Dairy 2020
Scenarios for a sustainable UK dairy industry
A vibrant UK dairy industry that enables people, environment and business to thrive

Introduction

We cannot predict how the world will change over the next 10 years, but it’s unlikely to look the same as today. We use scenarios to help us understand the way in which the future might look different from today.

These scenarios formed part of an 18-month ‘futures’ process which brought the whole UK dairy supply chain together to create a vision and framework for a sustainable industry. Together they can be used to build sustainability strategies, raise awareness about challenging longer-term issues that may need to be addressed, and inspire innovation in the industry and among its stakeholders.

The Dairy 2020 scenarios in this document are not predictions or depictions of desirable futures which we wish to promote, and they do not represent our vision of a sustainable future. They are pictures of different possible futures, designed to help people understand the major trends that are shaping our world. They necessarily contain both negative and positive elements. They aim to challenge, inspire and excite, so that people feel motivated to plan for a better, more sustainable future.

More information about the Dairy 2020 project can be found at www.dairy2020.com. You can find a list of all the organisations involved at the end of this document.
How we built the scenarios

In the first phase of this project, we undertook desk research and interviewed a wide range of people involved in different aspects of the UK dairy industry. We wanted to understand the key factors and trends that will shape the future of the industry. We then worked closely with the members of the Dairy 2020 Steering Group and a broader group of workshop participants (our Working Group) to identify which factors are highly uncertain (requiring the industry to prepare for a range of possible outcomes) and which are more predictable (implying that the industry has a relatively clear path for beginning to address them today).

Our next step was to work with the Working Group and Steering Group to construct a scenario framework based on two ‘critical uncertainties’ – two key factors that will be of particular importance to the future of the industry but that have highly uncertain outcomes. From this work we developed drafts of four possible scenarios that were then finalised in the light of feedback from the Steering Group and Working Group.

The Certainties: The backdrop common to all four scenarios

Our research and workshop dialogue suggested that some factors will be both important and relatively certain in the future – meaning that we can be fairly sure that they will need to be considered in any scenario.

For this reason, some features are common to all four scenarios we have developed, although the emphasis may differ between them:

1. Growing impacts of climate change, such as water shortages and extreme weather events. Greenhouse gases already present in the atmosphere will cause global temperature to rise by at least 1°C over the next 30-40 years and by as much as 4°C by the end of the century. In the UK the implications of this are a greater likelihood of drier summers; milder, wetter winters; and more extreme weather events, such as flooding. A third of dairy farmers in England say they are already experiencing the effects of climate change now, and 62% say they expect to feel those effects in the next ten years.2

2. Growing global demand for dairy products, fuelled by rising economic power and demographic change in emerging economies such as China and India. Global demand for dairy products is predicted to grow by 16% between 2009 and 2018, equivalent to an annual growth rate of almost 2%. Demand is expected to remain particularly strong in important developing dairy markets such as North Africa, the Middle East and East Asia, but also in more mature markets such as those in the European Union, the United States and Russia.3

3. Higher and more volatile prices for key industry inputs, such as feed and fertiliser, driven not only by growing market demand but also by resource constraints (exacerbated by climate change) and other market trends. Feed is the single biggest cost input for dairy farming, and there is increasing competition for grain from other markets because of the expansion of livestock production in other regions. Key growth markets include North Africa, the Middle East, China, Mexico and Southeast Asia. Despite volatility in the short term, higher feed prices and other production costs – such as energy, labour and land – are expected in the future.4

4. Ibid.
How we built the scenarios

4. A continued priority of health and wellbeing for consumers, fuelled by a growing awareness of key health and nutrition trends and more information being available about the products and services we consume. In recent years we have seen a radical shift in customer expectations/understanding of nutrition, and in public concern about chemicals. The main areas of concern for consumers are the amounts of salt, fat and sugar in food, as well as food safety issues. Consumer concerns are being reinforced by NGO campaigns and government regulation, as well as ICT-based tools that allow consumers rapid access to product information and comparative data. Within the dairy sector, this trend is exemplified through the rapid growth in popularity of products such as ‘1% milk’: worth £3.8 million in the convenience market and growing 71% each year.

The Uncertainties: Key differences between the scenarios

Other factors are more uncertain. It is easy to imagine things going a number of different ways when it comes to topics such as policy responses to climate change, the ability of farmers and the food industry to meet growing consumer demand, and public perceptions of dairy farming.

The differences between our scenarios focus on two main uncertainties that the Working Group told us are most uncertain for the industry: the nature of the global economy and public priorities. These came to form the framework of the scenarios, with the different key outcomes as articulated below:

**The nature of the economy**

**Global**
- Global supply chains
- Globalised, highly competitive marketplace
- Aligned regulatory frameworks
- Multilateral trade agreements
- High degree of competitiveness across the globe
- The most efficient, innovative players win – regardless of geographic origin.

**Local**
- Trade flows globally, but there are more regional blocs
- More protectionism and trade barriers
- Differentiated regulatory frameworks
- Bilateral trade agreements proliferate
- Former ‘emerging’ economies dominate, with ‘developed’ economies in a phase of low growth
- National policies prioritise local production, food and energy security, and a higher degree of self-sufficiency.

**Public priorities**

**Fuelies**
- Practical and basic foods and other products are desirable
- People are trying to simplify their lifestyles and are attracted to products and services that are easily understood while also delivering multiple benefits
- Maximising efficiency is important: in lifestyles, in industry and in wider society
- Consumers look for engagement with brands, but on a need-to-know basis: whether products are safe, for example, whether production processes are legal, and so on
- Price, performance, value and convenience are what the consumers want to know about, and brands and retailers are tasked with the responsibility to deliver.

**Foodies**
- Politics and consumer values are passionate and frequently irrational on key issues
- People want more than cheap products, and are interested in the ‘experience’ of production and consumption
- Product footprinting and informative labelling are important. Consumers want to know the ‘back story’ of products, and how that relates to their own lifestyles
- Lots of engagement between brands and consumers
- People seek as much information as possible in order to make choices meaningful to their lifestyles.

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Global Fuelies

Read the Scenario
The world in 2020

Free markets and big business dictate global economic activity. Sustainability challenges tend to be dealt with through efficiency measures and technological innovation, but only when they threaten the bottom line in the shorter term. The UK dairy industry is globally competitive, and focuses on large-scale, professionally run farming operations. Consumers are interested in functional products that deliver what they want in a convenient form, but largely indifferent to how they’re produced.

Free markets make the world go round. Our warming climate and a population explosion mean that there are significant and growing pressures on food production, land and resources. Efficiency is the order of the day. Only smart and streamlined multinationals are able to survive in this world, which is highly competitive and margin-thin. Political power is mainly held by the markets. Governments are relatively marginalised and focused on facilitating the flow of investment to and from their economies, forging powerful multinational trade agreements and investing in education and skills to retain a competitive advantage. The Common Agricultural Policy (CAP) has been stripped back and now acts only to coordinate and exchange knowledge to support R&D.

Resources have crunched. Climate change talks have stalled. A more short-term mindset now prevails, driven largely by the most pressing resource constraints. Renewable energy has significantly increased, but so has the use of unsustainable energy sources, including coal and oil from tar sands. Investment is being made to extend the life of existing nuclear plants, and there are plans to build more. There is a race for cheap energy, and competition for water is a big issue. Technological innovation is the default approach for tackling resource pressures. Fertiliser prices are high.

