

Developing regions sell emission permits profitably to industrialised regions.

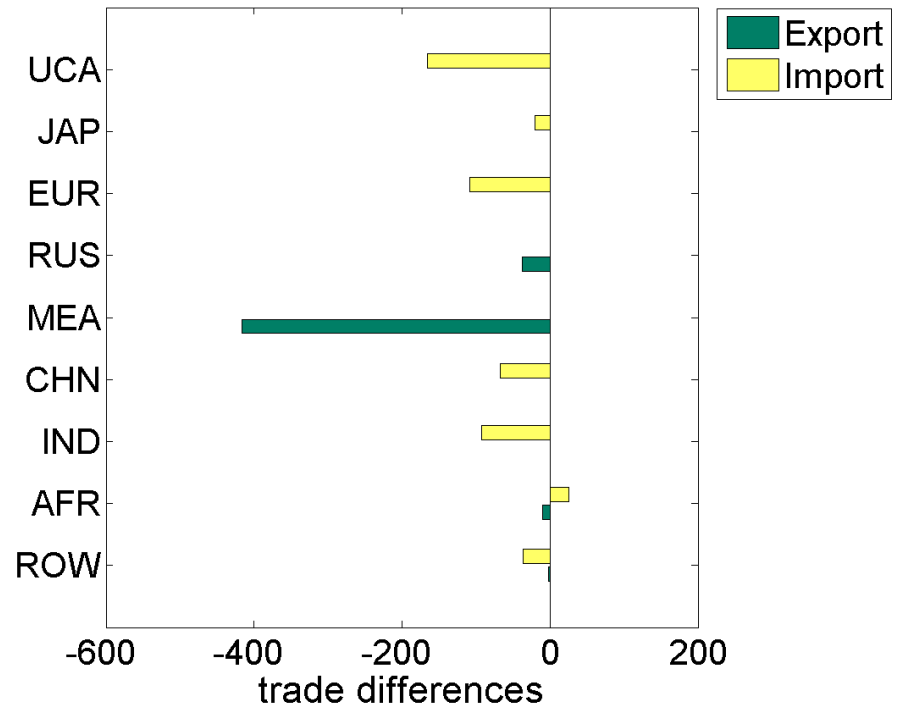


3. Trade results: Oil



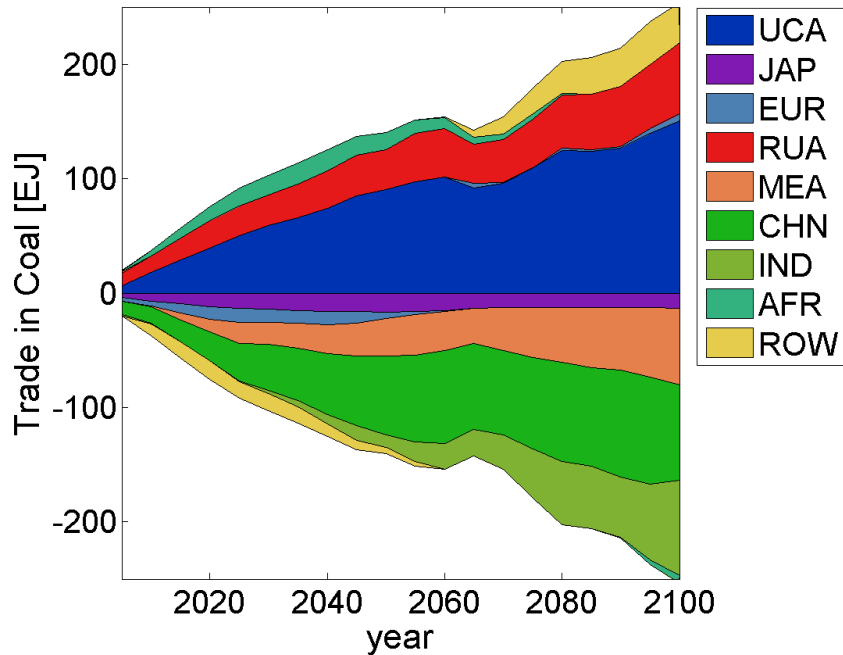
Oil price rises much slower in the policy scenario compared to the reference scenario.

The trade with oil decreases.

