

Evaluating the socioeconomic and environmental implications of the Spanish Renewable Electricity Promotion Policy in the decade 2000-2012 using Multiregional Input-Output Analysis

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

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Energy has been one of the main drivers of economic growth for societies along the history. But at the same time, it is still responsible of many environmental impacts, being one of most relevant climate change. Fossil fuels have been intensively used in the energy and transport sectors, causing their depletion and increasing the greenhouse gas (GHG) emissions concentration in the atmosphere. Society concerns for environment and sustainable growth have put pressure on policy makers so that other alternative energy sources are promoted. Based on this, several objectives and targets have been set by many countries to increase the role of renewable energy in the energy transition towards a low carbon economy.

Spain, as a Member State of the European Union, has made important efforts in the last decade to achieve the committed targets (20% of final energy consumption from renewable energy by 2020 and 27% of final energy consumption from renewable energy by 2027). Besides the reduction of GHG emissions, energy transition towards renewables can bring other positive impacts such as a decrease of energy dependency, the improvement of the balance of payment and the stimulation of the economy.

In this sense, the proposed study aims to analyze the energy transition in Spain from 2000 to 2012, focused on the electricity production. At the beginning of this period, 36% of the electricity was produced from coal, 9% from natural gas while renewable energy had a very low contribution (around 2% excluding hydro). At the end of the proposed period, the contribution of renewable energy has increased to around 24%, while there has been a decrease in the use of coal (16% of the share). The socio-economic effects of this transition, in terms of value added and job creation, as well as the environmental implications, in terms of GHG and cumulative energy demand are here estimated. An Environmentally Extended Multi-Regional Input-Output Framework together with process-based LCA emission factors for the different energy technologies are used to analyze the whole life cycle and therefore the whole supply chain, taking into account the economic relationships, both direct as fuel suppliers and indirect, among the countries. The World Input-Output Database, together with other public data will be the base of the analysis.