

Modeling Greenhouse Gases Abatement Scenarios with World-MARKAL: A Comparative Analysis of Permit Allocation Schemes

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The participation of all countries will be essential to stabilize the greenhouse gas (GHG) concentrations. However, sharing of the burden raises many debates on equity. We analyze burden sharing for 15 regions under global GHG abatement scenarios, using equitable permit allocation schemes. The World-MARKAL model, a techno-economic linear programming model of the energy-environment system, is used to determine the cost-efficient opportunities and compute the gross abatement costs (before permit trading) for each region. The allocation schemes are derived from a multicriterion model; together with the MARKAL solution, they define permit trading and cost of trading for each region. The regional net costs are discussed.

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