

# Dairy

NUTRIENT-RICH  
FOODS FOR THE FAMILY



# Key Facts

- Children should be exclusively breastfed to 6 months of age, and the World Health Organization (WHO) recommends continued breastfeeding to 2 years of age. Breastfed children should not be given other milks to avoid displacing breastmilk<sup>9</sup>.

- For older children and adolescents, dairy products are rich sources of nutrients needed for growth, immunity, and bone health<sup>1</sup>.

- Dairy products are a good source of Vitamin B12. Children and women are often deficient in B12 where consumption of other animal source foods is low<sup>2</sup>.

- Dairy products like milk and yoghurt can also be fortified with multiple vitamins and minerals.

## Dairy Composition<sup>1</sup>

### Micronutrients

Calcium, phosphorus, magnesium, zinc, iodine, potassium, vitamin A, vitamin D, vitamin B12, and riboflavin (vitamin B2)

### Energy

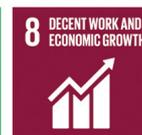
### High-quality protein

### Essential and nonessential fatty acids

- Yoghurt, or fermented milk, can have further positive nutritional benefits as a source of probiotics, or 'good bacteria' that help to suppress bad bacteria and maintain a healthy gut and immune system<sup>10</sup>.

The consumption of dairy contributes to some of the Sustainable Development Goals (SDGs)

Contributing  
to the SDGs

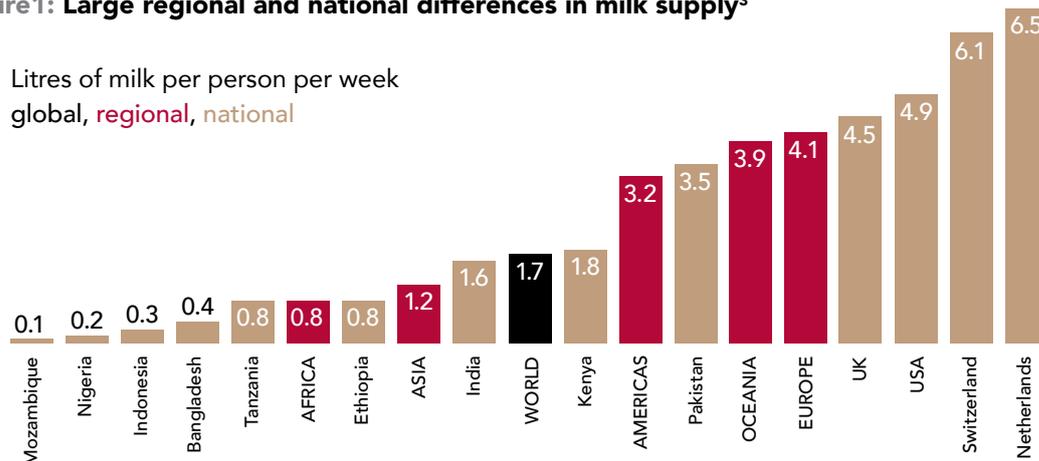


# Introduction

## Dairy supply around the world

Although milk is highly nutritious, it remains scarce and relatively expensive in many low-income settings, including across many of the countries where the Global Alliance for Improved Nutrition (GAIN) operates. It is also highly prone to food safety concerns. Globally, the average milk supply is around 1.7 litres per person per week. National variation is large though. In countries with GAIN's main offices, it ranges from just 100ml per person per week in Mozambique to 6.5 litres per person per week in the Netherlands (Figure 1).

**Figure 1: Large regional and national differences in milk supply<sup>3</sup>**



## Our vision: more available, accessible, desirable, and safe milk

GAIN works on **supply** and **demand**, as well as on changing **incentives**, **rules** and **regulations** to encourage **production** and **consumption** of nutritious and safe foods. We seek to understand and tackle barriers faced by small enterprises working to boost availability, affordability, desirability, and convenience of **nutritious foods like milk**, especially for people on low-incomes and population sub-groups who stand to benefit from greater consumption of nutrient-dense foods, such as children. In India, where milk is in relatively good supply owing to successful development of dairy cooperatives, we also work on milk fortification, to make this product even more nutritious.

