How the E.U. energy mix must change

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Europe's 20-20-20 plan to reduce emissions by 20 percent and raise energy efficiency and use of renewables by the same proportion, all by 2020, poses real short-term challenges.

The World Energy Outlook, the flagship publication of the International Energy Agency, says Europe's plans for fighting pollution are insufficient. It is urging Europe to cut its emissions by 23 percent, three points more than the E.U. framework, by 2020.

Today, the E.U. still produces more than 50 percent of its electricity using coal, gas and oil. IESE Prof. Xavier Vives and researcher Giulio Federico feel that natural gas is a necessary energy to bridge the gap until renewables arrive on a major scale, but first one needs to ensure a supply that is stable, of high quality and competitive.

In "Energy Policies in the E.U.: Supply Security, the Environment and Competition," the authors describe the tough transition period that Europe will need to go through in order to achieve a greener, more sustainable future.

Energy importers

In 2007, Europe imported 57 percent of the energy it consumed, up from 44 percent in 1990. The rate is even higher for Spain, whose energy dependency is 80 percent.

One explanation is the greater consumption of natural gas, which is used to generate a fourth of Europe's energy supply. Even in countries where there has been considerable domestic production, such as the United Kingdom and the Netherlands, reserves are not sufficient, and gas production is predicted to fall by half across the E.U.

The International Energy Agency estimates that by 2030 the E.U. will increase its gas imports by between 37 percent and 65 percent. Given this dependence, it is imperative that Europe thinks carefully about the source of these supplies.

Depending on Russia

Russia has the largest natural gas reserves and is the single largest supplier to Europe. But the E.U. cannot rely on just one source, insist the authors, nor leave supply vulnerable to political conflicts, such as recent disputes involving Ukraine, through which the pipeline that supplies Europe passes.

The authors recommend diversifying the mix of suppliers. Spain, for instance, replaces imports from Russia with liquefied natural gas from several countries.

New pipelines are planned apart from two in the works from Russia, including one connecting Europe to Iran, Turkmenistan and Azerbaijan, but construction on those won't start until 2011. In theory, these new pipelines would offer enough capacity and sufficient alternative suppliers through 2030. Once completed, gas would become more competitive and flexible contracts could be negotiated.

Curbing climate change

Until now, the Kyoto Protocol has served as the main policy framework for emissions reductions, calling for an 8 percent cut by 2012 in comparison with 1990 levels. As of 2008, the E.U. had met half this target, and is expected to do so fully, thanks mainly to the efforts of Germany, France and the United Kingdom.

One of the successes of the protocol is the ETS system, an open market in which member states can trade in emissions rights. The use of renewable energy sources has also been promoted, to the point where they met 15 percent of total demand in 2007, according to Eurostat.

So far, the E.U. has gone from an electrical generation ratio of 600 tons CO2/GWh to 450 tons. This was a necessary step forward, but not enough, say the authors. Experts say that in order for the rise in global temperatures not to exceed the critical threshold of 2 degrees, European electrical installations will have to reduce their emissions to 275 tons CO2/GWh.

In this context, natural gas loses its appeal in the long term, because the plants that use it surpass that limit by more than 30 percent. Natural gas may be part of the solution, but only

part, stress the authors.

No easy answers

The authors call for a profound transformation of the European energy market. They advocate coal-fired plants and doubling the use of renewable energy sources. The emissions market should reduce each country's allotments, and then consider how best to use the huge profits generated through the auctioning of these rights.

One can insist on encouraging the use of renewables, but the authors warn against overdoing it. For instance, solar energy carries with it a rate that is several times higher than that of its competition, generating a distortion that many people consider to be excessive.

Furthermore, the rise in clean energies ushers in a whole new set of challenges associated with managing systems based on intermittent sources of energy. This will require investment in new infrastructures aimed specifically at dealing with peaks in demand or lulls in production.

Nuclear energy, though relatively clean and cheap, nonetheless produces waste and is not popular with the public. Provided that nuclear energy will not be enhanced, then the cost of energy will inevitably go up, say the authors. Higher energy costs will mean higher domestic utility rates. In the United Kingdom, for example, these rates are forecast to go up by between 14 percent and 25 percent in real terms by 2020.

Unpopular? Certainly! But given the dire warnings of the scientific community, it is hard to put a price on the fight against global warming. The worst thing, say the authors, would be to do nothing at all.

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