We face east. Shanghai and Mumbai vie with each other to be the global financial centre and the leading skills base for R&D into innovations and technologies that will feed the globe. The dollar is no longer the dominant currency. All EU member states are in the euro and work as a powerful bloc in global trade negotiations. A competitive global economy with relatively few trade barriers has accelerated the growth of developing countries from Africa and Asia, which are joining China and India as players on the world stage. This has brought a lot of people out of poverty and created a larger global middle class.

Skills are global, students are tech- and business-literate. Big business runs universities across the globe, and courses are highly vocational. Science, technology and management-based courses are most popular. More people are going into higher education than ever before. Improved education and skills in developing and emerging economies, together with high demand for multi-lingual workers, have helped highly competitive and fluid labour markets to develop.

Consumers know their numbers, but not their stories. Global fuelies demand value and convenience from their food, and are health and calorie-literate. They approach and choose food in a fairly utilitarian way, and are largely indifferent to how it is produced. Food is highly processed and modified, with products achieving sales by demonstrating how they deliver the desired benefits for the best price. Consumers place their trust in big-multinational retailers and restaurant chains to deliver choice, convenience and food safety. There is little consumer interest in the ‘back story’ of food, and the gap between consumers and food production continues to widen. The public often don’t know their food and drinks contain dairy products.
## The UK dairy industry – At a glance

| Milk price | Highly competitive but high-quality products (those specifically adapted for use, for example, such as high-protein liquid milk for cheese) command the best prices. |
| Number of farmers | Decreasing numbers of ‘traditional’ farmers and family farms. But a rising number of specialists (such as renewable energy technologists and genetics specialists) and dairy farm managers (essentially business managers) as UK dairy grows in importance and size. Numbers of ‘farm hands’ rising. |
| Housed/pastured and forage vs feed | Mixed approaches, though largely indoor in winter. Mostly forage. |
| Size of farm (herd size) | Larger herd sizes, and several herds are often managed together as part of bigger dairy farm businesses. |
| Yield/availability of liquid milk | Yields are maximised. Liquid milk is not popular as a product in its own right, as processed and enriched milk products are increasingly demanded by consumers. But liquid milk as a commodity for processors is big business in the UK. |
| Demand for dairy – domestic and export | Dairy products are in demand at home and around the world. The UK is considered one of the best sources of liquid milk in the world. But with food becoming increasingly modified and processed, dairy analysts are warning that the industry faces a challenge from more synthetic products in the next 10-20 years. |
| Growth of industry – domestic and export | Industry is growing, but is being challenged by the development of synthetic foods. |
| Value added vs liquid milk | Value added dominates. |
| Environmental footprint | Biodiversity is declining, although water pollution and waste management are improving. Soil health remains at a similar level to the previous decade. Renewable energy has mitigated carbon emissions somewhat, but the growth of global demand and exports and higher numbers of cattle fight against this. |
The UK dairy industry

Dairy farming – ‘UK Farm plc’

The UK’s climate and topography are among the best in the world for ruminant livestock production. With fierce competition in agriculture, the UK tries to focus on those sub-industries it does best, so dairy is on the up and horticulture is largely a forgotten industry.

The drive for efficiency has changed the structure of the UK’s farms and how they’re managed. There are very few small family farms left, because of the investment in technology and management required to make these farms profitable. Instead, large farms are run by professional business managers using sophisticated ICT to monitor and streamline processes, inputs and outputs to a high level of detail and accuracy. There is less engagement with local communities. Farms are financed and owned by a mix of UK and overseas businesses.

Biotechnology has been at the forefront of the changes in dairy production. Genetics has improved milk yields by 50% and virtually eliminated mastitis. It has also significantly improved fertility and breeding. Optimising animal health is vital to an efficient dairy farm, so animal feed and treatment are monitored and adjusted on a daily basis. A testing breakthrough has all but eliminated bovine TB, but increased the risk of Johne’s disease, the biggest animal health issue for dairy in 2020. There is little diversity left in British dairy. Aside from a few rich ‘hobby farmers’ and landowners who keep heritage cattle breeds, the UK herd consists almost exclusively of genetically selected cross-breeds.

Cows are fed largely on forage because of high feed prices and price volatility. Genetic modification has improved forage quality and production; grass mixes now offer higher protein content, faster growth and longer seasons under hotter and drier conditions. The UK leads the world in the development of new, enriched grasses which now provide the nutrients that grain traditionally provided for high-performing cows.

UK cattle spend some of their time outside, but because the land area cannot produce enough grass, a new industry has developed growing grasses hydroponically in large-scale hangars that produce all year. Farm managers monitor grass growth by sprinkling ‘smart dust’ nanotechnology across grass-growing areas to pick up minute changes in water availability, disease, protein production and growth. Every farm has a tech centre or ‘lab’ where this information is centralised and managed, and dedicated health managers are tasked with achieving high levels of performance from each animal.

Farms enter into agreements with other regional food businesses to run large-scale anaerobic digesters. Often sited on farmland, these units are fed by a mix of dairy, consumer, retailer and other business waste. The power is used for the farm units and sold for regional distribution. In farm-based labs, the digestate produced is modified and optimised for each farm’s particular nutrient needs. All farms are set up to deliver maximum energy efficiency and the most profitable mix of renewable energy generation. Significant investment is being made in water efficiency, capture and storage technologies, with trials of ‘water-harvesting crops’ showing early promise.

Although biodiversity now has a price tag and financial benefits attached as a result of the International Convention’s work in 2018, the effects have not yet filtered down into UK farming. Biodiversity is primarily the responsibility of parkland, now sponsored and managed by businesses as part of their Corporate Social Responsibility (CSR) on behalf of councils. Pressure groups and NGOs are on the wane, and receive little support from government. A new European R&D funding stream has been announced to stimulate research into new ways of protecting and managing biodiversity. This will be highly tech-focused, but applied solutions are not expected for three to five years.
The UK dairy industry

Processing and distribution

Just a handful of multinational processors dominate this part of the supply chain. None is of UK origin or based in the UK. They have highly managed distribution networks to move dairy products across continents to huge processing plants. Electrified, refrigerated lorries and shipping are increasingly used. The industry produces homogenised products for international markets, and UK dairy products are a major export – traded on every continent.

Dairy is highly processed to achieve the multiple benefits demanded by consumers. Alongside processing traditional dairy foods, dairy products are increasingly enriched to carry medicinal ingredients, as well as vitamins and other health supplements. Dairy is also deployed in novel ways outside of the food sector, from dairy constituents being used for fibre production, to anti-ageing treatments.

Brands/retailers

Large-scale retailers dominate the market for a wide range of products. Consumers can interact with, order and customise their food by using in-store or mobile technology. Information is synched with health providers to keep track of and monitor individual health and lifestyle needs. Consumers have passed over responsibility for safety and the environment to retailers and processors. Most produce in a supermarket or retail outlet is own-branded, with clear and extensive labelling to reinforce consumer trust and allow a high degree of customisation.

Retailers and processors exert a big influence over the dairy industry, as consumers look to them to provide for their nutritional needs and take responsibility for food safety. Food safety crises can put companies out of business: very recently, a large Swiss-based processor went bust after evidence that its ‘Perfect Pregnancy’ range of fortified products contained contaminated milk protein. This has led to a drive towards ever more stringent health and safety controls in processing plants and sensor technology technology to pick up trace elements.

