

In agribusiness, understood as the entire food production system, energy is consumed starting from the production of inputs for agriculture and the food industry, through activities related to cultivation and breeding on farms, and in food processing. The high energy consumption during food production raises concerns related to low energy efficiency. It is estimated that to produce 1 kcal of certain types of food, 10 kcal of energy is required at all stages of production. In addition, high energy demand across the food chain raises concerns about the impact of energy prices on food prices, national food security, and the country's dependence on imported energy. Low energy efficiency is also associated with high greenhouse gas emissions to the atmosphere, which negatively affects the quality of the natural environment. In the light of the existing problems, improving the energy efficiency of agribusiness, understood as the ratio of energy produced in the form of food to the energy consumed in this process is of key importance for maintaining production at a sufficient level. This is also important given the declining efficiency in obtaining energy from fossil fuels, resulting from their increasingly difficult availability.

The main goal of the project is to measure and evaluate the energy efficiency of agribusiness in the European Union (EU) countries. While currently, the data show that it is possible to improve energy efficiency at the level of entire economies in the EU, it is not known whether such an opportunity also exists in the case of agribusiness. This is because no official statistics are kept for the entire food production system. To measure energy efficiency in agribusiness in EU countries, the project assumes the use of input-output tables, which contain information on the value of flows of goods and services between individual sectors of the economy. The study will focus primarily on the economic aspect of energy efficiency, it is on calculating the relationship between the economic effect in the form of production value or income derived from it, and energy consumption in the food production process. It is the economic aspect that is often the main reason for making production decisions, hence there is a need for research in this area.

Project outcomes will fill the existing knowledge gap regarding the strategies to improve energy efficiency in agribusiness in EU countries. Previous studies indicate that in some areas of food production (for example agriculture) energy efficiency can be improved, but the economic aspect of production is neglected. Moreover, the project assumes the calculation of partial efficiency indicators for individual stages of food production. Thus, the efficiency will be determined separately at the stage of production of inputs used in agriculture and the food industry, separately at the stage of on-farm production, and separately at the stage of food processing. The obtained results will allow formulating of recommendations for decision-makers in the field of improving energy efficiency in the entire agribusiness, as they will indicate the least effective areas, it is those that may potentially require support from sectoral policies.