The law of the land

Professor Jody Endres and Rayane Aguiar discuss their relationship as mentor and protégé, and their work towards investigating and designing policy frameworks that can foster sustainable practices.
Sustainable standards

Policy researchers at the University of Illinois, USA, are examining the issues associated with setting standards for sustainability that can be followed by farmers and growers across the nation and beyond.

THE PERENNIAL CHALLENGE of environmental protection, which pervades the entirety of human history, is tied to the inability of individual people to understand the collective impact of their actions.

From the first megafauna casualties of the Anthropocene extinction to the desertification of Mediterranean Europe in the classical era, and even extending to modern challenges like the carbon crisis and overfishing, there often seems to be a fundamental disconnect in the minds of individuals between the scale of the problem and their own personal behaviour. One person, we tend to think, surely could not have a noticeable impact on mammoth herds, the vistas of Arcadia or global fish stocks. Yet still, these precious and irreplaceable resources have disappeared or are dwindling fast.

Today, many of the human practices that put the most strain on the environment are associated with agriculture. The rapidly increasing global population is putting greater pressure on farmers and growers, which in turn puts more pressure on the land. The depletion of groundwater, soil overuse, eutrophication from fertiliser run-off, animal waste from intensive farm units and pollution from pesticides and other chemicals all take their toll on the countryside – and, just like their counterparts through the ages, individual growers may find it hard to connect their business with the big picture. Of course, even the many farmers who try to act responsibly will have differing ideas as to what level of pollution or overuse is acceptable.

A TIP OF THE CAP
This is where agricultural policy comes in. By regulating the agricultural industry and ensuring that the same standards are implemented across the board, national governments can control pollution and unsustainable land use. Furthermore, thanks to the legal frameworks supporting such policy, governing bodies have recourse to strong measures when they find individuals who are not complying. Such regulation effectively connects the small farmer to the big picture – but with increasing globalisation, it is possible to develop this advantage even further. The concept of the Common Agricultural Policy (CAP), as implemented across the member states of the European Union (EU), facilitates greener standard practices through even larger geographical areas – at least, in theory.

Are there limits to the utility of expanding CAP? What sustainability lessons could major
For more than seven years, Endres has been concerned with developing new standards for biofuels sustainability that can encourage a sustainable system. Agricultural producers like the US, Brazil and Europe share with one another? And what shortcomings currently prevent agricultural policies from achieving their environmental, economic and food goals? All of these questions and more are being considered by a team of researchers at the University of Illinois. Professor Jody Endres leads work focused on the legal and regulatory side of agriculture in the University’s Department of Natural Resources and Environmental Sciences; her goal is to encourage growers to use more diverse and sustainable mixes of crops including biofuels. Her student Rayane Aguiar, on the other hand, is more interested in comparing the policies of different regions.

**PERENNIAL HARVEST**

Endres’ work focuses on the legal environmental regimes that surround biomass-based cropping systems. “Renewable energy policy in Europe is driving discussions in the US about how to verify the sustainability of bioenergy feedstocks, whether for transportation fuels or power, particularly for export to Europe,” she explains. Growing practices in the US contrast with the traditional methods that are often employed in Europe in that they tend to focus on monocultures. US growers, in other words, are intent on producing one kind of crop in bulk – a system that maximises returns and minimises expenditure in the short term, but which has a detrimental impact on the land and a destabilising effect on the agricultural economy. In Europe, growers who follow traditional lines are more likely to plant a number of crop varieties that complement one another, and make more balanced use of the land’s resources.

For more than seven years, Endres has been concerned with developing new standards for biofuels sustainability that can encourage a sustainable system like the one maintained in Europe – or even, ultimately, a perennial cropping system. “Bioenergy served as the perfect platform to consider how to redesign agricultural and forested landscapes to include more diverse systems that can include many perennial bioenergy crops,” she enthuses. Indeed, with rising consumer concern in the US over forest use for biofuels, private and public organisations have never been under greater pressure to ensure that the agri-forest supply chain is sustainable. In order to achieve this, though, sustainability attributes must be measured and legal frameworks developed.

**TOOLS AND LEGITIMACY**

In the late 2000s and early 2010s, Endres kicked off her work with outreach activities that allowed her to engage with multiple stakeholder groups, an essential process towards achieving a complete understanding of the overarching principles involved. She then began to develop quantitative measurement tools based on these parameters. In a 2012 paper published in the Southern Illinois University Law Journal, Endres examined the potential of a variety of governmental and market-driven frameworks to achieve sustainability standards, drawing from a wide range of international case studies employed publically and privately. These different approaches provided the basis for her analysis of agricultural regulation.

