



ENGINE OF THE ECONOMY

THE **DUTCH DAIRY SECTOR'S** STRENGTHS
AND THE CHALLENGES AHEAD



Cees 't Hart, FrieslandCampina

Farmer craftsmanship, favorable climate, and fertile soil are at the foundations of the dairy sector's success [#milk2030](#)



Ruud Huirne, Rabobank

Rising price volatility is the next challenge: liquidity planning, building up buffers, and using these if necessary [#milk2030](#)



Albert de Groot, Vreugdenhil Dairy Foods

Growing food demand worldwide. Sustainability. Opportunities or obligations for the Dutch dairy sector? [#milk2030](#)



Marc Ligthart, DOC Kaas

Dutch dairy: where a small country is punching above its weight [#milk2030](#)



Wiebe Willig, Henri Willig Group

You can realize sustainable success in the Dutch dairy sector + good milk prices by making special cheeses [#milk2030](#)



Ben Wevers, Rouveen Cheese Specialties

Dairy is in the Netherlands' genes, we are naturally innovative, efficient and sustainable [#milk2030](#)



Jan Anker, A-ware Food Group

Dutch cheese is known worldwide for its high quality. We are seeing the demand for quality cheeses from the Netherlands growing worldwide [#milk2030](#)



ENGINE OF THE ECONOMY

The Netherlands is dairy country. The Dutch love their milk, cheese and yogurt, the cattle grazing in the fields. For most of us, though, the economy is not what first comes to mind when we think of dairy. The Dutch dairy sector, however, is an important part of the Dutch economy and its international trade. In the growing global market, Dutch dairy is renowned for quality products and innovations – but here in the Netherlands, the economic side of Dutch dairy has largely gone unrecognized.

Dairy is a **strong economic sector**. Dairy farming and the dairy industry mean tens of thousands of jobs and billions in revenue. Even in times of economic crisis, the sector grows and companies invest. Across the sector, barn builders, animal feed companies, breeding farms, wholesalers, business services and many other companies are thriving. And together, they make up a strong dairy cluster.

Dairy's importance for the Dutch economy is underscored by the **large international dairy trade and the potential its future holds**. The dairy sector accounts for no less than 8% of the Dutch trade surplus, significantly contributing to the earnings capacity of the Netherlands. An economy, after all, hinges on those sectors which are exposed to and successful on the international playing field. Dairy is certainly such a sector. Its economic importance is also growing. Greater global demand means greater opportunities for the Netherlands in the export of both products and knowledge.

These opportunities come with **considerable responsibility**. The sector can contribute to global food security by teaching farmers in other countries how to be more efficient, and by producing enough dairy in the Netherlands that much of it can be sent to countries in need.

As a global player, the dairy sector must **increasingly deal with price volatility**. Milk and dairy prices in the EU are coupled with international supply and demand, which means that prices fluctuate much more than they did when the EU regulated prices. This fluctuation is due to a number of factors, including economic developments, weather, currency rates, reserves, and capacity. Volatility is here to stay, and represents a significant challenge for the dairy sector. Those companies which can handle the volatility will be successful in the long term. They will rely on both cost efficiency as well as high added value: excellent milk which is turned into high-quality, reliable and delicious dairy products in a sustainable and efficient way.

The Dutch dairy sector is in an excellent position to seize these international opportunities and to face the challenges that come with the more open market. Its climate, soil and logistics give the Netherlands, as a production center, a natural competitive edge.

Entrepreneurship and innovation are at the heart of this competitiveness. The Dutch dairy industry and dairy farms are seizing the opportunities that have come with the elimination of the milk quota – within applicable environmental requirements, of course. Companies are investing heavily in R&D, and several of the world's most leading dairy research institutes can be found in the Netherlands. With the close cooperation between companies and these research institutes, and with dairy companies putting their knowledge and technologies on the market, agro & food in the Netherlands is deservedly one of the country's "top sectors".

The Dutch dairy sector wants to be **competitive**, but it also wants to be **sustainable**. Sustainability is a social and economic necessity which demands cooperation, so the dairy sector is coming together. The sector's shared agenda is making it more transparent and accountable. Though important progress has been made, this transparency has made it clear that there is still work to be done to make the sector more sustainable.

Dutch dairy is a **quality product that is part of a sustainable and healthy diet**. Its richness in nutrients, the relatively low calorie content and the relatively affordable price make it a staple. Milk and dairy are part of a balanced, healthy, sustainable, affordable and delicious diet. Players in the dairy chain are continuously improving product quality. The international reputation of the Dutch dairy sector's quality and entrepreneurship are important competitive advantages in serving the new middleclass in emerging countries.

Its strong position, its economic potential, the close ties to the Netherlands and its traditions of entrepreneurship, cooperation and innovation give the dairy sector enduring importance for the Dutch diet and culture, the landscape and the economy: an **engine of the economy**. Or, as State Secretary Dijkema of Economic Affairs in the Dutch House of Representatives said, "We can all see that the Netherlands is a leading dairy country. We see this not only in the levels of entrepreneurial expertise and technical and economic performance, but also in the high quality of our dairy industry."

COLOPHON

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DAIRY COUNTRY

Dairy farming

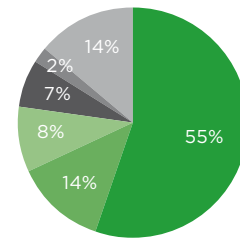


1.6 million cows on 18 thousand dairy farms in the Netherlands...



...produce 12.7 billion kilos of milk

Dairy industry

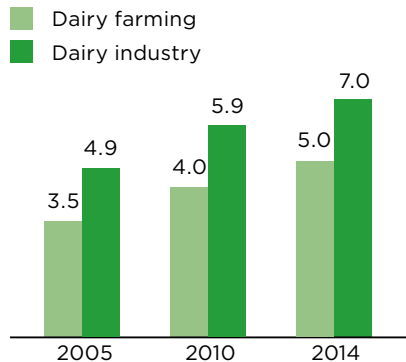


- Cheese
- Milk powder
- Pasteurized milk and products (incl. cream)
- Condensed milk
- Butter
- Other

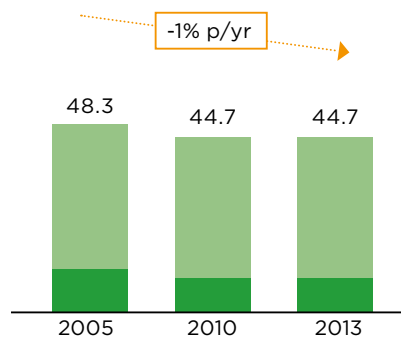
23 companies with 52 factories in the Netherlands process 98% of this milk into dairy products and ingredients

A ROBUST ECONOMIC SECTOR

Production value [EUR bn]

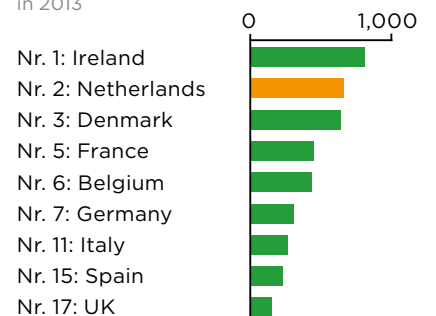


Employment [1000 fulltime jobs]



International benchmark

Rankings of dairy sectors in EU-28 countries by per capita revenue [EUR] in 2013



A STRONG CLUSTER

Illustration of the cluster





STRONG ECONOMIC SECTOR

DAIRY COUNTRY

The Netherlands and dairy are inseparable. Dairy is deeply embedded in our diet, our hearts, and our culture. On average, the Dutch drink two glasses of milk a day. Cows out at pasture dominate the landscape – a nostalgic sight for Dutch who live abroad. Everyone remembers the Joris Drieprinter, “milk, the white engine”, and “cheese cube” commercials. And around the world, the Netherlands is symbolized by images of cheese and milkmaids in traditional dress.

