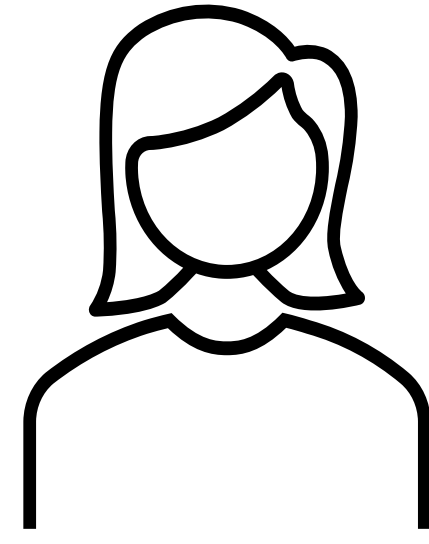




# The Impact of Urbanization and Migration on the Protection of Agricultural and Forested Lands in the Context of Spatial Planning



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## INTRODUCTION

Socio-economic development, urbanization, and migration are integral components of the modern world. With social and economic progress, our cities are growing at a rapid pace, and people are moving from rural to urban areas in search of better living conditions, employment opportunities, and development prospects. However, this dynamic process of urbanization and migration poses numerous challenges, including the protection of agricultural and forest lands. Farmland and forests are valuable resources that play a crucial role in ensuring food security, biodiversity, climate regulation, and the maintenance of ecosystem balance. However, urban development, city expansion, and migration have significant impacts on these areas, leading to their degradation, fragmentation, and loss.

In the context of such challenges, spatial planning becomes incredibly important. Spatial planning is the process of developing strategic frameworks and decisions regarding the spatial organization of urban and rural areas. Its primary goal is to ensure sustainable and harmonious development that considers social, economic, and environmental aspects.

Farmland and forests are most extensively converted to other purposes in the proximity of large urban centers. The presented results also indicate that the responsibility for developing rational land-use policies rests with the authorities at all levels of national administration, but mainly with local governments.

## Conversion loss index

The purpose of this study was to investigate the impact of protecting farmland and forests on spatial planning and to highlight the loss of agricultural and forest land caused by conversion to other uses. Statistical data from Statistics Poland, including land use and changes in land, agricultural and forest land scheduled for conversion, local zoning plans, and demographic data, were analyzed alongside relevant legal regulations.

$$CLI = (Agrc/Agr + Frc/Fr) / (Agrc + Frc) * 100, \text{ where:}$$

CLI – conversion loss index;

Agrc – area of agricultural land intended for conversion to other purposes in the MMP, in ha

Frc – forest area intended for conversion to other purposes in the MMP, in ha;

Agr – area of agricultural land in a voivodeship, in ha;

Fr – forest area in a voivodeship, in ha;

A – total area of a voivodeship, in ha.

The proposed conversion loss index (CLI) can be used as an universal one. Appropriate statistical data should be selected each time (relevant to the selected administrative unit).[1]