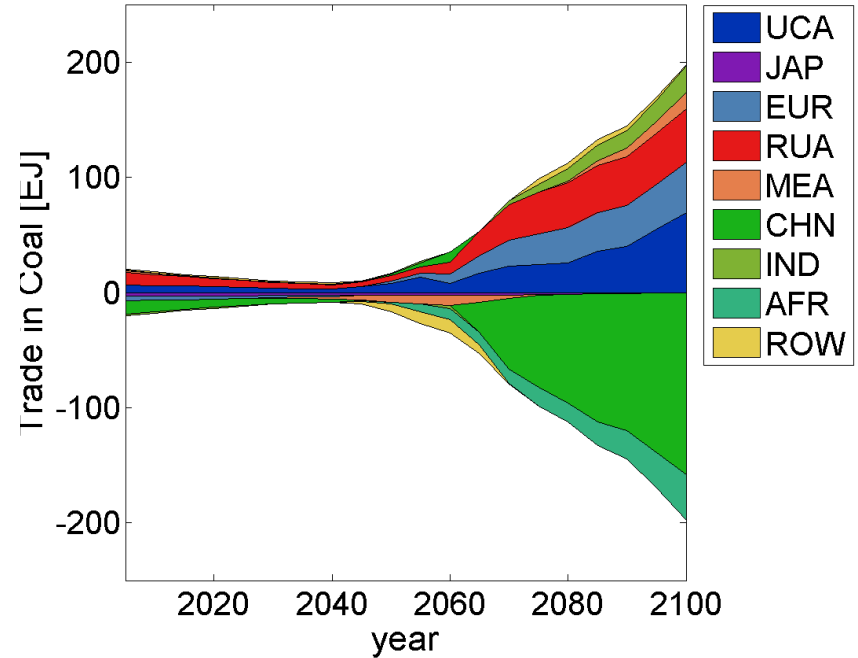


3. Trade results: Coal

Reference scenario

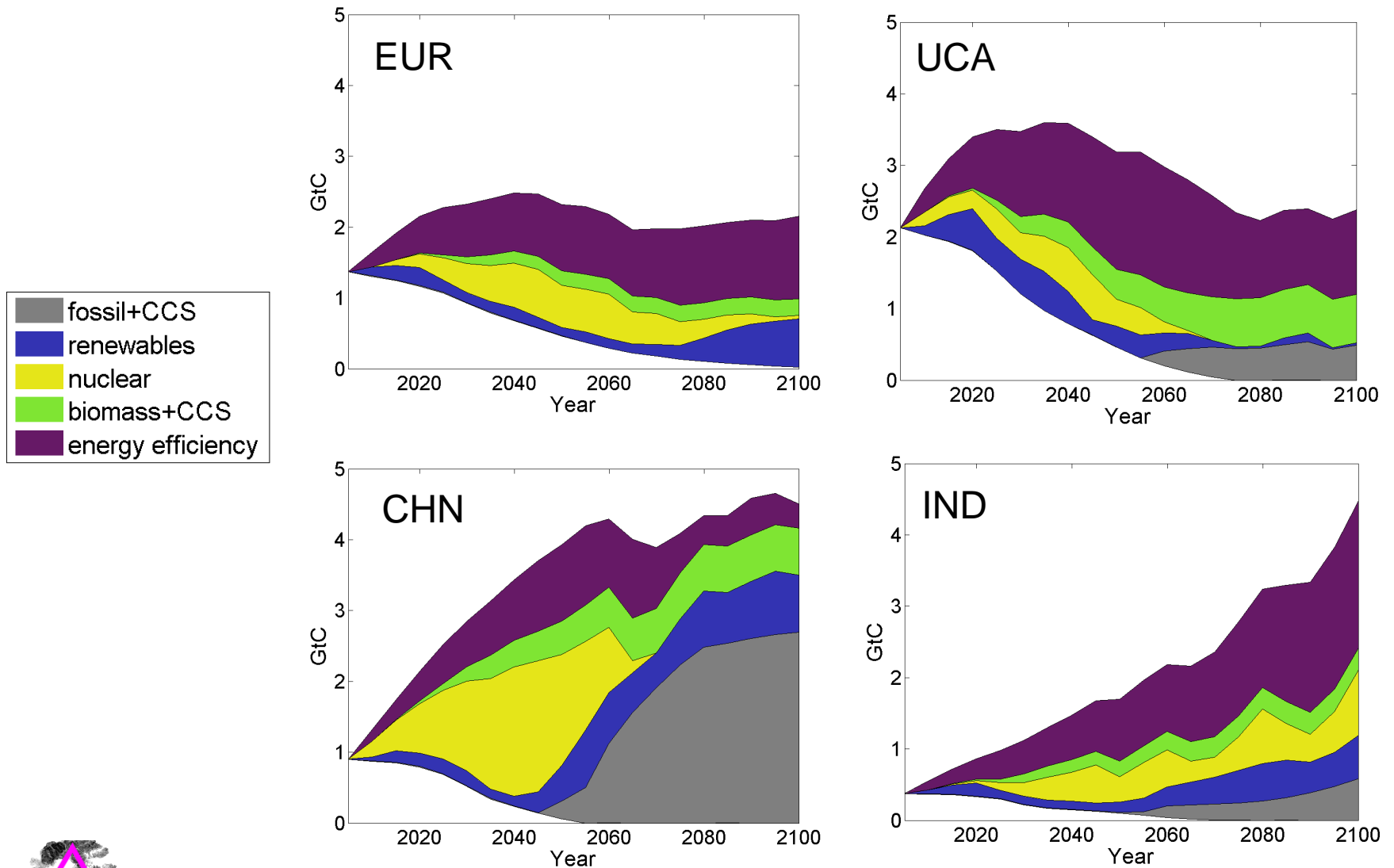


Policy scenario