One of GAIN's flagship programmes, the **Marketplace for Nutritious Foods (MNF)** supports local small and medium enterprises (SMEs) to accelerate accessibility, desirability and quality of nutritious foods, including milk and dairy products. Through the MNF, GAIN provides technical assistance, grants and training to improve businesses' capacity to produce nutritious and safe foods at scale, leading to improved production and consumption of these foods – which in turn improve people's diets and health.

GAIN's **Better Diets for Children (BDC)** workstream also works in dairy value chains. It seeks to improve children's diets through four main pathways:

- Better quality foods for children,
- More opportunities to purchase nutritious and safe foods for children,
- More effective promotion of nutritious and safe foods and promoting child feeding aligned with WHO guidelines,
- Better partnerships for nutritious and safe foods



# GAIN case studies

## 1. Boosting safe and reliable supply – milk machines in Kenya

In Kenya, around 85% of milk is sold raw and unpasteurised<sup>4</sup>, raising concerns about food safety<sup>5</sup>. One reason milk is sold raw is because it allows people to buy in variable and smaller quantities, catering to customers with less money. Moreover, it tends to be 20 to 50% cheaper than pasteurised milk. Milk machines dispensing pasteurised milk, or milk ATMs, can be both a **safe and affordable** alternative. Pasteurised milk also keeps for longer than raw milk, improving milk availability in the off-season<sup>6</sup>.

**Tarakwo Dairies**, based in the Rift Valley near to Eldoret has scaled up their use of milk ATMs, with support from GAIN's Marketplace for Nutritious Foods programme. Customers can choose the amount of pasteurised milk they want from an ATM using the keypad of the machine; payment is made with cash, and the milk is dispensed from the nozzle into a receptacle placed underneath. Ready-to-drink milk is available for as little as 5 Kenyan Shillings (around 5 US cents) for an 80 ml cup.

GAIN leveraged investments already made by Tarakwo, helping them to develop a business plan and marketing strategy, while providing a grant to overcome challenges in the cold chain. Production capacity and market reach expanded as a result.



Tarakwo started pasteurising milk and selling it through a milk ATM in Eldoret town in August 2015. Sales reached 950 litres that month. By mid-2017, the business was pasteurising and selling more than 2,000 litres of milk each day – some 60,000 litres a month. They also expanded their product lines to include yoghurt and mala (fermented milk).

In 2018, GAIN technical support to Tarakwo helped them develop an expansion strategy, enabling them to distribute to four further counties.

A case study analysis revealed that in areas where Tarakwo ATMs operate, pasteurised milk prices are driven down – to close or equal to the prices of raw milk. In the absence of milk ATMs, prices of pasteurised milk can vary greatly. Quality milk ATMs, appropriately operated, have great potential to expand consumption of safe, nutritious dairy in Kenya, east Africa, and beyond<sup>7</sup>.

**“I started buying Tarakwo’s milk in April this year. I don’t buy raw milk. I only purchase milk at Tarakwo. I started buying there after finding out about the **good quality milk.**”**

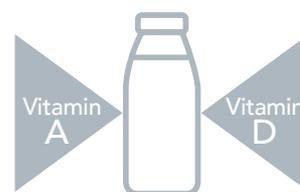
Miriam, 29, mother of three living with husband and children<sup>7</sup>





## 2. Improving micronutrient content of milk in India

Vitamin A and D deficiencies are widespread in India, with vitamin A deficiency identified as a severe public health problem among pre-school children in 12 Indian states<sup>11</sup>. Vitamin D deficiency is likewise emerging as a major public health problem. Milk fortification with vitamin A was introduced in 1984, but coverage remained low. In 2013, GAIN began a milk fortification scheme in Rajasthan. 24 dairies began fortifying milk with vitamins A and D, reaching around 5 million people daily. This level of fortification can provide consumers with around 30% of their daily needs of vitamins A and D. When GAIN phased out its support in 2015, the dairies continued fortifying.