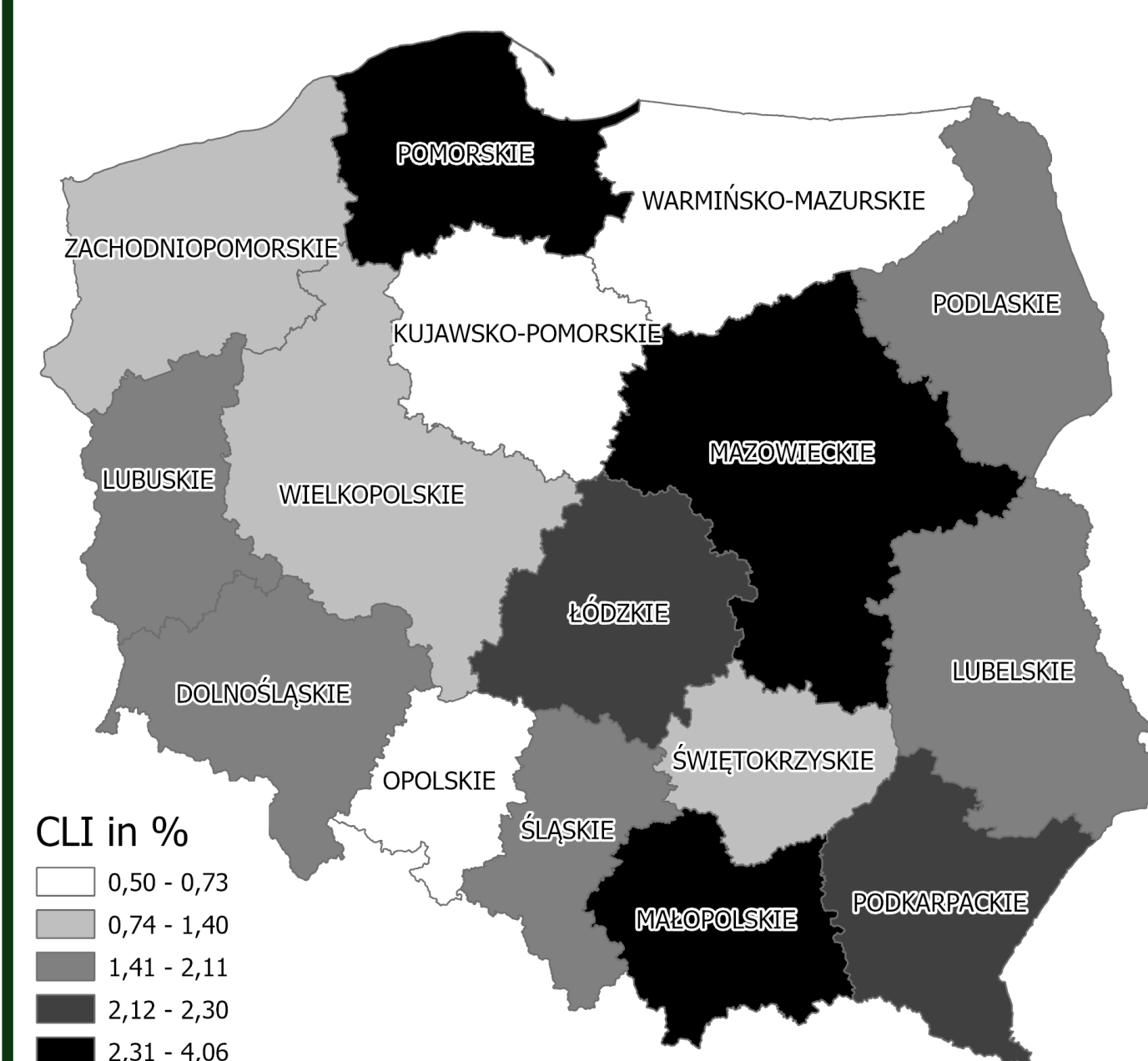


Fig. 5. Potential loss of farmland and agricultural land resulting from land conversion in Polish voivodeships (data of December 2021).

The results presented in Fig. 5 indicate that the risk of farmland and forest loss is highest in 4 out of 16 Polish voivodeships in 2021 (Mazowieckie – 3,67 %, Podkarpackie 3,00 %, Małopolskie – 3,88 % and Pomorskie – 4,06 %) The calculated CLI points to considerable variations in demand for new land across Polish voivodeships. Farmland and forests are most extensively converted to other purposes in the proximity of large urban centres.

## Trends analysis and projections for 2030

Analyzing the dynamic socio-economic trends and their impact on the protection of agricultural and forest land in the context of spatial planning, it is predicted that by 2030 [Fig. 1 ] built-up and urbanized areas will increase at the expense of agricultural and forest land. In this situation, an important task is to ensure the sustainable management of these resources and to minimize the negative effects of urbanization and migration.

