

Biofuels and Rural Poverty.

Author: Tyner, Wallace E.

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portfolio effects, the importance of which has been convincingly demonstrated in analyses of forest pest outbreaks (e.g., Holling 1992) and of the Bristol Bay sockeye salmon fishery (Hilborn et al. 2003, Schindler et al. 2010).

Diversity, ecological variability, modularity, tight (but not too tight) feedbacks, social capital, trust, networks, innovation, experimentation, equity, and fair trade are among the attributes that are argued to confer resilience but that may be difficult to prescribe quantitatively. Nonetheless, the authors give useful practical advice: Think across multiple scales—local, regional, global. Focus on thresholds, either to maintain systems or to restore flipped systems. Figure out where ecosystem services come from and how are they linked. Celebrate change. Embrace uncertainty. Foster innovation. Graft new thinking onto prevailing institutional structures.

These generalities and suggestions are made more concrete with a wide array of case histories. A number of these are focused on how scarce water is used and shared in irrigation systems in Sri Lanka or New Mexico or under water management plans in Australia that draw on Walker's life experience with rangelands challenged by drought and overgrazing. Crossing an economic threshold can increase the probability of crossing an ecological one in coupled social–ecological systems, such as farms or ranches. A graph on page 31 deftly illustrates how social and ecological variables interact to affect system resilience and management. It shows how debt might force ranchers to overgraze, but replanting tolerant native grasses or diversifying ranch income could each increase their “safe operating space.” Later, we return to water issues at regional scales with the Okavango Delta, the Tonlé Sap, the French Camargue, and the Aral Sea presenting a spectrum of resilience or degradation of wet places under different kinds of governance.

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Further intriguing examples show how resilience is applied and practiced at the scale of individual lives—in disaster relief, in engineering (e.g., aircraft design), and in public health.

Chapter 2 will appeal to those interested in community organizing for resilience in social–ecological systems. It addresses the touchy issues of determining who gets to sit at the table as a stakeholder and of identifying the key knowledge holders. Walker and Salt point out the iterative nature of getting these groups organized with proper representation. They give general but useful advice for characterizing cross-scale human relationships; for example, systems are scaled in part by where people get their resources and where they deliver what they make or harvest. The authors point out the inconvenient truth that the element or dimension of trust is slow to build but is quickly lost when it is violated or mismanaged.

The last chapter addresses resilience on a planetary scale. The authors note that during the entire Holocene, Earth and its atmosphere absorbed human impacts on an increasingly global scale: the harvest of vegetation, the reduction in species diversity, and an alteration of the distribution and abundance of key elements and compounds. The corrective feedbacks that regulated the Earth system despite these impacts are not likely to persist in the Anthropocene, given that we have transgressed safe operating limits for at least three variables (Rockström et al. 2009, of which Walker was a coauthor). The authors call for an establishment of an adaptive global governance, “to which nations and global corporations pay allegiance.” Those working together to protect or build resilience features at a global scale, like those working locally and regionally, will need to figure out how to reposition thresholds (between good and bad basins of attraction) to increase resilience against stressors such as greenhouse gases, abuse or exploitation of human beings, loss of native species or cultures, or pandemics.

The book ends with a postscript called “A view from the Northwest Passage.” Brian Walker sailed through the passage over 6 days in July 2010, reflecting with scientists, businessmen, and government officials on what the opening of this passage across the Arctic Ocean would mean for the planet. Briefly but cogently, the authors spell out how observed, ongoing, and anticipated changes could fundamentally destabilize the global thermohaline ocean circulation and the entire climate system. Throughout the book, the authors have avoided charged language or dire predictions, and this choice should broaden their reading audience and perhaps the influence of their message. *Resilience Practice* emerges as a readable, friendly guide to planetary preservation, intended to foster hope and corrective action in order to improve future prospects for a human-friendly Earth. Unfortunately, the words “Don't Panic” do not appear on the cover.

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MARY E. POWER

Mary E. Power (mepower@berkeley.edu) is a professor in the Department of Integrative Biology at the University of California, Berkeley.

ARE WE FUELING POVERTY?

Biofuels and Rural Poverty. Joy Clancy. Earthscan, 2012, 206 pp., illus. \$79.95 (ISBN 9781844077199 cloth).

