Impacts of renewable energy promotion on income and employment in the Republic of Korea

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Abstract

Renewable energy promotion is considered together with energy efficiency improvement as the option to mitigate greenhouse gas emissions. As most renewable energy sources (RES) have not yet been economical compared to traditional fossil fuels, many governments have promoted RES with tax and subsidy incentives. Proponents of renewable energy promotion argue that such incentives are justified as their impacts on income and employment are positive. For instance, an EU financed study concludes that policies supporting RES give a significant boost to the economy and the number of jobs in the EU. Improving current policies to supply 20% of final energy consumption with RES by 2020 will provide a net effect of about 410,000 additional jobs and 0.24% additional GDP in the EU.[3]

However, other studies express concerns on RES promotion. A Danish study says that "in the long run, creating additional employment in one sector through subsidies will detract labor from other sectors, resulting in no increase in net employment but only in a shift from the non-subsidized sectors to the subsidized sector".[4] An EU sponsored Spanish study claims that the programs creating green jobs would have resulted in the destruction of nearly 110,500 jobs elsewhere in the economy, or 2.2 jobs destroyed for every "green job" created. And it says that "renewables consume enormous taxpayer resources. In Spain, the average annuity payable to renewables is equivalent to 4.35% of all VAT collected, 3.45% of the household income tax, or 5.6% of the corporate income tax for 2007".[5] Both Danish and Spanish studies analyze opportunity costs of renewable energy development. That is whether investments in renewable energy sources would result in more or less income and employment than investments in other sectors.

Methodology

First, this study tries to assess impacts of renewable energy promotion on income and employment in Korea by using the opportunity cost approach applied by the Danish and Spanish studies. This approach assumes that any investment in RES will absorb funds and manpower which can be used in other sectors. The question is whether such investments can be justified from the economic view point.

Second, this study tries to assess such impacts by using 2009 input-output tables of the Republic of Korea. An input-output analysis enables to assess not only direct but also

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indirect employment and production effects. The present Korean input-output tables do not list renewable energy sectors such as photovoltaics and wind sectors. Therefore, this study tries to develop a framework to calculate impacts of investments in renewable energy on income and employment by using Korean input-output tables. The question is how to allocate such investments to sectors listed in the Korean input-output tables.

Furthermore, this study will assess CO_2 emission reduction from the RES investments and costs of such reduction in Korea.

Expected results

This study tries to make a contribution to the discussion on the impacts of renewable energy promotion on employment and economic growth by analyzing such promotion in the Republic of Korea from 2007 to 2010. Moreover, it tries to answer whether the allocation of substantial funds to promote renewable energy sources is justified. Preliminary results show that the renewable energy promotion seems to be a rather expensive policy measure to increase employment and income as well as to reduce CO_2 emissions.

Keywords: Renewable energy promotion, Input-output analysis, Renewable energy policy