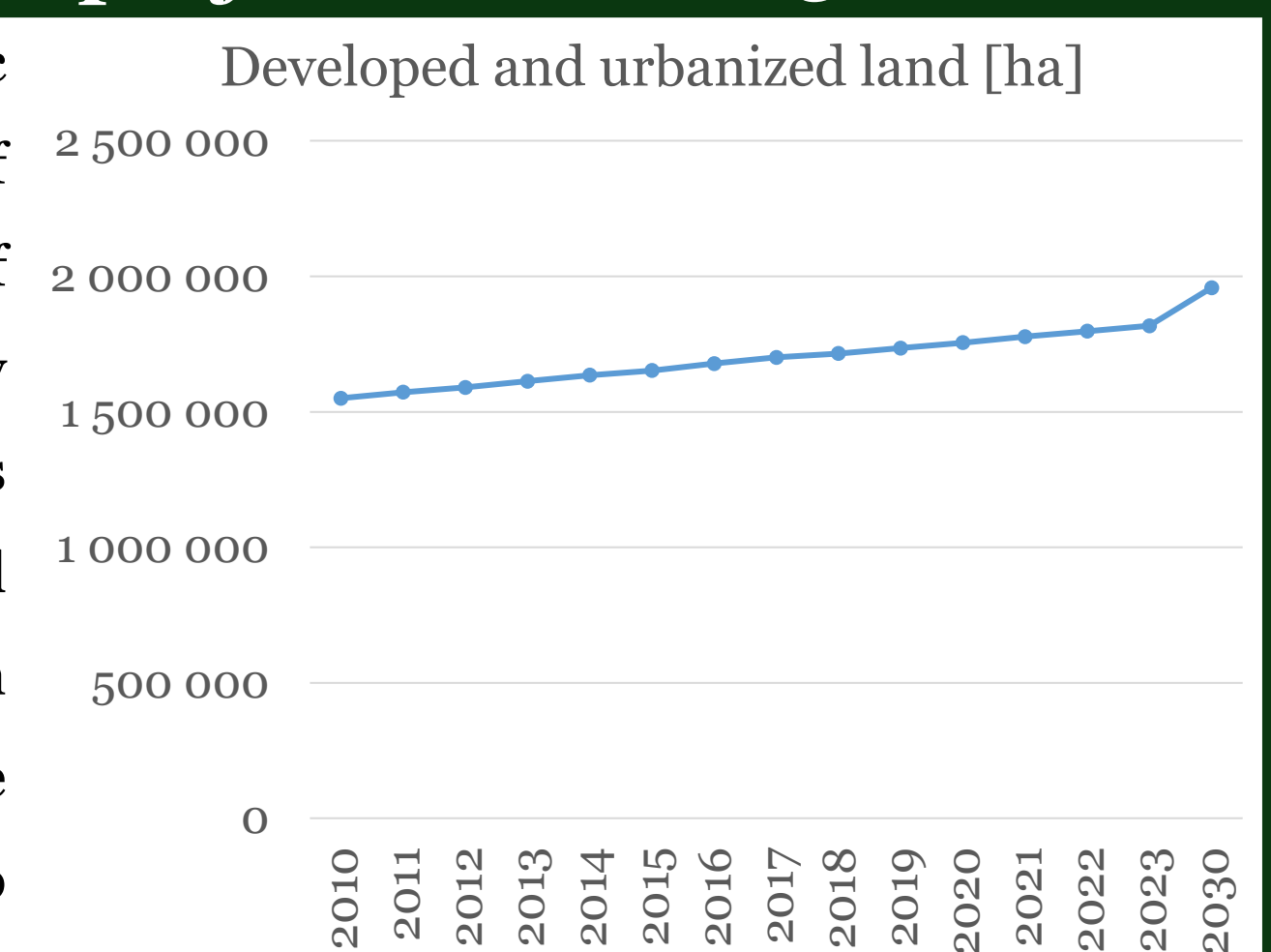


Fig. 1 Projection of developed and urbanized area in Poland for 2030

The projections [Fig. 2] indicate a decline in forest land. Factors such as deforestation, land conversion for other purposes, and urban sprawl contribute to this reduction in forested areas.

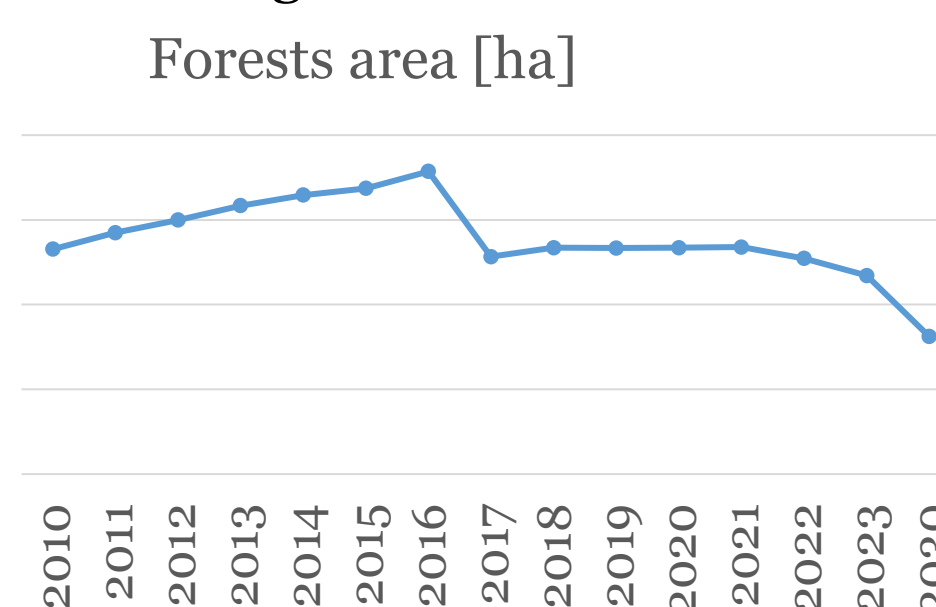


Fig. 2 Projection of forest area in Poland for 2030

Projections suggest a moderate increase in agricultural land. This could be attributed to advancements in agricultural practices, technological innovations, and efforts to enhance food security and sustainable farming

