

# **Modeling Tools: Choice of Policy Instruments and Mitigation Options. (Additional) Experience and Insights from Modeling for the EU ETS**

**Partnership for Market Readiness (PMR)**

**Fourth Technical Workshop: “Instrument Choice for Mitigation: Modeling  
and Analysis & Data Management and Reporting”**

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- **The views and opinions presented in this paper are partly based on results from research commissioned by the German Federal Ministry for the Environment, Nature Protection and Reactor Safety, the German Federal Environment Agency and the European Commission.**
- **The contents of this presentation does not necessarily reflect any official position of Germany or the European Union.**

- **Making a choice and building support for GHG mitigation**
  - Building the (numerical) case for GHG mitigation goals
  - Compare different policy options (to go beyond core beliefs)
  - Identify coverage options (from a top down perspective)
  - Disclose implications (costs, terms of trade, carbon leakage, etc)
- **Specification, implementation and parameterization of an ETS**
  - Setting the cap (also: building the basis for review & adjustment)
    - defining the efforts (difference between BAU and the cap)
    - allocate efforts to traded and non-traded sectors
    - identify and reflect policy interactions for traded sectors (renewable energies, energy efficiency etc.) as well as between traded and non-traded sectors
  - Parameterizing a wide range of ETS provisions (offsetting entitlements, new entrant reserve, etc)
  - Specifying compensation measures (consumers, carbon leakage)

- **Making a choice and building support for GHG mitigation**
  - Macroeconomic (top down) models, e.g. CGEMs, for the big picture (at least mainly used for this purpose in the EU)
    - reflect the complex interactions within an economy (aggregate impacts, distributional effects)
    - allow to sketch interactions with the international market
  - Useful but need complementary analysis
    - general equilibrium approach is comparatively easy to calculate but does not necessarily reflect full reality (market distortions, policy interventions, technological progress, locked potentials, etc)
    - results are informative in terms of relative changes but often exaggerate impacts & underestimate benefits
    - difficult to reflect some important features of ETS or other policies (e.g. compensation measures or other constraints)
  - Building sufficient transparency is a significant challenge

- **Specification, implementation and parameterization of an ETS**
  - Simulation (bottom up) models often more suitable (at least mainly used for this purpose in the EU)
    - more reliable in terms of absolute trends
    - more robust in terms of results (directly linked to ETS, e.g. carbon price, distributional effects in more detail)
    - more sector specific
    - allow better technology foundation
    - allow better representation of policy interactions
    - allow integration of many real-world features of an ETS (allocation, other compensation measures)
    - (allow regional attributions)
    - have a potential (!) to be more transparent
  - Simulation models need to be designed to reflect ETS sufficiently (coverage, allocation, etc)

- **Reflecting different purposes of modeling is important (and should be considered from the beginning)**
  - Tier 1: Informing policy makers (and the public) on the existing choices on goals and policy instruments at an aggregate level
  - Tier 2: Specification, implementation and parameterization of ETS
  - Both tiers should not be mixed up but somehow be consistent
  - Both need carefully reflected methodological approaches
  - Both need preparation, resources and sufficient lead-time
- **Transparency on modeling and modeling assumptions is of key importance (and needs learning ...)**
  - To build robust grounds for fundamental political decisions
  - To build a reliable basis for designing certain ETS provisions
  - To provide also sufficient data for reviewing and adjusting ETS provisions
  - (Independent) review of methodologies, data and results

**Thank you  
very much**

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