Behind our diet and our culture stands a modern, innovative and entrepreneurial economic sector of dairy farming and industry. 18,000 farms and 1.6 million cows produce 12.7 billion kilos of milk per year: two glasses of milk a day for nearly 100 million people. The Netherlands accounts for 8% of European milk production, fifth after Germany, the United Kingdom, France and Poland. 28 companies and 52 factories in the Netherlands process 98% of raw milk into dairy products like cheese, butter, pasteurized milk and milk powder. And the sector does even more with milk. From whey, a byproduct of cheese, high-grade proteins are extracted for products like baby food and sports drinks.

A ROBUST ECONOMIC SECTOR

In 2014, Dutch dairy farming and the dairy industry had a production value of EUR 5 billion and EUR 7 billion, respectively. The sector's size is about 1/6 of the total Dutch food industry and, for comparison, is larger than the country's electrical appliance, pharmaceutical or automotive industries. In terms of revenue per capita, the Netherlands is second in the EU. The sector's growth is robust: today, it is larger than it was the day before the economic crisis began.

The Dutch dairy sector is in relatively excellent condition: the country's climate and soil are good for dairy cows and for the grass they eat, the Netherlands is strategically located in Europe, with good access to potential markets, and the logistics infrastructure here is first-rate. For the Netherlands, dairy is a logical choice.

The dairy sector also means 45,000 fulltime jobs. Automation has brought the numbers down somewhat, but on the other hand has improved the sector's competitiveness. Productivity is high. Milk production per cow is in the global top, and through gradual expansions Dutch dairy farms are realizing increasingly higher and more efficient yields. And they do this with enormous care for the well-being of livestock, and in accordance with environmental standards. Most dairy farmers have

organized into cooperatives through which they sell their milk to the cooperative-owned milk processing company. The cooperative gives farmers security, market power and an investment in future generations. For milk processing companies, the cooperative means a shareholder which can lead them in the long term. But the dairy sector also has private businesses, bringing a balance to the sector that makes it strong.

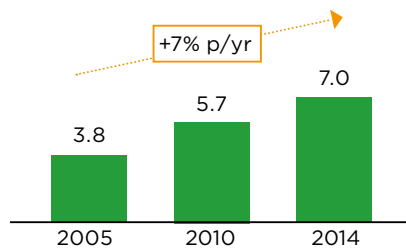
Of the world's five largest companies in the dairy industry, one is Dutch: FrieslandCampina, a cooperative of 19,000 member dairy farms in the Netherlands and abroad. And two of the five have research and production locations in the Netherlands, Danone and Nestlé respectively. The Dutch dairy industry also has many other unique companies, like CONO Kaasmakers from Beemster, now over 100 years old. De Graafstroom, a cooperative of 150 farmers with a cheese factory in Bleskensgraaf. CZ Rouveen, experts in specialty cheeses and which even offers cheeses à la carte. DOC Kaas, a cooperative of 1,200 dairy farms in Hoogeveen. Bel Leerdammer, the maker of Leerdammer cheese and part of the French Bel Group. Vreugdenhil Dairy Foods, exporting milk powders and ingredients around the world. Ausnutria Hyproca, which has conquered the world with baby food. The Danish Arla Foods, which produces and delivers fresh dairy products in the Netherlands. Hochwald, one of the largest German dairy companies, with a production location in Bolsward for condensed milk. Yakult from Japan, producing its well-known drinks in the Netherlands for the European market. A-ware Food Group, a dairy services provider which has also recently entered production; its first cheese was made in its brand new factory in December 2014. And Henri Willig, visited by nearly one million tourists a year who come to learn about the cheese maker's craft.

A STRONG CLUSTER

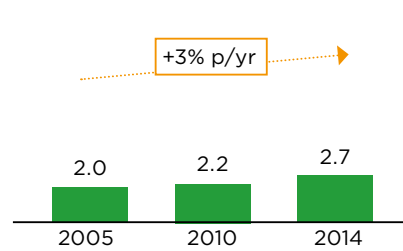
The dairy sector is part of a larger dairy cluster. Wholesalers buy dairy products which retailers and food service companies sell to consumers. There are companies that supply special semen for breeding new cattle with higher yields. Other companies supply animal feed, products to make or keep livestock healthy, the newest barns and machinery, financial services, education, knowledge and technology. The Dutch dairy cluster is a cluster of winners, known for its strong, international players which contribute considerably to the Dutch economy.

STRONG TRADE BALANCE

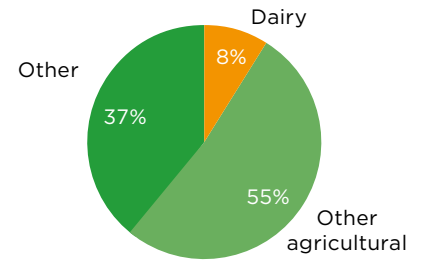
Dairy export [EUR bn]



Dairy import [EUR bn]

