

## **Measuring the contribution of nuclear energy to reducing greenhouse gas emissions – case of Poland**

Topic: Thematic IO analysis: Energy and Environment

Author: Mariusz Plich

Securing sustainable, low-cost energy supplies with minimal impact on the environment is common interest of every country. For these reasons in the forthcoming decades a significant limitation of coal share in power generation mix should be expected in Poland, in favor of nuclear energy and renewable energy sources. Although the construction of a nuclear power plant in Poland has been widely discussed since the 1970s, it has not been built yet. At the end of last year, the government announced a plan of the development of nuclear energy. An impact of this plan on the economy as well as the reduction of CO<sub>2</sub> emission in Poland is assessed in this paper. For the assessment a multisectoral macroeconomic model and scenario analyses are used.

To meet this goal two problems has to be solved: (1) inclusion of new technology to the existing structure of input-output and emission coefficients and (2) development of scenarios for the future power generation mix based on the analyses of possible future demand for electricity as well as electricity supply by technology.

The data used in the research include international databases, i.e. WIOD (input-output tables, socio-economic accounts and environmental accounts) and Eurostat database (input output tables, energy statistics) as well as domestic sources published by Statistics Poland and Energy Market Agency SA.

The novelty of the research can be considered in the following areas:

- (1) energy policy - the first attempt to assess new plans of Polish government with the use of multisectoral macroeconomic model
- (2) methodology - proposal of "translation" of power generation mix by (by technology) into the language of input-output coefficients
- (3) practice of modelling - construction of a generic model and software which can be used for any country for analyses of changes in energy mix.