

Environmental, economic and social impact of the Portuguese renewable energy policy in 2000-2010

Topic: Energy Systems

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In the past two decades Portugal pursued aggressive policies to promote renewable energy using feed-in tariffs and various other incentives. These policies have been very successful, leading to high penetration rates. For example, wind power accounted for 16.8% of electricity production in 2010, up from 0.4% in 2000. Such massive changes in the structure of the energy sector have had important environmental, economic and social impacts. The present paper quantifies the direct and indirect impacts of Portuguese renewable energy policy in the period 2000-2010, using Input-Output analysis. To do so a hybrid model is constructed, combining a foreground detailed model of the energy sector and a background model of the rest of the economy. The impact of energy policy in any given year is then assessed as the differential between the historical observation and a counterfactual scenario in which the energy structure from the previous year is kept fixed. The analysis distinguishes impacts from operational costs, from investment and from the opportunity costs stemming from energy subsidies. In spite of the evolution of the energy technology mix, capital investment always leads to positive impacts, whereas subsidies always lead to negative impacts. The overall result shows a positive contribution of renewable energy policy to economic growth, employment and GHG emissions reduction prior to 2009, and a negative impact thereafter.