Integrated modelling at CICERO:

A macroeconomic perspective on adaptation

Adaptation in current IAM : Adjust estimated damage costs for net benefits of adaptation to provide more realistic comparisons of the costs of mitigation and damage costs.

Poorly addressed : The choice of adaptation strategy: The relationship between adaptation and damage is unaffected by a change of relative prices spurred by climate change → A lost opportunity

Approach in the CGE-model GRACE:

Step 1: *Integrated assessment of impacts*

Impact functions for*:*

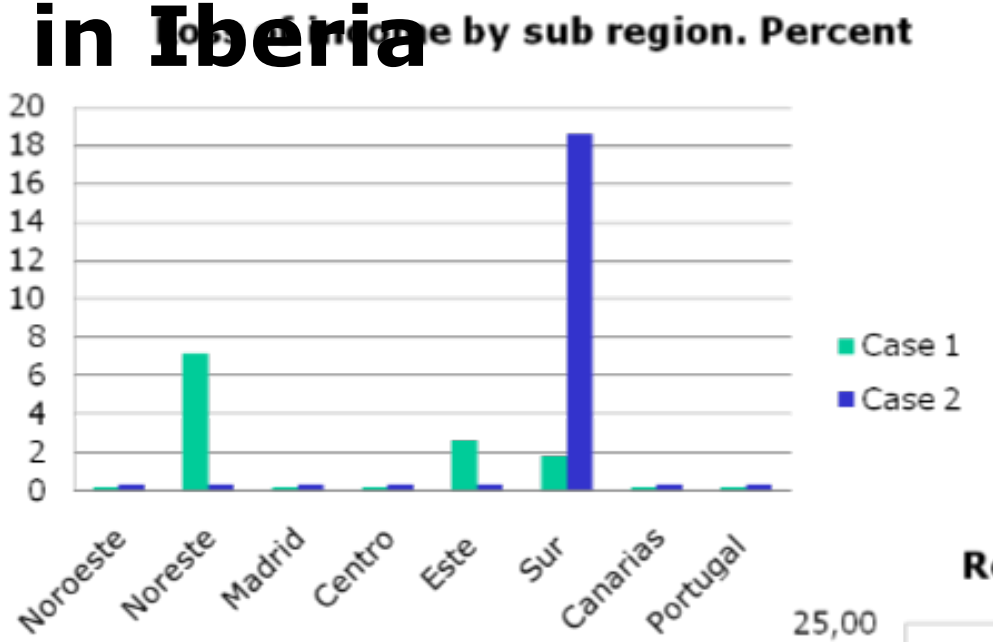
- Loss of natural capital (agriculture, fisheries, forests)
- Loss of real capital (extreme events)
- Loss of human capital (health effects)
- ”Technology” (input of energy, transport by sector)
- Preferences (energy and transport demand, tourism)

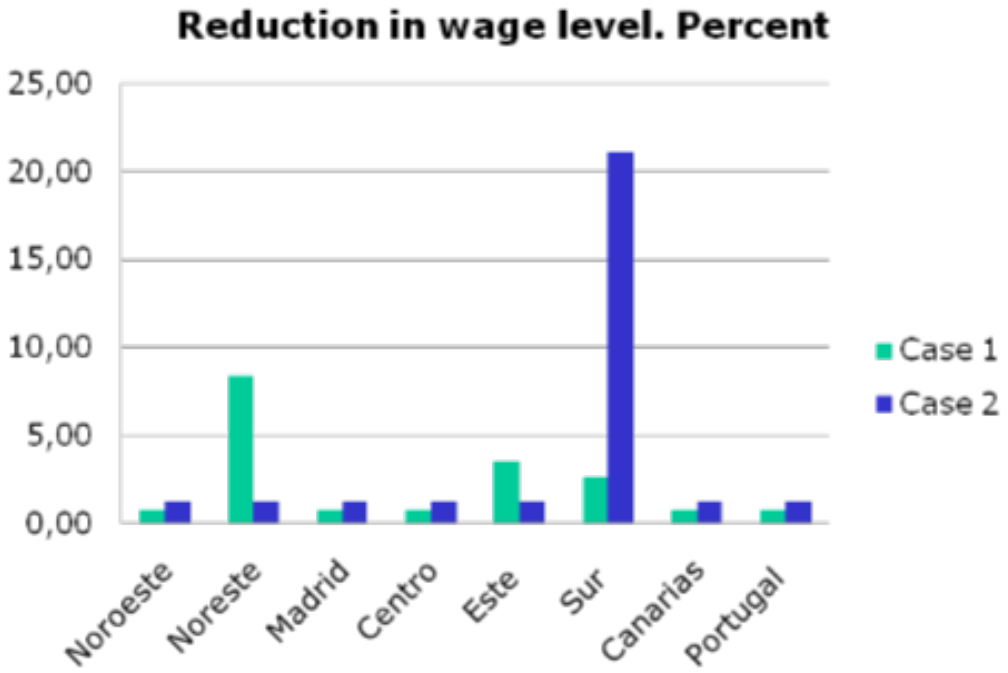
Approach… (cont.)

Step 2: *Split into "local" markets to allow for variability of impacts and vulnerability*

- Technology and preferences are invariant across sub-regions in basis
- Split activities into sub-regions according to main indicators (GDP)
- Include impacts by sectors and sub-regions
- Put constraints on mobility across sub-regions

Example: Variability of impacts in Iberia





Applications:

- Addresses possible needs for *national* strategies for adaptation
- Consistency between economic behaviour and adaptation to climate change
- Enables analysis of the fact that adpatation takes time: Sudden changes are more costly than smooth changes

- *Current projects* : Ensembles, ADAM, IMPLICC, NorClim