

Identification and assessment of driving forces of landscape change and landscape services in the context of planning the spatial development of commune

Man has been the main global driving force for transforming the Earth's surface for several centuries. He has significantly influenced the changes in the landscape that we can see today by meeting different needs. Over the past few decades there has been noticeable intensification of the changes as a result of strong socio-economic transformations like changes in agriculture, industry or transport. These changes have been particularly seen in the countries of Central and Eastern Europe, especially in the post-transition period. In recent years more and more attention in literature is devoted to identification the forces which have been responsible for the transformation of the landscape. They are called driving forces of landscape change. In this type of studies several decades is usually considered when the changes are easy to identify. Meanwhile, significant landscape transformations in Poland can be observed in XXI century. For this reason, it is necessary to know the driving forces and the units / institutions that have decided about particular types of landscape transformation in recent years. The scientific community is also discussing the need to develop research methods for the identification of landscape services. In this aspect, there is a lack of research combining the concept of driving forces of landscape change with the landscape services analysis, what is crucial for planning of landscape changes. That's why it is necessary to develop methods of forecasting changes in landscape services as a result of the implementation of the spatial policy of municipalities and meeting the needs of the inhabitants.

Analysis of this problem allowed the authors to put three research questions:

- 1) What is the intensity and types of landscape transformations and which driving forces have most influenced landscape changes in Poland in the XXI century?
- 2) What is the impact of identified driving forces on changes in landscape services?
- 3) How to identify landscape services and forecast changes of them which can be the result of spatial policy implementation of the communes?

In this context, the main scientific objectives are:

- 1) Determination of intensity of landscape changes, classification of landscape types and landscape transformations types which have been observed in the research area in 2000-2018.
- 2) Identification and assessment of the relationship between the selected driving forces of landscape change and intensity as well as types of landscape changes.
- 3) Drawing up the list of landscape services within each commune provided by identified landscape types in the analyzed periods on the basis of survey research.
- 4) Indication of driving forces which have had the greatest impact on changes in landscape services.
- 5) Development of scenarios of the possible scope of changes in landscape services resulting from the implementation of the spatial policy of each commune included in spatial planning documents, resulting from the needs of the inhabitants and the need of landscape protection.

Answers to the research questions will be presented on the basis of computer analysis, field observations and surveys obtained during workshops with local leaders/experts and inhabitants of selected test communes representing at least 80% types of landscape in Poland. Communes will be selected because of the landscape diversity and the problems of landscape transformations within their borders eg. Kąty Wrocławskie, Krośnice, Łądek-Zdrój, the city of Jelenia Góra and one of communes located near the sea.

The expected final effect will be the identification of changes in the landscape of area of selected communes and the driving forces which have been responsible for the transformations. The complete list of landscape services provided by the identified types of landscape in the areas of each commune will be prepared as well as the analysis of the changes in demand for specific landscape services. The last stage will be the identification of types of landscape changes and the assessment of the scope of changes in landscape services, which will be the result from the implementation of the spatial policy of each commune and demand of the inhabitants and landscape protection. The final result of the research will be 3 scenarios of changes in future landscape services.