



## 2014 UVM FOOD SYSTEMS SUMMIT KEYNOTE COMMENTARY

### A global perspective on food systems

Rosamond L. Naylor  
Stanford University

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There is a widespread perception, particularly among observers in the United States, that the world's food system is broken. Obesity rates now rival hunger rates in developed and developing countries.<sup>1</sup> Both afflictions are more prevalent than they should be given the rising prosperity and technological advances that have occurred in many parts of the world in recent decades. Private

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The keynote speakers at the 2014 University of Vermont Food Systems Summit were invited to contribute commentaries to this issue of JAFSCD, which also includes presenters' papers.

Rosamond L. Naylor is William Wrigley Professor, Earth Systems Science, and director, Center on Food Security and the Environment at Stanford University. She can be reached at [roz@stanford.edu](mailto:roz@stanford.edu).

Photo of Rosamond L. Naylor by Stephen Mease.

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<sup>1</sup> See, for example, Black et al., 2013; Food and Agriculture Organization of the United Nations [FAO], 2012; United Nations Development Programme [UNDP], 2012.

corporations dominate large segments of the global agricultural economy—most notably in seed development and distribution—and unhealthy food products are marketed widely at prices affordable to most consumers. Agricultural development strains water and land resources, and farming operations generate nutrient and chemical pollution. Food and agricultural policies in many countries favor certain interest groups with only limited consideration for the larger social good.

Yet as 2015 unfolds it is clear that a growing appreciation for the biophysical and socio-economic complexities of food systems is enabling communities throughout the world to manage agriculture in ways that promote healthy food products, rural income growth, and environmental services. Strategies for enriching food systems are numerous and highly varied at local to global scales. No silver bullet exists to assure food-system success, and it is particularly important for critics to keep an open mind with respect to the evolving

opportunities and challenges of achieving food and nutrition security both at home and abroad.

During my time in Vermont I had the opportunity to visit a variety of farms and farming communities, and it was apparent that a major shift was taking place from a focus on systems based on single commodities toward the promotion of more diverse, environmentally sound, and healthy food systems. I spoke with Doug Lantagne, Dean and Director of University of Vermont (UVM) Extension, about the challenges facing Vermont farming communities. He noted the persistent problem of rural poverty within the state and described how the priorities of UVM Extension were increasingly being driven by the need to improve rural incomes and livelihoods, rather than just by the need to solve specific crop and livestock production constraints.<sup>2</sup> The fact that the extension program was now engaging in both the demand and supply sides of Vermont's agricultural economy had resulted in burgeoning local food markets, improvements in school lunch programs, and higher incomes for farmers who were able to connect to value chains for diverse, healthy, and environmentally sound agricultural products.

Policymakers in many developing countries also face the challenge of persistent rural poverty. High on their policy agendas is the need to help farmers earn an adequate living, yet there is no one-size-fits-all model of how to achieve this goal. During the past 50 years the model has often focused on improvements in staple-crop production, including the widespread dissemination of modern agricultural technologies (high-yielding seed varieties and chemical fertilizers), irrigation expansion, and the development of supply chains to reach poor communities. Along with the introduction of these "green revolution" technologies, governments have frequently relied on agricultural

<sup>2</sup> See more at UVM Extension:  
<http://www.uvm.edu/extension/>

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trade at the margin (i.e., when domestic food supplies are insufficient or in surplus of domestic demand) to ensure price stability and food security.<sup>3</sup> Sound governance and sensible macroeconomic policies that reinforce rural development objectives have also been critical for success. Indonesia, the world's fourth most

populous country, benefited enormously from this approach; extreme poverty rates fell from 80% to roughly 15% within a generation, resulting in vast improvements in the country's food security (Falcon, 2014). China also invested heavily in agricultural research and development, irrigation, and rural supply chains. The changes in Indonesia and China together helped to bring global hunger rates down in the latter half of

the 20th century.