The power of retailers and processors over the industry is very strong but is largely uncapped by the Government, which sees them as playing a vital role in the economic health of the country.
The UK dairy industry

Consumers

Global fuelies are tech-literate consumers who are plugged into their particular health needs, and they see food as a key component of managing those needs. They are financially motivated to think in this way by the significantly lower insurance premiums that are now available for demonstrating that you are looking after your health. Food is hugely processed – offering multiple benefits in each product. People are not very aware of or interested in the dairy industry per se, only the benefits of individual products.

Global fuelies are comfortable with tech- and biotech-heavy production as long as their food is safe, affordable and meets their needs. They have a sophisticated understanding of food and an ability to pick and choose products that precisely meet their particular lifestyle and health needs. Restaurant chains that tailor to highly individual, customised choices have come onto the scene, and for example, frequent travellers who want to boost their immune system after a stressful work trip get an ‘after-flight’ cocktail as they wait for their baggage, a milk-based product enriched with energy-boosting and rejuvenating supplements. Although a few 100% dairy products are promoted in their own right (cheese and yoghurts remain popular), many consumers wouldn’t know if their favourite food and drinks contained dairy.

People use the latest technology to monitor their health on a day-by-day basis. This is fed directly into interactions with their private health insurance. Private insurance has become the norm, as most countries now follow the US model of health provision, with the state only offering emergency services.

Although most environmental-based NGOs are on the wane, there is a rise in pressure groups acting to protect health provision for groups at risk, such as low-income groups and people over 75. Experts suggest that ‘health poverty’ is the big global issue of the day.

End of life

In such an efficiency-focused world, waste has been minimised where it costs money. As food is so tailored to individuals and plays exactly to their needs and lifestyles, there is less pure food waste in the home. Packaging is uniform, with LCD screens conveying information personal to the consumer and their customised package. These are picked up by retailers and reused.

This scenario is one of four developed for the Dairy 2020 project. It is not a prediction or depiction of a desirable future which we wish to promote, and it does not represent our vision of a sustainable future. It is a picture of a different possible future, designed to help people understand the major trends that are shaping our world. It necessarily contains both negative and positive elements. Along with the other scenarios, its aim is to challenge, inspire and excite, so that people feel motivated to plan for a better, more sustainable future.
Below are some ‘weak signals’ (early signs of possible future trends) which suggest that elements of the Global fuelies scenario are already with us.

1. **Mega dairy herds for greater efficiency?**

   The average size of the dairy herd in the UK has increased from 84 in 2000 to 117 in 2010. Will this trend be accelerated by the proposed introduction of mega dairies in the UK, given their prevalence in other parts of the world, like the US?


2. **Real-time remote monitoring of individual cows**

   Dairy farmers can already keep track of their herds in real time through innovative animal tracking and monitoring systems such as CowDetect. These enable farmers to follow individual animals remotely, to analyse movement and eating patterns, and to identify sick cows. It also allows them to plan milking schedules so as to maximise productivity.²,³


3. **“Eggs come from sheep”?**

   Are people becoming increasingly disconnected from where food comes from, particularly those living in urban areas? Will the next generation care less and less about the origins of food and drink? If answers from a 2010 survey of children are anything to go by – e.g. “Eggs come from sheep” – then it appears so.


4. **Smart dust – will nano reach scale?**

   The US Department of Agriculture is investing $3.7 billion in nanotechnology – the manipulation of matter at the atomic and molecular scale. One technology being explored is ‘smart dust’, the use of tiny wireless sensors and transponders to communicate the information they sense. These could potentially be sprinkled across a field and linked to existing farming equipment used in precision agriculture.⁵

How this scenario could arise – Timeline

2012
UK interest rates rise and stay high.

2013
bTB testing breakthrough.

2014
Grocery Adjudicator has no work.

2015
EU allows GM technology to be used.

2016
EU biofuel policy rescinded, freeing land for dairy.

2017
Dubai funds large-scale dairy in UK.

2018
Genomic screening becomes cost effective for cow management.

2019
Big European dairy processor goes bust after contamination story.

2020
New UK grass ‘tech’ reduces use of imported proteins.
The world in 2020

The economy is highly globalised, with strong interconnections between countries and regions. Business is dominated by multinationals, and ‘climate-preparedness’ determines the winners and losers. The UK dairy industry is a global leader, specialising in high-value, differentiated products and focused on the growing export market. People care about the ‘experience’ of production and consumption, rather than just price and convenience – if you can afford it, that is.

The world is a vibrant, interesting and at times volatile global village. People care much more about sustainability across the globe, and we have come far in addressing key issues, but that doesn’t mean all the problems have been solved. Resource scarcity is very much an everyday reality: the costs of key commodities – from oil to metals to soy – are high. Industry is forced to invest big money in resource-efficient solutions, but higher prices are passed on to consumers as a consequence.

It’s full steam ahead on climate change mitigation. Ambitious efforts are being made across the world to meet obligations under a far-reaching global agreement. The agreement was the result of a pivotal turnaround by China in 2014, followed by a groundswell of global support. We now have more stringent national carbon targets, and an efficient global carbon trading system is in place. Industry focuses hard on minimising the impact of production, and climate-preparedness has become a strong filter that separates out the winners from the losers in the new economy.

People are technology-literate, globalised and forward-looking. There is an appetite for exploring new trends, and seeking out products that add value to hectic urban lifestyles. Industry has to work hard and swiftly to meet demand for a wide variety of products and services. Quality and sustainability are key criteria, but in a highly globalised marketplace, where products come from is less important. Consumer politics is highly emotional, which is tough for industry and government to deal with at times. There have been instances of food-related terrorism, and there are more and more single-issue action groups.

We have not managed to fundamentally shift equity issues. While an increasing number of people live comfortably, the gap between the haves and the have-nots is as wide as ever. Particularly given the high price of food, poverty and food security are still issues of day-to-day survival for a significant segment of the population, and those affected are increasingly concentrated in what was formerly known as the ‘first world’.

There is increased mechanisation and intensification of pretty much everything. Society now accepts that we need high levels of efficiency to meet global demand in a resource-stressed world. Sustainable intensification in agriculture, for example, is now mainstream. There is widespread use of GM solutions that increase yield and crops that are resilient in the face of extreme weather, such as submersion-tolerant wheat. But we are not unconditionally accepting: people want information about technological interventions before giving their seal of approval. This particularly applies in sectors that affect our lives directly, such as food and healthcare. Technological solutions that increase choice and enhance lifestyles are very popular, such as nutritional profiling technology that helps you choose the foods that are right for you.
# The UK dairy industry – At a glance

| Milk price | Farmers paid a premium for milk quality, covering the cost of production and a margin for investment. Costs passed on to demanding consumer. |
| Number of farmers | Flat. New entrants are attracted by the higher milk price, but many are put off by the onerous bureaucracy. Increased mechanisation is dampening growth. |
| Housed/pastured and forage vs feed | Mixed. |
| Size of farm (herd size) | On average, a larger herd size, although this varies. |
| Yield/availability of liquid milk | The focus is on high standards not yield, so the UK dairy industry doesn't produce high volumes. The shortfall in demand is met by cheaper, lower-quality imports from abroad. |
| Demand for dairy – domestic and export | Moderate demand from both domestic and export markets, with strong competition from dairy-free alternatives. |
| Growth of industry – domestic and export | Moderate growth, mainly as a result of new export markets. High risk, but high reward. |
| Value added vs liquid milk | Value added dominates. |
| Environmental footprint | Increasing carbon footprint as a result of growing export market. On-farm biodiversity, water pollution, soil health and waste management all improving through strong sustainability standards. Food and packaging waste is being pared down as a result of stringent legislation. Companies are expected to be sustainability leaders because there is money to invest in this. |
The UK dairy industry

The UK dairy industry is a global leader, specialising in high-value, differentiated products that are supplied to both the domestic and export markets. It has risen to the top by responding early to increasing input costs. The UK’s mild climate, ideally suited to dairy farming, has provided a competitive platform for dynamic, innovation-led growth.