The primary question addressed in Joy Clancy's book *Biofuels and Rural Poverty* is this: Are biofuels inherently

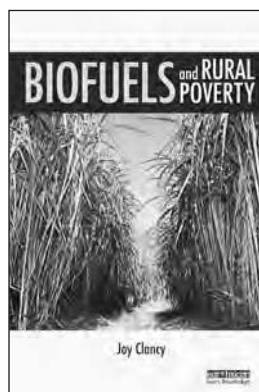
pro- or antipoor? In addressing this question, the book reveals the many dimensions of the links between biofuels and rural poverty, including food security, gender issues, energy poverty, time poverty, and ecosystem services, making its focus more on development economics with specific biofuels applications. In this sense, the book reflects the interests and background of the author, who is an associate professor of technology and development at the University of Twente, in the Netherlands. Clancy's extensive publication list includes many papers at the nexus of renewable energy and economic development, and *Biofuels and Rural Poverty* draws on several of her research projects in this area from different parts of the world.

One message to be taken from the book is that biofuel production, when it is done right, has the potential to be pro-poor, and to make that happen, governments have to ensure that certain policies are enacted to protect and promote the interests of rural inhabitants in developing countries. Clancy's approach is to explore the major development issues associated with potential or actual biofuel projects and to explain the conditions under which they can either benefit the poor or harm them. For example, in many developing countries, land tenure and property rights are major development issues. Farmers with insecure property rights are less likely to invest in productivity enhancement, and any development activity that takes land away from rural poor is likely to increase poverty. This principle also applies to large-scale biofuel projects.

Another important theme in *Biofuels and Rural Poverty* is the relationship between ecosystem services and environmental damage. The author discusses the conditions under which development can improve environmental quality and ecosystem services and those that are detrimental. Then, as in other areas of her analysis, she applies these principles to biofuel projects and biofuel production and use.

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Clancy takes a broad perspective on many of the issues found in her book, as she has in her prior work. She describes examples in which cooperative methods of production or consumption of biofuels have worked or not worked well. She provides many examples of the importance of stakeholder participation. She correctly points out that there are few universal truths and that the right approach will depend on each unique situation.



Clancy impressively maintains a balanced approach throughout the book by accurately describing both the pros and the cons regarding most of the major issues—for example, her objective analysis of the association of biofuels with food security and rural poverty. She successfully debunks the media claims that biofuels will be a catastrophe for the world's poor. At the same time, she describes what it will take to make a biofuels program that ensures food security for the poor. Her summary is taken from a United Nations document (UN-Energy 2007, p. 24): "At their best, liquid biofuels programmes can enrich farmers by helping to add value to their products. But at the worst, biofuel programmes can result in concentration of ownership that could drive the world's poorest farmers off their land and deeper into poverty." Clancy then suggests that all efforts should be focused on making sure we get the former and not the latter outcome.

The biggest omission I see in the book is the lack of attention paid to one of the major issues raised in

the food–fuel debate: the impact of biofuels on agricultural commodity prices. The popular argument is that an increase in biofuel production increases poverty in developing countries by increasing agricultural commodity prices. In rich countries, 10–20 percent of disposable income is spent on food, and most of that is on processed foods or food away from home. In developing countries, up to 70 percent of disposable income can be claimed by food, and much of that food is in the form of raw commodities such as wheat, rice, and maize. Clearly, to the extent that rich-country biofuel programs lead to increased food commodity prices, poor people can be harmed. However, as the author points out, 75 percent of the world's poor live in rural areas, and most derive their primary livelihood from agriculture. When food commodity prices surge, the attention is often on the urban poor—they can demonstrate in the streets, and they have political access and media attention—but what about the rural areas, where, in fact, most of the poor live? Higher commodity prices have the potential to increase incomes for rural farmers, and Clancy states that 50 percent of the rural poor are smallholder farmers. So, if rich-country biofuel projects cause the price that these farmers receive for their normal crop outputs to increase, poverty could be decreased. In my view, this opportunity for rural economic development through higher agricultural incomes is a key part of the biofuels picture that is often omitted (Tyner 2013), and this volume is no exception.

As Clancy suggests, the development economics issues raised in *Biofuels and Rural Poverty* are not particular to biofuels, because they apply to any kind of economic development activity. I can recommend the book to those who work in any area of development economics with links to renewable energy. I have worked in the fields of development economics and renewable energy economics, and my opinion is that this book applies well to both.

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WALLACE E. TYNER
Wallace E. Tyner (wtyner@purdue.edu) is the James and Lois Ackerman Professor in the Department of Agricultural Economics at Purdue University, in West Lafayette, Indiana.

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