Encouraged with this success GAIN began a new scheme in 2017, working with small and medium-sized dairies to scale-up fortification of all types of milk – from skimmed milk to full-fat versions. Presently, 44 dairies in 8 states are fortifying around 3 million litres a day, reaching around 16 million people daily.

## 3. Formulating and marketing delicious, accessible yoghurt in Ethiopia

In 2017, GAIN established Access to Better Dairy, a nutritious dairy partnership hinging on business-to-business interactions between Ethiopian dairy processors and a global dairy company. It aims to help improve diets of children and mothers, as well as the livelihoods of smallholder farmers, by producing and commercializing yoghurt that appeals to children.

The main partners comprise: GAIN, LONI Agro Industry dairy (LONI), Arla Foods Ingredients (AFI), Danish Church Aid (DCA), the Confederation of Danish Industry, and the Addis Ababa Chamber of Commerce and Sectoral Associations (AACCSA). LONI is a processor aggregating milk from hundreds of small-scale producers, operating in Sululta, north of Addis Ababa in the Oromia region.

Access to Better Dairy operates along the whole value-chain – from improving safety and efficiency of small-scale dairying, to advancing nutrition education, to enhancing marketability of the final product.

This product is a locally-produced safe, affordable, desirable, and convenient yoghurt fortified with vitamins A, D3, B12, Folic Acid, and minerals zinc, iodine, and selenium. It is designed as a snack or breakfast food.

GAIN manages the partnership while leading on the downstream development through activities to create demand for the yoghurt, branded Ergo-go (Ergo meaning yoghurt in Amharic). In 2018, the Access to Better Dairy partnership, together with DSM and Swiss flavour company Firmenich, worked to develop strawberry, mango, and vanilla flavouring for Vit-Ergo. The flavouring developed both masks potential undesirable flavours from the added micronutrients, while boosting the sweetness without requiring as much added sugar as is commonly used in other flavoured yoghurts on the market. This allows for healthier products without compromising on taste.



**Image 1: Packaging design of Ergo-go, strawberry flavour**

### Safe and healthy

The milk is pasteurised and then fermented. Fermentation makes the product safer, since the proliferation of “good bacteria” make it difficult for “bad bacteria” to survive.

Sales were due to have been piloted at schools in two suburbs of Addis Ababa by in mid-2020, however this has not yet been possible owing to COVID-19. When these hurdles can be overcome, there should be considerable scope to scale. The price per 80 ml portion is around 25 US cents, thus affordable for many low-income consumers.

The primary target consumers are children aged 3 to 7, pregnant women and lactating mothers, with secondary targets including adolescents, school children, and other family members. Marketing and branding to make fortified yoghurt a desirable and aspirational choice for strong and active children among low- and middle-income households has been undertaken.

The Access to Better Dairy partnership is a long-term proposition that will hopefully feed into wider development of the dairy sector in Ethiopia, as well as in other countries, leveraging the SUN Business Network in the coming decades.

## Dairy as an important source of missing micronutrients for children

Recent research by GAIN and UNICEF called Comprehensive Nutrient Gap Assessment (CONGA) identified key nutrient gaps faced by young children aged 6-23 months in Eastern and Southern Africa, as well as South Asia. CONGA also highlighted the micronutrient-dense foods that are already relatively affordable in local contexts, though under-consumed, identifying good candidate foods to help plug particular nutrient gaps. Dairy appeared as an important and affordable source of various micronutrients seven of the nine countries in which CONGA research was conducted. The findings (Table 1) point to a need to increase demand among families with young children, particularly those on low incomes, to include items like yoghurt in children’s meals, and to given older children milk once they are no longer breastfeeding.. In countries where dairy is not so affordable, CONGA points to a need to improve efficiency of supply.

