

THE DUEL BENEFITS OF GLOBAL EMISSION REDUCTION SCENARIOS: REDUCED ENERGY IMPORT VOLUMES AND REDUCED ENERGY IMPORT VALUES

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Overview

The POLES energy model has been used to highlight the duel benefits of global reduction scenarios to energy importing countries showing that reducing both their energy import volumes and also the value of imports via the important role of reduced international energy prices in reduction scenarios. Both these impacts are analysed in this paper. The costs of reaching ambitious emission reduction targets are offset by significant ancillary benefits, such as reduced energy import bills. Lower energy prices account for a share of the import bill reductions.

Methods

The POLES (Prospective Outlook for the Long term Energy System) model is a global sectoral simulation model for the development of energy scenarios until 2050. This model provides key inputs to European Commission Energy and Climate change policy discussions.

The dynamics of the model is based on a recursive (year by year) simulation process of energy demand and supply with lagged adjustments to prices and a feedback loop through international energy price, thus energy prices are endogenously calculated in the model as a result of balancing supply and demand.

Energy prices (which are different per regional market) are calculated endogenously in the POLES model as a result of the balance between supply and demand.

A Reference Case representing a 'business as usual' pathway is compared to a Reduction Scenario which would bring the world onto a pathway that would limit global temperature increase to 2 degrees.

Results

Reduced expenditure on fossil fuel imports in the Emission Reduction scenario is based on lower demand but also on lower international energy prices. This demonstrates the effect of the lower prices on the fuel bill, where the considerably reduced energy prices of the POLES Reduction scenario compared to the Reference scenario account for a major share of the fuel bill savings.

For Europe 24% of the import bill reduction in 2050 is due to lower energy prices, in China it is 31% and in India it accounts for almost half of the energy import bill reduction at 46%. This highlights the fact that if a country that is an energy importer reduces its energy consumption and therefore its energy imports it stands to benefit from significantly reduced import bills even in the absence of globally reduced energy prices from global action to reduce energy consumption. However if a majority of countries act in concert to reduce CO₂ emissions and energy consumption, each energy importing country stands to benefit also from the reduction of international energy prices.

Conclusions

Whilst there is significant effort and costs involved in the world achieving its emissions reduction targets, it should not be forgotten that offsetting those costs are significant ancillary benefits, such as reduced energy import bills and reduced air pollution. The global reduction of energy prices that accompany the emission reduction effort amplify these ancillary benefits.

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