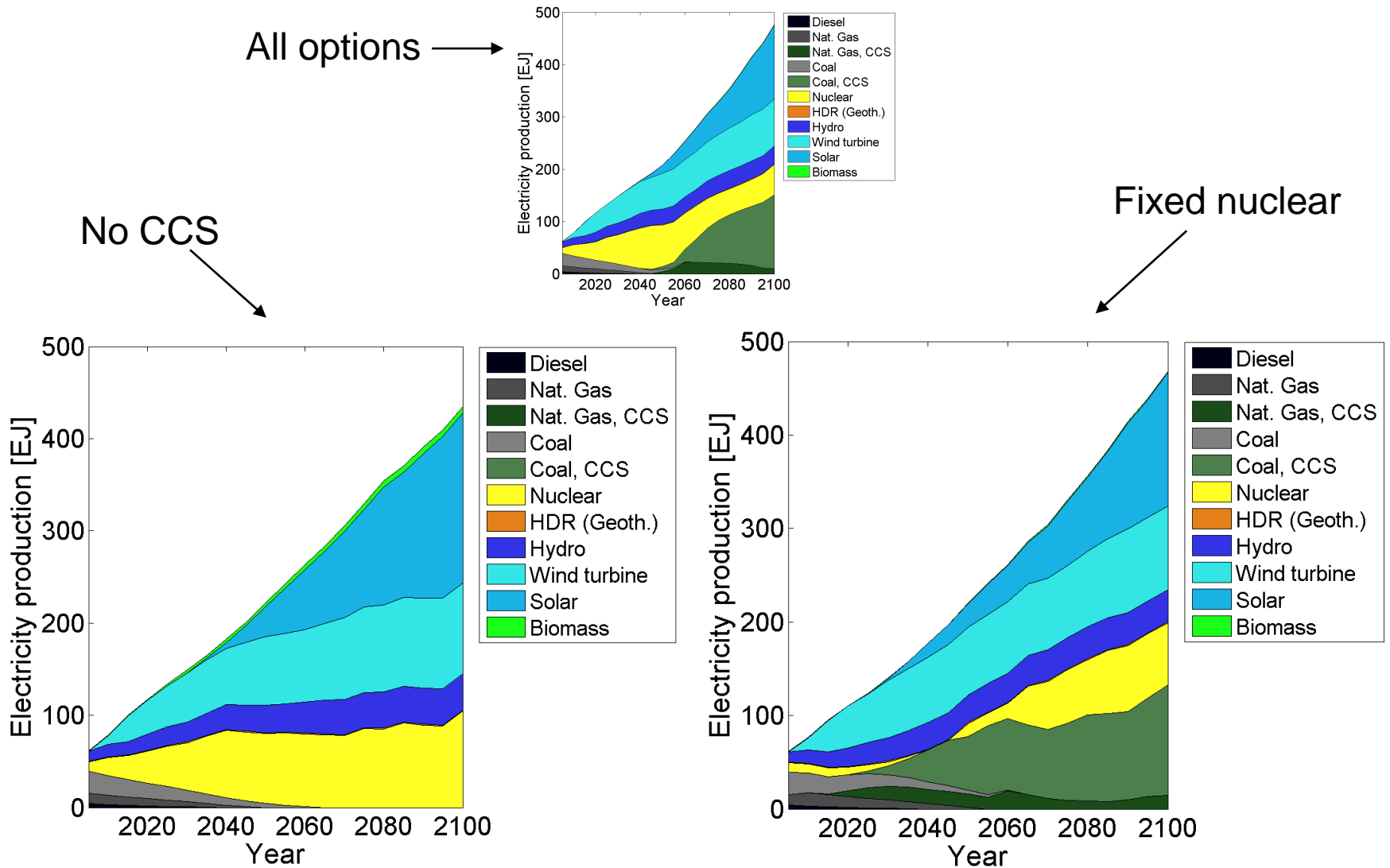


Until 2040: decreasing trade in coal in the policy scenario,
After 2040: increasing trade in coal in the policy scenario => CCS

