

The background of the entire cover is a close-up photograph of a tree trunk covered in vibrant green moss. Two human hands are visible, with fingers gently touching the mossy surface. The hand in the foreground is more prominent, showing the texture of the skin and the moss. The second hand is slightly behind it, also touching the tree. The lighting is soft and natural, highlighting the textures of the moss and the skin.

eco@work

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Sustainable reading
from the Oeko-Institut

Nature for us... ...we for nature

Bridging divides Interview with Maria Noich

Bisons in Spain, otters in Hesse



Anke Herold
CEO, Oeko-Institut
a.herold@oeko.de

Bisons are back in the Iberian Highlands north of Madrid. Rewilding Spain, an initiative within the European Rewilding Network, re-introduced the European bison to Guadalajara Province early this year. Projects such as this have succeeded in boosting the population of Europe's largest terrestrial mammal from around 2500 to some 9000 animals over the past decade. This is good news – not just in terms of species protection. For through its grazing and trampling behaviour and the fertilising effects of its excrements, the European bison can make valuable contributions not just to reviving biodiversity but also to preventing wildfires and mitigating climate change.

It is examples such as this that give the restoration of nature such a strong appeal. For countless successful projects highlight that while humankind has definitely done great harm to natural systems if we give them an opportunity to recover plants and animals will return. In Germany, projects to restore peatland and river systems are good examples.

Unfortunately, restoration is often viewed narrowly in terms of nature conservation alone. In actual fact, it is a vital approach by which to preserve the natural bases of our lives, such as clean water and healthy soils, and by which to cope with the consequences of climate change. It follows that restoration is about protecting human lives, health and rights and is therefore a task of major societal importance. It poses challenges, beyond doubt. The price of land is one. Farmers who no longer use their fields to harvest crops, instead setting them aside for natural development, incur direct financial loss as the value of the land drops. This needs to change as a matter of urgency – the value of rewetting arable land, for instance, needs to be expressed not just in idealistic but also monetary terms.

We also need far more knowledge. About the current state of nature, but also about the options for improving it. For example, recently the German Scientific Advisory Board for Nature-based Climate Action, which I co-chair, received reports about action taken by a number of local conservation authorities against farmers who had cut the hedges planted in the course of agroforestry measures. Yet precisely such cuts are beneficial to biodiversity. Where cooperation is so urgent, conflict arose instead.

I would like to close with a thought about an animal much smaller than a bison: the otter. This has been regionally extinct in large parts of Germany for quite a while and is still classed as endangered. Now the otter is slowly returning. It values good water quality – definitely good news for us humans, too. It has been sighted in the German states of Hesse and Baden-Württemberg. Have you spotted one yet?

Yours,
Anke Herold

CONTENTS



IN FOCUS | INTERVIEW

- 3 “The Nature Restoration Regulation is society’s opportunity to halt species extinction”**
Interview with Maria Noichl (MEP)

IN FOCUS

- 4 A matter of survival**
Restoring nature in Europe
- 6 Dual benefit**
Restoration and nature-based solutions for climate and biodiversity

Further information on our topics can be found online at www.oeko.de/en/ecowork-magazine

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“The Nature Restoration Regulation is society’s opportunity to halt species extinction”

The atmosphere in the European Parliament was rarely as charged as it was during voting on the EU Nature Restoration Regulation. Rarely was a climate of distrust against a piece of legislation created with such energy and so many false claims, rarely was a decision so tight. Maria Noichl was in the eye of the storm in spring 2024 in her capacity as member of the European Parliament and shadow rapporteur in the Committee on Agriculture and Rural Development (AGRI). She speaks to *eco@work* about the causes of the bitter debate and explains why the Regulation could help to bridge the deep divide between farmers and environmentalists.

Ms Noichl, why was the process surrounding the Restoration Regulation so turbulent?

I think the topic was a test field for the new majorities following the 2024 European elections, which resulted in a distinct shift to the right. There is now strong mobilisation along party policy lines in which there is fundamental dispute about regulation and deregulation. At the same time, discussions on the Regulation were framed in such a manner that farming and environmental protection were pitted senselessly against each other. There is now a battle of cultures that is driven massively by the right wing. Conservative forces in Germany were seen – and continue to be seen – as the main agitator of an intense offensive against the Regulation. These forces have no qualms about spreading disinformation and exploit the concerns of Europe’s farmers in a very targeted manner for their purposes. Yet in actual fact the Regulation is designed to reconcile both sides by rewarding the ecosystem services of farmers financially. Of course there are also

farmers who already manage their land differently, in harmony with nature. Unfortunately, they did not raise their voices loudly enough in this process.

