

Internalisation of External Costs - Insights from Global Markal Model

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The Global MARKAL-Model (GMM), a multi-regional "bottom-up" partial equilibrium model of the global energy system with endogenous technological learning, is used to address impacts of internalisation of external costs from power production. This modelling approach is imposing additional charges on electricity generation, which reflect the costs of environmental damages from local pollutants (SO₂, NO_x) and climate change. Technologies allowing capturing of pollutants emitted from power plants are introduced into the energy system, like desulphurisation, NO_x removal, and CO₂ scrubbers. The model indicates substantial changes in the electricity production system (technologies penetration and fuel switching), caused by internalisation of the external costs and efficiency loss due to the use of scrubbers.

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