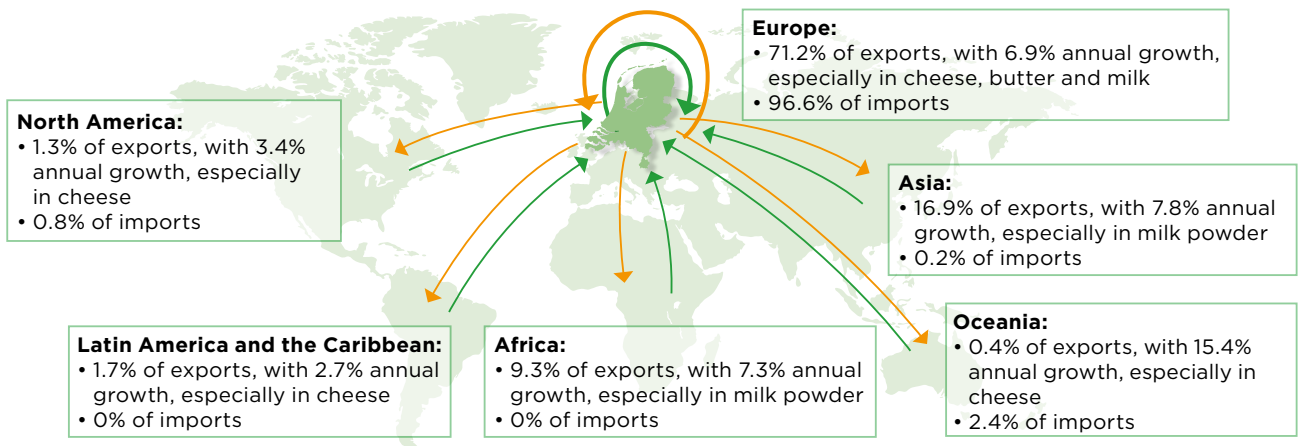


Netherlands trade surplus, 2013



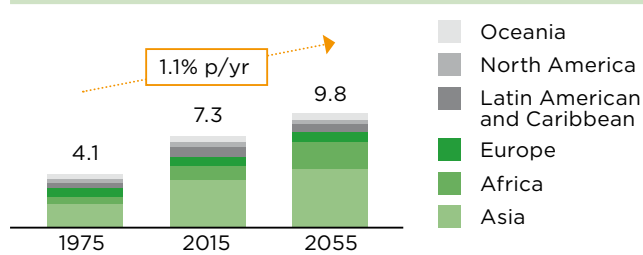
TRADING AROUND THE WORLD

Export and import of dairy products from and to the Netherlands as a % of total value (2014, growth rates 2005-2014)

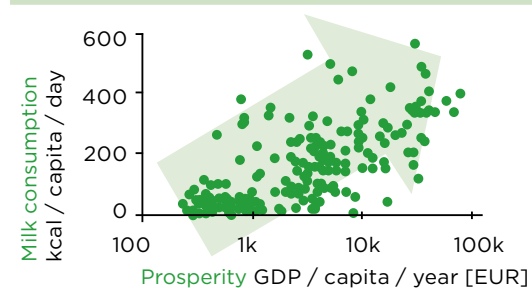


GOOD PROSPECTS, BIG CHANCES, BIG RESPONSIBILITIES

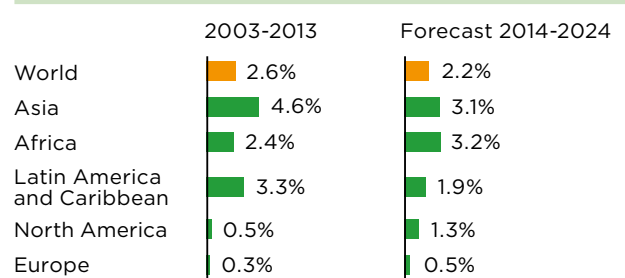
Growing global population [bn]



More prosperity, more milk consumption

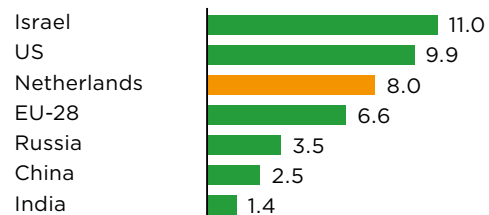


Average annual growth in demand for dairy [milk equivalents]



Growing demand for expertise

Milk yield per cow in 2013 [tons/year]





COUNTLESS EXPORTS, COUNTLESS FUTURE OPPORTUNITIES

STRONG BALANCE OF TRADE

The Netherlands is traditionally a trading nation, and international entrepreneurship is one of the pillars on which the Dutch dairy sector is built. In 2014, the sector exported EUR 7 billion worth of products, around half of which were cheese. Export value grew by an average 7% per year between 2005 and 2014 – despite the economic crisis. Imports are much smaller – in 2014, the Dutch dairy sector saw a trade surplus of EUR 4.3 billion. The dairy sector is thus making a significant contribution to the earnings capacity of the Netherlands. An economy, after all, hinges on those sectors which are exposed to and successful on the international playing field. Those are the sectors that determine the prosperity of a nation. In the Netherlands, dairy is certainly such a sector.

TRADING WITH THE ENTIRE WORLD

The Dutch dairy sector trades with more than 150 countries around the world. Measured in product value, 71% of these exports go throughout Europe. 29% is traded outside of Europe, 20% of which is made with milk produced in the Netherlands. The Netherlands is thus the largest exporter of dairy products from inside the EU to outside the EU. And this international export is growing quickly.

At the national level, our European neighbors are our most important trading partners. We export mostly to Germany: EUR 1.8 billion. Belgium and France follow, together accounting for EUR 1.6 billion of Dutch exports. Export to these countries has risen sharply in recent years, but growth is even larger for export to several emerging countries outside of Europe. Exports to China grew an average 25% per year between 2005 and 2014, reaching EUR 260 million last year.

The Dutch dairy sector not only exports dairy products, but also expertise, technology and dairy farmers. FrieslandCampina's Dairy Development Programme is one such example, providing knowledge and people to support the development of dairy farms in Asia and Africa. Experts help local dairy farmers increase their yields and assist them in the process of joining the international quality system. In 2014, FrieslandCampina and Huishan Dairy started a joint venture to locally produce, sell and distribute baby food in China.

GOOD PROSPECTS, BIG CHANCES, BIG RESPONSIBILITIES

The long-term forecasts for global dairy demand look good, which means big opportunities for an exporting country like the Netherlands. A multiplying and ever more prosperous population is increasing the global

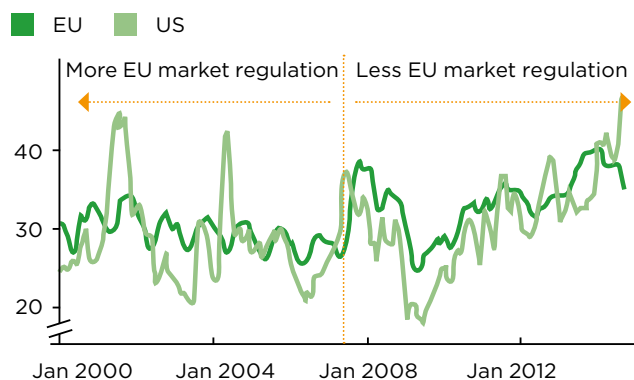
demand for dairy products, particularly from emerging countries in Asia, South America and Africa. Growing prosperity means a shift in eating habits, from grains to more expensive animal products like dairy. Urbanization is also giving more people access to grocery stores, where they can buy fresh dairy, and refrigerators in which to store them. Globalization is giving more and more people a taste for dairy.

The OECD and FAO expect that producers in emerging countries in Asia and Africa will not be able to keep up with the growing local demand for milk powder and ingredients. They estimate that the shortage of milk powder in Asia and Africa (demand minus local production) will reach 3,600 kilotons (kt) by 2023 – 18 times today's milk powder production in the Netherlands. Cheese shortages in Asia and Africa are forecasted to rise by 9% a year on average for the coming 10 years. These shortages will have to be supplemented by countries elsewhere. This is a big opportunity for the Netherlands.