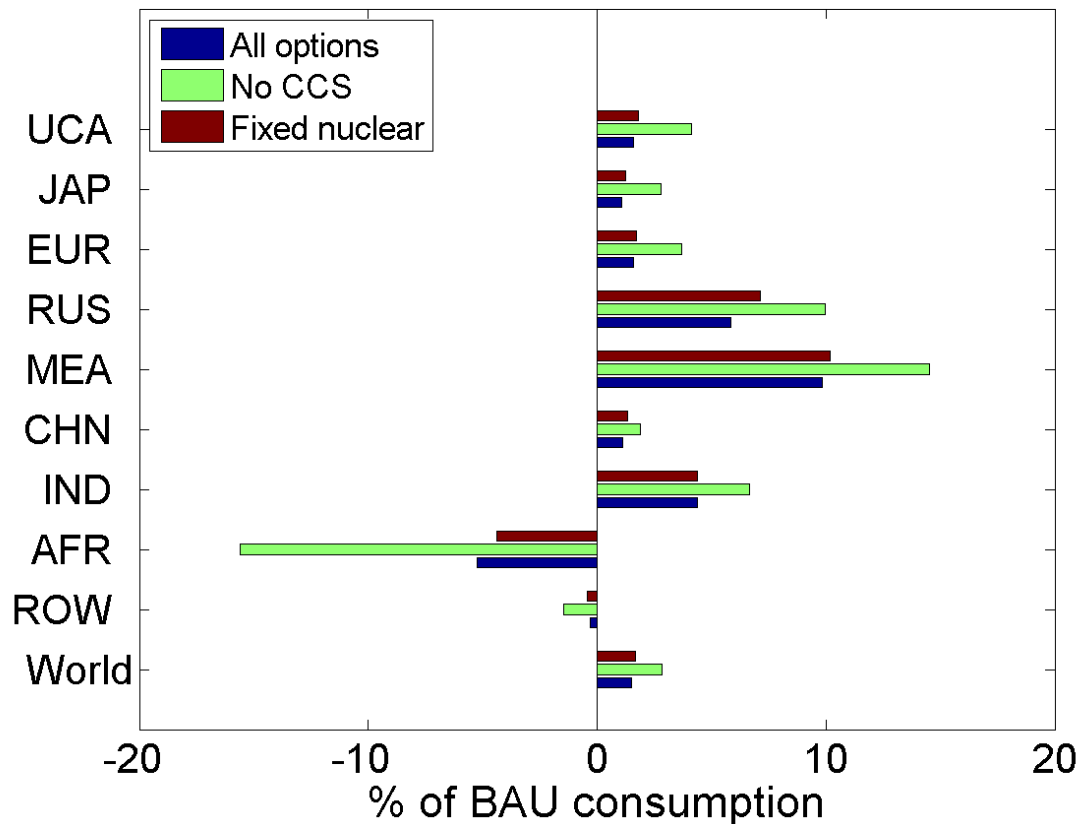
4. Mitigation wedges



5. Mitigation options



5. Mitigation options



