Innovative knowledge management and decision-making support in forest and wood-based industries: Applying the cluster concept to forestry in Germany

Uwe Kies (1), Thorsten Mrosek (1), Martin Raubal (2), Alfred Schultz (3)

1. University of Munster, International Institute for Forest Ecosystem Management and Timber Utilization North-Rhine/Westphalia, Germany
2. University of Munster, Institute for Geoinformatics, Germany
3. University of Applied Sciences Eberswalde, Faculty of Forestry, Eberswalde, Germany

The forest industry currently lacks a holistic perspective when it comes to knowledge of the forest resources, forest and wood-based industries, and the sustainable use of their primary resource: wood. Current statistical reporting and information systems, designed for branch-specific purposes, increasingly show limited potential for mapping the complex field of industry branches, production and value-added chains and stakeholders. Consequently, industry and policy decision-makers have only limited access to a suitable information base, and the sector receives limited political support and public attention in Germany.

The objective of this research project was to develop and test a decision-making support information system for the German forest and wood-based industry cluster. The European Union definition of the cluster concept in forestry was adapted to develop a suitable methodological approach for an integrated analysis of this sector. The information system design process involved database programming, a geographic information system, spatio-temporal analysis methods and cartographic visualization. Data was then collected via case studies across the national, State, regional and local levels in Germany.

The cluster concept in forestry was further developed through a comprehensive classification of all forestry, wood-based and other industry branches related to non-timber forest products and services. Both quantitative and qualitative cluster analysis methods were used to define a structured approach for assessing forest resources availability and productivity, and identifying the socio-economic parameters of various industry branches within a spatial context at various scales. This cluster information system gives users access to a well-documented compilation of relevant research findings - including key variables, graphic analyses, visual maps and information sources - via interactive user interfaces. The system can effectively communicate scientific knowledge regarding the status and development of the forest and wood-based industries to decision-makers and stakeholders.

The information system currently faces data availability and quality constraints and further research is needed on the implementation and standardization of these concepts and methods for application in forest policy and management information systems. However, the research results indicate that the socio-economic role these industries play in Germany's national and regional economies is frequently underestimated. The research has also produced a more standardised and empirical view of forest and wood-based industries, offering a science-based framework and a series of effective instruments for knowledge management and decision-making support relevant to many other jurisdictions.

Uwe Kies

Thorsten Mrosek

Martin Raubal

Alfred Schultz