Written on the wind
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Is the debate surrounding renewable energy missing important facts around localized benefits and job creation? The true value-creation potential of wind energy may be higher than first thought. Report by Alexis Gazzo.

European policy makers are facing difficult decisions regarding which renewable energy sectors and technologies offer the most efficient and secure energy solutions. In most cases, they are relying on a comparison of the respective Levelized Cost of Energy (LCOE) of technologies, which assess the relative cost of a source of electricity in terms of kilowatt-hour over the lifetime of a project.

However LCOE seldom provides a comprehensive analysis of the additional economic benefits or costs of an energy technology. Our study, conducted at the request of Acciona and EDP, presents a more integrated analysis of the value creation potential of wind energy to better support energy policy decisions. We compared wind energy and Combined Cycle Gas Turbine (CCGT) technology using several parameters not usually covered by the economic analysis of wind projects. Our findings show that wind power, while incurring, in most cases, a higher cost on the basis of LCOE analysis (compared with fossil-fuel-based generation), triggers additional returns for the domestic economy by generating local added value and job creation.

Higher GDP

Wind energy provides a high contribution to Gross Domestic Product (GDP) in most European countries – generating a higher gross value added (GVA) per megawatt-hour (MWh) than CCGT. For instance, in Spain, the costs required to produce 1 MWh from wind will generate €56 of GVA, compared with €16 for 1 MWh produced from CCGT. This result can be explained mostly by the fact that many of the costs of CCGT relate to fuel costs and, because many European countries import much of their natural gas, these expenditures generate few benefits for the domestic economy.

Also, the industries and services involved in the entire value chain of wind energy have, in global terms, more local added value than in the case of CCGT.

It is worth noting that, while these results held true for all of the European countries we analyzed, results did vary significantly between countries that rely on significant imports of fossil fuels, such as France, and those that have a larger domestic supply, such as the UK.

Gross value added in euros discounted per MWh produced in Spain

Creating more jobs

Wind has significant job creation potential. Jobs are created right across the value chain as well as in the wider economy due to the income it generates.

Job creation is presented in “job year” units, which correspond to one full-time-equivalent job during one year per million euros invested (discounted value) to show the efficiency of the investments in terms of job creation. In Spain and France, wind creates twice as many jobs than CCGT per million euros invested. In EU27, wind creates 21 job years per million euros invested, compared with 13 for CCGT. Much of the difference can be explained by the fact that a high share of the costs of generating electricity with CCGT is “exported” through fuel costs.
Extra tax revenue

Wind electricity generates more tax revenue than CCGT. While both energy sources generate tax revenue by creating local value and jobs, our model calculations show that €1 spent on electricity from wind generates between €0.27 and €0.52 in tax revenues in Europe, depending on local tax policies. In particular, the “tax return” rate is above €0.50 in France and Germany. Tax revenue mostly comes from VAT and corporate taxes, although, in some countries, social taxes can be a significant source from employers and employees.

Adding to the debate

Despite a higher up-front cost in €/MWh, wind technology triggers higher returns for the domestic economy by generating local added value and jobs. In the end, combining the cost and benefit items, benefit from the LCOE (initial costs) and the GDP contribution (return on costs) shows a lower net cost of wind compared with CCGT for most European countries studied and at EU27 level.

The energy challenges facing European economies will require a diverse mix of electricity generation. Our findings show that wind energy may offer many advantages and potential to create economic value and should be considered by policy makers as they make decisions regarding current and future levels of support for renewable energy generation.

How Ernst & Young can help

Ernst & Young has in-depth knowledge across the entire value chain of the renewable energy industry, working in transactions, mergers and acquisitions (M&A), tax and financing. Our global teams engage closely with government and private sector clients to make the most of the growing opportunities in wind energy and other renewable sources.

For more information

Read more of our findings and methodology in our report Analysis of the value creation potential of wind energy policies Click here

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