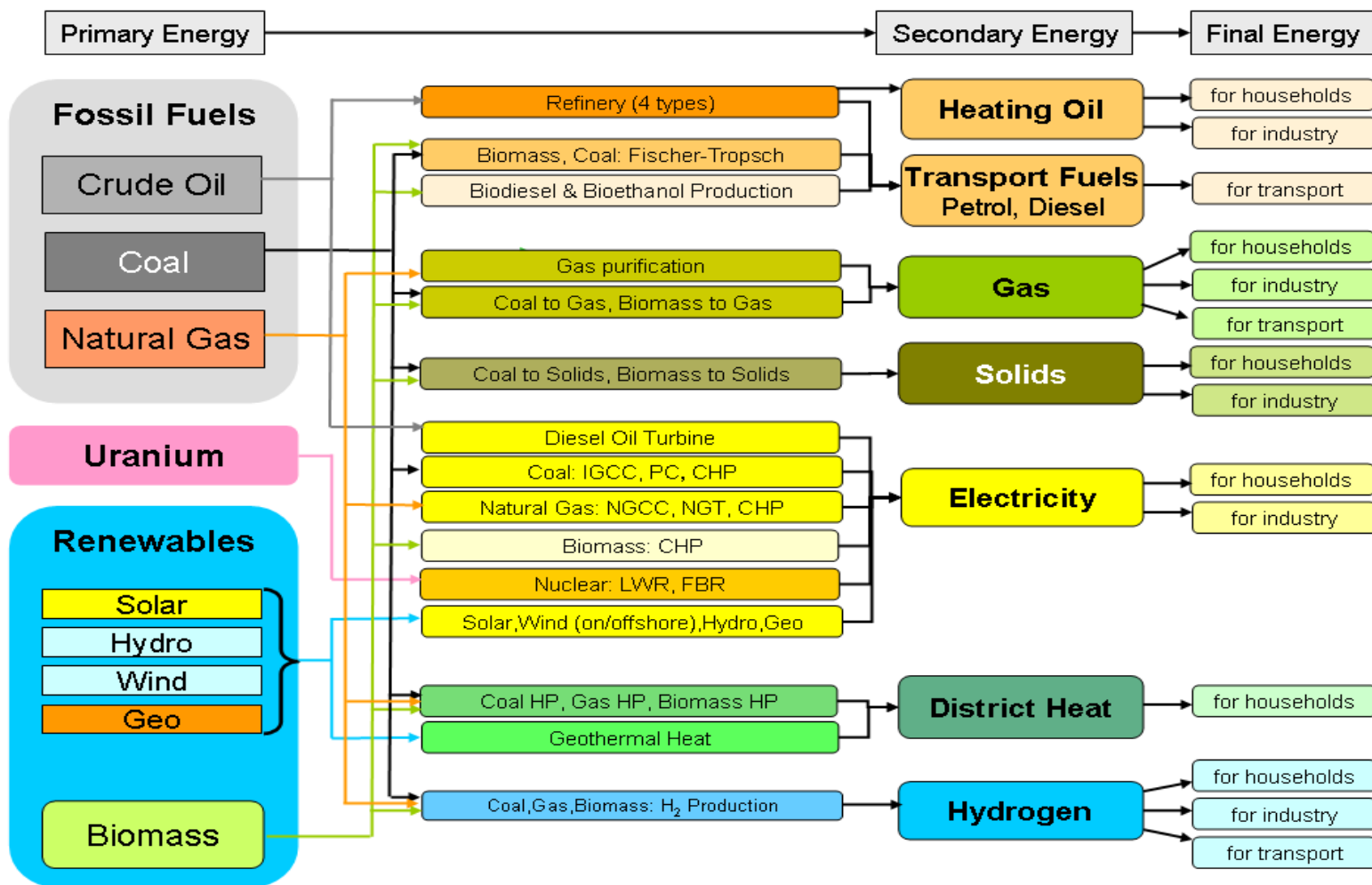
Doing without nuclear energy is not costly, but CCS option is important.



