

GHG emissions-reduction targets applied to Spain: A dynamic approach for the climate change road to Paris agreement

Topic: (3.5) Designing of Energy Policies with I-O

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Recent warnings about the impacts of climate change have led international climate negotiations to focus on the necessary global long-term goal (LTG) presented in the Paris agreement (COP21). Over 120 countries, numerous non-governmental organizations, and many corporate leaders support LTG propositions on the basis of voluntary cooperation and widely disseminated information on national contributions, to achieve sustainable development with zero emissions by 2100, compatible with the achievement of poverty eradication and equity (see IPCC (2014) and FCCC (2015)). However, the starting point for each country and agency differ considerably, and specifically- defined national objectives are demanded necessary.

Based on a Computable General Equilibrium (CGE) model, calibrated with Spanish data for 2010 and including GHG emissions and energy demands, this article considers the Paris Accords by defining and comparing a range of dynamic 2010-2100 scenarios in which the Spanish economy advances to zero emissions. We also evaluate the long-term economic and environmental impacts to 2020, 2030, 2050 and 2100. Specifically, our simulated scenarios are based on criteria from the Paris agreement and the EU climate strategies and targets, considering Spain. These scenarios define, on the one hand, improvements in the use of energy produced by the current technologies, in other words, the reduction of the unit direct coefficient of emissions from productive activities and from households. On the other hand, we also evaluate the impacts of technological improvements in the use of energy, both in production and households, implying a better use of technology.

Our findings suggest that significant emissions reductions could be achieved, compared to the expected evolution if nothing is done, reductions which are undoubtedly very important to progress in the battle against climate change.