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Examples of rural case study landscapes in Europe's West (Sweden and Spain, top) and Europe's East (Ukraine) and Africa (Ethiopia). Photo: Per Angelstam (lower left) and Marine Elbakidze.

Sustainable rural development:

The need for integrative knowledge production and learning

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Rural areas face significant challenges regarding economic development, creating job opportunities and maintaining ecological, social and cultural assets.

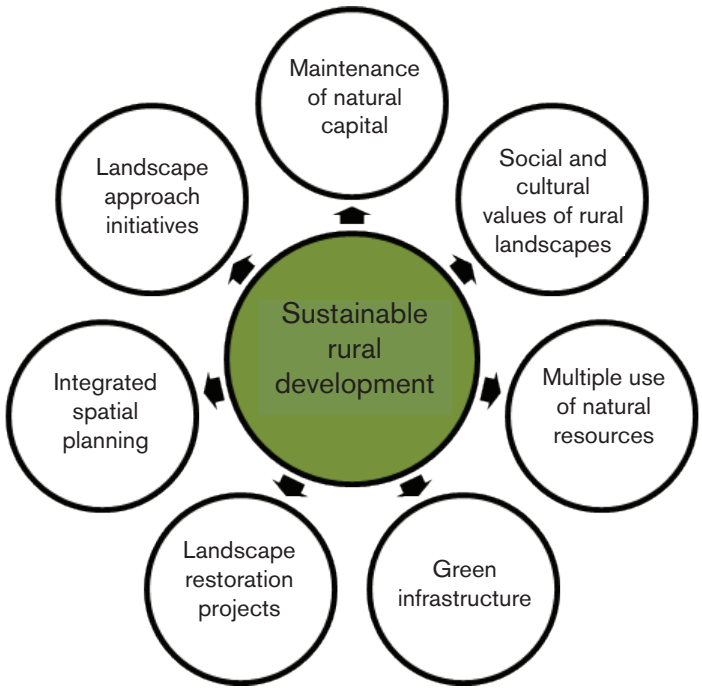
In Sweden, rural development focuses on sustainable management and governance of natural resources in order to achieve balanced territorial development of rural economies and communities towards viable living rural areas.

Here we present the main directions of our sustainable rural development research.

We support implementation of Swedish policies toward sustainable rural development by generating evidence-based knowledge through collaboration with relevant local, regional, national and international stakeholders.

The vision is to consolidate our international hub for sustainable rural development focusing on problem-solving research and problem-based education.

Knowledge production and learning for sustainable rural development requires place-based integration of both researchers from multiple disciplines, and stakeholders representing different societal sectors involved in the development process. This applies to problem formulation, research design and identification of place-based solutions (see Box). Our multiple case studies in Europe, Africa and North America form "landscape laboratories" to generate holistic understanding of the ecological, econo-



Main research directions for sustainable rural development developed by researchers at SLU's School for Forest Management with their international network.

mic, social, and cultural dimensions of the rural development process in a variety of contexts.

Maintenance of natural capital

Conservation areas, including formally and voluntary set-asides, are usually located in rural areas. Their functionality is crucial for the maintenance of natural capital. In addition to their biodiversity conservation function, these areas deliver ecosystem services. However, legally protected areas in Sweden are not sufficient in protecting biodiversity. One example is integrated spatial planning, focusing on biodiversity conservation, and multiple aspects of human well-being are needed.

Applied research on aquatic ecosystems shows that sustainable recreational sport fishing could contribute to rural development. By restoring river and stream sections degraded by hydropower development, energy companies may compensate local communities through the provision of subsidies and support systems aiming at restoring viable populations of brown trout or salmon important for local fisheries.

Social and cultural values of rural landscapes

Studies of oak wood pastures in Sweden and Spain highlight that maintenance of high natural and cultural values of these landscapes is challenging. A key issue is that the sectorial structure of institutions and policies neglects the multi-functionality of traditional land use systems.

In Sweden community-led local development using EU's LEADER program focuses on enhancing social capital, collaboration, and stimulating entrepreneurship. Our research aims to develop criteria, identify indicators and verifier variables of social and cultural sustainability to be used as a measurement and visualisation tool for social learning.

Multiple use of natural resources

Research on use and governance of non-wood forest products (NWFPs) shows that in Europe's East, NWFPs ensure food security and provide a source of additional income for rural people. In contrast, in Europe's West the use of these resources is more associated with cultural aspects and recreational activities. The multifunctional value of NWFPs is important for rural communities, but is usually neither supported by national policy and management regulations, nor by appropriate regional or local governance mechanisms. Research on community based forest management conducted in East Africa also shows the importance of NWFPs for the livelihood of forest-dependent communities. To improve inclusiveness of the poor in the rural development process, multilevel collaborative learning is suggested as a crucial complement to the present sustainable forest management approaches.

The history of forest landscapes affects the extent to which wood production and biodiversity conservation objectives are satisfied. Modelling indicators of wood production and biodiversity in Europe's East and West shows that there is a conflict between intensified wood production and biodiversity conservation in the European boreal forest biome.

Agroforestry research on traditional homegardens in Ethiopia shows that this land-use is important for livelihoods of rural communities. However, agroforestry homegardens are transitioning towards monoculture production of new cash crops that increases income of households, but negatively affects the supply of food crops to households and rural communities.