The UK dairy industry exports high-quality, value-added products, which bring in a high margin. There has been a steady shift in focus from commoditised production or sheer volume. This area is now dominated by South America, which exports its high-volume, low-cost production around the world to meet overall demand growth – especially from those who cannot afford high-value UK dairy. In the UK production is very environmentally efficient. This has offset some, but not all, of the growth in the overall environmental footprint caused by increasing exports.

That does not mean that the going is easy – the industry has to perform to very high standards and is grappling with crippling bureaucracy and tough competition from dairy-free alternatives. It is a case of ‘innovate or die’ – low-performing players fall out of the market quickly because they can’t compete, but those which remain are responsible producers of exceptionally high quality.

There is much more cross-sectoral and international collaboration by the industry. This includes working with pharmaceutical companies to enhance dairy products with nutraceuticals, and with NGOs to develop social and environmental business ventures.

Dairy farming

The UK dairy industry has pioneered the ‘Humane Farming’ label, which is recognised the world over for high standards of production. There are many types of dairy farming systems in the UK to match demand for a vast array of products. This includes many more large-scale dairies, but they have to ensure spotless credentials in areas such as animal welfare, labour conditions and environmental sustainability of production in order to gain a licence to operate.

Increased mechanisation means more litres produced per person employed, and less overall need for labour. What jobs remain are more highly skilled and better paid. New skill sets have become critical, from on-farm animal behaviourists to phosphorous recyclers. Farmers are generally younger, better trained and more professionalised than in the past.

A wide range of technologies is used to satisfy different market segments. For example, the UK no longer relies on a single breed of dairy cow. Different breeds meet different consumer demands, such as outdoorsy Friesians, which meet the high demand for free-range milk. GMOs are accepted very selectively by society – only when the benefit is very obvious, such as in cases where GM reduces the risk of animal diseases.

There is a bustling sub-industry of on-farm anaerobic digestion (AD). This method of generating energy has become economically competitive as a result of cost reductions and vast improvements in the technology. AD units are particularly popular on farms in closer proximity to cities, converting food waste to energy. Growth has forced the industry to significantly increase water use efficiency in order to keep its footprint to required legal standards. Most farms have large-scale water capture and storage, with the majority of forage-based farmers using the water to irrigate pasture land. There are even stricter limits on nitrate runoff and pesticide use.

The ‘Cow Comfort’ standard for animal welfare is strictly respected in the UK. Barns might be large in many cases, but they are state-of-the-art facilities that incorporate extensive indoor walking tracks, robotic milking equipment proven to enhance cow welfare, and transparent barn walls that let in natural light. Cows wear mood-detection collars, which mean they get milked when they choose. Rumen and cow health are much better, which means there is less culling and less need for replacements.

Some farms with extensive systems are still around. Grazing is enjoying a resurgence as a...
The UK dairy industry

result of high feed costs, though only on land designated as unsuitable for growing staple food crops. Feed is still sourced globally where it is economically sensible, but there has been a moratorium on deforestation for production of commodities like soy. Many UK farmers keep costs of production lower through a return to grass-to-milk production, and experiment with high-yielding ‘super forages’ that improve feed conversion efficiency.

Producer organisations and farmer-owned cooperatives are strong. Long-term relationships and pricing transparency are the cornerstones of their relationships with processors and retailers. They lobby actively, with the main focus on big corporations and international organisations, and have enjoyed considerable success in harnessing media exposure to address issues of concern. Farmers that have the best ‘back story’ for their dairy products are paid the highest prices, enough to cover production costs and to support investments in meeting standards and maintaining competitive advantage.

The environmental impact of the industry is rapidly improving, particularly in terms of protecting biodiversity, water and waste management, and cutting carbon. The ‘postcode lottery’ in processing is nearly a thing of the past, as processors are willing to go the extra mile for the best product, with extra costs passed on to the consumer.

Processing and distribution

There has been significant investment in processing capacity in the UK dairy industry, in order to meet increased export demand. Milk is increasingly processed into sophisticated dairy products that use nanotechnology to meet the demands of hectic, globally connected consumer lifestyles. You can mix your own cocktail of nutraceuticals into your yoghurt snack to help you sleep on your long-haul flight, for example. Innovation is quickly brought to market, so it needs to continue apace.

Processors and distributors are also challenged by the need to have an open production process. It is no longer possible to absorb liquid milk collected from farms into a vast amount of anonymous product. Consumers want to know the story of their yoghurt pot or cheese board, and companies have to keep this ‘history’ intact. For this reason, the industry has a much closer relationship with farmers than in the past: they are effectively business partners rather than suppliers.

Distribution systems are ultra-efficient. New business models have popped up for shared distribution channels to optimise efficiency, such as using empty milk tankers to transport recycled water from processing facilities back to farms in water-stressed areas.

There is much more security in processing and distribution since the terrorist attack that contaminated milk vats in the UK in 2013 as campaigning groups were mounting protests against the industry.

Brands/retailers

The brand and retailer space is dominated by multinationals, although they sell to consumers in a very ‘local’ way. There are many examples of locally branded dairy products. Heritage and history are a key part of this, and there is consumer pride in the renowned ‘country of origin’ designation for UK dairy. Dairy products are heavily marketed for their health benefits because consumers are concerned with having natural, nutritious foods.

Retailers invest a lot in making it easier for consumers to get information about their products. Touch screens in public places allow you to log on and shop for your favourite products everywhere; smart fridge gadgets alert you when you run out of your favourite cheese. There are more product designations that help inform the consumer, such as free-range milk. NGOs are powerful watchdogs that hold industry to account on transparency issues.

Physical stores are still around, but they are focused on providing the most authentic food shopping experience for consumers, rather than
The UK dairy industry

just convenience and low price (consumers can go online for that). Many large supermarkets have restructured their formats into small neighbourhood delis and farmers’ markets.

Consumers

People seek to achieve more than just basic nutrition from food. Natural, wholesome products are important, but so are foods that deliver functional benefits, such as enhancing health or improving mood.

Food culture is extremely multicultural, as a result of migration and global connectivity. Japanese-style yoghurt with essence of hand-harvested kelp is one of the latest food trends in the UK, for example. A number of previously less recognised sustainability issues – such as access to pasture for dairy cows and water efficiency in farming – are rated as important by the more educated consumer.

Dairy products are valued by consumers, but consumption has grown only moderately. People like having lots of choice and nutritional variety. For example, the dairy alternatives market is very large, with sheep milk a particularly popular choice for UK consumers.

Consumers know more about dairy farming than they used to, and value its role in society. Key producers all have regular visiting hours and farm tours, so that consumers can connect with and trust the product. Consumers also have access to a number of sophisticated ICT gadgets that tell them about the foods they eat, including RFID-based apps that trace the supply chain of a bottle of milk, or DNA-mapping tools that help you choose ‘functional’ cheeses just right for your genetic profile.

Dairy products are more expensive, but foodies know that they have to pay more for food because it costs more to produce responsibly, especially when it comes to high-value-added products such as nutraceutical-enriched milk. Low-income consumers feel left behind in this context, as the UK dairy industry pursues export-led, value-added growth and no longer prioritises affordable production for the local market.

