

[DOI: 10.20472/IAC.2017.032.015](https://doi.org/10.20472/IAC.2017.032.015)

## **TOMISLAV GELO**

**University of Zagreb, Faculty of Economics and Business , Croatia**

# **EXTENDED INPUT OUTPUT MODEL FOR NUCLEAR POWER PLANT IMPACT ASSESSMENT**

### **Abstract:**

Energy is important for economic and social development while energy infrastructure is necessary element of growing energy demands. Infrastructure (including energy infrastructure like a power plant or transmission and distribution networks) is capital intensive activity and it has significant direct and indirect impact on macroeconomic variables like GDP or employment. Most world countries (developing countries primarily) do not have appropriate macroeconomic analytical tool/model and knowledge to calculate not only energy but also economic and social benefit from investment in energy sector. Developed countries usually use full econometric input-output (IO) models and Computable General Equilibrium (CGE) models.

International Atomic Energy Agency (IAEA) assists Member States in capacity building and offers a set of computer models and a methodology. According to the previous mission IAEA two years ago started to develop new analytical tool under the new project Assessing the National and Regional Economic and Social Effects of Nuclear Programmes. Croatia as other 11 countries actively participated in this project. The final result of the project is Extended Input Output Model for Nuclear Power Plant Impact Assessment (EMPOWER). The model set up follows the traditional impact analysis with input-output analysis, where a new industry (new plant like nuclear power plant or any other power plant) is introduced. Model is simple static input-output model and use technical and commercial data from nuclear power plants for economic and social impact analysis.

The model framework is designed for impact analysis including the following four model mechanisms: (A) Indirect effects (including direct effects), (AB) Indirect & induced effects (including direct effects), (ABC) Indirect & induced effects & labor market response (including direct effects), (ABCD) Indirect & induced effects & labor market response & feedback from financing of investment (including direct effects). Each model version from A to ABCD incorporates everything of the model version below plus one additional feature.

The results of the model simulations are presented on two ways: as aggregate results (gross domestic impact, disposable income, total production, public net savings, private consumption, exports and imports, all at current as well as constant prices, and employment; as results by industry production at current as well as constant prices, and employment.

### **Keywords:**

energy sector, Input-Output model, economic impact, analytical tool, effect

**JEL Classification:** C67, O11, Q43