

Europe's changing energy landscape

Landscape planner **Professor Dr Michael Roth** is chairing a project that aims to reconcile demands to protect landscapes with the need for renewable energy. Here, he discusses the challenges of finding a universal language in research and gaining public acceptance for landscape transformations

Could you outline the focus and objectives of the COST Action Renewable Energy and Landscape Quality (RELY)?

There is a two-way relationship between landscape and renewable energy systems. Landscapes offer vast potential for renewable energy generation, but the production, storage and transport of renewable energy might have significant negative effects on landscape quality. This generates public opposition to the implementation of renewable energy systems, which might endanger the realisation of objectives to boost renewable energy generation throughout Europe. RELY aims to better understand how landscape quality protection and renewable energy deployment can be reconciled. It will contribute to the sustainable transformation of energy systems towards renewable energy, without jeopardising the quality of European landscapes.

In what way has your professional background prepared you to take on the role of Management Committee Chair for this project?

With my background as a landscape, environmental and spatial planner, I am used to interdisciplinary work dealing with landscape quality, landscape perception and technical infrastructure. Speaking the languages of both social sciences and engineering is a prerequisite for successfully leading a large interdisciplinary team as in this COST Action, which currently has more than 100 individual partners from 31 different countries. My participation in international research networks dealing with landscapes, environmental impact assessment, renewable energy and

public participation in planning helped to establish contact with excellent researchers all over Europe and beyond.

How does this Action seek to address both economic and societal needs and technological advances?

Clean energy is a prerequisite for maintaining European lifestyles. The renewable energy sector is rapidly developing – as is evident from discussions about the ‘repowering’ of wind farms with turbines twice as high as, and far more productive than, those installed a decade ago. The political pressure on implementing the energy turnaround is enormous, but it cannot be realised without public support. I also strongly believe that, as the European Landscape Convention states: “landscape is a key element of individual and social wellbeing, and its protection, management and planning entail rights and responsibilities for everyone”. With economic changes and technological advances accelerating landscape transformation, the only way to reconcile objectives is to bring leading experts from the sectors of landscape sciences and planning, renewable energy technologies, economics, public participation and governance together to advance a transdisciplinary and multi-paradigm science base to aid in the management of landscapes.

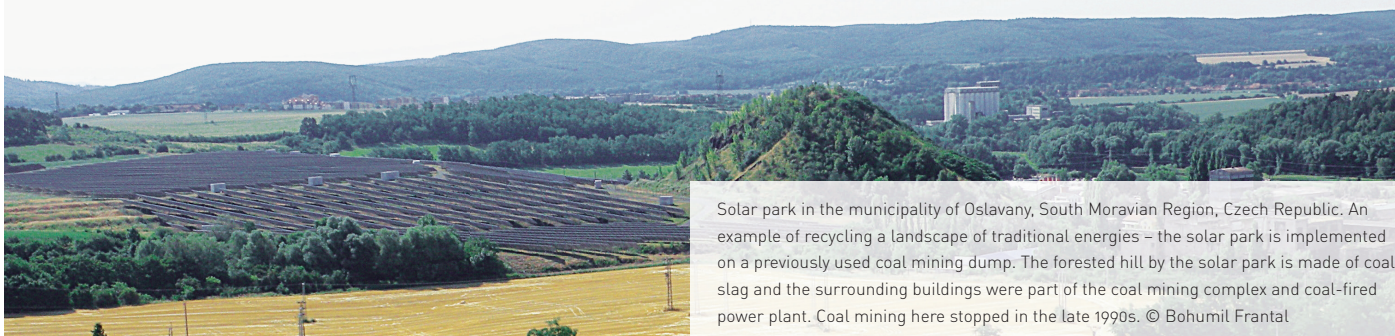
Why is it important for this Action to maintain a pan-European perspective?

First of all, as outlined in the European Landscape Convention, landscape is a basic component of natural and cultural heritage, contributing to the consolidation of the European identity. Furthermore, there is a European – if not global – perspective to renewable energy development, and

renewable energy goals have to be met on an international level to successfully deal with climate change. Finally, diversity in renewable energy potentials and developments throughout Europe, as well as in planning and participation cultures, allows individual countries to learn from each other and develop more effective approaches.