End of life

There has been a revolution in waste management in the past eight years. The public now have to pay for their landfill waste, and foodservice packaging must be recyclable or biodegradable. Industry felt the pain of this initially, but now things are adjusting. UK dairy is taking on responsibility for waste in order to attract and keep consumers. It is finding innovative ways of reusing packaging, such as cold-moulding plastic containers into other materials for use in production, and offering glass ‘heritage’ milk bottles once again.

Almost no food waste now goes to landfill in the UK. Milk waste is processed into a range of other products, including milk fibre for a new fashion fad known as ‘trashion’.

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Weak signals

Below are some ‘weak signals’ (early signs of possible future trends) which suggest that elements of the Global foodies scenario are already with us.

1. The rise of niche milks

The International Dairy Federation is supporting research into camel, buffalo and other unusual dairy products. In 1961, non-cow milk made up 8.9% of global milk production, but this had increased to 16.7% by 2010.6


2. Radical consumer-drive transparency

Mobile phone barcode scanners – like Barcoo7 – link products in stores with independent consumer information, which anyone can add information to. It not only compares price but also customer reviews, health impacts and sustainability information.


3. More efficient alternatives to traditional anaerobic digestors

Microbial fuel cell technology to help dairy processors dispose of waste streams and generate energy has been successfully trialled.8 This is at an early stage, but could become significantly cheaper and more efficient than traditional anaerobic digestors.


4. Value-added milk – milk fibres for clothing?

A young German designer named Anke Domaske has created an organic fibre is made from cow’s milk that would otherwise have been thrown away. Milk fibre is remarkably like silk yet cheaper, very protein-rich (which makes it easy to care for) and can be produced without any pesticides. Will this be the direction for added-value milk products in the future?

How this scenario could arise – Timeline

2012
‘Tesco Tracer’ app allows consumers to map impacts of all products. It gains 15 million users worldwide in its first six months.

2013
Landmark UK ‘Cash for Trash’ legislation passed. Consumers have to pay for landfill.

2014
China changes its position at the eleventh hour of negotiations. The global climate change agreement is signed.

2015
Doha negotiations are successfully completed.

2016
Somerset Brie surpasses French Brie in global sales.

2017
UK ‘milk protests’ by the poor. Milk vats contaminated in an act of food terrorism.

2019
Oil price hits $200/barrel.
Local Fuelies

Read the Scenario
The world in 2020

In a politically discordant world, protectionism is rife and import prices are high; energy and food security top the agenda. Climate change policy has taken a back seat. The UK dairy industry has shrunk because production is economically unviable except where farmers can diversify. UK consumers look for where they can get maximum nutrition for the lowest price.

We’ve battened down the hatches.
Governments across the world are struggling to deal with the impacts of astronomically high oil and food prices, and increasing regional protectionism. In a time of continued conflict and heightened resource crisis, regional blocs are signing bilateral trade agreements for access to each other’s natural resources. China and Brazil kicked off this trend with a bilateral agreement to trade Brazilian soy for exclusive access to China’s latest genetic modification technology. This has left Europe out in the cold as far as soy supply is concerned. UK companies and farmers that rely on imported animal feed have seen their costs skyrocket.

The cost of all key industry inputs is very high. Oil prices and therefore fertiliser costs have continued to rise. Water availability and cost is also an issue for many countries – particularly Australia and southern Europe. There is a real fear that the UK will be unable to feed its population if costs continue to rise, and if breakthrough trade fails to materialise.

Self-reliance is all the rage. As a result of high costs and global instability, energy and food security top the agenda for the UK Government. It has just launched a national campaign to get communities producing their own energy and food. Some are recalling the sense of self-reliance and national solidarity that characterised the war years. With the concerted effort of ordinary people, the UK seems to have turned a corner after a decade of insecurity. There is renewed optimism in the air.

We’re in efficiency overdrive. UK industry has responded to high costs with a rapid drive towards efficiency and the elimination of waste to remain competitive. Anything that increases efficiency or that is seen to be in the national interest is fully embraced by a grateful population. Technologies that work are quickly rolled out across the UK. That said, technological progress is relatively slow. Countries are less willing to share intellectual property unless it can be used as a political bargaining chip in exchange for access to scarce natural resources. Genetic modification is being embraced by some countries with access to technology that works, but others have chosen to divert funding elsewhere because results are not living up to expectations.

Energy security has forced climate change policy to take a back seat. There are still national emissions reduction targets, but the policy focus tends to be on dealing with the most pressing impacts of climate change in the here and now rather than reducing emissions in the future. Targets are not being enforced, and some countries have rocketing emissions. The UK, dependent on imported gas, is in an increasingly desperate position. Offshore wind and nuclear have not yet made much of an impact, and there’s not enough energy to meet demand. Blackouts are commonplace. There has been some negotiation for back-up power from France’s nuclear power industry, in return for access to a recent UK scientific breakthrough in anaerobic digestion. Many communities are turning to local renewables, helped by ‘energy security’ feed-in tariffs from the Government.

We reserve our land for food production.
Agricultural policy has recently been renationalised, and UK land use is a hotly debated topic. The current priority is land for food production. There is a general feeling that energy can be sourced in less land-intensive ways than through biofuels, and that nutrients can be delivered to people more efficiently than through meat and dairy products. Subsidies are allocated accordingly.
The world in 2020

We’re less wealthy. With costs high, general wealth levels are lower and greater numbers have been pushed into poverty. To finance its national campaign for self-reliance, the Government has raised taxes significantly, particularly on the top 10% of earners. This has led to greater equality in earnings.

We share more and buy less. The reduction in global trade has had a profound impact on what and how we consume. Through sheer financial necessity the UK consumer is beginning to experiment more with ‘collaborative consumption’, and is increasingly willing to ‘share’ rather than ‘own’. For example, spurred on by record breaking fuel prices and supported by sophisticated social networking, lift sharing is easy – just key in your destination and walk to the nearest main road, and you’ll be alerted by your mobile phone wristband when the next available space in a car going in your direction passes by.

We demand exactly what we need: no more, no less. With such a strong drive for food security, the focus is on maximum nutrition for minimum cost. Food is almost entirely functional, and UK consumers have little tolerance for being supplied with more than they need – why pay for extra nutrients? Home blood-testing kits tell people exactly what nutrients they need for the day, and give information on exactly what they need to eat to get those nutrients. This information automatically links to a local supplier that can deliver a tailored meal in time for lunch to the office or at home. ‘Bite counters’ worn on the arm train children to know exactly how much food to eat for the calories they need. Obesity is less of a problem.
The UK dairy industry – At a glance

### Milk price
Does not cover the cost of production. Many farmers go out of business or diversify to supplement income.

### Number of farmers
Fewer.

### Housed/pastured and forage vs feed
Polarised, based on the local availability of grassland. Imported feed is prohibitively expensive.

### Size of farm (herd size)
Mostly larger and more intensive – although farmers that have highly diversified incomes have smaller herds.

### Yield/availability of liquid milk
Less milk is available, as dairy farming is not economically viable.

### Demand for dairy – domestic and export
Less demand: milk is not seen as providing nutritional benefit compared to sophisticated food supplements.