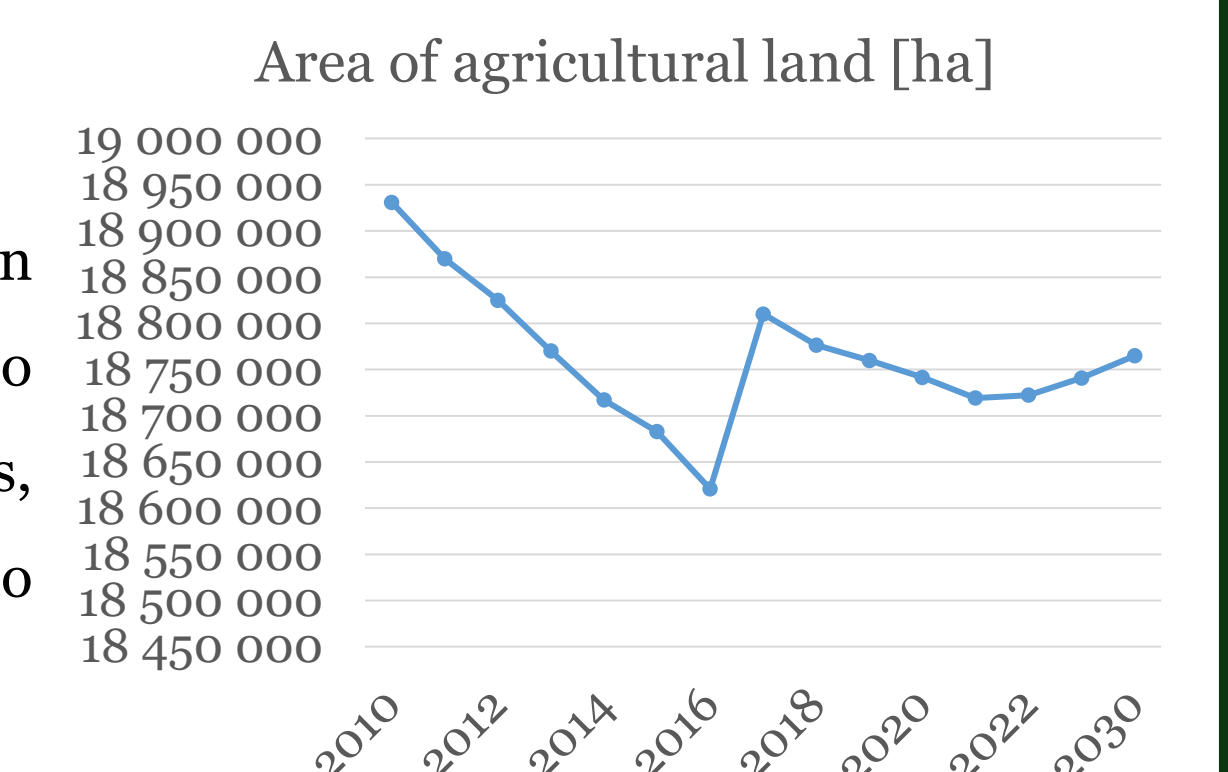


Fig. 3 Projection of agricultural land area in Poland for 2030

The forecasts suggest a decrease in migration to cities and an increase in migration to rural areas [Fig. 4]. This trend could be driven by factors such as improved quality of life in rural areas, the pursuit of a simpler lifestyle, and the desire to reconnect with nature.

