

## Back to the future food systems

Barbara Burlingame\*

School of Public Health, Massey University

Through a broad historical lens, modern agriculture is a recent experiment. By some measurements, it has been successful; by other measurements, it has been a catastrophic failure. Regardless, for scientists and policy makers involved in recent global summits, international committees, UN conventions and commissions, and independent panels of experts, the sustainability of food systems and diets necessitates a re-examination of the past to inform the future.

Sustainable food systems and sustainable diets both seem to be new and modern frontiers. The fact that these terms are now in common use *is* new, but they are not new as concepts or as imperatives for action – they've simply migrated into mainstream awareness.

One could go back in time more than two millennia and find alignment with the Greek philosophers for the concepts of sustainable diets and food systems. As for the modern science of nutrition, our glance to the past can take us back 150 years to the pioneer Ellen Swallow (aka Richards). She holds several distinctions dating from the late 19<sup>th</sup> century: she was the first female admitted to the prestigious Massachusetts Institute of Technology, she is credited with introducing the word 'ecology' into the English language, and she introduced nutrition science into university-level curricula under the name 'human ecology'. In her work, the studies related to agriculture, human health, and the natural and physical environment were integral to the subject of human nutrition. Over several decades after Ellen Swallow, integrated disciplines devolved into segregated sciences, to the detriment of all. As the degradation/destruction of natural environments and the epidemics of obesity and diet-related chronic diseases progressed, with modern agriculture at their epicentre, attempts were made to reinstate sustainable diets and sustainable food systems for policies and actions.

Notwithstanding the pleas from many quarters dating back to the 1960s and 1970s, e.g., Rachel Carson's *Silent Spring* (1962), the first UN conference on the environment in 1972, and the Club of Rome's *Limits to Growth* and the dire warnings about overshooting planetary limits (1972), and the Rio Earth Summits in 1992 and 2012, there have been plenty of examples from the nutrition science community, since the days of Ellen Swallow, to bring to the fore the topic of sustainable diets and sustainable food systems.

Some selected examples include the following.

Dietary Guidelines for Sustainability (Gussow and Clancy, 1986): '... educated consumers need to make food choices that not only enhance their own health **but also contribute to the protection of our natural resources**. Therefore, the content of nutrition education needs to be broadened and enriched not solely by medical knowledge, but also by information arising from disciplines such as economics, agriculture, and environmental science.'

The International Union of Nutritional Sciences International Congress of Nutrition (Wahlqvist, 1994): The overarching conference theme was Nutrition in a Sustainable Environment, with sessions including climate change and food production, sustainable food production, burdens of terrestrial and oceanic pollution.

The New Nutrition Science Project (Cannon and Leitzmann, 2005): '...broad integrated structure brings much recent and current progressive work into the centre of nutrition science...concerned with personal and population health, and **also with planetary health** – the welfare and future of the whole physical and living world...contribution to the preservation, maintenance, development and sustenance of life on Earth, appropriate for the twenty-first century.'

\*Correspondence: barbara.burlingame@gmail.com



**Barbara Burlingame** is a nutrition scientist, an independent consultant, and adjunct Professor of Public Health Nutrition and Food Systems at Massey University. She has a PhD from Massey University and undergraduate degrees from University of California, Davis (nutrition science and environmental toxicology). Dr Burlingame is a member of the High Level Panel of Experts on World Food Security, chair of the International Union of Nutritional Sciences Task Force on Sustainable Diets and specialty chief editor of *Frontiers in Nutrition*.

## Basic unit of nutrition

Perhaps the most widely used definition of nutrition identifies individual nutrients *per se* as the basic unit, with nutrients defined as being substances required for the maintenance of life and growth. This definition originates in the health sector where the intakes of nutrients below requirements lead to disease states. This health sector conceptualisation has led to interventions bypassing diets and food systems as solutions, and focusing on medicalised treatments with individual nutrients in the form of pills, injections, or therapeutic formulations. Flaws in this approach are many, including the fact that substances identified as nutrients represent only a tiny subset of beneficial bioactive components in a diverse diet, and that a measured deficiency of a nutrient is almost always simply a marker for a poor quality diet overall. Promoting nutrients as the basic unit of nutrition is easily exploited, and has directly led to the appropriation by the food industry of the term ‘healthy’ for a range of ultraprocessed foods, i.e., highly refined food ingredients dosed with nutrients manufactured by the fine chemical industries.

