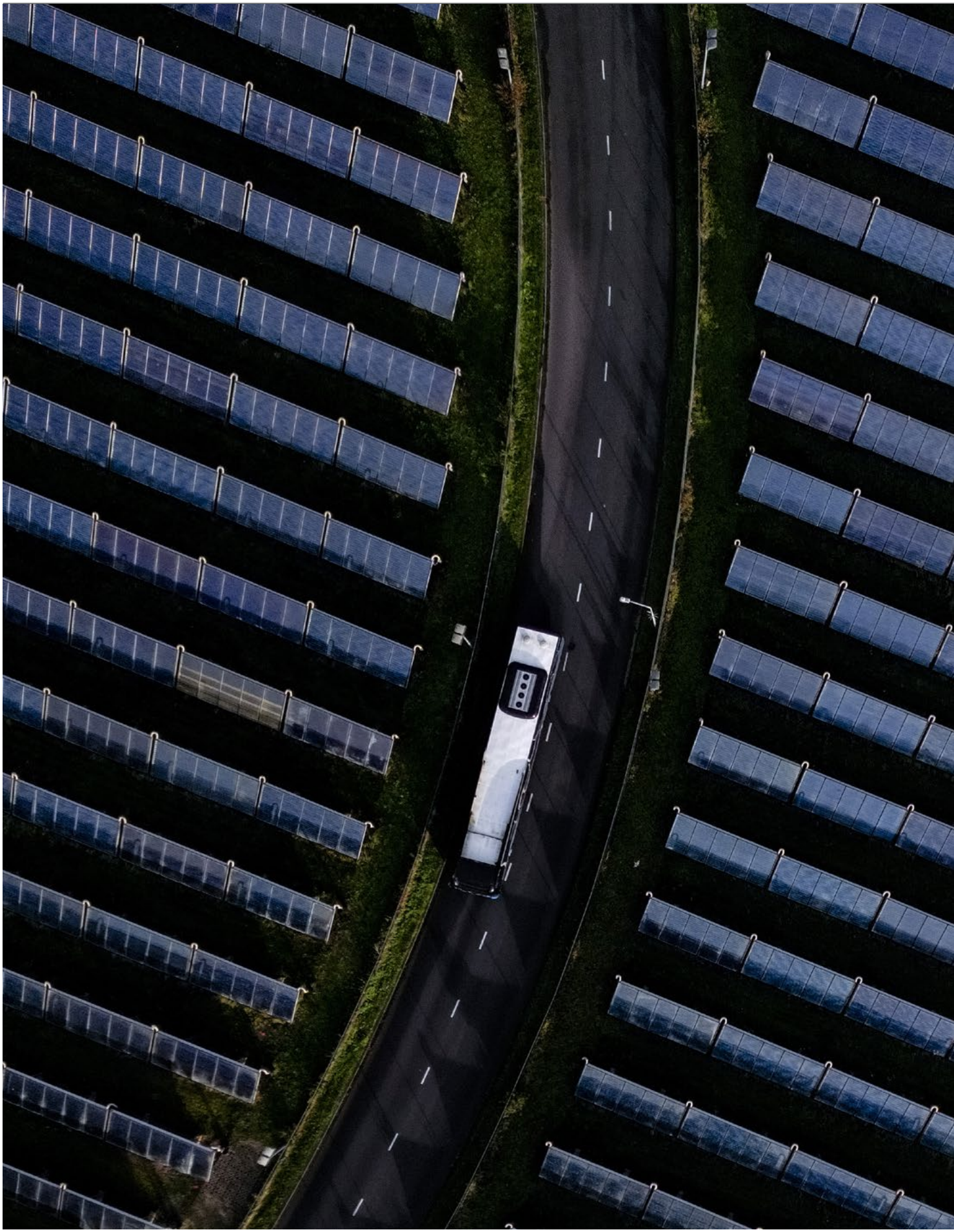

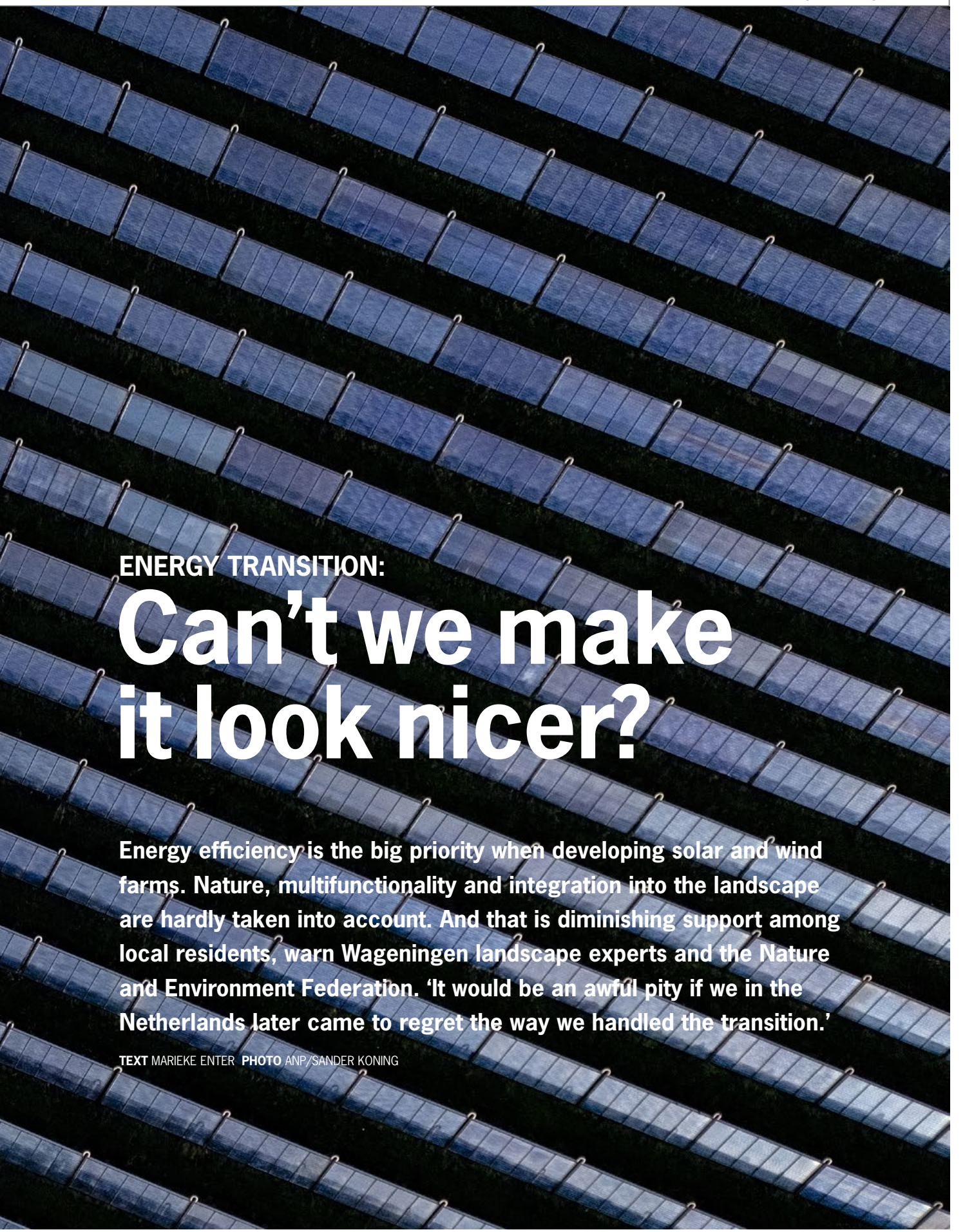

ENERGY TRANSITION:

Can’t we make it look nicer?

Energy efficiency is the big priority when developing solar and wind farms. Nature, multifunctionality and integration into the landscape are hardly taken into account. And that is diminishing support among local residents, warn Wageningen landscape experts and the Nature and Environment Federation. ‘It would be an awful pity if we in the Netherlands later came to regret the way we handled the transition.’

TEXT MARIEKE ENTER **PHOTO** ANP/SANDER KONING

‘Promising combinations with nature, landscape and agriculture are rarely implemented’

Anyone who drives through the Netherlands regularly can see that the Dutch energy transition is gathering momentum. The number of wind and solar farms is growing rapidly, and will continue to do so in the years to come. This growth is necessary in order to be generating at least 35 terawatt-hours (TWh) of sustainable electricity on land by 2030, as pledged in the Climate Agreement.

The government has delegated the task of deciding where and how these 35 terawatt-hours about a third of the country’s current annual electricity consumption should be generated in 30 energy regions. Each region has worked out its own regional energy strategy, RES for short. The Netherlands Environmental Assessment Agency (PBL) calculated at the end of last year that together, these strategies will suffice to meet the target in the Climate Agreement. But at the same time, PBL warned of the danger of stagnation – due not only to an overloaded electricity grid, but also to a potential lack of public and local government support.

