

Environmental impacts of generating electricity by substituting lignite with photovoltaic technology. An analysis based on a NAMEA-table for the Greek economy.

Topic: Energy input-output analysis II

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This paper investigates the environmental impacts (emissions) caused by conventional energy production methods and specifically by the combustion of lignite for the generation of electricity.

In addition, it looks at the possibility of substituting lignite with solar energy for the production of electricity, and specifically the use of photovoltaic technology, with the aim of reducing emissions and particularly CO₂, which accounts for 80% of all greenhouse gas emissions and is thus considered to be primarily responsible for climate change.

According to recent data of the European Commission, 94.50% of electricity in Greece is produced from conventional energy sources, the main fuel being lignite. It is noted that two of the electricity generation facilities of the Public Power Corporation SA are the most polluting electricity production plants in Europe, since they release the highest levels of CO₂ with the lowest production yield among the 25 EU member states. According to a report of the European Environment Agency, Greece is projected to show a 46% increase in greenhouse gases in 2012 relative to 1990 emission levels.

The necessary calculations will be made on the basis of the 2005 NAMEA-table for the Greek economy, as well as the PPC's operational program for the period 2007-2012, which takes into consideration the country's compliance with the requirements of the Kyoto Protocol. Greece has undertaken the commitment to ensure that the increase in emissions does not exceed 25%.

The use of photovoltaic technology provides a number of important advantages for Greece at an environmental level (reduction in emissions of gases responsible for the greenhouse effect), since the country has sunshine most months of the year. In addition, a more general reference will be made to the measures aimed at limiting the increase in emissions of greenhouse effect gases.