The agriculture sector had long considered food *per se* as the basic unit of nutrition, the metric for which was dietary energy supply (de Haen, Klasen and Qaim, 2011). It was the crude but useful methodological tool for monitoring food security, but it was misused with the stated presumption that if food intake (i.e., dietary energy) is sufficient, everything else (e.g., micronutrients) will also be sufficient. Obviously, this is a deeply flawed approach, with decades of examples in the nutrition literature of dietary energy sufficiency and even excess, combined with micronutrient malnutrition in the same individuals – a striking example of which is children who are both obese and stunted (Fernald and Neufeld, 2006).

It was the environment sector that succeeded in finally bringing the concept of sustainable food systems back into the mainstream of nutrition awareness, with their game-changing ‘cross-cutting initiative on biodiversity for food and nutrition’ (Conference of the Parties, 2006), which included the specific request that the initiative be led by FAO’s nutrition division. This then brought to bear the re-introduction of diets, and explicitly sustainable diets – not foods, and not individual nutrients – as the basic unit of nutrition.

## Healthy diets v. sustainable diets

The first scientific symposium on sustainable diets, in 2010 (FAO, 2012), included two breakout workshops, one of which was charged with developing a consensus definition for sustainable diets, which had been identified as an urgent requirement for moving forward (Sustainable Development Commission, 2009). The consensus definition is as follows:

Sustainable Diets are those diets with low environmental impacts which contribute to food and nutrition security and to healthy life for present and future generations. Sustainable diets are protective and respectful of biodiversity and ecosystems, culturally acceptable, accessible, economically fair and affordable; nutritionally adequate, safe and healthy; while optimising natural and human resources (FAO, 2011).

There are fundamental distinctions between a healthy diet and a sustainable diet: a sustainable diet, by definition, is healthy; whereas a so-called healthy diet need not have anything to do with environmental sustainability. Similarly, an environmentally sustainable food system does not necessarily produce a sustain-

able diet, whereas a sustainable diet, by definition, requires a sustainable food system.

Indeed, the supermarket shelves are filled with foods synthesised in a food science laboratory and bearing front-of-pack labels and symbols signifying that they are healthy. It is for this reason that some authors have called ‘healthy’, as related to foods and diets, a bankrupt concept (Sukol, 2016).

Traditional food systems of indigenous peoples have a place of great importance in science-policy forums and for assessments of future food systems (Kuhnlein *et al.*, 2009; 2013; FAO, 2021a). Unfortunately, the contributions that these knowledge systems can make are often rejected, with the justification that they do not conform to evidence-based policy development using the conventional hierarchy of evidence. In many areas, and particularly for food and food systems, a rethinking is necessary to give traditional knowledge greater consideration (Milbank *et al.*, 2021). The recent White/Wiphala Paper on Indigenous Peoples’ food systems (FAO, 2021b) makes the case convincingly that the often-used assessment of evidence developed by clinical/medical sciences has criteria that are inappropriate for food systems policy development; it makes the following recommendations: (1) that traditional knowledge systems need to be recognised, respected and valued with equal consideration and integration by the scientific and academic communities informing the UN Food Systems Summit, and beyond; and (2) the contribution by itself of systemic observation carried by Indigenous Peoples’ traditional knowledge is a tested scientific approach.

## The year 2021

The year 2021 is significant in many ways. A few years earlier, the UN General Assembly declared that 2021 would be the International Year of Fruits and Vegetables (IYFV). This is a welcome departure from previous food-themed international years where single starchy staples featured because of their importance for food security – that is, global dietary energy supply. Examples include the International Year of Rice (2004) and the International Year of Potato (2008). The year 2013 was the International Year of Quinoa, the first attempt at recognising the importance of lesser-known, but regionally important crops; albeit still a starchy staple. The IYFV brings to the fore the importance of the first principle of good nutrition: eat a variety of foods. It also elevates micronutrients to the same level of importance as dietary energy.

The year 2021 is also the year of the UN Food Systems Summit (FSS). Unfortunately, there seems to be little or no attempt to revisit the past to inform the future. Critical reviews and analyses and past summits – their recommendations and degrees of implementation, their successes and failures – have not been undertaken. This should be the single most significant undertaking of the FSS – examining the past to inform the future – the absence of which is, perhaps, the single most significant shortcoming.

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