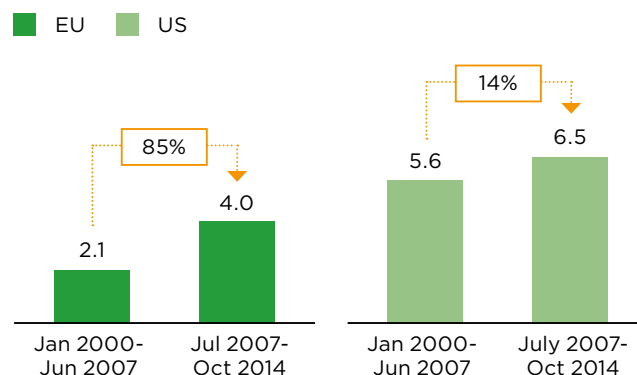
Internationally, there is also a great need for Dutch expertise. According to the FAO, by 2050 we will need 60% more food than we do now. The agricultural sector, including dairy farming, uses scarce natural resources. The answer to the growing demand for dairy and other food cannot be found in using more agricultural land – in many areas, that isn't even possible. Food security means a future where food is produced more efficiently: doing more with less. For many countries, food security is a major challenge. A great deal of the growth in consumption – of fresh products – must be met by local production, where the growth itself is taking place. Here lies opportunities to create value by exporting Dutch knowledge, technology and projects to help achieve higher productivity levels and a more sustainable world. The Netherlands has the right climate and position for efficient and sustainable dairy production, and a wealth of knowledge in this field. This comes with not only an opportunity to export products and expertise, but also a great social responsibility to contribute to global security: from helping farmers in other countries learn to produce more efficiently, to producing and processing enough dairy in the Netherlands that we can also feed other countries.

HIGHER FLUCTUATIONS IN MILK PRICES

EU and US milk prices
[EUR/100 kg, not corrected for inflation]



EU and US milk price fluctuations
[standard deviation, EUR/100 kg]



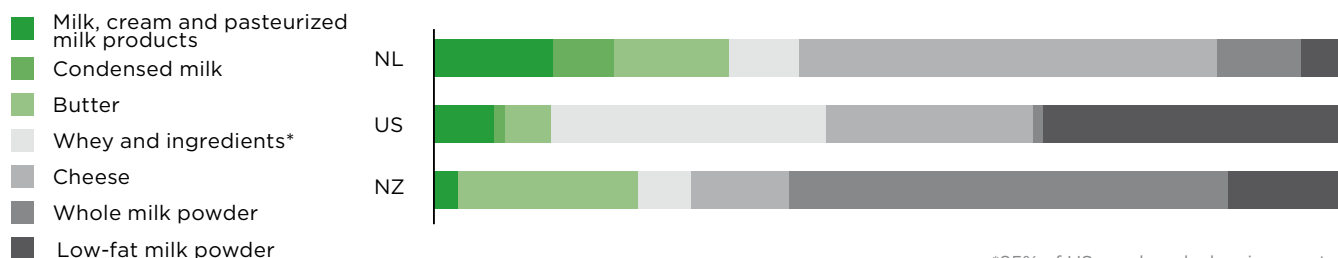
CONTINUED PRICE VOLATILITY

Complex interplay of factors

| | | 2007/2008 peak | 2008/2009 slump | 2009/2010 surge | 2013/2014 peak | Late 2014 slump |
|--------|-------------------|-------------------------------------|---|---------------------------|----------------------------------|---|
| Demand | Economy | Strong growth in emerging economies | Crisis | | | Leveling out in emerging economies |
| | Currency exchange | High NZD | | | | Fall of ruble |
| | Regulation | | | USDA market support | | |
| | Notable events | | | Melamine scandal in China | | Russian sanctions |
| | Reserves | Low in US | US replenished | | Buildup in China | China replenished |
| Supply | Weather | Oceania drought | Good summer in Oceania | | Cold winter in US/EU, NZ drought | Better weather in production countries than in 2013 |
| | Costs | High feed prices | Low feed prices | Rising feed prices | High feed prices | Dropping feed prices |
| | Regulation | Deregulation of EU dairy policy | Extension of EU quota | | | |
| | Notable events | | | Farm closures in China | | |
| | Capacity | | Expansion due to high prices in previous period | | | Expansion due to high prices in previous period |

GOOD BUSINESS

Export product mix [share of export value]



*95% of US-produced whey is exported



MANAGING VOLATILITY

HIGHER FLUCTUATIONS IN MILK PRICES

A lot has changed in the dairy sector in the last decade. Before 2007, it was heavily regulated in Europe, which counteracted global market volatility and ensured stable EU milk and dairy prices. In 2007, the export subsidy in the EU was phased out and support for dairy farms in the EU was uncoupled from production – in a period when the global demand for dairy was growing sharply. Today, Dutch and EU milk and dairy prices are largely determined by international demand and supply, and by milk prices in other international markets. In April 2015, additional deregulations in the EU will see the elimination of the milk quota. A freer market means higher price fluctuations. After 2007, fluctuations in EU milk prices were 85% higher than in the previous period; since then, fluctuations have been more similar to those long familiar in countries like the US.

CONTINUED PRICE VOLATILITY

Volatility in milk prices is driven by a mix of factors behind global demand and supply. The global economic crisis was one of the reasons for the drop in demand and thus milk prices in 2009. But demand is also influenced by exchange rates, regulations, the buildup and depletions of reserves, and by events like the Chinese melamine scandal that pushed up prices in 2010 and the sanctions against Russia in the second half of 2014 which puts sales and thus prices under pressure.

The causes behind price volatility also lie on the supply side. Milk production depends on the weather, especially in those areas where cows are primarily outside and feed on grass, such as in New Zealand. Droughts in New Zealand and floods in Argentina led to around 3 million tons less milk production in 2007/2008, which pushed up milk prices. Double-digit percent fluctuations in feed prices – a major cost factor in dairy farming – have also contributed to the peaks and valleys in milk prices in recent years. Entrepreneurs respond to changes in price: at high prices, they increase capacity (more cows, increased use of feed concentrates), at low prices, they reduce capacity, and many companies cease operations. At the dairy farm, however, capacity adjustments cannot be made from one day to the next, where production changes could be aligned with the milk price. This further intensifies price hikes or price drops. Limited access to actual information about developments in consumption in emerging countries also makes production planning a challenge.

Price volatility is therefore a complex array of factors which largely lie outside the influence of the dairy sector, and which cannot be simply eliminated. Demand

is becoming increasingly dependent on emerging, mostly volatile economies and on a climate and weather patterns that are becoming more extreme and less predictable. In short, the increased volatility in prices is here to stay. A fact of life for the European dairy sector.

GOOD BUSINESS

Volatility is a major challenge. Dairy farms which can handle the volatility will be successful in the long run. Managing volatility demands a robust business, entrepreneurship, and the buildup of buffers in better times. In the coming years, this is what many dairy farms will have to do.

The Dutch dairy industry, with its vast supplies of entrepreneurship, is in a good position to handle the price volatility. The product mix is diversified relatively well. In the Netherlands, cheese makes up a relatively large share in the product mix, and cheese is one of the most stable products in term of price. By adapting the product mix to global demand and supply, Dutch dairy entrepreneurs can stay responsive to reality and can counteract the effects of price volatility. Flexibility is an entrepreneurial balance. It requires building up costly production facilities that make rapid adjustments possible. This also holds true for the diversification of exports to various countries and regions across the world. Dutch dairy entrepreneurs travel to all corners of the world and trade where circumstances are favorable. This way, they create flexibility. Entrepreneurship remains essential here; it is a challenge for the sector to continue to do business, to dare to do business, with the greater risks that come with increased price volatility.