### Growth of industry – domestic and export
Industry smaller. Bureaucratic, limited export market.

### Value added vs liquid milk
Nutritionally dense liquid milk and value-added tailored products to individual needs.

### Environmental footprint
Industry is smaller, so its footprint is smaller. Focus on efficiency is helping to conserve water and eliminate waste. A switch to renewable resources for energy supply in places is having a positive but patchy impact on emissions. Wildlife is not a focus, and biodiversity is in peril. Packaging is biodegradable.
The UK dairy industry

Most people are eating less meat and fewer dairy products because the high cost of inputs is making prices prohibitively expensive for anything other than an occasional purchase. In any case, more consumers are turning to lower-cost, nutrient-rich alternatives to meat and dairy – often through a cocktail of dietary additives and vitamin supplements to enrich basic diets. The dairy industry is not perceived to be providing enough nutrient density through its products. The dairy industry has responded with a campaign featuring “10 reasons milk is better for you than broccoli”, but the real threat to the industry comes from the rows of ‘additives racks’ which have replaced spice racks in many people’s homes. Trade barriers mean there are fewer dairy imports, so the UK industry serves a bigger chunk of the local market.

In the face of rising costs and demand for functional, low-cost dairy, however, margins are low, and overall industry growth is sluggish. Only the most innovative companies succeed, usually through low-cost, nutritionally tailored dairy produce. At every stage of the supply chain, waste is being driven out, or is used as a raw material elsewhere.

**Dairy farming**

With less demand for dairy, and a continued squeeze on costs, milk prices still do not cover the costs of production. Those dairy farmers that remain in business supplement their income in a variety of ways. In particular, many have seized new opportunities to produce community energy and local food. For example, ‘energy farmers’ have smaller herds, and focus primarily on renewable energy production and management for the local area.

Farmers have been quick to take advantage of ‘energy security’ feed-in tariffs, and many dairy farms co-own and host wind turbines and solar panels with the local community. Farms often host local ‘smart grids’ that automatically optimise energy use and match demand to production where possible.

Most dairy farmers use fully automated robot milking systems, affordable to all through farm equipment leasing schemes. Methods of dairy farming vary regionally. In some regions, to maximise the use of land, there has been a shift to housed farm units, and cows are rarely grazed outdoors. In these regions, farms tend to be very large, professionally run units, with nutrients used for on-site arable crops. In other regions where pasture land is still relatively abundant, farms are smaller and cows grass-fed. On-site renewables help keep costs down, although climate change impacts mean that fewer areas enjoy enough rain for high-quality pasture. Farmers still dependent on imported feed are struggling with increased costs, although the move to ‘closed-loop’ resource use is uncovering more sources of regional feed.

Disease is tackled with clinical efficiency. A widespread badger cull and strict ‘no wildlife’ borders on dairy farms have reduced bovine TB cases. Biodiversity campaigners are up in arms. The Government has launched new ‘soil fertility’ grants to prepare more land for food production, and polytunnels are increasingly a feature of the UK countryside.

To maximise efficiency and reduce transport costs, water is removed from milk and reused on farm. This particularly applies to products leaving the farm for processing, now collected every other day as industry standard. Farmers work closely with processors to feed their cattle ‘to order’, for example producing milk higher in leucine that can be used for muscle-growth products, in high demand by people making long cycle rides to work.

**Processing and distribution**

Vertically integrated supply chains are rapidly moving to being ‘closed loop’, and are highly competitive. Mass consolidation means there are only a few stand-alone processors left. Most of these are large-scale operations, using technology to produce highly tailored products. Efficient models that work are copied elsewhere in the country as soon as results are proven. Intellectual property is closely guarded. Skilled ‘closed loopers’ and ‘dairy-trition’ professionals are headhunted regularly, commanding high salaries. A ‘Dairy
The UK dairy industry

Grid’ collects and distributes UK dairy products efficiently across the country using advanced IT and logistics.

Brands/retailers

Shoppers are less influenced by brand hype, and functional brands appeal more to a numerate, nutrition-savvy consumer. Umbrella brands are trusted, but each offers highly tailored products to meet individual demands. ‘Efficient nutrition’ is the mantra of all retailers, and this has led to some innovative collaborations with the NHS. One major retailer is trialling a regional delivery service in the South West that delivers food ordered automatically, based on medical records that are updated daily using home testing kits. Online shopping and home delivery continue to grow strongly as people increasingly look to order just what they need, when they need it.

‘Hygiene factors’ such as animal welfare still need to be taken care of, but are taken as a given by consumers. If a product proves a let-down from this perspective, people are quick to switch to something branded that offers the same nutritional value at a similar price.

Consumers

Consumers are more concerned about minimum cost for maximum nutrition. Functional consumption is the name of the game. Portion size has become such a meticulous science that the concept of categories as broad as ‘small’, ‘medium’ and ‘large’ now seems amusingly retro. Daily routines, levels of fitness and planned exercise are all taken into account when developing a unique portion size for each day. Dairy has its part to play: whether it’s yoghurt with added statins, or rice pudding fortified with iron, pill packets look set to become a thing of the past.

Community food kitchens are on the rise. For cash-strapped individuals with hectic schedules, or families on a budget that can’t afford a home delivery service, the local community kitchen can be a vital resource. For a small ‘pay as you go’ fee, locals can pre-order an evening meal. Many include an ‘additive buffet’ for users to sprinkle natural or manufactured supplements onto their meals, based on nutritional needs. A dwindling dairy industry is campaigning hard to get more dairy onto community kitchen menus.

End of life

Food waste is a financial drain for most and a social faux pas for some. For the wealthy, the latest home delivery service uses smart packaging that lets them know when food is about to reach its sell by date so that it can be made into a nutritionally specific menu suggestion for that evening. For everyone else, ‘Wastes-R-Us’ can collect any household waste for a local biodigester, in return for a small discount on energy bills. The use of ‘humanure’ is on the rise.

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Weak signals

Below are some ‘weak signals’ (early signs of possible future trends) which suggest that elements of the Local fuelies scenario are already with us.

1. Different delivery mechanisms for milk – dispensing machines?

A German dairy farmer has developed a 24-hour milk vending machine.10 This self-serve filling station eliminates the need for a retailer or distributor to market and sell the milk, meaning that the farmer keeps margins. Local customers bring their own containers, insert money and instantly get ultra-fresh milk.


2. Community-focused efficient energy networks

Dairy farmers can already keep track of their herds in real time through innovative animal tracking and monitoring systems such as CowDetect.11 These enable farmers to follow individual animals remotely, to analyse movement and eating patterns, and to identify sick cows. It also allows them to plan milking schedules so as to maximise productivity.


3. Smart packaging

Smart packaging solutions may soon be able to tell us when products are out of date. For example, packaging companies are reputed to be trialling milk cartons that change colour when left out of the fridge for too long.12

How this scenario could arise – Timeline

2012
Very poor harvest due to several extreme weather events.

2014
High oil price spikes begin and continue through the decade.

2016
EU policy conflicts with UK interests. UK responds by renationalising its agricultural policy.

2018
UK Government launches a high-profile initiative on food security, including an R&D fund, collaborative industry projects, and high-profile community growing projects.

2020
Anaerobic digestion rolled out across UK agriculture.

2013
Food prices rise across the globe. There is mass famine on unprecedented scale across Africa, Asia and parts of South America.

2015
Countries resort to protectionism. The Union of South American Nations signs a bilateral agreement with China on soy.

2017
Functional foods become the nation’s best-selling foods. An increasingly aware UK public abhors waste. Any companies not responding are boycotted, and anti-packaging protests are a weekly occurrence.
Local Foodies

Global Economy

Well Being

Zero Waste

Self Sufficiency

Dairy Sales

Expensive

Grow Your Own

Small Farms

Water Harvesting

Read the Scenario
The world in 2020

In an expensive and resource-constrained world, the imperative to reduce expensive imports has made local production and distribution attractive. Tackling sustainability challenges is an accepted priority for business, consumers and government. The recent decline in the UK dairy industry seems finally to have stabilised, with farmers enjoying high prices coupled with ecosystem service payments. The emphasis is on high-quality, high-value-added production from smaller herds as consumers buy as locally as possible and look for quality and a great story to give meaning to their purchases.