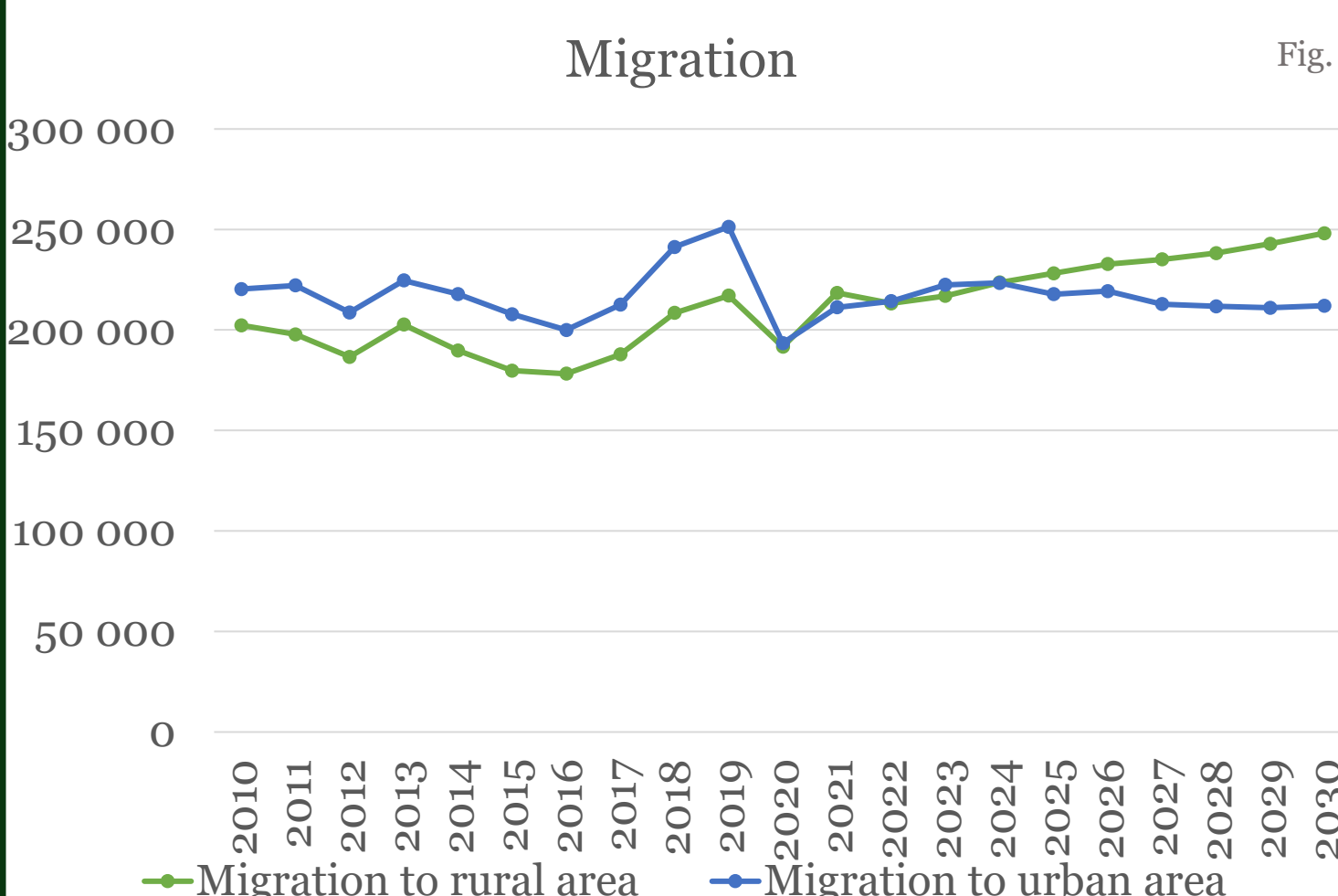


Fig. 4 Projection of migration to rural and urban area in Poland for 2030

## SUMMARY

The impact of urbanization and migration on the protection of agricultural and forest lands in the context of spatial planning is a matter of great importance and significance. Research indicates that the dynamic growth of cities, increasing migration, and changes in spatial development have a significant impact on these valuable resources. The protection of agricultural and forest lands requires effective strategies and tools that consider sustainable development, take into account social, economic, and environmental factors, and address specific local conditions. Zoning, spatial planning in rural areas, revitalization of degraded areas, social education, and intersectoral cooperation are examples of strategies that can contribute to the effective protection of these lands. The findings from the conducted analysis indicate the need for flexible, sustainable, and coherent actions that ensure the long-term protection of agricultural and forest lands and enable harmonious socio-economic development.

## Acknowledgments

[1] Kurowska, Krystyna, et al. "Conversion of agricultural and forest land to other purposes in the context of land protection: Evidence from Polish experience." Land Use Policy 95 (2020)