One drawback of the Dutch sector is the relatively high cost price of milk. Production materials and labor costs are high, and continual production increases make cost savings a challenge. Costs and profits from milk are often closely tied; in times of dropping prices this can lead to low or even negative margins for dairy farms. The influence of price volatility will gradually push the sector to consolidate: smaller companies and companies whose operations are not as strong will stop, the larger and stronger companies will succeed. Margins will be a deciding factor. In the future, Dutch companies must be cost efficient but above all offer high added value: excellent milk from which high quality, reliable and delicious dairy products can be made in a sustainable and efficient way.

PILLARS OF DUTCH COMPETITIVENESS

Location

- Climate and soil extremely suited for dairy farming
- A large and stable market in Europe
- Strong logistic infrastructure with global access

Innovative entrepreneurship

- Internationally focused, long-standing export experience
- Readiness to invest and innovate
- Good access to capital
- Unique knowledge base and application
- International recognition for high productivity, quality and safety

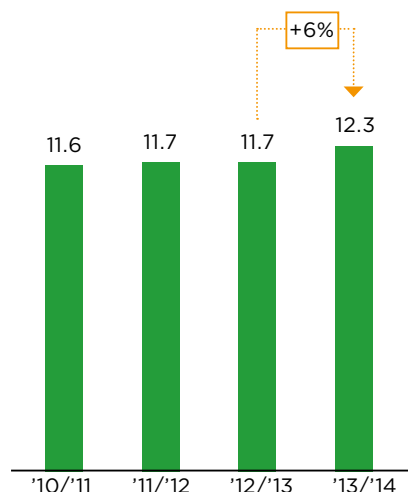
Cooperation

- Readiness to cooperate among sector, cluster, and “golden triangle” players
- Strong self-organizing capacity
- Cooperative model
- Education and research developed in the “golden triangle”

ROOM FOR GROWTH

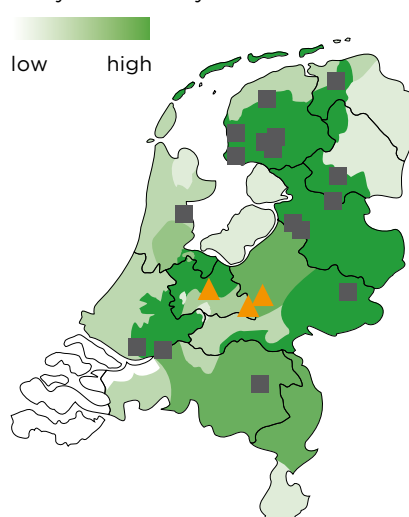
Milk production expansions

Production by quota year [m tons]



Milk processing expansions

Dairy farm density



■ New factories/expansions

EUR 2 billion in investments in new factories and new capacity in 2013-2015, including:

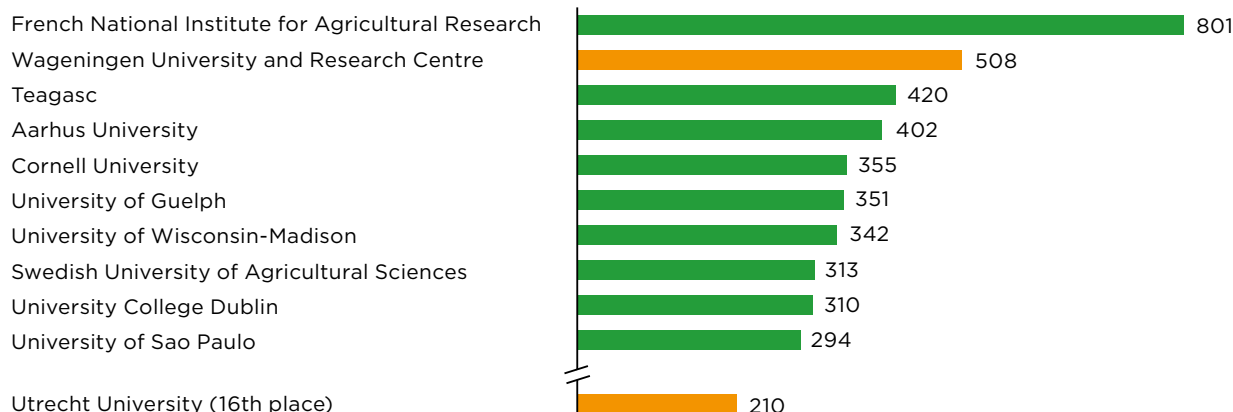
- CONO in Beemster
- Vreugdenhil in Gorinchem
- A-ware and Fonterra in Heerenveen
- FrieslandCampina, various projects
- Ausnutria Hyproca in Heerenveen
- Bel Leerdammer in Dalfsen
- DOC Kaas, CZ Rouveen, Hochwald, Henri Willig and De Graafstroom expansions of existing locations

▲ R&D growth

- FrieslandCampina center for innovation at WUR campus
- Danone center for innovation at Utrecht Science Park
- R&D center of Chinese dairy company Yili at Food Valley

DRIVEN BY INNOVATION

World's top 10 research institutes in terms of publications on dairy [# of publications between 2009 and 2013]





DRIVEN BY ENTREPRENEURSHIP AND INNOVATION

PILLARS OF DUTCH COMPETITIVENESS

The Dutch dairy sector is in an excellent position to seize the international opportunities and to face the challenges of a freer market. The Dutch dairy sector has a natural edge thanks to the country's climate, soil, strategic position in Europe, logistic infrastructure and the knowledge and education available. And Europe, where people love dairy, is a stable home market. International entrepreneurship is in the country's genes. As early as the 1920s, Sietze Hepkema, director of the Coöperatieve Condensfabriek Friesland, traveled to North Africa and Asia with cans of "Bébé Hollandais" and "Frisian Flag", which he used to open new markets and lay the groundwork for FrieslandCampina's strong international position today. Above all, the Netherlands is known internationally for its quality and safety – an enormous competitive advantage in serving the new middleclass in emerging countries.

Good access to capital means room for investment. With Rabobank, the Dutch dairy chain has a bank with a wealth of sector knowledge, a bank which loaned almost EUR 12 billion to Dutch dairy farms in 2013, almost EUR 600 million more than the previous year. Rabobank is an integral part of the chain, and participates in initiatives to strengthen the chain's sustainability and more. Other financial players like ABN AMRO and ING are also partners in the dairy chain. Cooperation lies at the foundations of the Netherlands' competitive power. The country's strengths have been coming together in the cooperative model for a hundred years. Cooperation in the golden triangle of business, research institutes and government has realized the main conditions for success, which include a strong foundation of knowledge and excellent education; it is a continual challenge to keep this triangle in motion.

