

A close-up photograph of a glass bottle pouring milk into a clear glass. The milk is captured mid-pour, creating a thick, white stream that falls into the glass, forming a frothy head. The background is a soft, out-of-focus grey.

Dairy Development and Nutrition in Low- and Middle-Income Countries: Hurdles, but Plenty of Opportunities

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KEY TAKEAWAYS:

- There is compelling evidence that dairy consumption improves nutrition and health, particularly among young children, in low- and middle-income countries.
- Despite its demonstrated benefits, several hurdles have hindered dairy production and consumption in low- and middle-income countries, which are correlated with greater rates of stunting and wasting among children.
- Programs that foster production and consumption, such as breeding and technology efforts on the production side or school and complementary feeding programs that promote consumption, can be put in place to minimize supply and demand challenges. These programs require time, effort, and money.

[A paper published earlier this year](#) in the journal *Food Policy* identified several hurdles and opportunities associated with growing the dairy sector in low- and middle-income countries (LMIC).¹ The authors, several of whom work for the International Food Policy Research Institute (IFPRI) or with the Consultative Group on International Agricultural Research (CGIAR), indicate that despite its strong association with reductions in stunting, wasting, and other conditions related to undernutrition in early life, dairy consumption remains low in several regions globally for a variety of reasons.

For those raised in countries with near unfettered access to nutrient dense, high quality protein sources like dairy, many of the hurdles associated with increased dairy production and consumption may not resonate. But challenges certainly exist in low- and middle-income countries which, as the authors point out, can deprive people who need it most, of access to a food category with “the potential for reducing the global burden of undernutrition,” while at the same time “augmenting the income of farm households in a wide range of countries.”

How to minimize these hurdles and potentially improve access to nutritious dairy products for millions of people who need them is the subject of this essay.

Dairy Can Improve Nutrition & Health in Developing Countries

Poor diets are a key factor in undernutrition in early childhood. As indicated in the manuscript, over [half the deaths in children under age 5](#) in LMICs are attributable to undernutrition² that often results from [consumption of monotonous diets devoid of nutrient-rich fruits, vegetables, and animal sourced foods](#)³ like dairy. In 2020, 149 million children globally under the age of 5 were estimated to be stunted (too short for age) and 45 million were estimated to be wasted (too thin for height). In India

alone, protein energy malnutrition (PEM) has led to a stunting rate of 48% of children under five years, and wasting in 20% of children, the highest in the world. And undernutrition not only leads to physical deformities in children; it often [results in poor school performance, cognitive deficits, and lower wages in adulthood](#)⁴.

The authors of the paper point out that dairy products are strongly associated with reductions in chronic undernutrition in early life, and that growth of dairy consumption in low consuming regions can improve diets and accelerate progress towards nutrition targets that can minimize health risks. The nutrient dense nature of dairy products, their rich micronutrient profile and high-quality proteins are key reasons cited for their positive health impacts in infants, children, and adults, particularly those from food insecure households. These factors offer great opportunities for the global dairy sector to grow, if issues such as affordability, and policy challenges that impact production, trade, and education, among other things, can be overcome.

Despite its Benefits, Great Disparities Exist in Dairy Consumption Among Countries

[FAO Food Balance Sheet](#) data¹ demonstrate significant differences in dairy consumption among regions, with health issues most prevalent in children from countries that consume the least dairy. Higher income countries tend to consume the most dairy (roughly two cups per day per capita), while some populations in South America, the Middle East, and Southern Asia consume about one cup of dairy per day. By contrast, many countries in Eastern Africa, Southeast Asia, and Western and Central Africa derive very few calories (12-90 kcals/d) from dairy. In areas with low dairy intake, regional health consequences are apparent. For example, in Guatemala only 35% of children consume dairy, and roughly half the children in the country are stunted. In the Dominican Republic about 75% of children consume dairy, and the country has a 7% rate of stunting.

A similar situation is seen in Africa, where low dairy consumption rates in countries like Nigeria (24% consumption rate among children) and the Republic of Congo (6% consumption rate among children) are correlated with high rates of stunting, compared to lower stunting rates in Kenya, where dairy consumption is higher (50% consumption rate among children).

If Dairy is a Solution, How do We Increase Consumption?

Multiple issues in LMICs can serve as impediments to greater dairy production and consumption. These include local incomes and food costs, climate conditions, infrastructure, and available and affordable supportive technologies.

In many LMICs, dairy products can be relatively expensive. Though, as the authors of the article point out, as incomes grow so does the demand for dairy. Changes in policies that can improve production, trade, and food supply chains in LMICs,

particularly in countries with agroecological factors in their favor, can go a long way toward improving the incomes of dairy producers and consumers alike, which in turn can drive higher overall per capita dairy consumption. However, enacting these changes can sometimes be easier said than done, particularly in countries without the infrastructure to effectively produce, transport, and protect highly perishable foods like dairy. Real solutions will take time and effort.

Jay Waldvogel, former Senior Vice President of Strategy and International Development at Dairy Farmers of America, led several aspects of an ongoing initiative called [Dairy Nourishes Africa](#), designed to improve the strength and productivity of the dairy sector in Tanzania and other African countries. He witnessed the impediments to change that exist, as well as the potential for growth. He says, “Dairy development in LMICs is not a new solution. The challenge has always been execution, which requires a focus on the full dairy chain from farm inputs all the way through to consumer education. And these changes require a long-term commitment.”