How can this sort of thing be avoided in future?

It would be a good thing if in European politics, as is commonplace at national level, there were coalition agreements that safeguard majorities. Then the Group of the European People’s Party (EPP) would not constantly swing from one side to the other. And all parties would then be able to achieve results in their key concerns. In our case, this would include, for instance, a European social security card. I wish more stable cooperation – in the interests of Europe’s citizens, too.

You were shadow rapporteur and had to forge compromise in a highly controversial process. What does it take for this to succeed?

You must define in advance which points you can certainly give up, which under certain circumstances, and which not at all. For us, grassland conservation was extremely important and peatland conservation even non-negotiable.

What is your assessment of the Regulation as adopted?

The Nature Restoration Regulation is society’s opportunity to halt species extinction and the ongoing loss of ecosystems across the EU. We should grasp this opportunity in view of the poor condition of many European ecosystems. Majorities have shifted again in the meantime in the European Parliament and under such circumstances many are glad if environmental protections are not rolled back. I take the view, however, that it is still possible to take many small steps forward. This applies

to restoration, too – the Regulation is a basis for achieving quite a lot.

What can be done to move away from the polarisation about this topic?

The Regulation could be a bridge. If we succeed in setting financial incentives such that farmers can profit at farm level from restoration actions while doing something that is furthermore held in high esteem in society, we could overcome the distrust between farmers and environmentalists. If in the end only half of the farmers join in, we will have achieved a lot.

What setting will this require?

Sufficient financial resources for one thing. The pricing of restoration actions needs to be transparent and clear. Farmers must know in advance what they are letting themselves in for. Another point is that there must be clear legislation giving farmers long-term certainty. This must, in my view, include accepting that farmers are free to reverse their decision after ten years if they want to do something else with their land.

Thank you for talking to *eco@work*.

The interviewer was Christiane Weihe.



*Talking to eco@work: Maria Noichl, Member of the European Parliament for the Group of the Progressive Alliance of Socialists and Democrats
maria.noichl@europarl.europa.eu*

A matter of survival

Restoring nature in Europe

It is degraded. Overexploited. And the web is fraying. European nature is in a poor state. Biological diversity has declined, ecosystems have been destroyed, a third of the continent faces water stress. Not least: no other continent is warming faster – climate warming is advancing in Europe at a rate twice the global average. Numerous extreme weather events such as drought and flooding are the result, with devastating impacts on the natural environment. The European Union's Nature Restoration Regulation is designed to remedy the situation. It obliges the EU member states to draw up national restoration plans. In Germany, the Oeko-Institut is contributing its expertise to the process, working on ways to conserve key ecosystems and restore their functions.

The state is poor and the outlook not much better. This is the picture painted in the recent State of the Environment Report by the European Environment Agency (EEA). Water scarcity, soil degradation and the poor or even very poor state of 81 per cent of protected habitats give particular cause for concern. Moreover, the EEA notes that the outlook for most environmental trends is concerning and poses major risks to Europe's prosperity, security and quality of life.

The EEA reports that
60–70%
of soils in Europe are now degraded.

"The environment is not just something we enjoy on a weekend trip. We need it for our very survival," says Judith Reise, Senior Researcher at the Oeko-Institut. "The value of ecosystem services can't be overstated. We need them to produce food, to provide water, to harvest resources such as timber and for our recreation. At another level, they regulate the climate by sequestering carbon, keep the air clean by filtering

pollutants, cool landscapes and purify our water. And let's not forget the services provided by individual groups of species: insects, for example, which pollinate our plants." The EEA highlights that attainment of the goal of climate neutrality by 2050 will also depend on how we handle natural resources such as land and water in future.