The conclusion of this sustained study was that there were two major challenges facing the establishment of effective biofuel standards. Firstly, those standards – regardless of their source – would have to achieve some degree of legitimacy in the eyes of practitioners, or risk being repudiated. Secondly, in order for such standards to have an impact, they would need to be accompanied by relevant tools that could be utilised by those in the industry. Endres was keen to point out that without support and guidance, practitioners would not easily be able to implement sustainable practices. Perhaps more importantly, on the global stage, she predicted a rough road in harmonising international approaches to biofuels – especially in the absence of reliable sustainability metrics.

**AIR, TREES, WATER, ANIMALS**

More recently, Endres has contributed to collaborative papers on a range of topics both within the same remit and outside of it. In ‘Sustainability of forest bioenergy feedstock supply chains: Local, national and international policy perspectives’, she returned to the topic of governance for biofuels sustainability – examining in particular the impact of the EU’s Renewable Energy Directive, a trans-boundary governance mechanism designed to provide measurable targets and sustainability criteria towards meeting green goals. The multi-author paper contributed additional sustainability criteria to the discussion on the directive, and also raised the issue of existent national policies within woodchip-exporting countries including Canada, the US and Russia, and compared the policies of those countries with the prescriptions of the directive.
But Endres’ work has also ranged beyond biofuels to look at other environmental threats and preventive legislation – including the US Clean Water Act. The US Environmental Protection Agency (EPA), under the administration of President Obama, has taken various approaches to curbing nutrient pollution across different areas of the country. In each of the Mississippi, Chesapeake and Floridian watersheds, for example, the Agency has employed different methods of combatting this issue. In her research on the subject, Endres emphasises the importance of moving from narrative to numerical measurements of pollution – a critical goal for the EPA in preventing abuses of the environment.

GENERATION NEXT
The culmination of Endres’ efforts, as she sees it, has been the opportunity to work on two major grants for building and applying sustainability metrics to biofuels. One, awarded just over a year ago by the Federal Aviation Administration, is focused on the design of a verified sustainable biofuel system for jets in the US. The other, which constitutes US $9 million from the US Department of Energy, is a collaborative effort to introduce reliable metrics for biorefineries in the Midwest. Both projects are expected to have a marked impact on the improvement of sustainability in feedstock production, as well as opening and strengthening collaborative links both within the US and worldwide.

But there has been another important sequel to Endres’ work that has come in the form of her PhD student and protégé Rayane Aguiar. Although Aguiar has only recently completed her Masters’ thesis, her research interests – which build on those of her mentor – are already well-developed. Combining expertise in US agricultural policy with an intimate knowledge of the equivalent frameworks in Brazil and the EU, she has been able to examine the potential for transboundary policy making in depth. “As the three major players on the production and consumption of bio-based products the EU, US and Brazil have led the current discussions on the future of biofuels and agricultural sustainability,” she explains.

A COMMON COMPLAINT
The objective of Aguiar’s research is to mobilise her holistic view of how law and policies can be used to remedy societal and environmental problems, in turn supporting sustainable farming on local and global scales. Over the past three years, she has travelled to both Europe and Brazil to carry out work in the field, as well as presenting her findings at numerous national and international conferences. During this time, she has broadened the scope of her work and even collaborated with other scientists on topics such as the Brazilian Forest Code and its impacts on the management of private land in Brazil.

Aguiar’s work has also helped to unearth failures in EU policy concerning CAP and the pursuit of further greening. “Subsidies have only been partially explored to promote environmental and rural development objectives, and to foster agricultural multifunctionality,” she points out. Her own conclusions suggest that, in order to promote sustainable agriculture, more integrative policy and funding approaches are required. Supporting mechanisms must move towards building sustainability legal regimes in agricultural landscapes

To formulate green development metrics that integrate accounting of economic, environmental and social benefits.

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JODY ENDRES is Professor of Law in the Department of Natural Resources and Environmental Sciences (NRES) at the University of Illinois at Urbana-Champaign. She received her JD from the University of Illinois College of Law in 2000. Her research centres on how to develop integrated sustainability policy at the nexus of agricultural, environmental and energy systems, and her current work includes institutional and comparative approaches for building green development metrics in law and policy. She is also involved in several national and international collaborations.

RAYANE AGUIAR is a lab student of Endres, conducting PhD research on environmental law and policies, and sustainable farming at the local and global level.