Green infrastructure for ecological sustainability and human well-being

The functionality of green infrastructure is affected by factors at multiple scales from patches to entire landscapes. From ecological perspective it is crucial to improve the understanding of how changes in land management affect the current land cover

STAKEHOLDER ENGAGEMENT IN KNOWLEDGE PRODUCTION AND LEARNING

Travelling workshop is a tool to initiate and sustain researcher–stakeholder partnerships. The main elements are stakeholder participation; problem-based discussion and learning; and practical communication of both perceived problems and solutions.

Round-table discussion is a way for stakeholders to learn about each others' opinions, values and interests, and to exchange empirical and local knowledge and practical experiences related to rural development.

Conceptual group modelling is a participatory tool whereby a group of researchers and stakeholders analyse a complex reality. Together they develop a joint understanding of problems, suitable for decision-making.

Travelling workshops with stakeholders in the case studies in the Russian Federation, Sweden and Latvia. Photo: Marine Elbakidze.

patterns, but also ecological processes such as grazing, browsing, predation or hydrology.

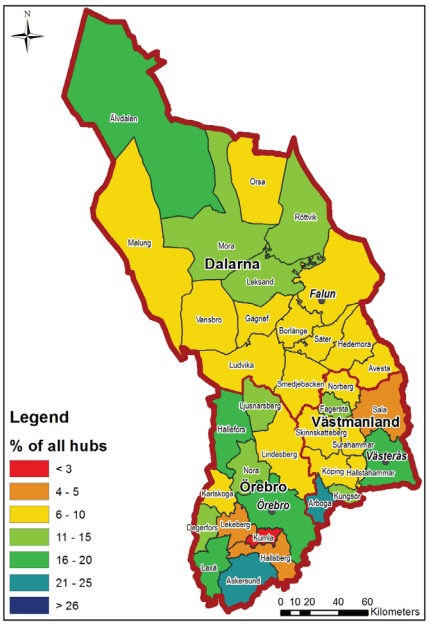
A key topic for rural development is to identify natural and semi-natural areas that provide multiple ecosystem services for human well-being. We have developed and applied a methodology for mapping context-specific elements of green infrastructure. Using multiple case studies in Europe and Africa, our research shows that rural areas are perceived as being important for human well-being. Inventories of multiple ecosystem services delivered by wood pastures in Sweden and Spain show that cultural services are important for securing sustainable rural development.

Landscape restoration projects: governance and management

Given the degree of landscape degradation, efforts to maintain functional green infrastructures are highly dependent on the success of landscape restoration (LR) projects. However, the understanding of the dynamics of LR governance and management remains empirically underdeveloped. We applied systems thinking methods to a series of case studies to analyse the causal structures underlying LR governance and management in Europe's East and West. In Sweden key challenges for LR projects relate to institutional and regulatory flexibility, the timely availability of sufficient funds, and the management of learning and knowledge processes. In response, project leaders develop several key strategies to manage complexity and risk, and enhance perceptions of the attractiveness of LR projects.

Integrated spatial planning for sustainable rural landscapes

International and national policies stress the importance of spatial planning for the long-term sustainability of regions. Our research shows that, in Sweden, municipalities experience challenges in coordinating complex issues regarding long-term planning to steer territorial development and help to solve conflicts among competing interests. Stakeholder participation is a basic condition for social learning in planning. There is a need for place-based arenas allowing and promoting stakeholder engagement that combines both bottom-up and top-down approaches where evidence-based collaborative learning can occur.



Area proportion of natural and semi-natural areas (or hubs) important for human well-being in the Bergslagen region, Sweden.

Landscape approach initiatives as social innovations

Landscape approach initiatives are founded in collaborative learning processes supported by integrative research where stakeholders identify challenges and start to learn. Our studies examine how multi-stake-

Traditional knowledge holders maintain cultural and social values of rural areas through diverse traditional land uses. Photo: Marine Elbakidze.

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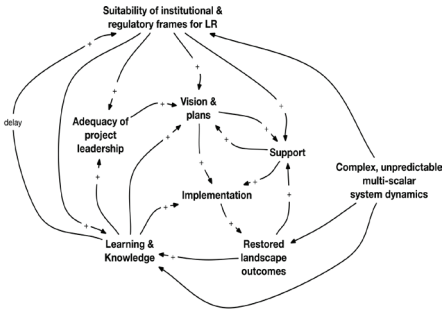
".... we have experienced that rural development is facing multiple challenges in different contexts."

holder collaboration has been established within different place-based initiatives and evaluate outcomes on the ground. Novel strategies such as the development of Designation of Origin mechanisms can foster rural development, especially when applied to geographical areas, rather than to specific products, and are based on traditional management practices to ensure holistic sustainable management of rural areas.

The way forward

Working with integrative knowledge production and learning during the past decade, we have experienced that rural development is facing multiple challenges in different contexts. We have established collaboration with researcher–stakeholder clusters nationally and internationally and are actively participating in multiple networks (International Model Forest Network, Long-Term Social-Ecological Research platforms, MAB Biosphere Reserves, African Forest Forum). In line with the Swedish National Forest Program, our aim is to consolidate our international hub of problem-solving research and problem-based education for sustainable rural development at the SLU's School for Forest Management in rural Skinnskatteberg■



Successful governance and management of LR projects involves engaging with four core processes and three sets of drivers.

Keywords
Stakeholder engagement, natural capital, human well-being, participatory research, landscape restoration.

Read more

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