Managing forests in such a way that productivity is optimised at the same time as allowing people to enjoy their natural beauty is no simple feat of planning. However, a new project named RegioPower hopes to do just that by providing an IT-based platform that facilitates communication between suppliers and users of forest resources

A regional IT-based platform for managing lignocellulosic resources

The term lignocellulosic biomass refers to plant biomass composed of cellulose, hemicellulose and lignin, and it is increasingly being recognised as a valuable alternative to petroleum for the production of biofuels and chemicals. It remains the only renewable source of carbon available on the planet, and can consist of anything from agricultural business (such as short rotation coppices or hedge care) to various forestry products.

Interest in lignocellulosic resources has skyrocketed in many countries since the introduction of policies such as the German Renewable Energy Act. Demand has experienced a considerable boost, which has in turn led to some problems with regards to the provision and supply of these materials. Cross-sectorial coordination and communication on the regional scale is often lacking, and communication between the producers of lignocellulosic resources and the people demanding them is also patchy at best.

"This was the starting point for us," says project coordinator Susanne Frank. "Our goal was to develop a platform to connect the different levels of stakeholders in lignocellulosic resources – the providers, the demanders, the industry and the regional planners. From this idea we ended up starting a project with six partners from four different countries." The project, named RegioPower, aims to develop an innovative new piece of software that will help to moderate between industry demands, land-based production and public needs (e.g. ecosystem services) related to lignocellulosic resources.

The platform

The work on the platform (which will provide the framework for all other work involved) is being conducted by two German partners, one of which is the Dresden University of Technology (TU Dresden). Work here has focused on a beta power platform that will become a webpage for providing tools to support communication between the forestry and agricultural sectors. "My colleague Christine Fürst from the University of Bonn and I are dealing with a biomass module of the decision support software GISCAME, a tool for simulating the development of land-use change and the expected outcomes in terms of lignocellulosic resources and other ecosystem services, like water retention, recreation and biodiversity."

To ensure professionalism and sustain the solutions, an SME partner, PiSolution is translating the science solution into ready technology. Also involved are some smaller solutions from another German partner, High Competence Network, Wismar, on bundling market demands.

Modelling and Evaluation

Swedish partners from Sveriges lantbruksuniversitet (SLU) have been modelling growth and yield of forests, as well as developing planning models such as LandSim and HEUREKA. "They are providing yield tables that will be integrated with our landscape simulation tool," explains Frank.

"Then we have a partner in Slovenia, the Slovenian Forestry Institute (SFI), who

are dealing with ecosystem services assessments," continues Frank. "They are applying a methodology that allows one to assess different ecosystem services in a comparable way; essentially it is a trade-off analysis between production of lignocellulosic resources and provision of other ecosystem services, and they will be doing this for all our five model regions, which include areas in Finland, Sweden, Germany and Slovenia."

Participation

A mobile phone application (Tienoo) is being developed at the University of Helsinki in cooperation with small enterprise Simosol. It allows for the collection and mapping of public opinion on forest management strategies and enhances the visitors' experience. "When people visit the forest, they will have this application on their phone which will allow them to express their opinions on specific forest management measures in an entertaining way," says Frank. This tool for participatory planning combines methods from sociology and forest planning, and the Finnish state forestry enterprise Metsähallitus will potentially apply it for triggering their forest management activities.

Making the platform work

In the end, these separate parts will be brought together to work as a single entity - the RegioPower platform - and Frank is pleased with the progress that has been made so far. "The prototypes of the biomass module and mobile phone application are now being tested," she says, "and the forestry planning models are already being used to help develop land management strategies in Sweden."

"The framework for simulating alternative land management strategies and effects on ecosystem services is also ready for application, and data for the ecosystem services evaluation has been collected from all project partners in order to test transferability of the integrated assessment approach."

Although landscape change models and forest growth and yield models already exist, Frank believes that it is the combination of elements within the RegioPower platform that hold the key to its success. "A lot of the elements we are working with are not particularly radical individually, but the cross-sectorial connections that we can help to create at a regional scale certainly are. By linking land management with regional planning questions, and providing moderation between land-based production and industrial demands, we can help to strengthen the competitiveness of the forest-based sector and promote the utilisation of lignocellulosic resources as raw material."

> "In the future, we will focus on additional biomass production from agriculture, as well as looking at different land-use systems such as those used in Africa"

Planning for the future

GISCAME, a piece of software used to evaluate land use trends that has been continually developed over the last seven years, is now capable of showing information on lignocellulosic resources as a result of RegioPower. "In the future, we will focus on additional biomass production from agriculture, as well as looking at different land-use systems such as those used in Africa," says Frank.

The phone application Tienoo is supposed to be included into the forest planning processes of Metsähallitus, Finland's state forestry organisation, and it is hoped that the use of a participatory geographic information system will allow for a more seamless integration of social issues with ecological and technical forestry issues. "This is a perfect example of what has motivated us throughout this project," says Frank. "We aim to develop resource management strategies that are beneficial for many sectors and even the public, not just for the economic benefit of a few."

AT A GLANCE

Project Information

Project Title:
RegioPower: A regional IT-based platform for bringing resource needs and land-based resource production together.

Project Objective:
The overall aim is to develop the prototype of an innovative software platform for moderating between lignocellulosic resources demands from industry (timber for wood-products & bio-energy, other bio-energy crops from agriculture), land-based production of lignocellulosic resources, and public demands considering the provision of ecosystem services by regional land-use and land-management.

Project Duration and Timing:
36 months, February 2012 to January 2015

Project Funding:
Joint call of ERA-Net Bioenergy and WoodWisdom (FP7)

Project Partners:
- ZEF (Center for Development Research), University of Bonn (Germany) www.zef.de
- SLU (Sveriges lantbruksuniversitet, Sweden) www.slu.se
- SFI (Slovenian Forestry Institute, Slovenia) www.gozdis.si
- University of Helsinki (Finland) www.helsinki.fi/university
- Simosol (Finland) www.simosol.fi
- HCN (High Competence Network e.V., Germany) www.hcn-group.de

MAIN CONTACT

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Since January 2012, PD Dr. Christine Fürst has been Senior Researcher at ZEF C, University of Bonn. Before that she was a researcher at TU Dresden, Institute for Soil Science and Site Ecology. She is coordinator of the European Land-use Institute and Head of European Nodal Office of Global Land Project on Integrated Land Management, Planning and Policy.

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