ASSESSMENT OF THE (MAGNITUDE AND LOCATION) OF SOCIO-ECONOMIC BENEFITS OF SPANISH BIOFUEL PRODUCTION

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Overview

Over the last few years, biofuels' support policies in Europe have been justified based on the benefits that these fuels have, in comparison with conventional fossil fuels, in terms of climate change mitigation. Although many studies have later shown the importance of other environmental impacts (Lechón et al, 2007), it is desirable to expand the sustainability assessment of biofuels by considering not only its environmental but also the socio-economic impacts.
In this context, CIEMAT has conducted several studies, commissioned by the Ministry of Agriculture, Food and Environment, aimed at assessing the sustainability of biofuels production in Spain. The objective of the study presented here is to estimate the direct and indirect socio-economic effects associated to biofuels production in Spain in 2011, measured in terms of additional economic activity and employment creation in Spain as well as in the countries where the raw materials are imported from.

Method

The Input-Output Analysis has been chosen as the most appropriate method to estimate both direct and indirect socio-economic effects of the two main biofuels produced in Spain: bioethanol and biodiesel. The National Energy Commission (CNE) annually publishes figures on biofuels consumption and production as well as data concerning the amounts and origin of the required raw materials (CNE, 2013). Due to the relevance of imported goods in the production of biofuels in Spain, not considering such imports and using the Spanish Input-Output would led to misleading results. Thus, the World Input-Output Database (Timmer, 2012) is a more suitable analytical tool for the goal of the study. This database includes national input-output tables for more than 50 countries and regions, distinguishing between 35 economic sectors.
Investment as well as operation and maintenance costs data have been taken from the Renewable Energy Plan 2011-202, published by the Institute for Energy Diversification and Saving (IDAE, 2011).

Results

Results have been divided into three stages associated to: (i) investment, (ii) operation and maintenance and, (iii) raw materials. Additionally, and as mentioned before, the socio-economic impacts resulting from the domestic and non-domestic demands are distinguished. Similar results have been obtained in relation to the production of 1 kg of each biofuel, being the multiplier effect in both cases higher than 2, although some difference can be found if results are analysed by stages. Results show that the production of raw materials – which mostly takes place outside Spain-, has the highest contribution to employment creation and economic stimulation for both cases. This is especially the case for biodiesel due to the high demand of imported oil and seeds.

Conclusions

This paper has presented the application of a methodological framework to assess the direct and indirect socio-economic impacts of biofuels production in Spain in 2011. The obtained results increase the knowledge of biofuels sustainability as they complement other environmental studies. Under the analyzed context in 2011, biofuels production in Spain had a positive effect both in terms of economic activity as well as employment creation. Results have highlighted the relevance of imported goods. In this sense, supporting policies that promote the national agriculture sector would lead into higher positive effects in the whole national economy. Through this analysis, sectors that contribute the highest to these effects

have been identified.

References

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