The global economy is slow and the UK is not particularly competitive. We still trade most within Europe, despite progressively withdrawing from EU commitments. Key global supply chains are less reliable, and prone to repeated shocks, so secure supplies are a priority. Transport and carbon are increasingly expensive. Many basic foods are cheaper to buy locally than to import because of rising costs, a UK Government drive for self-sufficiency and strong global demand.

People have grown tired of the seemingly empty quest for low-quality, mass-produced goods. There is a new focus on wellbeing, ‘gross national happiness’, health and community, family and friendship. Most people have less disposable income for consumer goods. But new business models and technologies are helping the public meet basic needs by sharing resources, leasing and tapping into community funds. People want to feel good about the money they spend – to express themselves, and support their local economy and environment. They want meaningful experiences – things that are built to last and have a good story. Nostalgia is strong – older consumers crave authentic experiences more than they do things.

Sustainability challenges feel very real. Tackling them is an accepted priority for business, consumers and government. Energy and oil prices have risen continuously, and hose-pipe bans and floods are the norm. Public services are struggling. In response, business models that balance the three ‘sustainability pillars’ – delivering social and environmental benefits as well as working financially – are becoming mainstream.

In 2017 the UN pulled off a breakthrough agreement on ecosystem services. Its success reflects rapidly growing recognition of the importance of ecosystem services, coupled with strong support from civil society and businesses concerned about agricultural supply chains. Land stewardship and biodiversity have become big issues as a result of huge campaigns on the importance of bees, hedgerows, the value of landscapes and so on. There’s a strong sense of local responsibility to your community and your local environment and wildlife: if you have a problem, you have to resolve it rather than passing it on to someone/somewhere else.

In this expensive world, integrated, longer-term thinking is taking hold. The NHS is pushing hard on preventive healthcare as policy-makers across government work on the bigger picture. Separate policies on waste, water, air quality and the environment have been combined into joined-up frameworks. There’s widespread support for voluntary agreements, and many industries exceed basic requirements to ensure that they meet high customer and consumer expectations. With continued water stress in the South East, there’s been lots of work on water licensing and access rights. Built-in or retrofitted meters are the norm in homes, on farms and in factories. Procurement policies prioritise local food sourcing, while subsidies and tax breaks favour the development of local and regional food infrastructure.
The world in 2020

**Competition for land is high – for energy generation, food production and housing.**
We’re a country focused on squeezing all we can out of every viable area of arable and non-arable land. Land disputes are common, particularly in areas with ‘protected origin’ produce.

**Agricultural inputs are expensive.** Resource constraints and bilateral trade agreements affecting oil and feed are the main contributory factors. UK farming has tried hard to combat rising costs and other challenges by investing in self-sufficiency and energy efficiency to reduce dependence on oil and imported feed. The country is moving towards a systems approach to farming to build resilience, with greater integration and cooperation within and between farms. This cooperation encompasses trading inputs and resources such as electricity, nutrients, water and slurry. Organic and ‘natural’ foods are popular thanks to strong marketing campaigns and consumer demand for oil independence.
## How this scenario could arise – Timeline

<table>
<thead>
<tr>
<th>Milk price</th>
<th>How this scenario could arise - Timeline</th>
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</thead>
<tbody>
<tr>
<td>Covers the costs of production most of the time, with the addition of diversified incomes and ecosystem service payments.</td>
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<table>
<thead>
<tr>
<th>Number of farmers</th>
<th>How this scenario could arise - Timeline</th>
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</thead>
<tbody>
<tr>
<td>The decline in numbers has nearly stabilised. New entrants attracted by the higher milk price, lifestyle and opportunities associated with new business models. Not all are successful.</td>
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<table>
<thead>
<tr>
<th>Housed/ pastured and forage vs feed</th>
<th>How this scenario could arise - Timeline</th>
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</thead>
<tbody>
<tr>
<td>A mixture of systems, with an overall preference for a pasture-based approach. Greater openness about chosen systems, with high animal welfare overall. Forage preferred to feed where possible; UK-grown feeds replacing imports.</td>
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</tbody>
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<thead>
<tr>
<th>Size of farm (herd size)</th>
<th>How this scenario could arise - Timeline</th>
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<tbody>
<tr>
<td>Ranging from microdairies to medium-sized herds, with a higher number of small-scale farms. The average herd size has dropped to around 80 cows.</td>
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<thead>
<tr>
<th>Yield/ availability of liquid milk</th>
<th>How this scenario could arise - Timeline</th>
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<tbody>
<tr>
<td>The focus is on high standards and added value rather than yield. Liquid milk available locally except in some parts of the South East.</td>
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<thead>
<tr>
<th>Demand for dairy – domestic and export</th>
<th>How this scenario could arise - Timeline</th>
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<tbody>
<tr>
<td>Lower domestic demand overall; higher demand for high-added-value products. Moderate export demand for GM-free foods and high-quality, gourmet products.</td>
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<table>
<thead>
<tr>
<th>Growth of industry – domestic and export</th>
<th>How this scenario could arise - Timeline</th>
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<tbody>
<tr>
<td>Low growth domestically. Export growth focused on added-value products and GM-free.</td>
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<table>
<thead>
<tr>
<th>Value added vs liquid milk</th>
<th>How this scenario could arise - Timeline</th>
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</thead>
<tbody>
<tr>
<td>Value added dominates.</td>
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<tr>
<th>Environmental footprint</th>
<th>How this scenario could arise - Timeline</th>
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<tbody>
<tr>
<td>Smaller industry – smaller footprint. Strong focus on ecosystem services leading to integrated approaches. Biodiversity, water pollution, soil health and waste management all improving due to strong standards. Supply chain impact improving as dairy moves away from imported feed.</td>
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</tbody>
</table>
The UK dairy industry

UK dairy has seized upon the strong demand for local products and self-sufficiency, leading to a high-quality market. That market is buzzing and diverse, but also complex and fragmented. Smaller farms have sprung up in response to demand for 'authentic' and local food; medium-scale farms handle larger volumes for the biggest brands and more highly processed foods. The focus is on adding value at a local level, rather than increasing production. Volumes have decreased, and don’t meet local demand everywhere, but the milk price is higher – just about covering the cost of production. This is a farmer’s world: the decline in farmer numbers has almost stabilised, and farmer organisations are stronger – not afraid to protest loudly or lobby hard. Attracted by promising career prospects, entrepreneurial new entrants have brought fresh perspectives, new business models, innovation and investment. On the whole, people consume less dairy, but go for high-added-value products. All food is more expensive, including dairy, so the poorest face difficult spending choices. There are also growing nutrition challenges, including calcium deficiency. Consumer pressure ensures that minimum standards are high, from animal welfare to land stewardship and labour conditions. Regulations make it harder to enter the UK market, with high animal welfare a de facto trade barrier. There’s little imported cheese, for example, but there is still a reasonable export market – gourmet British cheeses are popular in China. Civil society has remained largely opposed to GM technologies for feed and livestock. The Government decided to support cheaper options with quick results. As a consequence there’s now also a niche export market for UK GM-free dairy products.

Dairy farming

Farmers have diversified to ensure economic viability. There are lots of part-time producers who also use their farms for agro-tourism or energy production.

