

Socioeconomic impact of the renewables: the effect on the regional structuring

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Overview

As employment appears as an essential aspect in all of the regional structuring policies where the establishment of new sectors of activity and the lifting effect on existing sectors are the basis on which the population is stabilised and reinforced, can the promotion or renewable energy in rural areas be an opportunity to counteract migration to towns?

Aragon is a region located in the north east of Spain, with a surface area of 47,719 km² and the lowest population density in Europe (28.2 inhabitants per km² according the Aragonese Institute of Statistics 2011). More than 95% of the region of Aragon is included in the range of application of the Law 45/2007¹ and approximately 42% of the Aragonese population lives in the countryside, where its population density is 3 times below the national average.

Considering Aragon as a case study, the aim of this paper is to contextualise the socioeconomic impact of using renewable energy in a regional scope and measure this one through a set of indicators. This will serve the purpose of demonstrating the potential of the renewable energy sector to reinforce economic activity, employment and social well-being in the countryside.

Methods

The field work was one of the main actions of this study: the search for information was performed by means of a survey aimed at company managers. Simultaneously, a number of semi-structured interviews were held with key players in the economy of Aragón who, with knowledge of the sector from different angles, could help to complete the current image and establish predictions for its evolution.

Results

The sector of activity

¹ The Spanish Law 45/2007 is the instrument for implementing the policy aimed at correcting the imbalance between the rural areas and cities within the same autonomous community and the definition of regional structuring used in this study was also obtained from it.

As a result of the availability of excellent resources (human, physical and natural capital) and the energy policy developed by the regional authorities in Aragon, the renewable energy sector was, without doubt, the green economy activity that has experienced the most marked growth in terms of number of companies [1], although this has slowed down in recent years.

According to CIRCE directory of renewable energy, in mid-2013 the sector comprised 250 companies, most of them SMEs. A rural setting is linked to 31% of the companies (45% in the rest of the economy), although there are differences between areas. The volume of business generated by the companies that comprise the renewable energy sector in Aragón is 1.46% of the GDP, a contribution that has remained barely unchanged along the last years.

In addition, the productivity in the renewable energy companies analysed, calculated as GVA per employee is 7% higher than the average productivity of the Aragonese economy.

The generation of employment

Using the information provided by the companies, around 9500 direct jobs were estimated. Of these, 60% are in the countryside (compared to 41% in the Aragonese economy as a whole). This serves as evidence that the employment generated in green companies can be considered a factor of interest for the structuring of the region.

In this point the study had to respond to the following question: Does renewable energy promote a significant employment creation in Aragon? [2]

In this regard, authors demonstrated in previous papers that these differences regarding the intensity of work throughout the value chain of the sector, in conjunction with its structural characteristics in a certain region, can explain different trends in the generation of employment [3,4].

Due to all of this, the key characteristics of the employment were defined according to the stage of the value chain in which it originates concluding that the employment more likely to remain in the region is related to the stages of operation and maintenance, moreover, and is not very labour intensive, so it is expected that renewable energy will not generate large volumes of employment in rural areas.

The quality of the employment

Some studies on the subject point out how the employment generated in green economy sectors and in particular those of renewable energy meet certain characteristics due to which they can be considered “quality employment” such as the proposal of the UNEP [5]. Out of the ten indicators of the quality proposed in [6] those associated with essential matters for regional structuring were selected by the authors for analysis.

Estimates on the basis of the information provided by the companies allow to conclude that the renewable energy sector has good qualitative indicators in terms of both security/stability (95% of the ongoing employment is full time) and levels of specialisation (57.4% of the staff has a high and medium level of specialisation), and reasonably good in terms of salaries (66% above the threshold considered for evaluating whether it generates well-being and high in relation to the cost of living in rural areas). With regard to the very low level of incorporation of women in this subsector (only 26% of the employment), this could be the result of the links of these occupations to maintenance work, and to unreported activities to a certain extent.

Conclusions

The renewable energy sector is one of the key sectors for sustainable rural development of Aragon still having the potential to grow despite the technical maturity reached in some of the technologies used. This does not mean that it cannot continue to grow or improve in terms of productivity or competitiveness, but that it is highly likely that this will not happen abruptly.

Its potential for generation of new employment in the countryside is medium to low although it could be reinforced with actions aimed at encouraging the stages in which the volume of job creation is greater.

Moreover, in the event of any initiative aimed at promoting renewable energy as a factor in regional structuring through the generation of employment it is necessary to further analyse the impact that the different stages have on employment, to provide key lines of action that boost the generation of employment in any determined stage that is of interest, whether through promoting innovation (that increases the impact on the local economy of the employment in the first stage) or the professional training (that favours the establishment in the region of manufacturing plants of components and technology or reduces the need to use foreign installers).

Despite the construction of new installations, the qualitative indicators analysed offer a good perspective in the fields of salary, security and professional specialisation that, in conjunction with the possibility of

generating supplementary income, may be an incentive for stabilising the population in rural areas and contributing to regional structuring.

References

1. Zabalza I, Aranda A, Scarpellini S, Llera E, Martínez A. “Las energías renovables en Aragón. Zaragoza: Consejo Aragonés de Cámaras Oficiales de Comercio e Industria, Confederación de Empresarios de Aragón, Caja de Ahorros de la Inmaculada; 2009. Available: http://www.camarazaragoza.com/docs/Energias_renovables_Aragon_12272.pdf
2. Kammen D, Kapadia K, Fripp M. Putting renewables to work: how many jobs can the clean energy industry create. Report of the renewable and appropriate energy laboratory. Berkeley, CA: University of California; 2004.
3. Llera E., Aranda A., Zabalza I., Scarpellini S. (2010) Local impact of renewables on employment: Assessment methodology and case study. *Renewable and Sustainable Energy Reviews* 2010, 14(2): 679-90
4. Llera E., Scarpellini S., Aranda A., Zabalza I. (2013) Forecasting job creation from renewable energy deployment through a value-chain approach. *Renewable and Sustainable Energy Reviews* 2013, 21: 262-271
5. UNEP (2011). *Towards a Green Economy: Pathways to Sustainable Development and Poverty Eradication*. United Nations Environment Programme. http://www.unep.org/greeneconomy/Portals/88/documents/ger/ger_final_dec_2011/Green%20EconomyReport_Final_Dec2011.pdf
6. COM(2001) 313 final, 20 June 2001 communication of the European Commission to the Board, the European Parliament, the Economic and Social Committee and the Committee of the Regions entitled “Social and employment policies - A framework for investing in quality”