**Table 1: Comprehensive Nutrient Gap Assessment (CONGA) findings relating to dairy**

Country	Key micronutrients of concern among young children	Dairy for particular nutrients of concern
Bangladesh	Zinc, vitamin A, calcium, iron, iodine	<b>Dairy</b> for vitamin A, calcium, and zinc
Ethiopia	Iron, zinc, iodine, vitamin A, calcium	<b>Milk</b> for calcium and vitamin A
India	Iron, vitamin A, zinc, vitamin B <sub>12</sub> , folate, calcium	<b>Dairy</b> for vitamin A, calcium, zinc and vitamin B <sub>12</sub>
Pakistan	Vitamin A, iron, folate, vitamin B <sub>12</sub> , zinc, calcium, iodine, and vitamin D	<b>Dairy</b> for vitamin A, calcium, zinc and vitamin B <sub>12</sub>
South Africa	Vitamin A, calcium	<b>Fresh milk</b> for vitamin A and calcium
Tanzania	Iron, vitamin A, calcium	<b>Milk</b> for vitamin A and calcium
Uganda	Iron, calcium	<b>Whole milk</b> for calcium

Source<sup>i</sup>

# Recommendations

**What sorts of things might be done to help boost supply and demand of nutritious and safe dairy products around the world? We've listed a few ideas:**

Governments can make policies and regulations work for safer, more efficient and sustainable dairy supply, through funding schemes to develop and support local dairying, for example through supporting small enterprises to access finance, technical assistance, or output markets; or through improving affordability of key inputs such as feed or animal health services. They can also contribute to multi-stakeholder efforts to reduce loss and waste of perishable dairy products along the supply chain.

Governments can mandate fortification of dairy products with micronutrients and work to ensure and improve compliance.

They can also put clear food safety regulations in place, helping to ensure fewer people are consuming food that may make them ill.

The private sector is central to milk supply. It can voluntarily improve offerings, as well as comply with government efforts to improve food systems. Food manufacturers for example might incorporate more micronutrients in milk, while using less sugar in processed dairy offerings. They can pasteurize, package, and distribute milk with high standards of safety. Businesses should also comply with World Health Organization recommendations on the marketing of foods and non-alcoholic beverages to children<sup>8</sup>.

On the demand side, governments, private-sector stakeholders, development partners, and consumer groups can work together to develop innovative demand-generation campaigns, encouraging people – particularly our younger generations – to desire healthy milk options as much as less healthy ones.

Where governments procure food and meals, such as for schools, prisons, and canteens, they can ensure these include (fortified) dairy products in line with national dietary guidelines, helping to stimulate supply and demand.

Governments, including municipal and other sub-national ones, should also be encouraged to set policies in place that boost selling, advertising and otherwise promoting healthy options including milk, while discouraging sales and advertising of unhealthy options such as sugar-sweetened beverages – especially to children – as part of wider schemes to improve food environments.

Many companies, particularly larger ones, can offer workplace nutrition programmes that include healthy offerings such as milk or yoghurt. Larger companies can mentor smaller ones, for instance to improve the nutrition and business cases of their offerings. Small and medium enterprises can join networks like the SUN Business Network to amplify their voices and to better access available opportunities such as trainings in their communities of practice.

Individuals, consumer groups, and non-governmental organisations have a crucial role to play beyond programming, including to amplify voices of marginalized groups. They can help to hold both government and private sector actors to account for their actions or lack thereof, particularly where commitments are made. Milk safety may be a key area for consumer groups to rally around.

The supply and safety challenges around dairy products, their lack of affordability in many low- and middle-income countries, and the underexploited opportunities to boost demand, for example for fortified products, are widespread. Programming to support dairy will remain firmly on GAIN's plate in the future, as part of our commitment to making healthy foods and healthy diets more available, accessible, and desirable.

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