THE EU NATURE RESTORATION REGULATION

The EEA further underscores how essential it will be to pursue nature-based solutions to restore habitats. "That strengthens resilience, fosters biodiversity conservation and climate change mitigation and helps adapt to climate change," notes Reise. The European Union's Regulation on Nature Restoration adopted in June 2024 by the European Council is designed to promote such solutions. This is the first piece of legislation to establish restoration targets for degraded ecosystems in the EU in a legally binding form. By 2030 restoration measures are to have been carried out in at least 20 per cent of the terrestrial and sea areas in need of restoration. By 2050, this is to have been done in all ecosystems – by then, 100 per cent of terrestrial ecosystems of high conservation value and 90 per cent of those in

marine environments are to have good ecological status. "It is very encouraging to see that Europe's states are now addressing the issue, have to take stock of the areas they can and must restore, and have a timeline to do so." The objectives could have been more ambitious, no doubt. "In view of the poor state, efforts will need to be stepped up considerably. Not least because biodiversity and climate issues interlock here."

62%
of European water bodies are in a poor ecological state.

The EU member states are now obliged to prepare national restoration plans setting out detailed measures by which these targets can be met. Synergies are to be ensured with existing national and international schemes – such as the EU-wide Natura 2000 protected area network and Germany's Federal Action Plan on Nature-based Solutions for Climate and Biodiversity. The Oeko-Institut is assisting the German Federal Agency for Nature Conservation

(BfN) in producing Germany's national restoration plan. This project involves cooperation with numerous partners: the Ecologic Institute, Luftbild Umwelt Planung GmbH, the University of Duisburg-Essen, the University of Rostock, the IVL Institute for Phytosociology and Landscape Ecology, the Eberswalde University for Sustainable Development and Stefan Brunzel GbR. "One of our outputs will be a guidance paper for the competent authorities setting out how to identify sites potentially suitable for restoration measures. We are compiling publicly available data sources suited to the task and providing examples of how to process these." Moreover, the project team is advising BfN on potential and essential restoration measures. "Beside converting site-inappropriate monocultures to mixed forests, such measures can involve restoring rivers to a more natural state, promoting more extensive grassland management or rewetting peatland."

CONTROVERSY AND CONFLICT

Even prior to preparation of the national restoration plan there was no lack of controversy over the European Regulation. "There was a veritable campaign against the Nature Restoration Regulation by NGOs representing farmers and forest owners. They raised many fears, such as of expropriation or a general loss of economic freedoms. Yet implementation of the Regulation in fact rests above all on voluntary actions. This is quite clear, for instance, in the passages of the Regulation concerning the rewetting of peatland under agricultural use. The process is mainly about incentivising restoration measures, for example through the grant funding available un-

der Germany's Federal Action Plan on Nature-based Solutions for Climate and Biodiversity.



In principle, however, Judith Reise can well understand the frustration of many farmers and forest owners that has resulted from the implementation process of the Natura 2000 scheme. "Natura 2000 is a very rigid system unable to give full consideration to ongoing changes of habitat types. Its provisions need amendment." She also understands the fears of some of Germany's regional states (Länder). "In a highly bureaucratic setting with shrinking public budgets any additional task is of course a burden. And it is equally clear that it will not be an easy process – I do think, however, that one should wait and see how implementation actually evolves on the ground before embarking on confrontation." Judith Reise is keen to stress that farmers can indeed profit from the measures. "We're talking here about measures to control erosion or adapt to climate change, about new ways to make an income such as paludiculture and about making farm management fit for the future."

The Oeko-Institut's researcher is confident that the process of implementing the EU Nature Restoration Regulation in Germany will principally involve volun-

tary actions and grant incentives. "Unfortunately, the Regulation does not establish a financing strategy, there is no EU budget for it. In this context it is deplorable that the EU LIFE Programme, which promotes biodiversity and climate action among other things, will probably not be continued in its current form after 2027."

On a final note, the Restoration Regulation would have had a different name if it were up to Judith Reise. "It's a pity it wasn't called Regulation to Safeguard our Livelihood Base. For that is precisely what it is about if we want to continue to have the ecosystems in the future upon whose services we vitally depend."

Christiane Weihe



Judith Reise holds a bachelor's degree in Biodiversity and Ecology and a master's in Global Change Ecology. She joined the Oeko-Institut's Energy & Climate Division in 2019, where she works on synergies between biodiversity conservation and climate action, the conservation and restoration of carbon-rich ecosystems and sustainable forest management.
j.reise@oeko.de

Dual benefit

Restoration and nature-based solutions for climate and biodiversity

The diagnosis for Germany is much the same as for Europe: ecosystems are in a poor state. The causes include intensive use by farming and pesticide inputs. Climate-related stress is increasingly a culprit, too. Yet there is also some good news: numerous actions do help to restore vital ecosystems, thus also doing justice to the European Nature Restoration Regulation. The Oeko-Institut is researching suitable instruments. Moreover, it is revealing the positive climate impacts these biodiversity actions can have.