That is not an imaginary danger, agrees Sven Stremke, associate professor of Landscape Architecture and scientific coordinator of the Wageningen Solar Research Programme. For years, he and associate professor Dirk Oudes have been researching large-scale energy landscapes, both in the Netherlands and abroad. Their book about it, *Power of Landscape*, came out in late 2022. In the book, written with Paolo Picchi of the Academy of Architecture, they explain why the spatial impact of the energy transition can be such a headache. Renewable energy generation requires more space than that of fossil energy, and what is more, often takes place close to residential areas.

DECLINING SUPPORT

The researchers note that so far, the energy transition in the Netherlands mainly takes the form of technical-looking, monofunctional solar or wind farms, which in size and design are neither a sight for sore eyes nor an asset to the community. Take the Dorhout Mees solar farm near Biddinghuizen, which is currently the largest in the Netherlands. It boasts more than 300,000 neatly contiguous solar panels on a surface area of 85 hectares. These large-scale, industrial-looking wind and solar parks do nothing for public support, so much is becoming clear now the time has come to implement the regional energy strategies. Plans for wind turbines have been met with resistance for some time, but it is a relatively new development that local residents are starting to object frequently to the construction of solar parks – and appealing against it in the highest administrative court. The plans are not always abandoned as a result, but an appeal procedure always causes a considerable delay, sometimes going on for years. Local government support for new energy projects cannot be taken for granted, either. For instance, wind turbines were recently banned by a number of municipal councils, including those of the municipalities of Voorne aan Zee (Zuid-Holland) and Altena (Noord-Brabant). This is exactly the kind of stagnation the PBL warned of in late 2022.

GENUINE CONCERN

It would not be fair to dismiss this public and local governmental resistance as just the ‘not in my back yard’

ECO LABEL FOR SOLAR PARKS

Wageningen researchers are closely involved in the development of the first quality label for nature-inclusive solar parks in the Netherlands. Together with other research institutes and several companies, they are investigating how the nature and soil quality on new and existing solar farms can be improved through design and vegetation management. Their research results will be translated into guidelines for a label. This EcoCertified Solar Label will guarantee added value for biodiversity. The project will run until the end of 2025.

PHOTO OLAF MOLENAAR

De Kwekerij solar farm in Hengelo in the eastern Netherlands combines energy generation with nature and recreation.

mentality, says Oudes. 'That term assumes a self-centred outlook, whereas the objections to large-scale energy parks also stem from people's genuine concern for their environment and the landscape,' he argues.

Stremke and Oudes' long-term research shows that the landscape quality of recent solar energy projects in the Netherlands is much lower than that of older examples, which were cutting-edge in their time. Take the much-praised solar farm De Kwekerij in Hengelo in the Achterhoek region, which was designed in consultation with local residents. There, energy generation, nature and recreation go hand in hand; residents can take a stroll and children can play there. Biodiversity is thriving there too, thanks to features such as a long hedge, indigenous flower mixes and wadis. De Kwekerij dates from 2016. Very few comparably nature-inclusive and multifunctional solar or wind farms have been created since then.

This is largely a matter of financial incentives, Oudes and Stremke explain. The Dutch government's current subsidy schemes target the greatest possible CO_2 reduction at the lowest possible cost. Factors such as multifunctionality, nature inclusiveness or blending into the landscape are low priority: energy efficiency comes first. This encourages developers to build solar or wind farms that may be super-efficient, but don't tend to do much for support from local residents.

'Up to now, the energy transition has mainly revolved around concepts such as technology, efficiency and maximizing profits. Why don't we assign equal value to things like the cultural landscape, people or nature?' Stremke wonders.

It is not that Stremke and Oudes are opposed to all large-scale wind and solar farms. 'At locations such as Wieringermeer in Noord-Holland or Noordoostpolder in Flevoland, they can be a perfectly good choice. But >

PHOTO ANP VINCENT JANNINK

PHOTO SHUTTERSTOCK

Multifunctional solar farms: shade for sheep and floating solar panels on a gravel pit.

they are only one of the options, and there are plenty of other possibilities,' says Stremke.
If popular support for the energy transition is to be maintained, the two scientists are convinced that solar and wind farms must quickly be made more attractive and more multifunctional. 'Promising combinations with nature, landscape and agriculture are rarely applied. It's the wrong way round: people have a better and better idea of what they do want, but they are getting get more and more of what they don't want,' Stremke notes. The Nature and Environment Federations (NMF) share this concern, which prompted the joint position paper 'Further with onshore energy generation', on an alternative, better approach to onshore renewable energy generation.