As suggested above, dairy production is heavily influenced by agroecological factors such as weather and access to natural resources. Dairy yields are much higher in countries with more temperate environments; heat stress can dramatically affect cow fertility rates and milk yields, as well as feed quality and quantity. Cows in wealthier regions with temperate environments such as Europe, North America and Australasia can produce more than 6,000 liters of milk per year. In South Asia yields can be as low as 5% that of the wealthier regions; in Sub Saharan Africa between 1-5% of wealthier regions.

Solutions to issues like cow productivity are dependent on better breeding programs with adapted animals, access to advisory services, and other technologies that can increase milk yield in harsher climates. But therein lies a conundrum; access to these technologies requires capital. For farmers eking out a living with a couple of unproductive cows and with limited access to effective processing capabilities and transportation of product to markets, among other things, the ability to adopt the technologies necessary to induce positive change is difficult. Governmental aid and help from other outside agencies, as well as the private sector, will be required to improve technology adoption, which ultimately leads to production improvements. Once again, not an insurmountable situation but certainly a formidable hurdle that requires support.

On the marketing/consumption side of the equation, school milk programs have been shown for almost 100 years to be an effective way to deliver the nutritional benefits of milk to children, though many of the early programs were conducted in Western countries. More recent programs, such as one conducted in schools in three Kenyan counties with support from Global Dairy Platform (GDP), among others, demonstrated that motivated teachers and program leaders, as well as a stable, consistent distribution of products were keys to developing successful county financed milk feeding programs. GDP collaborated with the Food and Agriculture Organization of the United Nations (FAO) and the U.S. Dairy Export Council (USDEC) for a report, [“School Milk Feeding Programs in Kenya: Impact and Community Motivation Towards Them,”](#) with research in Kenya led by the Busara Center for Behavioral Economics.

In the report, inadequate storage and irregular milk supplies were viewed as barriers to success. But overall, these programs were rated very highly by parents and school administrators, and the feasibility of their success was considered high. Such models can serve as templates to greater introduction, familiarity, and acceptance of dairy products by young children and their families, which will bode well for the future of dairy in regions that adopt them.

Why Companies and Funders Should Help

To be sure, several dairy companies with global reach have ongoing programs in LMICs to help strengthen supply chains and expand the dairy sector in these countries. Many companies not only provide products but are also supplying funds and know-how to improve industry capabilities in low consuming regions. Certainly, access to new or undeveloped markets is one reason for these efforts. But many of these companies also understand that dairy has the potential for reducing undernutrition and augmenting incomes of farmers and others who work in the dairy industry in LMICs. Dairying also offers opportunities to women and other underrepresented groups who often have few career or income-generating opportunities in developing countries.

“Science based evidence has clearly demonstrated that in LMICs, dairy development has a high positive impact on a wide range of well-being indicators.”

Ernesto Reyes

Sector Lead for Dairy Development

Global Dairy Platform

Ernesto Reyes, a dairy development expert and the Global Dairy Platform/IFCN Sector Lead for Dairy Development, has collected data and conducted research in LMICs for many years on the opportunities that dairy provides to women and others to run businesses, support their families, and garner respect in their local communities. According to Reyes, “science-based evidence has clearly demonstrated that in LMICs, dairy development has a high positive impact on a

wide range of well-being indicators, either at the household or community level. Randomized control trials have shown that dairy cow ownership is positively correlated with better nutrition-related outcomes (improved child linear growth and reduced stunting), higher incomes, increased food security, substantial employment generation, and added value beyond the farm gate.”

Moving forward, it may be that more projects like the Dairy Nourishes Africa program, which works with governments, health experts, farmers, and others in an effort to remove barriers to production and consumption and seeks to grow the dairy sector at a local level, can serve as a template for future growth in several countries. But Waldvogel offers instructive insights for companies seeking to pursue such efforts: “Dairy development projects have historically focused on one end of the value chain; give everyone a cow or every child a glass of milk. These well-intentioned efforts are not sustainable without addressing the full value chain. In the past, when direct support for such programs ended, the benefits of the program generally ended as well. A true lasting solution requires the development of a holistic, economically sustainable value chain.”

As the dairy industry seeks ways to improve its production practices and continue to provide products that augment healthy, sustainable global diets, figuring out how

“The benefits of dairy development in LMICs are undeniable, the work is hard. If it was easy, it would have been done long ago.”

Jay Waldvogel

Former Senior VP Strategy and International Development

Dairy Farmers of America

to nourish more adequately the poorest among us will go a long way toward feeding the anticipated nine billion people who will inhabit the earth in the next several decades. As stated in a recent United Nations Food and Agriculture Organization (FAO)/GDP/IFCN report titled, [Dairy Development’s Impact on Poverty Reduction](#)⁵, “dairy has the power to be a major pathway out of poverty as investments in the sector generate positive returns to reduce poverty in LMICs...Improving our capacity to assess the contribution of the dairy sector to poverty reduction is necessary for designing and implementing investments that are genuinely pro-poor, and sustainable from a social, environmental and public health perspective.”

Programs put in place today can help to ensure the sector rises to the challenge in the future.

DAIRY LEADERSHIP: A CALL TO ACTION.

Despite the hurdles that exist, improving dairy production capabilities in LMICs offers opportunities to not only expand markets, but to also provide healthy, nutritious food options to people who need them most. Dairying also provides income generating and leadership opportunities to women and others often shut out of the process in their respective countries. Elevating the dairy industry in LMICs would be a positive development for the entire global dairy sector.

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