ROOM FOR GROWTH

The Dutch dairy sector has the room to grow, and it also takes it. Production in Europe is artificially restricted until April 2015. A result of the milk quota in the EU is that farmers cannot produce more than a certain amount of milk. In April 2015, this milk quota will be eliminated, leaving room to grow, export and compete – especially for the Netherlands, a big exporter to countries outside Europe. But this also offers the Netherlands opportunities to compete on the European market and to further grow its market share there. The dairy farm thus loses a cost factor, namely the interest/write-off/rental for the quota. Between 2013 and 2015, the Dutch dairy industry will have invested a total EUR 2 billion in new factories and expansions of existing factories. This also means a lot of new employment. At the same time, Dutch dairy farming has been increasing production. As a result, in the year 2013/2014 the Nether-

lands exceeded the milk quota by 4%, the highest in Europe. A fine of EUR 132 million has to be paid, but this shows that the sector is in the lead to profit from the elimination of the quota and to further enter the global competitive field.

DRIVEN BY INNOVATION

The future of the dairy sector stands or falls on innovation. Innovation to stay internationally competitive, to improve production processes, to meet growing demand, to make dairy cheaper, to ensure quality, to increase sustainability, and to capitalize on consumer health, safety, diet and convenience preferences.

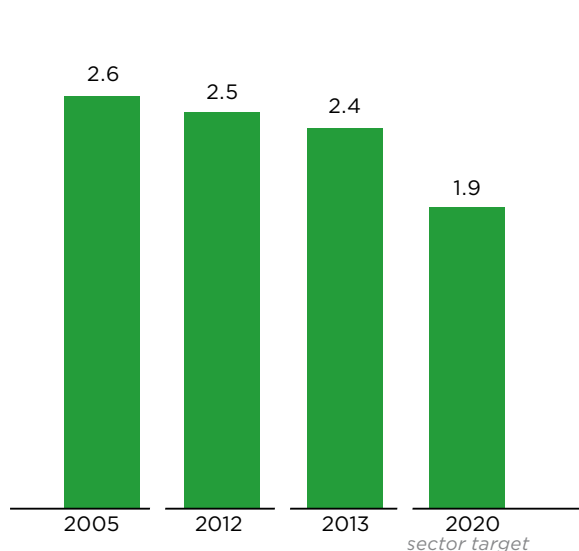
The Dutch dairy sector and the dairy cluster as a whole are innovating and making progress. In innovative barn concepts like the koeientuin (literally: "garden for cows"), the well-being of the cow, the farmer, and the environment are central. The well-being and the milk yield of individual cows are measured and improved by using ICT, sensors and "big data". And Dutch companies are developing new varieties of dairy products specifically aimed at the demands of foreign consumers.

The Dutch dairy sector can build on a strong foundation of knowledge. With Wageningen University and Research Centre (WUR), it has a world leader in dairy expertise right here at home, along with strong players like Utrecht University and NIZO food research. The cooperation between research institutes and companies in the sector is also unique. On campuses like the Wageningen Business and Science Park, the Utrecht Science Park and the Dairy Campus in Leeuwarden, R&D talent from companies and research institutes comes into contact on a daily basis; this also happens at the national public-private research initiatives like Top Institute Food & Nutrition. Near Leeuwarden, a new campus is being built just for the dairy sector: the Dairy Campus. Companies and research institutes are participating in national research initiatives like the Top Institute Food & Nutrition, which for more than 10 years has organized public-private research partnerships. The Dutch dairy sector invests heavily in R&D. In 2013, FrieslandCampina opened a new center for innovation in Wageningen where 350 researchers work in state-of-the-art labs with the latest equipment. In that same year, Danone opened a center for innovation at the Utrecht Science Park, where it concentrated a large portion of its international R&D. The dairy sector also invests in attracting and educating talent, talent which will develop the innovations in the future. For example, the Dairy Academy was recently launched. This initiative, a cooperation of dozens of companies and educational institutes, offers courses on dairy to vocational (MBO) students and employees of Dutch dairy companies.

1. DEVELOPMENT TOWARDS CLIMATE NEUTRALITY

Example goal: improved energy efficiency

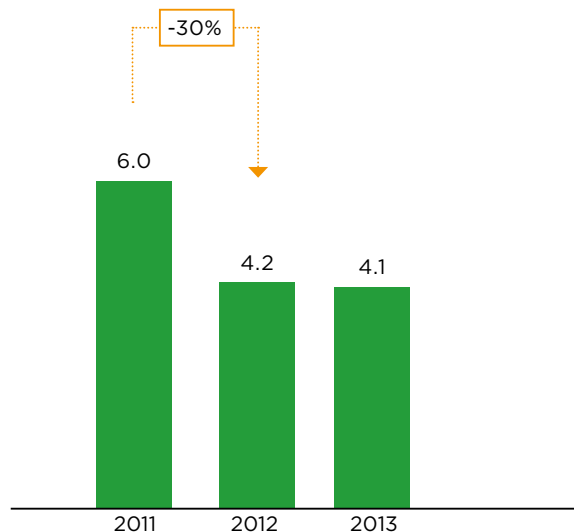
Primary fuel consumption [MJ per kg of milk]



2. CONTINUOUS IMPROVEMENTS IN LIVESTOCK HEALTH AND WELL-BEING

Example goal: responsible antibiotic use

[Animal defined daily dose by year (2011, 2012)] [Animal defined daily dose national average (2013)] (comparable)



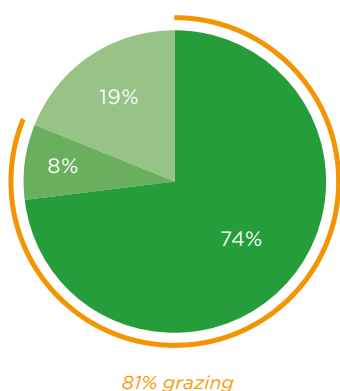
The Sustainable Dairy Chain brings Dutch dairy industry and farming together towards gaining a leading position in sustainability by focusing on four themes

3. PRESERVATION OF GRAZING

Goal: protected grazing

Target level [% of dairy farms]

- Grazing: Min. 120 days for 6 hours
- Grazing: Other type
- No grazing

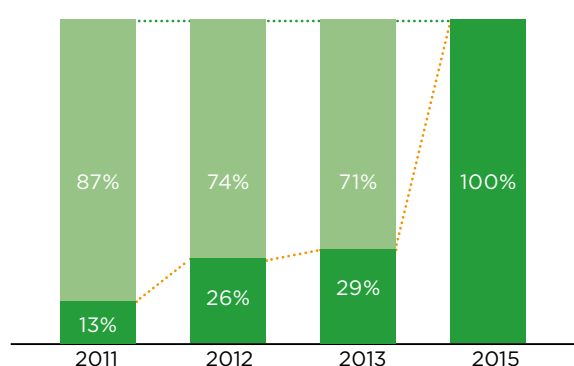


4. PROTECTING BIODIVERSITY AND THE ENVIRONMENT

Example goal: Using responsible soy

[% of use]