6. Conclusion

- 2°C climate target can be reached with costs of 1.5% of global GDP; however, regional costs vary significantly
- Terms-of-trade effects influence mitigation costs substantially: regions with high shares in trade of fossil resources (MEA and Russia) bear highest costs
- AFR can benefit from a global emissions trading system
- Regions pursue quite different technology strategies

Energy System Module

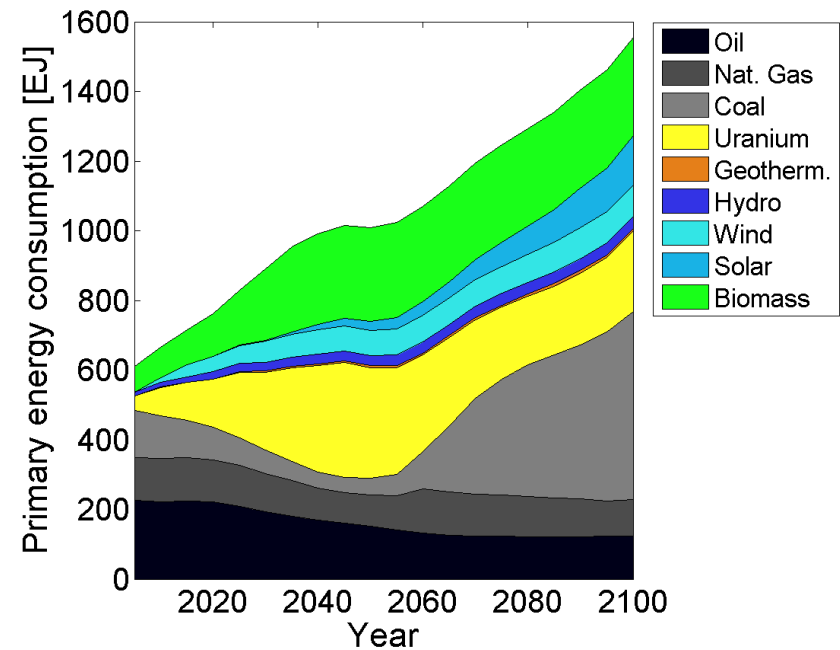
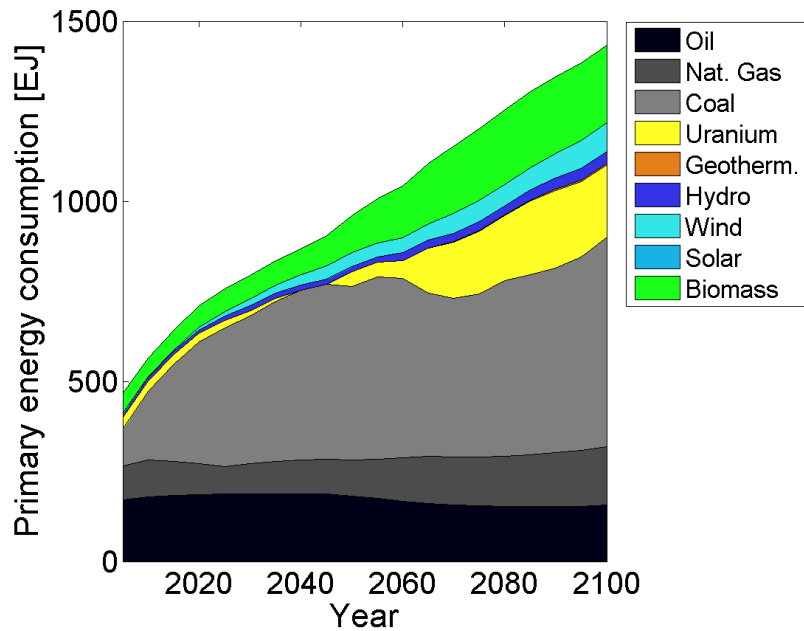


Policy regimes

- 2°C target
- 3 different allocation schemes:
 - 1. Contraction & Convergence (C&C)**
in 2010 – grandfathering
since 2050 – same per capita emissions
 - 2. Intensity target**
emission rights according to shares in world-wide gross product
 - 3. Multistage approach**
amount of permits depend upon per capita income



Primary energy production



3. Trade results: Coal