The data published by the German Federal Agency for Nature Conservation (BfN) on the nationwide state of nature highlight an array of issues: 73 per cent of habitats are in an unfavourable condition. What is more, their condition is deteriorating steadily over time. In addition, 36 per cent of species are in an unfavourable-inadequate and 37 per cent in an unfavourable-bad condition and in this regard, too, the situation has deteriorated further since the last survey. "This trajectory is due partly to land-use changes, such as the conversion of grassland to arable fields. Greater intensity of land use similarly often has a negative impact on the condition.

To these pressures are added the water pollution by sectors such as agriculture, industry and transport, and the drainage of agricultural and silvicultural land," notes Dr Hannes Böttcher, Senior Researcher at the Oeko-Institut. "Furthermore, our ecosystems are exposed ever more to climate-related stress." In many points there is simply a lack of sufficient knowledge about the state of nature – notably with regard to forests. "The national forest inventory survey concentrates mainly on the aspect of timber availability. The data collected in this manner do not suffice to assess the ecological status of forests, for instance their habitat value and connectivity."

BIODIVERSITY AND CLIMATE ACTION

The European Environment Agency (EEA) similarly stresses in its country profile for Germany that greater efforts and more measures for environmental quality and climate action are needed. Harnessing synergies among policy goals is a key lever. In a project commissioned by the German Environment Agency (UBA), scientists in the Oeko-Institut's Energy & Climate Division show how biodiversity conservation and climate action can be combined effectively in Germany. Specifically, they



**Peatland soil conservation measures
could reduce greenhouse gas
emissions in Germany by more than
30t CO₂-equivalent
per hectare and year.**

analysed a range of measures in different ecosystem types – grassland, arable land, forests and peatland – that deliver effective, nature-based solutions for both climate and biodiversity. A publication titled “A programme of action for nature-based solutions: Harnessing synergies between biodiversity conservation and climate action” (only available in German: Das Aktionsprogramm Natürlicher Klimaschutz: Wie können Synergien zwischen Biodiversitäts- und Klimaschutz gehoben werden) emerged from the project. This showcases the diverse array of measures promising substantial synergies between climate change mitigation and adaptation on the one hand and biodiversity enhancement and conservation on the other. “We show in this publication how stronger nature conservation has positive effects upon the resilience of ecosystems,” notes Böttcher. Sustainable land use can enhance biological diversity while at the same time binding carbon in soils and biomass if measures are designed appropriately and are carried out on suitable sites.

GRASSLAND

“Changing grassland management is a key measure, for grassland plays a pivotal role in carbon sequestration and biodiversity conservation. This implies,

for instance, switching to extensive management practices that go without fertilisers and involve only moderate mowing.” A further benefit of species-rich grassland is that it is relatively resilient to climate change impacts such as drought.

AGROFORESTRY AND PEATLAND

Agroforestry systems are another type of land use that offers major synergies between climate and biodiversity action, especially if local tree species are planted and particularly if this is done in landscapes with low structural diversity. “Agroforestry reduces erosion and increases soil carbon levels,” explains the Oeko-Institut expert. “Many species further profit from the greater habitat diversity and connectivity provided by agroforestry systems.”

Peatland and wetland restoration is particularly promising in terms of climate change mitigation, as rewetting is highly effective in reducing greenhouse gas emissions and conserving species dependent upon wet habitats. “This need not necessarily imply full rewetting, for moist meadows, in particular, such as litter meadows on lowland moors, are a valuable habitat for butterflies, dragonflies and many other organisms.”

