

The main objective of the project is a joint environmental and economic analysis of farms with diversified production activities. The project involves the implementation of a number of specific objectives: a) to recognize the environmental impact of production processes and farming systems (considering varying production intensity, economic size and spatial differences), b) analysis of the life cycle costs of products, c) creating an inventory database processes for unit processes of different production systems (necessary to determine inputs and production effects, as well as environmental effects associated with a variety of agricultural products), d) identifying important sources of emissions in the production processes and costs in the life cycle of products as being important components of a system that supports the analysis of sustainable development of agriculture, b) developing system models of main production systems based on life cycle analyzes of products and life-cycle costing.

The research will be carried out in the group of farms located in the Wielkopolska and Lubelskie regions. They will represent four types of main farming activities: a) milk production, b) pig production, c) field crops, d) mixed livestock production (pig and milk). Another factor differentiating the featured group will be their economic size. By diversifying the economic size of farms and the presence of regional context, it will be possible to link the assessments of product life cycle with varying intensity levels and scale of production.

The methods of Life Cycle Analysis (LCA) of products and Life Cycle Costing will be used in the study. They will allow a full assessment of eco-efficiency in terms of a number of environmental effects (carbon emission) and costs. In the analysis of life cycle costing, there are taken into account all costs induced in many phases of the product life. An important feature of this research is the assignment of costs to the specific production systems and the estimates of total costs associated with the production and use of products.

To date, the known ways of approaching the assessment of production activities of farms are too one-sided. In the environmental context, they capture most often only the fragmentary environmental effects. However, the general assessment based on the individual environmental effects is insufficient. In turn, the standard economic research, focused exclusively on the production phase does not give the possibility to determine the cost on the long term life cycle. With the proposed research, it will be possible to determine the environmental risks and hot spot areas of generating major costs over the lifetime of the products.