Co-funded by the European Union

ProLand

Project "EU partnership to protect agricultural land in the face of climate and environmental challenges. Caring for future generations" (ProLand)

Program Erasmus+, project KA220-HED - Cooperation partnerships in higher education (2024-1-PL01-KA220-HED-000252809)

Master thesis

Author: Sara Marcinkowska

Title: The direction of land use change over many years. Case study for the part of Wielkopolska region

Supervisor: prof. Monika Jakubus, PULS

Date: June 2026

Abstract: Land use and land cover change is one of the most important manifestations of human impact on the environment, influencing both ecosystem functioning and socio-economic development trajectories of regions. In this context, this study examines land use changes in central Greater Poland (Wielkopolska; the area of the former Poznań Voivodeship) between 1990 and 2018, with particular emphasis on identifying the direction and intensity of transformations as well as their spatial and temporal variability, especially in relation to agricultural land conversion.

The study is based on CORINE Land Cover datasets for the years 1990, 2000, 2006, 2012, and 2018. The analysis was conducted using geoinformation techniques within a GIS environment, complemented by statistical methods, including the assessment of land use change at the municipal level and in the vicinity of soil sampling locations.

The results indicate that 475.9 km² of land were subject to change, representing approximately 6% of the study area. The highest intensity of transformations was observed between 2006 and 2012. The most pronounced changes occurred within the influence zone of the Poznań metropolitan area and were primarily associated with the decline of arable land and the expansion of urban fabric and supporting infrastructure. At the same time, an increase in green areas was recorded, indicating local processes of natural succession and renaturalisation. The analysis also confirmed the significant role of transport infrastructure in shaping the spatial distribution of land use change.

The findings may support sustainable spatial planning approaches aimed at maintaining the long-term availability and productivity of agricultural land for future generations.

Key words: Land Use and Land Cover (LULC), spatial change, CORINE Land Cover, Greater Poland (Wielkopolska), urbanization, landscape, natural environment