



## Why Dairy Foods Are Important Contributors to Least-Cost Nutritious Diets

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## KEY TAKEAWAYS:

- Sustainable eating encompasses four primary domains: nutrition and food security; the environment; cultural acceptability; and affordability
- The inclusion of animal-source foods, such as dairy, in the diet is the most efficient and effective way to provide adequate nutrition for the lowest cost
- Studies from North America, Southeast Asia, and Oceania all demonstrated animal-source foods, including dairy, can help reduce the cost of the total diet while providing essential nutrients necessary for good health

When global health organizations like the Food and Agriculture Organization of the United Nations (FAO) implore us to eat more sustainably, they are referring to a construct that incorporates four key dimensions:

- Health and nutrition
- Environmental factors
- Social and cultural considerations
- Economic concerns

Of these, the environmental and nutritional needs have thus far tended to dominate the conversation.

With inflationary concerns around food escalating in recent years, it has become clear that global diet recommendations that feature relatively expensive and sometimes hard-to-find foods could become a burden to consumers both in emerging economies and developed countries. For example, in several low- and middle-income countries, [people already spend upwards of 30-40% of their income on food](#)<sup>1</sup>.

With economic conditions front-of-mind, it's good news that recent studies show that the inclusion of animal-source foods like dairy can limit the cost of the total diet while providing essential nutrients necessary for good health.

Here is a look at the debate about sustainable diets and the studies that show why nutrient-dense, affordable and accessible foods are essential for many around the world.

## The Cost of Eating Sustainably

When concepts such as the EAT-Lancet Commission’s Planetary Health Diet were first promulgated as blueprints for “saving the planet,” they focused heavily on the impact of food production on the environment, with some consideration of the health consequences of consuming certain foods and diets. But, like most sustainable diet roadmaps of this nature, they paid scant attention to the economic impact of adopting certain eating patterns.

According to [Hirvonen et al.](#)<sup>2</sup>, who analyzed the cost of consuming an EAT-Lancet diet shortly after it was published in 2019, one-quarter of the global population would be unable to afford to consume this type of diet. The researchers found that the EAT-Lancet reference diet, which consists mainly of plants, limited dairy products, and very little meat, was on average 60% more costly than alternative regional diets that could provide nutrient adequacy.

These data were corroborated by the recent [2024 State of Food Security and Nutrition in the World \(SOFI\) report](#)<sup>3</sup>, an annual publication, which indicated that from a financial perspective, current recommendations for sustainable eating are unattainable for a large segment of the global population.

## Creating a Least-Cost Diet

Projects like the EAT-Lancet diet prompted several research groups around the world to delve more deeply into the issue of sustainable diet affordability.

These groups asked questions such as:

- Can we create a prototype acceptable diet that costs relatively little (in local currencies), but delivers nutritious foods that are also sound for the environment?
- How much would such a diet cost?
- Which foods should be included in a diet that provides nutritional adequacy at the least possible cost?
- And, in some instances, is there a place for foods like dairy in a least-cost diet regimen?

Using a model that controlled for daily calorie requirements, as well as minimum recommendations and upper limits on nutrient needs, and daily serving sizes, [Dr. Sylvia Chungchunlam and colleagues](#)<sup>4</sup> at the Riddet Institute at Massey University in New Zealand found, in short, that diets with no or minimal amounts of animal-source foods cost more than diets that include animal products. There are several reasons for this, not the least of which is that animal-source foods are generally the best and lowest cost vehicles of key nutrients such as protein, calcium, iron, and vitamin B12.

These data are in synch with those of [Beal et al.](#)<sup>5</sup>, who recently indicated that six key nutrients commonly lacking in global diets (iron, zinc, vitamin A, calcium, folate, and vitamin B12) tend to be overwhelmingly higher in animal-source foods than plants, and that subsisting on a plant-based diet too low in animal-source foods could result in people being deficient in several key nutrients.

The sum of these studies suggests that to eat in the most efficient way possible – that is, to get the most nutrition for the lowest possible cost – the inclusion of animal-source foods in the diet is key. To put numbers to this assertion, a study of the [least-cost nutritious diet in the United States](#)<sup>6</sup> indicated that a nutritionally adequate diet which includes animal-source foods would cost roughly \$1.98/day, versus a plant-only diet that would cost \$3.61/day, or 45% more expensive.

## Role of Dairy in Least-Cost Nutritious Diets

In the United States, dairy is the least-cost nutritious diet model proposed by [Chungchunlam et al.](#)<sup>6</sup> accounts for 26% of the projected \$1.98 daily diet cost, or about 51 cents. But, for this cost the consumer receives roughly 26% of their daily protein requirements, and 56%, 65%, 42% and 38% of their required vitamin D, calcium, riboflavin, and vitamin A, respectively. By contrast, to receive the same quantity of these nutrients from a soy beverage the consumer would have to spend 37% of the \$3.61 cost of a plant-only least cost nutritious diet, or \$1.33 per day.

Further, these projections do not consider the quality, or bioavailability, of nutrients, which tend to be higher in most instances in animal-source foods than plants. In other words, while a serving of milk and a serving of soy beverage might both provide 13 g of protein to meet 26% of the daily protein requirement, more of the protein from dairy is available for use in the body than from the soy beverage, making dairy a more efficient (in terms of cost as well as nutrient provision) vehicle for protein than soy beverage.

Dr. Chungchunlam's analysis of the US diet further indicated that on a cost per 1000 mg of calcium basis, dairy milk costs the consumer about \$1.30 USD, while the cost of a comparable amount of (less bioavailable) calcium from alternative beverages such as soy, almond, rice, and oat range between \$2.27 and \$2.84 USD. This underscores the efficient and economic pivotal role of dairy milk in supplying key essential nutrients at very competitive prices per unit of bioavailable nutrient.

“Using a mathematical modelling approach, we found that animal-source foods, like dairy, are needed to supply key essential nutrients to meet nutrient requirements at the lowest cost, and in supporting balanced least-cost nutritious diets.”

Dr. Sylvia Chungchunlam

## What's Next?

Dr. Chungchunlam followed up her initial analysis on the US diet by publishing similar studies using the same diet model in [New Zealand](#)<sup>7</sup> and [Indonesia](#)<sup>4</sup>.

Additional research is currently ongoing in several other African and Southeast Asian countries. Ultimately, the intent is that these various analyses will generate a clearer picture of what a least-cost nutritious diet can look like in both developed and developing countries. That information can be used to inform future diet recommendations and generate more robust information about what constitutes the most sustainable global diet.

### DAIRY LEADERSHIP: A CALL TO ACTION.

Challenge thinking that sustainable global diets are dictated primarily or exclusively by environmental impact. It is imperative to consider nutritional adequacy, the environment, cultural acceptability, and cost when developing sustainable diets for a growing population. Continued investment in dairy development in low- and middle-income countries will be crucial to ensuring access to nutrient-rich dairy and least-cost nutritious diets to nourish the world.

*For more information on the Global Dairy Platform's Perspective Papers or our Quarterly Webinar Series, please contact Dr. Beth Bradley at [beth.bradley@globaldairyplatform.com](mailto:beth.bradley@globaldairyplatform.com).*

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