

Low-carbon economy is one of the main objectives of European Union policy. The strategic documents of the European Union, including the Europe 2020 Strategy, pointed out the need to reduce emissions in all sectors of the economy. At the same time it is important to note that agriculture is one of the major sources of emissions of gaseous pollutants. In this respect, Polish agriculture is facing many difficult challenges, including reduction of ammonia and greenhouse gas emissions from livestock production and emission of nitrous oxides and suboxides from manure and mineral fertilizers. Reducing emissions of among others, gas emissions from agriculture requires the introduction of innovative techniques and tools to increase the efficiency of agricultural production and waste from livestock and crop residues. The condition for the development of low-carbon economy in agriculture is smart growth based on knowledge and innovation. This necessarily requires, among others, the use of innovative means of agricultural production with relatively low environmental pressures (including bio-fertilizers and bio-pesticides), the implementation of the principles of precision farming, the development of low-carbon energy sources on farms (e.g. biogas plants), the use in crop rotation the ones with a positive rate of reproduction of soil organic matter, adding to the feed preparations binding nitrogen compounds.

The main scientific objective of the project is to identify the type of relations and strength of the relationship between endogenous and exogenous determinants of the development of low-carbon production in Polish agriculture. The project will be theoretically-empirical in nature. Current state of research in the subject of the proposed project is incomplete, especially in terms of regional diversity of conditions for the development of low-carbon agriculture. Necessary from the point of view of science is to deepen and acquire new knowledge about the behaviour of agricultural producers, affecting the development of low-carbon production in Polish agriculture. One of the specific objectives of the planned research is to identify the economic, environmental and social factors that determine the transformation towards a low-carbon agriculture in Poland. In the framework of this project it is planned to conduct studies using secondary and primary data. The research process begins with an analysis of secondary data of GUS, IERiGŻ, IUNG, PIORiN analysis of the literature. Secondary data will be analysed in various ranges of territorial area of the country, regions (classification NTS-1) and provinces. The basic range of temporal analysis will cover the years 2005-2016. Analysis of secondary data will allow the detection of trends in the consumption (size and structure) of, among others, mineral fertilizers and chemical plant protection products, the trends in the production of agricultural biogas, etc.

Test procedure will include also primary (empirical) research. It is planned to carry out in the period 10.2017 - 3.2018 a survey among agricultural producers and independent experts. The spatial scope of the research will cover the entire country, and empirical research among farmers will be conducted in six randomly-selected provinces. Selection will be based on localization research approach, based on territorial units. Six provinces will be randomly selected for the study, one province from each macro-region of Poland - statistical units of the first level (NUTS 1). Random selection will also apply to districts within selected provinces. In each province 3 districts will be drawn, in which the surveys will be carried out. Sample size was set at 900 farms. Surveys will be carried out in cooperation with the Agricultural Advisory Centres with headquarters in randomly selected provinces. In addition, within the project it is planned to conduct surveys among experts. Research sampling will be purposeful. It is planned to conduct research among 30 experts dealing with the issues of low carbon agriculture, employed, among others, in IERiGŻ, IUNG, INS, MRiRW, CDR, PIMR, ARR, ARiMR, and in higher education.