

# Science for Environment Policy

## Relationships between energy consumption and economic growth investigated

**Renewable energy plays an important role in economic development,** according to a recent study which investigated the relationship between economic growth and energy consumption in Europe.

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**Understanding the link between economic growth and energy consumption** is key to energy policies. It is recognised that energy consumption and economic growth are related, but the direction of this relationship is not always clear, for example, when does a country's economic growth stimulate energy consumption or when does increased energy consumption of a country promote its economic growth?

It is thought that an increasing share of renewable energy in the energy mix of a country can help meet the growing future demand for energy while influencing economic development. As well as reducing the environmental impact associated with fossil fuels, renewable energy sources can increase diversity of energy sources and, potentially, contribute to energy security and to the long-term availability of energy supply. Renewable energy sources can also promote regional development as they can be used in less developed areas without conventional energy sources, and could reduce costs associated with climate change.

In this study, the researchers explored the relationship between energy consumption and economic growth in the EU, using an average of all 27 Member States, plus Romania and Spain as examples of two individual Members States, for the period 1990 to 2010. The researchers tracked gross domestic product (GDP) per capita to represent economic growth. Energy consumption came from coal, oil, natural gas and renewable sources. Renewable sources included biomass, hydropower, geothermal energy, wind and solar energy.

Results from the analysis reveal that during this time, the share of renewable energies in the energy mix has been steadily increasing both in Romania and Spain, but also in the whole of the EU. For Romania, energy consumption, which is based on natural gas, petroleum products and renewables, is likely in the long-term to stimulate economic growth. For Spain, energy consumption, which is based on natural gas and petroleum products is also likely in the long-term, to stimulate economic growth. For the EU-27, in the long-term, energy consumption based on renewables and petroleum products are likely to stimulate economic development.

In the short-term, increasing energy consumption, including that from renewable sources, stimulates economic growth for Romania. Similarly, energy consumption, based primarily on natural gas, promotes economic growth in Spain in the short-term. But for the whole of the EU, in the short-term, there was no clear relationship between economic growth and energy consumption.

Renewables were seen to play a significant role in economic growth. In Spain, development of renewable energy is taking place at twice the rate of Romania, even though, for example, renewables accounted for about 7% of its overall energy consumption, compared with about 12% of energy consumption in Romania in 2007. The results of this study suggest that increasing exploitation of renewable energies would be beneficial to the Romanian economy.

Being aware of the marked influence of renewable energy on growth helps decision makers to define specific measures for developing the infrastructure needed to produce green energy. At the same time, decision makers are able to design aid schemes for promoting renewable energy and attracting investors.