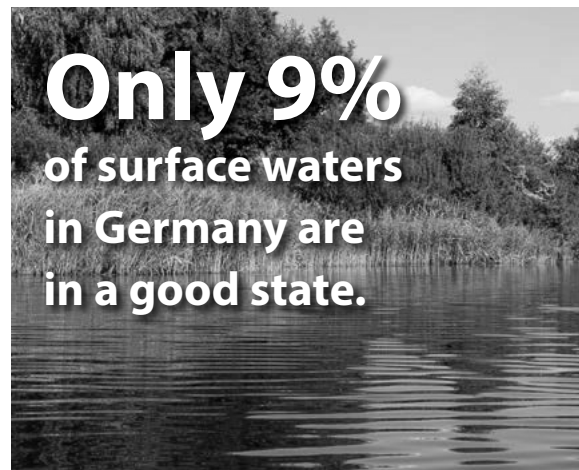
SPECIES-RICH FORESTS

Major benefits in terms of carbon storage and biodiversity are also to be found in forests, as the Oeko-Institut’s analysis shows. “Key measures include establishing new forest areas on the one hand, and converting existing ones to mixed, climate-stable forests rich in species. A more diverse composition of tree species can furthermore make forests more resilient to climate change impacts. An important point is to rely, wherever possible, on indigenous and site-appropriate tree species.” Not only the immediately visible part of forests plays a role: In view of their major importance as carbon reservoirs, greater attention needs to be paid to forest soils. “Grant programmes designed to finance more sustainable and low-impact forest management have a role to play here; for instance, they can offer financial incentives for forest owners to leave wood in the forest.” Here, as in all other approaches, the specific condition of a forest needs to be taken into account. To deliver simultaneous positive biodiversity and climate outcomes, forests that are not all too impaired by drought and other extreme weather events should be used less intensively than before. In severely impaired forests, on the other hand, targeted tim-

25%
of the roughly
40,000 species
in Germany are
endangered.



Only 9%
of surface waters
in Germany are
in a good state.



ber use can help to convert them more quickly. Whichever approach is taken, the overarching goal should always be to establish ecosystems that are resilient over the long term.

It is essential, Böttcher notes, that all measures are not considered in isolation but in an integrated manner. "We must keep sight of interactions and potential goal conflicts. If we conserve forests, timber production is likely to fall. This has to be balanced by utilising materials with as long a service life as possible and reusing timber resources more than in the past – above all, less timber must be consumed for energy production."

GETTING EMISSIONS DOWN

The Oeko-Institut has quantified the tangible climate benefits of restoration measures in an analysis titled "Synergies between restoration and nature-based climate solutions. Scenario analysis of GHG mitigation potential in the land-use sector arising from implementation of the EU Nature Restoration Regulation".

The project team shows in various scenarios how different variants of a potential national restoration plan would affect greenhouse gas mitigation. As

the actual plan is still being drawn up, a number of simplifying assumptions were made for the purposes of scenario analysis.

The analysis reveals that rewetting peatland is by far the most effective measure. This can deliver additional annual GHG reductions in Germany amounting to up to five million tonnes CO₂-equivalent (CO₂e), depending upon water levels in the sites concerned and the proportion of paludiculture. "Agroforestry, too, can have a great effect," stresses Dr Hannes Böttcher, "depending on how intensively the biomass is used and how much land is available, it delivers GHG reductions totalling up to 16 million tonnes CO₂e." Expanding the forested area can provide an additional emissions reduction of up to 3.5 million tonnes CO₂e annually in Germany, moderate forest conversion to deciduous species up to two million tonnes CO₂e.

INCENTIVISING AND REWARDING ECOSYSTEM SERVICES

The Oeko-Institut's researchers note that whoever restores ecosystems and their services needs to be rewarded, for instance by setting up a restoration fund from which payments can be made. "The whole of society benefits – for example through clean air and cooler cities. Forest owners should therefore

receive financial compensation if they manage their forests with low impact in order to enhance ecosystem services. Similarly, farmers should receive payments for their efforts to ensure a healthy aquatic environment." If such mechanisms are set up this could motivate many stakeholders to view the Nature Restoration Regulation not as a threat but as an investment in their own future.

Christiane Weihe



Dr Hannes Böttcher holds a doctoral degree in Forest Sciences and is a Senior Researcher with the Oeko-Institut's Energy & Climate Division since 2013, where he heads the Biogenic Resources and Land Use subdivision. He works on, among other topics, emissions from land use, land-use change and forestry (LULUCF), the carbon inventories of forest ecosystems and the forestry sector, and the biomass potential of agriculture and forestry.
h.boettcher@oeko.de



Since 1990 the population of wild bees in Germany has declined by 42%.