Microdairies prefer locally adapted breeds to high-yield Holsteins. New farmers combine traditional, low-tech, cheaper approaches to dairying with readily available smart technology to monitor cow health, energy and nutrient use. Herds are generally well cared for, but not everyone knows what they’re doing or follows best practice. Bovine TB is still a serious issue: many new starters failed from the outset, having bought infected cows. Four people were recently infected with TB from raw milk from two different farms. Cutting corners is risky given the level of transparency and consumer interest.

Farmers prefer forage over feed, making the most of grass as a readily available resource. Reliance on soy and palm is declining, thanks to a higher milk price, combined with ecosystem service payments and flexible government grants, most farmers are making good enough returns.
The UK dairy industry

Processing and distribution

Innovation has transformed processing and distribution, driven by cost and resource constraints. Nothing is wasted: every by-product is fed back into dairy production or another supply chain. Distribution is largely local, using short and ‘smart’ routes and networks. Small-scale local processing, run by local entrepreneurs or farmer co-operatives, is much more common. This has vastly reduced the need for transport, and new technologies have enabled further cost savings.

Processors trust farmers to be efficient, and generally have a better relationship with them. Joint ventures around new products are common. The stronger farmer organisations have negotiated longer-term agreements, in particular on milk price commitments. Most farms are now closer to a processor, and so successes and failures tend to be more closely interlinked. In the South East, two major dairy farms went bust in rapid succession recently, and the local processing plant followed suit, because it was not able to find an alternative supply base quickly enough.

Traceability and transparency mean processors can’t afford to make mistakes on safety and hygiene. This keeps standards high across large and small processing units.

Brands/retailers

Retailers have a better relationship with producers, managed through local supply contracts. Retailers are paying more for dairy products, with a view to ensuring supply and satisfying demanding consumers. Managing a complex supply chain of many small producers can be difficult, so buyers have to spend a lot more time on farms. Dairy products have a lot more ‘personality’, communicating provenance and farming/feeding systems. Retailers and brands are deeply engaged with consumers, providing personalised, speciality or dual-branded food products such as rice pudding made with local milk, salt marsh cream and RSPB cheese. There’s a trusted label for free-range, grass-fed cows’ products. Information overload on labels can be a problem, leaving some consumers confused or annoyed. Brands succeed where they filter information and make it easy to choose.

Industry brands strongly promote the benefits of dairy. Technology drives convenience-based products, which are in high demand, with whey a key ingredient. Mineral waters have lost out to milk-based performance and nutrition drinks. Local brands are strong, and often sell directly to consumers. Online purchases are delivered by independent ‘gourmet milkmen’ or local delivery co-ops; markets, farm shops and street-corner milk distributors are also options. Retailers have replaced unfashionable hypermarkets with smaller stores that have a strong local identity. Food service companies satisfy procurement policies, NGOs and consumers by sourcing locally to supply schools, hospitals, prisons, barracks and other workplace canteens.
The UK dairy industry

Consumers

Demanding ‘foodie’ consumers want nourishing, tasty, convenient, sustainable dairy with a great background story. They’re willing to pay for it, and they trust farmers to meet their expectations. They can also be fickle and contradictory – tricky for brands. Despite the relative cheapness of local products, the high cost of food overall excludes the poorest households from high-added-value dairy.

Speciality, local and heritage products are all popular: you can get a taste of Devon at the yoghurt bar, or win a ‘guess the origin’ competition. Demanding consumers now expect dairy ingredients to come from happy cows, just as free-range eggs previously became the norm. Home-based restaurants are hugely popular, as are networks and clubs that support quality, shared experience and diversity. Slow Food, farmers’ markets, farm visits, cooking courses and cheese tours are all thriving.

Technology and multi-media gadgetry bring consumers closer to farmers by allowing them to scan barcodes or use in-store touchscreens to access live farm-view webcams or 3D product information, as well as to send e-feedback to the farmer or chat live.

End of life

Waste has been reduced to a bare minimum – no one can afford it. Low-waste households are rewarded by council tax discounts. Bottles are reused or exchanged for deposits; best-before dates have been adapted to limit food waste. Leftovers (and spoilt milk) are reused. Community-run food waste collection, composting and recycling are the norm.

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Weak signals

Below are some ‘weak signals’ (early signs of possible future trends) which suggest that elements of the Local foodies scenario are already with us.

1. Micro dairies – extreme localisation of production

Small-scale community dairies show that extreme localisation can work. For example, North Aston Dairy in Oxfordshire produces organic milk from 15 traditional Ayrshire cows. By keeping costs to a minimum – mainly through the use of second-hand equipment – and by selling direct to consumers (who get the benefit of fresh, local milk), the farmer is able to make a reasonable living.


2. Community empowerment – Crop Mobs

Since 2008 more than 50 Crop Mob groups have started up around the United States. Crop Mobs are primarily groups of “young, landless, and wannabe farmers who come together to build and empower communities by working side by side”. They are often groups of experienced farmers looking to share knowledge with their peers and with the next generation of agrarians.


3. Ultra local – made-at-home yoghurt

You can now make your own yoghurt at home for the ultimate in locally produced food. EasiYo uses milk powder derived from free-range cows in New Zealand. DIY culture is extending into food. Will DIY culture and milk cultures continue to overlap?

15. Link: http://bit.ly/k0DpoZ

4. Gross national happiness

Nicolas Sarkozy suggested that the French should measure success through wellbeing rather than traditional measures like the Gross Domestic Product. Is this the start of a bigger trend or is it a temporary distraction during tough economic times?

16. Link: http://tgr.ph/SKgBr
How this scenario could arise – Timeline

2012
Further riots with looting and wrecking of shops, schools and libraries prompts national soul-searching on consumer culture and community cohesion.

2014
Soybean rust outbreak leads to higher feed costs, and more UK investment in local options like field bean production.

2016
Many local food products are now cheaper than imports.

2019
The Institute of Environmental Accountants is founded.

2013
Hugh Fearnley-Whittingstall launches his latest campaign on UK dairy farming.

2015
All major retailers have a local, ‘green’ dairy range. One major retailer moves to ‘free-range, grass-fed’ milk only.

2017
Breakthrough at the UN on ecosystems. A framework and global agreement is implemented around the world.
Dairy 2020 was managed and facilitated by global sustainability non-profit, Forum for the Future
www.forumforthefuture.org

Find out more and download the free toolkit: www.dairy2020.com

Dairy 2020 working group:
AB Agri Ltd
Agricultural Industries Confederation (AIC)
Arla foods
Biotechnology & Biological Sciences Research Council (BBSRC)
Business in the Community (BITC)
Dairy Council
Danone
Farmers Weekly Group
Fonterra Europe
HSBC
Kite Consulting
Kraft Foods Inc
Linking Environment and Farming (LEAF)
Milk Link
Morrisons
National Farmers Union Scotland (NFUS)
Organic Milk Suppliers Co-operative (OMSCo)
PepsiCo International
Promar International
Rabobank
Royal Association of British Dairy Farmers (RABDF)
Royal Society for the Prevention of Cruelty to Animals (RSPCA)
Sainsbury’s Supermarkets Ltd
Technology Strategy Board (TSB)
Tetra Pak International
University of Nottingham
University of Reading
WWF UK
M&S
Tesco

Dairy 2020 steering group:
Asda Stores Ltd
Dairy UK
DairyCo
Department for Environment, Food and Rural Affairs (DEFRA)
First Milk
Forum for the Future
National Farmers Union
Volac