What obstacles have you overcome so far? Do you anticipate any forthcoming difficulties?

A constant challenge we face in interdisciplinary and international research is finding a shared language, and a shared understanding of key concepts in order to enable deep collaboration between different disciplines and countries. We are dealing with terms and concepts such as ‘landscape’, ‘planning’ and ‘participation’, which are used differently in everyday language in different countries and are sometimes even contested between disciplines. By building on past research efforts and strong networks such as the Emerging Energies, Emerging Landscapes (EEEL), Permanent European Conference for the Study of the Rural Landscape (PECSRL), Spanish Network on Renewable Energies and Landscapes (RESERP), Landscape Europe, European Culture expressed in Agricultural Landscapes (EUCALAND), and Nordic Landscape Research Network (NLRN), we are on our way to overcoming these obstacles. With an Action as large as RELY, future challenge will be to ensure a continuity of strongly involved participants, yet allow sufficient flexibility to include new participants, as COST is an open framework and participants can join during the course of the action.



Solar park in the municipality of Oslavany, South Moravian Region, Czech Republic. An example of recycling a landscape of traditional energies – the solar park is implemented on a previously used coal mining dump. The forested hill by the solar park is made of coal slag and the surrounding buildings were part of the coal mining complex and coal-fired power plant. Coal mining here stopped in the late 1990s. © Bohumil Frantal



Understanding the opposition

The RELY COST Action, coordinated by **Nürtingen-Geislingen University** in Germany, is integrating findings from the disciplines of landscape planning and renewable energy to provide solutions for sustainable development that suit both

CURRENT EU TARGETS for renewable energy (RE) include an 80 per cent reduction in greenhouse gas emissions by 2050, and an increase in use of RE sources to 20 per cent of total energy consumption by 2020. If successfully implemented, such actions could make a major contribution to the mitigation of climate change; however, public acceptance could stand in the way of these ambitious objectives. Despite the clear benefits of RE in terms of sustainable development, hostility is widespread, with opposition campaigns often citing changes to the local landscape and degradation of 'landscape quality'.

To break the current impasse in European landscape-energy conflicts, an interdisciplinary approach is needed. The lack of such measures to date has meant academic understanding has not been translated into practical mechanisms to resolve the matter. Working to change this is Dr Michael Roth, Professor in Landscape Planning at Nürtingen-Geislingen University in southern Germany. Using his experience in landscape quality and renewable energies, Roth is chairing a project to investigate the relationships between the two, and the role of public participation in the acceptance of RE systems. He hopes this will facilitate their uptake and bring societal, economic and technological benefits to Europe.

THEORETICAL SUPPORT

While the evidence base clearly shows that most people are in favour of RE in principle, when developments are proposed in local areas opposition often arises, with landscape being raised time and again as the primary concern. Such resistance has resulted in high rates of RE project rejection in a number of EU countries,

reaching up to 90 per cent; for example, in certain areas of the UK, the Netherlands and the Czech Republic.

This opposition is impeding the growth of the entire RE sector, and is a growing problem. As the sector expands, facilities are growing in size – solar farms are getting bigger, wind turbines taller and energy crops taking over more fields – and in number, with many more small-scale wind, solar and hydro schemes in place than there were 10 years ago. Furthermore, most of the 'easy' locations have been used, meaning new developments are beginning to encroach on densely populated areas and highly valued, scenic landscapes.

As a result, controversies and rejections are becoming widespread, even in countries that have previously led the way in the uptake of RE, such as Denmark and Germany. To stop this worrying trend, the friction between landscape and energy must be resolved, and questions surrounding public support and landscape capacity answered.

AMALGAMATING KNOWLEDGE

Taking the lead on this is the European Cooperation in Science and Technology (COST), which approved a so-called Action (an interdisciplinary scientific network) on RE and Landscape Quality (RELY). The COST Action RELY aims to understand how European landscape management and RE deployment can be reconciled in order to ensure the sustainable transformation of energy systems.

The project, which kicked off at the start of the year, will consolidate knowledge from

landscape quality, landscape planning, RE production systems and public participation. By collecting evidence from each of these fields, the Action aims to inform best practice for decision making and produce guidelines to help the public participate in RE planning.