- Regular
- Responsible





COMPETITIVE – AND SUSTAINABLE

COMPETITIVENESS COMES FROM BEING RESPONSIBLE

Dairy production takes up space and energy. It produces milk, but it also produces greenhouse gasses, phosphate and ammonia. The Dutch dairy sector is proactive in its commitment to reducing its impact on livestock, nature and the environment. Dairy farmers are largely family companies with close ties to animals and nature. They want to pass their farms on to their children, so they are deeply motivated to conserve resources. In a small country, doing more with less is also a prerequisite to seizing international market opportunities, and it helps maintain public support for the sector and for its growth. Dairy companies also reward farmers for their achievements towards sustainability via a surcharge on the price of milk. The sector initiative Sustainable Dairy Chain (Duurzame Zuivelketen) brings dairy farming and industry together to address concrete goals for sustainability. The research institute LEI monitors the initiative and reports yearly on its progress – so far, its work has produced a baseline and two annual reports. The dairy sector is thus transparent about and accountable for its sustainability. This not only makes the sector's successes visible, but it also shows where the sector should intensify its efforts. The Sustainable Dairy Chain initiative focuses on four themes:

1. DEVELOPMENT TOWARDS CLIMATE NEUTRALITY

A competitive and sustainable sector does more with less. Through efficient production processes, the dairy industry had reduced its energy use in the dairy chain in 2013 by 5% compared to 2012. The sector aims for an average 2% reduction per year between 2005 and 2020. The sector is also committed to generating its own sustainable energy – 16% of the energy it needs by 2020 – and is making progress here. In 2013, 28% of dairy farms had an installation to recover heat from the milk cooling process, compared to 16% in 2010. Between 1990 and 2011, the entire dairy chain reduced its greenhouse gas emissions by around 20%. The target for 2020 is climate neutral growth relative to 2011. Due to production increases, however, greenhouse gas emissions in 2013 were 6% higher than they were in 2011. Improvement in this area remains a struggle. In the coming years, the sector will be working hard to reach its goals.

2. CONTINUOUS IMPROVEMENTS IN LIVESTOCK HEALTH AND WELL-BEING

The ethical treatment of animals is imperative. The sector has extensively – and successfully – pushed for more responsible antibiotic use in dairy farming in order to fight the buildup of resistance: veterinarians and dairy farmers make a company treatment plan together, and the dairy

industry only accepts milk from companies with such a plan. Thanks to this, a sharp decrease in antibiotic use was realized in 2012. In 2013, the use of medicines crucial for human health was brought down to nearly zero. Another goal is to extend the average lifetime of cows. However, cow lifetime has stabilized in recent years, presenting a challenge for the future.

3. PRESERVATION OF GRAZING

Cattle grazing typifies the Dutch landscape and is vital for a cow's well-being, but it is a practice that has declined gradually over the years. In the Grazing Agreement, 65 parties have committed to keeping grazing at least at its 2012 levels: grazing at 81.2% of companies. However, the number of companies employing grazing in 2014 was 77.8%. The Dutch dairy sector is taking extra measures to achieve this target. As of 2015 a number of dairy companies have increased financial support to dairy farms which employ grazing. The sector is also, for example, conducting research into the application of grazing in combination with systems like robotic milking.

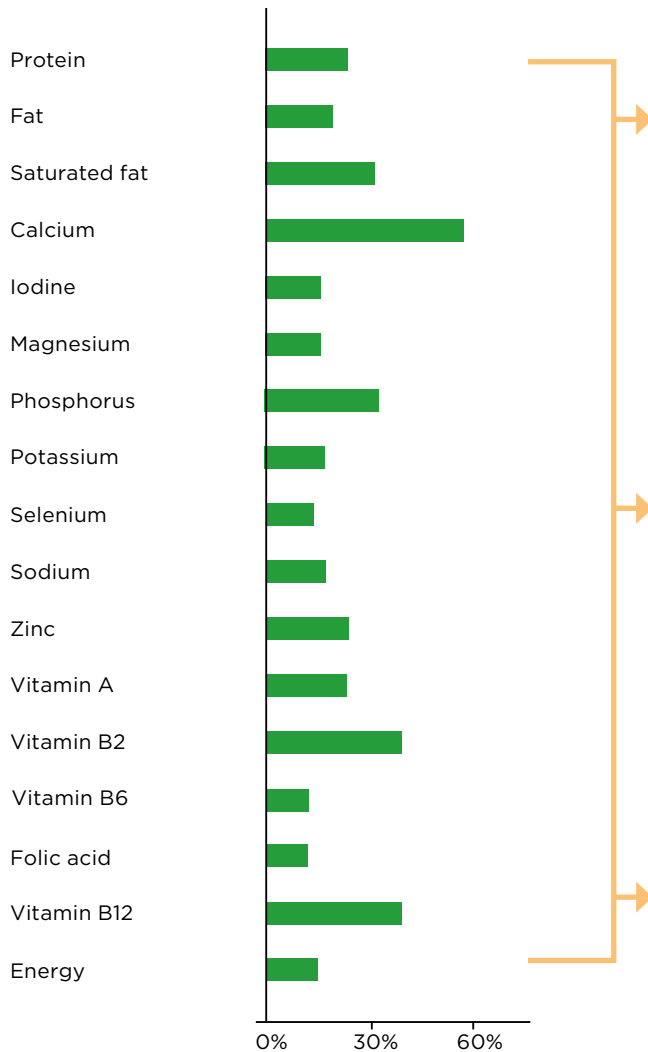
4. PROTECTING BIODIVERSITY AND THE ENVIRONMENT

The sector is committed to development according to environmental standards. To maintain and improve soil and water quality, the sector aims to keep phosphate emissions at dairy farms under the 2002 levels. In 2013, levels were 5% below, but had increased compared to 2012. Improving phosphate efficiency is a condition for the sector's continued growth. Cows also emit ammonia, which causes the acidification of soil. Over the past 20 years, ammonia emissions from dairy farming have been lowered by a factor of three. The sector is working towards further reductions of 5 million kg by 2020 compared to 2011; in 2013, ammonia emissions were 0.9 million kg lower than they were in 2011.

Dairy farming takes up 60% of the country's farmland. The sector is employing land conservation to strengthen biodiversity. 53% of dairy farmers are actively dedicated to the protection of nature and the landscape, 37% engage in species management, for example to protect the nests of grassland birds, and 28% look after landscape features such as tree lines and dikes. The sector is also committed to sustainability outside of the Netherlands. By purchasing sustainable soy from developing countries for animal feed, the sector is combating deforestation, environmental problems, poor working conditions and hunger. On January 1, 2015, it had reached its goal: all soy used by Dutch dairy farms is now produced in a responsible way.