A focus on primary staple-crop systems over wide geographic scales has led to poverty alleviation and rural development in several parts of Asia and Latin America, but success has been not been ubiquitous. In several locations, policy incentives have benefited larger and wealthier farmers, sometimes at the expense of the poorest farmers. The dissemination of green revolution technologies has been particularly difficult across Africa's heterogeneous agro-ecosystems, and irrigation has been relatively slow to develop within the continent's fractured hydrological landscape. The political commitment to reduce rural poverty and improve food security has not always been in place.

Moreover, despite gains that have emerged globally from a focus on staple commodity systems, new challenges have arisen with continued economic development and population growth. Middle-income countries such as China now face a

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<sup>3</sup> The high-yielding seed varieties during this period were the result of classical breeding (not genetically modified organisms [GMOs]). For further information on the overall agricultural development approach, see Evans, 1998; Mosher, 1966; Schultz, 1964; Timmer, Falcon, & Pearson, 1983.

second food security challenge: how to improve the availability of and access to micronutrients (e.g., iron, vitamin A, iodine, zinc) in order to support the cognitive development, education, and productivity of their growing labor force (Rozelle, Huang, & Wang, 2014). During the initial period of the green revolution in the 1960s to '80s, there was little pressure to deliver a highly nutritious product, protect the environment, maintain food safety, and combat climate change. The goals were to eradicate massive famines through access to macronutrients and to establish a trajectory for rural development and the alleviation of extreme poverty. The sequencing of policy objectives was important in this case to avoid inadvertent triage. But to sustain agricultural productivity and protect human health into the 21st century, the environmental, nutritional, and food-safety dimensions of global food systems must be elevated substantially (Conway, 1997).

Moving in this direction will take political will and the constructive involvement of both the public and private sectors. On my most recent visit to Indonesia in the summer of 2014 I visited sites of a newer agricultural revolution: the widespread expansion of tropical oilseeds. Once again, this revolution focuses on the development of single commodities across immense geographic areas. Soy and oil palm, in particular, have been planted across large tracts of the tropics, including the Amazonian and Southeast Asian rainforests (Byerlee, Falcon, & Naylor, in press). Indonesia is now the third largest emitter of greenhouse gases globally due primarily to the clearing of tropical land and the production of oil palm on high-carbon peat soils. Due to public pressure by non-governmental organizations (NGOs) and emerging corporate values promoting social responsibility, several large private companies involved in supply chains for tropical palm oil and soy have recently taken a leading role in transitioning production to areas that have previously been cleared for other

purposes. Some of the most influential companies in the industry are advocating a zero-forest-clearing standard. Large agribusinesses are typically viewed as villains when it comes to human health and environmental outcomes, a view that in many cases is well deserved. However, these same companies provide some of the most promising opportunities for changing the structure of the entire industry in

an environmentally sound direction. Nonetheless, astute public policy remains critical for providing the correct incentives for a successful transition.

Given the impact of tropical forest clearing on greenhouse gas emissions and climate change, the future direction of tropical oilseed development has serious implications for food production worldwide. In addition, these crops are consumed largely by the world's middle- and upper-

incomes classes via livestock feeds and meat, cooking oil, and processed foods. The global health and environmental spillovers from these major single-commodity activities are therefore substantial, underscoring the importance of understanding the myriad dimensions of global food systems (Rueda & Lambin, 2014).

Circling back to the Vermont story, there are vital lessons to be learned from a focus on farm incomes and livelihoods, the diversification of cropping systems, and the promotion of healthy food products. The challenges of achieving these outcomes increases, however, when the analytical scale moves from local to national or global—across agricultural landscapes of varying quality and across political boundaries with varying degrees of governance. While improvements in food systems may start at the local level, fixing the “broken” world food system requires a broader view of the agents of change—including the private sector—and a deep knowledge of the biophysical, technological, and political constraints on and opportunities for change. Food systems at all scales are

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connected through climate, resources, markets, international trade, and governance. I urge those working (or wanting to work) in the field of food security to keep an open mind and to strengthen their analytical capacity. These are critical needs, for there are no universal solutions that can be used or imposed successfully throughout the world's complex food system. 

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