The Action will take a pan-European approach, integrating perspectives across disciplines, sectors, countries and regions, as well as both academic and practical viewpoints. By combining existing knowledge from research teams in relevant fields, the Action aims to better understand the issues involved in the transition towards RE. To achieve this, a systematic review will be conducted, followed by a meta-analysis. "I hope that by collating a huge body of empirical research findings from excellent research in the individual participants' projects, we can generate knowledge that is more than the sum of its parts," Roth enthuses.

CONSIDERING CULTURE

Simultaneously, the research will explore current practices, and the problems encountered by specific planning projects, through the Action members' individual, nationally funded research projects. By analysing best practice, RELY will develop new methods to assess the interplay of landscape quality and RE production, as well as new frameworks to involve the public in planning.

Their approach relies on the widely used assessment framework of ecosystem services, but adapted to the planning of RE production systems. The Action will

Wind farms in Caithness, Northern Scotland, UK, with abandoned fields in the foreground. The Highland Clearances and potato famine in the 1800s and economic out-migration in the 1900s led to depopulation. An uneasy coalition of 'natural' beauty, affordable housing and jobs in the renewable energy industry has now stopped this decline and is transforming the area.

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RELY-ABLE OUTCOMES

The RELY Action will generate a number of tangible benefits:

- A systematic review of the relationship between renewable energy (RE) systems and landscapes
- Documentation of landscape quality and character across Europe
- A typology of best practices for sustainable and landscape-compatible RE production systems

- A catalogue to assess the suitability of landscapes for RE systems
- A toolbox for public participation in all planning stages
- A multilingual glossary for scientific collaboration and trans-border public participation

These outcomes will benefit policy makers; decision makers in public agencies and private enterprises; energy, landscape, agricultural, urban and regional planners; the general public; and NGOs

complement the framework by including cultural ecosystem services – these being the non-material benefits people obtain from landscapes, such as aesthetic experience. “I believe cultural ecosystem services have been neglected, yet they are of equal importance for sustainable development and human wellbeing. I hope to advance this perspective for future research,” Roth expands.

Since starting operations in January, the Action has made impressive progress. “So far, we have spent most of our efforts establishing a solid structure to guide the research network over the next four years. We have already set up four working groups,” Roth details. These groups have various foci, including creating a typology of RE production systems and their impacts on landscape quality, and developing integrated participation toolkits for the planning of RE systems. The number of participants has also multiplied at an amazing pace. Beginning with 27 participants from 14 countries, Roth has quadrupled the former and doubled the latter.

A SMOOTH TRANSITION

By integrating findings across disciplines and countries, the Action will have significant and far-reaching impact. It will integrate currently fragmented research on landscape and RE, and thus contribute to a better understanding of the relationship between the two. This new interdisciplinary knowledge base will lead to novel approaches to planning, generating new participatory methods to enable a smooth transition to energy systems based on renewables.

In terms of policy, the project aims to contribute to the successful implementation of both national and EU policies. Because public acceptance is so critical to the realisation of RE systems, the Action will provide a set of criteria necessary for the sustainable and landscape-compatible expansion of RE systems. The ultimate goal is to reconcile the policy agendas of RE development and landscape conservation.

Finally, the project aims to motivate stakeholders in energy to begin locally adapted RE projects of their own by spreading the word about the potential of RE, identifying acceptance-promoting factors and explaining the benefits of locally supported projects.

APPROACHING RECONCILIATION

These efforts are particularly important given the growing pressure on decision makers, communities and planners to resolve landscape-RE conflicts. This pressure arises from the need to meet EU targets while maintaining landscapes, which are important to individual wellbeing and the rural economy. RELY will optimise trade-offs between the two, promoting an effective RE policy without jeopardising the quality of European landscapes. “With both top-down policy and smaller bottom-up initiatives being unable to provide suitable solutions on their own, I am confident that with the landscape perspective, we can consolidate these approaches,” Roth concludes.

INTELLIGENCE

RELY

RENEWABLE ENERGY AND LANDSCAPE QUALITY

OBJECTIVE

To investigate the relationship between renewable energy production and landscape quality, and the role of public participation in the acceptance of renewable energy systems in Europe.

KEY COLLABORATORS

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