economics for energy

Technology improvements can reduce around 40% of Spanish energy demand without cost or at very low cost.

- *For the first time in Spain, the annual report of Economics for Energy presents an estimation of energy demand reduction potentials and costs.*
- *The results indicate that it is possible to reduce energy demand in at least 25% until 2030, by simply employing those measures already planned and foreseen today. There is a further reduction potential between 15% and 20% if additional measures are taken.*
- *The report contributes to a reflection on current support schemes, indicating that current systems based on subsidies may not be desirable.*

Madrid, November 29, 2011. Technology evolution and political support for its implementation could reduce energy demand by 40% until 2030 compared to a scenario without energy-saving measures. This is the key conclusion of the report 'Economic potential of energy demand reduction in Spain', presented by the research center *Economics for Energy* this morning in Madrid.

This is the second annual report presented by the center, which in its first edition of 2010 concluded that savings between 1.5% and 3.5% of the GDP could be achieved if Spanish energy intensity reached the average value of EU15 member states (results vary depending on the oil price).

The report presented today in the headquarters of the National Energy Commission is an estimation of energy demand reduction potentials and costs, something which has not yet been estimated for Spain so far. According to Xavier Labandeira and Pedro Linares, directors of Economics for Energy, this information is especially useful and necessary for a proper design and evaluation of energy efficiency policies, which are a priority to increase energy security and to reduce emissions and energy expenses simultaneously.

The results show that in 2030 energy demand can be reduced to 2010 levels, which implies a reduction of 26% compared to a scenario without technological change. Moreover, new policy measures or increased technological innovation provide even more reduction potential; the proposed technological measures could yield additional savings of 20% over the scenario expected in 2030. Given that the study does not consider possible savings derived from behavioral changes, information policies designed to increase consumers' awareness or improved price signals could lead to even higher savings.

The report argues that leaving the investment decision on energy efficiency to the market would not yield optimal results, particularly when energy prices are low. This is still true if technological change is considered. In a low energy price scenario, a lower energy demand reduction of 15% compared to base levels would be achieved (although it is still a significant reduction).

Regarding costs, all scenarios show that at least 40% of the reduction potential could be achieved at negative costs, and over 60% would cost less than 50€/MWh (most fuel costs considered for 2030 are above this price), even if technology overlaps and a higher discount rate for the residential sector are considered. Cost differences among scenarios also hint at the high influence of energy prices: In the technological scenarios a price reduction of natural gas is assumed, leading in turn to a higher cost of energy efficiency measures because monetary savings are reduced. Therefore, it is especially important that energy prices reflect all costs in order to provide appropriate signals to save energy.

Priority measures

One important factor to reduce demand is the successful implementation of existing policies to promote energy savings. Examples are more efficient boilers in heating or improvements in the transport sector, which yield significant energy savings in the business as usual scenario.

The report's recommendations regarding the optimization of these policies for the future are focused on ensuring greater penetration of renewables in the electricity sector; reducing vehicle consumption through hybrids but also conventional cars; encouraging rail instead of road transport; and improving the efficiency of heating, and air conditioning in buildings through efficient boilers and heat pumps.

Possible cost reductions of certain energy efficiency measures are also considered in the technological scenario: efficient lighting, hybrid and electric cars. Additional efforts in R&D may be required to achieve the technological advances and cost reductions assumed in this scenario.

Recommended policies

Additionally, the report analyzes the effectiveness of different policies that may be established. In this sense, the main contribution of this report is the simultaneous estimation of potential capacities and cost reductions of energy demand in Spain. The results show a high reduction potential, achievable at low costs. However, the negative cost measures indicate the presence of non-economic barriers. According to the report, general subsidies to investment, which are quite common in practice, are not particularly useful to solve this problem because they only improve economic profitability (already achieved in many of the measures) without solving the problems of hidden costs, high transaction costs or non-economic barriers. Furthermore, the authors argue that taxes cannot solve the problem either, although they do provide a proper long-run signal and thus correct the effect on energy prices. In the end very specific and appropriate policies must be implemented to overcome the non-economic barriers that prevent low cost energy saving measures from being adopted.

The report recommends other policies, such as the implementation of flexible

standards, voluntary agreements, simplification of administrative procedures or direct bundled aids. However, the authors admit that this is a new field, without easy or obvious solutions, and international experience can only provide some limited guidance.

About *Economics for Energy*

Economics for Energy (www.eforenergy.org) is a private research center constituted as a non-profit association participated by Comillas Pontifical University, University of Vigo, the Institute of Fiscal Studies (Spanish Ministry of Economy), Barrié Foundation, Novacaixagalicia, Banco Santander, Gas Natural Fenosa, Acciona, Alcoa and Iberdrola.

The center is headed by Xavier Labandeira, Professor of Economics at the University of Vigo, and Pedro Linares, Associate Professor of Industrial Engineering at Comillas Pontifical University (Madrid).

The mission of *Economics for Energy* is to create knowledge in the field of energy economics, and to transfer this knowledge effectively to society, informing, guiding and advising public and private decision makers.

Its research lines are focused on the analysis of energy demand, innovation in the energy sector, the economic assessment of energy and environmental policies, economics of energy security and long-term energy and regulatory prospective.