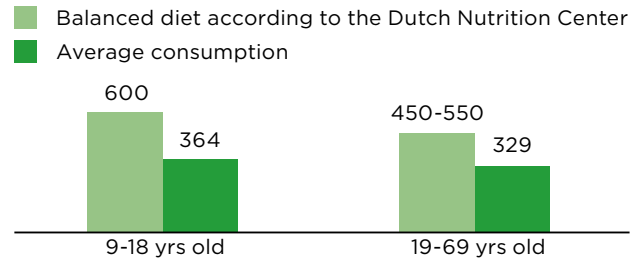
RICH IN NUTRIENTS

Percentage of nutrients from dairy products in the Dutch diet



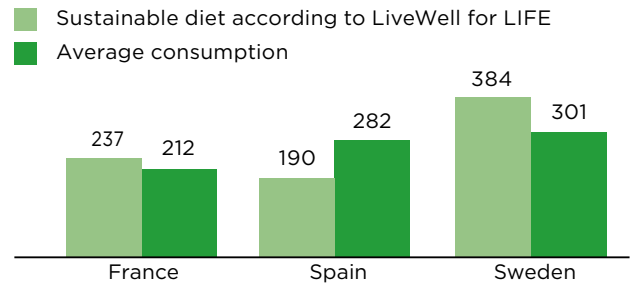
PART OF A HEALTHY DIET

Milk and milk product consumption in the Netherlands [ml per day]



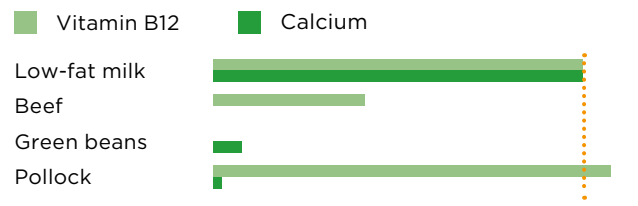
PART OF A SUSTAINABLE DIET

Dairy consumption in three reference countries [grams per day]



PART OF A HEALTHY AND AFFORDABLE DIET

Nutrients per Euro compared to milk



GUARANTEEING QUALITY AND SAFETY

The Dutch dairy sector's quality system

Dairy farm quality systems



Safeguards concerning the cow, including antibiotics, animal feed and cleaning supplies

Milk transport quality control



2.3 million checks per year

All farm milk is analyzed for fat content, protein content, antibiotics, platelet count and various other features

Dairy industry quality systems



3-5 million checks per year

Safeguards throughout the entire production process, all the way through to the final product



A QUALITY PRODUCT IN A SUSTAINABLE AND HEALTHY DIET

RICH IN NUTRIENTS

Dairy turns grass, which we cannot digest, into a nutritious product rich in proteins, fats, carbohydrates, vitamins and minerals – the nutrients we need to live. A 200 ml glass of low-fat milk contains approximately one-fourth of the required daily calcium and vitamin B12, about 10% of the protein requirement, and only 92 kcal. The large number of nutrients, relatively low calorie content and affordable price make dairy products like milk, cheese and yogurt an important nutritional source that contributes to global food security and a balanced and sustainable diet. This is why milk is recommended, around the world, as part of our daily nutrition.

PART OF A HEALTHY DIET

Overconsumption is a major problem in Western countries. Too much unhealthy, unbalanced food and too little exercise can lead to obesity, diabetes and cardiovascular disease. It is therefore important to eat a healthy and varied diet which provides sufficient nutrients without too much fat or added sugars. Basic foods like milk and other dairy products make an important contribution. In a healthy diet, dairy is a question of balance: not too much to limit fat intake, but not too little so that we get enough calcium, vitamins and protein – and in balance with the other food groups. Dairy is among the five key food groups in the Netherlands, and the Dutch Nutrition Center provides advice on recommended daily consumption of dairy and the types of dairy products that make up a balanced, healthy diet. However, the average Dutch person does not drink the recommended daily amount of milk.

The dairy industry participates in health initiatives like the Healthy Weight Agreement and the Network for the Reformulation of Products. By doing so, the dairy sector is well underway towards reducing the salt content in Gouda 48+ cheese, the most purchased cheese in the Netherlands, by 10% in 2015 compared to 2010, after its earlier reduction of 14% in 2010 compared to 2006. An initiative focused on sugar reductions is currently being developed.

PART OF A SUSTAINABLE DIET

Food production is responsible for 70% of water use and nearly 1/3 of global greenhouse gas emissions and energy use; in the future, much more food will be needed: about 60% more by 2050 in order to feed the growing and more well-off global population. In November 2014 the FAO and WHO issued a statement asking nations to work together with the private sector to eradicate global hunger and to encourage healthy eating patterns – with food produced in a sustainable way. With its high nutritional value, dairy can contribute considerably to sufficient nutrient intake and to

increasing prosperity through local production. Closer to home, the NGO LiveWell for LIFE, a WWF partnership, has developed a sustainable diet for three pilot countries, France, Spain and Sweden: a diet that is healthy and affordable, reflects the current local diet, and which can lead to a 25% reduction in greenhouse gas emissions from the food production chains in these countries by 2020. The high concentration of nutrients in milk and other dairy products means that dairy is a major part of the sustainable diet in all three pilot countries.

PART OF A DELICIOUS AND AFFORDABLE DIET

One of the most important reasons that consumers buy dairy products is that they are delicious and affordable. Dairy is a cheap source of many nutrients. The availability and high quality of the milk in the Netherlands is also one of the reasons that many dairy producers establish themselves here. With better, cheaper, safer, healthier and more sustainably produced dairy, the sector should be able to stay ahead of international competition.

GUARANTEEING QUALITY AND SAFETY

Dutch dairy is known around the world for its high quality and safe products, and for good reason. The sector has an intense quality control system in place throughout the entire chain, from cow to consumer. Quality systems at dairy farms are focused on the cow, for example on antibiotic use and feed. All farm milk is checked upon delivery at the factory along various quality parameters. Intense quality and control systems in the dairy industry guarantee the quality and safety of dairy products. Every day, samples from several processing steps in the production process are analyzed, from semi-finished to final products. Machine operation and packaging materials are also checked. Several external monitoring programs are also in place which work to improve quality. Quality systems at production locations are tested by independent inspectors, in addition to checks from the government. Quality and safety are at the heart of the Dutch dairy sector's competitive power. Around the world, food safety is a major condition for doing business. A country like China, which has seen major safety issues, is a symbol for safety's importance.

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LiveWell for LIFE, A balance of healthy and sustainable food choices for France, Spain and Sweden *[sustainable diet and impact on food production]*

Dutch Dairy Association *[quality]*

All 2014 figures are estimates



Arnold van den Breemer, dairy farmer from Soest

Dutch dairy farmers are innovative entrepreneurs. History proves this. They will find their way in the quota-less age [#milk2030](#)



Joost van der Hoogte, Bel Leerdammer

In 20 years, energy-neutral cheese production will no longer be a question – it will be a sine qua non [#milk2030](#)



Bas Padberg, Arla Foods Netherlands

Together we can reduce milk wastage with next-generation fresh milk that is still good a week after opening [#milk2030](#)



Eric Hulst, CONO Kaasmakers

We should be more proud of what we have done in the field of dairy in the Netherlands! [#milk2030](#)



Roald van Noort, CRV

The Netherlands is a leader in knowledge and experience in sustainable dairy production. Production restrictions would hamper knowledge development [#milk2030](#)



Atze Schaap, FrieslandCampina

For China, grazing in the Netherlands is like the star on a Mercedes. It drives fine without, but it's not real [#milk2030](#)



Bart van der Meer, Ausnutria Hyproca

A passion for dairy is at the heart of our entrepreneurship, and the same is true for the Dutch economy [#milk2030](#)



Henk van Bochove, De Graafstroom

Working in the dairy field is never boring [#milk2030](#)

