



## GLOBAL DAIRY PLATFORM

### **Sustainable Food System Improvement: A Rubik's Cube of Options**

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Seven years ago, a diverse group of health, nutrition, and environmental scientists participated in a conference called the Ecosystem Inception Meeting, which produced a document, [The Chicago Consensus on Sustainable Food Systems Science](#). The document identified issues the group saw as key to the study of food system science, chief among them an integrated approach between all relevant disciplines to solving issues related to our global food system. Since the release of the Chicago Consensus document, scores of papers have been written on what constitutes the domains of a sustainable food system, but few have truly zeroed in on a multifactorial approach to solving the issues we face. Most have focused primarily on the consumption side of the equation, the dietary changes we should consider enacting globally to create a more sustainable food system. There are reasons for this, the most obvious being that the study of nutrition, certainly as it pertains to our food systems, is the most evolved of the domains.

Volumes of journals dating back more than one hundred years have been published, identifying the health- and disease-provoking implications of the foods we eat. On the other hand, the study of food systems on the environment, and the economic and cultural impacts our diets have on global populations is in its relative infancy. Synergizing these disparate issues in a multifactorial way—solving the Rubik's cube of sustainability domains, so to speak—is even newer. Scientists are still trying to generate metrics that can incorporate more than one of the domains of sustainability in an effort to explain the interaction between variables. So, at this stage of its evolution, it is understandable why so much effort has been focused on the consumption side of the sustainability equation. But by doing so, we not only fail to tell a more complete story about the factors that may help to improve an overworked food system, we also run the risk of creating misperceptions or generating solutions that are destined to fail.

#### ***Even Diet Recommendations Open to Debate***

It is also worth noting that even on the consumption side there is still debate on what constitutes the healthiest diet for all. While few would argue that virtually every region of the globe could benefit from some nutritional tinkering (less overconsumption of food in general in most developed countries, more access to nutritionally dense, high quality protein sources in the developing world), there is no firm consensus on the best ways to enact these changes. Recent global recommendations by groups like the EAT Commission suggest meat intakes in the range of 0-200 g/wk.; poultry 0-400 g/wk.; fish 0-700 g/wk., and dairy 0-500 g/day. Do we really know with certainty if such a small provision of animal-sourced foods (ASF) will serve us well, even in developed Western countries with traditionally higher ASF consumption?



Data on what constitutes the “healthiest” diet is still not decided. The difficulties encountered in doing definitive nutrition research is certainly a factor for why nutrients, foods, and diets deemed healthy today may be viewed as unhealthy at a later time. Regardless, no nutrition expert can state with a degree of certainty what the addition or removal of entire classes of foods from the diet will have on whole populations in the long run.

### ***Newer Manuscripts Bring Hope***

Health experts from several disciplines are certainly aware of the fragmentation that exists between researchers who study the biophysical (health, environmental) and social (economic, cultural) dimensions of sustainability. In a recent article, [Towards healthy and sustainable diets for the 21st century: importance of social-cultural and economic considerations](#), the authors acknowledge this lack of coordination among scientists who study individual domains of sustainability, and suggest that “the challenge for science is to...become more interdisciplinary and to engage with policymakers and food system actors.” More collaboration among the disciplines would certainly be a step in the right direction toward identifying robust solutions that take all aspects of the food system supply chain into account, rather than pointing fingers at any one link of the chain.

Another recent paper, [Circularity in Europe strengthens the sustainability of the global food system](#) is one of a growing number of modeling projects that looks at the issue of circularity, a concept in which solutions to improve our global food system are found by more effectively using food waste to produce fertilizers, animal feed, and other by-products that have great implications for improving livestock’s environment footprint. In fact, the model suggests that adopting more circularity practices can produce a potential reduction of 71% in European agricultural land use and a 29% per capita reduction in agricultural greenhouse gas emissions, while generating enough healthy food for the entire European continent, as well as an additional 767 million people outside the EU.

### ***Production Improvements are Already in Effect***

While the concept of circularity is not new, it does represent a potential sustainable food system solution that does not entail a massive transformation in the way humans consume foods, but rather in the ways we produce, handle, and dispose of the foods we generate. Several other production improvements are already in effect within the livestock sector compared to just a generation ago, including improved animal husbandry practices, breeding techniques that dramatically improve production rates (in the US, for example, dairy cows today produce over 60% more milk with 30% fewer cows than they did in the 1960s), and the use of feed additives to reduce the amount of methane cows generate.

Ongoing research on the impact of the ruminant microbiome on animal methane production, the development of next-generation breeding techniques to further improve production efficiencies while lowering GHG emissions, and other areas of investigation may one day improve the livestock production footprint even further.



### ***Bottom Line***

Creating a more sustainable, equitable, and affordable global food system will be no easy feat. But pointing fingers at any one aspect of the food system, like global dietary practices, while ignoring other aspects of our food system is ultimately destined to fail. Simply telling people to eat this, not that, while ignoring the improvements that several agriculture sectors have made or are aspiring to make on the production side of the equation is counterproductive. It also ignores the economic realities of phasing out large sections of the current global diet. For example, a recent study entitled, [Animal-sourced foods are required for minimum-cost nutritionally adequate food patterns for the United States](#) indicate that the least-cost diet in several countries will require the presence of animal-sourced foods.

Complex problems generally require complex solutions. Like the Rubik's cube, the domains of a sustainable food system interact with one another in complicated ways. Focusing on any one or two of these domains will not help us to solve the puzzle that is our global food system. More interdisciplinary study on how various factors interact in specific geographic/cultural contexts is a step in the right direction. Further collaborations among all disciplines involved would go a long way toward healing what ails the global food system.