PERSISTENT MISUNDERSTANDING

The idea that the energy transition is hard to combine with other interests is a persistent misunderstanding, say Oudes and Stremke. 'Administrators habitually see landscape and energy transition as incompatible,' Oudes observes. 'They say: "We've got to do something about the energy transition, but it pains us because it will ruin our landscape". That is faulty reasoning, but it does colour how people view the energy transition.'
Thanks to that reasoning, the potential for combining, say, solar energy with nature, landscape or agriculture remains largely unexploited – with a handful of exceptions, such as fruit farms where fruit is grown under solar panels. At WUR's experimental farm in Randwijk, pear trees grow under solar panels which let light through in different ways. And in Babberich (Gelderland) and Olland (Noord-Brabant), commercial fruit growers grow fruit like raspberries, blackberries and strawberries under a protective canopy of semi-transparent solar panels. Wageningen researchers are monitoring the yields, both agricultural and solar, as well as the ecological impact of these systems.
There are opportunities for such 'dual use' in livestock farming too. Recent Master's graduate Emma Kampherbeek found, for example, that sheep in California graze more on plots with solar panels than on similar plots without. She thinks this is due to the protection the panels provide against heat and harsh weather conditions, which leads the sheep to graze under them for longer. Another factor is that the solar panels have an impact on the vegetation: the microclimate around the panels, with more shade and condensation, results in a higher protein content and better digestibility.
Of course, the Netherlands is not California, but Kampherbeek says there are parallels to be drawn, especially in view of climate change. 'The Netherlands has between twice and four times as many days with warm and tropical temperatures as it did 30 years ago. Meanwhile, Dutch livestock are already at risk of heat stress on almost a quarter of the days of the year,' she says. So solar panels could provide welcome shade and shelter for grazing animals.

CENTRAL GOVERNMENT COORDINATION

But there are still too few instances of this kind of dual use, in Oudes' opinion. 'Moreover, the spatial

PHOTO GUY ACKERMANS

PHOTO TNO / NORBERT WAALBOER

Pear trees under translucent solar panels; a cycle path made of solar panels.

quality of our surroundings obviously shouldn't depend entirely on what happens in individual projects. This should be under central government control,' he stresses.

The scientists' advice is to take the landscape as a starting point. They are referring to landscape in the broadest sense: the visible landscape, what it means to people, and its functions: food production, water storage, nature, culture, you name it. 'From that perspective, see which forms of energy generation are appropriate and have added value. What other social benefits could it offer: recreation, nature development, agriculture, or nitrogen reduction perhaps? In this day and age, you can't have one without the other,' says Stremke.

Oudes draws a parallel between the energy transition and the Room for the River programme, which was designed to improve the protection of the Dutch river areas from flooding. This 'relandscaping' was used to develop the areas concerned in consultation with local people. The outcomes included the creation of new nature areas and recreational facilities. Well-known examples are the side arm of the Waal near Nijmegen and the IJssel delta near Kampen.

Oudes: 'There you can see the added value of a government that decides that a major hydraulic engineering project like that should be tackled from a broader perspective. So not just with the clear-cut goal of reducing the flood risk, but also based on the premise that the local community should benefit from it in terms of social value and spatial quality. And exactly what that means should very much be defined by local people.'

A landscape-inclusive approach to the energy transition is not necessarily the easiest way to go, admit the landscape experts, nor perhaps the fastest, at first. Oudes: 'But let's make sure we're not beating ourselves up in 10 years' time because of missed opportunities. It would be a terrible pity if the Netherlands later came to regret the way we handled the transition.' ■

www.wur.eu/solarresearch

WAGENINGEN SOLAR RESEARCH PROGRAMME

In the Wageningen Solar Research Programme, about 75 Wageningen researchers from different disciplines are working on a scientific basis for sustainable solar parks that benefit the economy, nature and the local community alike. The research focuses on six interrelated themes: landscape and spatial quality, community involvement, biodiversity and nature, agrivoltaics (combining energy production with food or feed production), meteorology and soil quality. The researchers collaborate regularly with members of the public, farmers, landowners, energy and technology suppliers, governments and civil society organizations.