

The White Paper



A report on the
UK dairy industry
June 2010

FOREWORD



Dairy UK Chairman, Mark Allen

Dairy UK is the voice of the UK dairy industry. We aim to speak with authority and confidence directly to government and its agencies on matters affecting all parts of the dairy industry supply chain.

We bring together dairy processors and co-operatives, farming representatives and retail milk distributors. Our organisation embraces the views and opinions of all those involved in the industry. Our Farmers Forum feeds producers' views directly into our board. The integration of the Dairy Council into Dairy UK means that we possess the full breadth of expertise on nutritional issues.

In the pages that follow you will find a comprehensive insight into the UK dairy industry and the principal challenges that it faces.

The document starts by looking at the industry's ultimate customer: the consumer, then turns to nutrition, the environment and the supply chain from farms to retailers and the world market. At the end of each chapter is a statement of Dairy UK's position on relevant policy issues.

We believe that what follows will clearly demonstrate the scale, importance, complexity and dynamism of the UK dairy industry. We also hope that it can make you share the pride that we feel for this industry which we believe is an asset to this country that should be safeguarded and nurtured.

I think you'll find the 2010 White Paper a fascinating and useful resource and, it goes without saying, we would welcome your feedback on any of the issues raised.

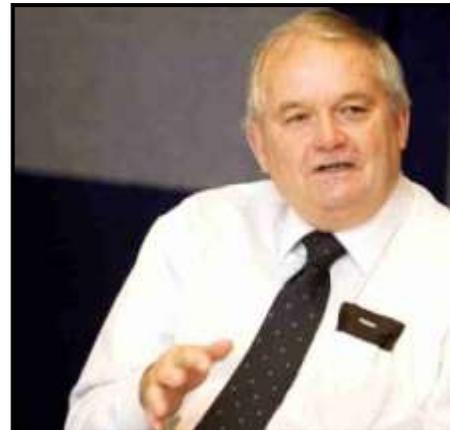
Roger Evans, Chairman of the UK Dairy Farmers' Forum

There are good grounds for optimism for dairy farmers, both in the short and the long term.

But the reality is that the industry now works in a volatile market. At the moment we are on the up cycle, but this will turn and turn again.

In this situation it's important for the supply chain to come together to work jointly to add value to milk. This means building strong committed partnerships between farmers and processors to make the industry more resilient and its products more appealing to consumers.

As an organisation working across the supply chain Dairy UK is well placed to make a strong contribution to this process. That's why I'm particularly pleased to add to the work of Dairy UK through its Farmers' Forum. It provides a means of tackling a range of common issues and to collectively take on matters of real importance.



No-one denies that many farmers are still finding the current situation really difficult. But the longer term outlook is good, and the best way of getting the most from the future is through collaboration and working together, and Dairy UK is an excellent way of doing this.

OVERVIEW



Jim Begg, Dairy UK Director General

Global demand for dairy is rising. The UK industry is an efficient and dynamic producer of raw milk and our products are safe, wholesome and nutritious.

We are doing the right things now to ensure that we remain competitive in the future. Dairy farmers and dairy companies are following a clear strategy. They are becoming more efficient and consolidating; they are innovating and adding value. The decline in milk production is beginning to flatten out as producers increase investment as

confidence about the future improves.

Like all sectors the dairy industry needs a constructive partnership with Government to fulfil its potential. The general strategy of the dairy industry is to work proactively to help deliver the agenda of the Government to realise the country's nutritional and environmental policy objectives. This document provides ample examples of how the industry is already doing this across a whole spectrum of issues.

In exchange for this positive engagement by the industry, we would like the new Government and its agencies to commit itself to the principles spelt out on the right.

- **Strong and supportive partnership between the Government and the dairy industry**
- **Provision of a clear and predictable policy environment that gives the industry the confidence to undertake the major and sustained investment required to preserve its competitiveness**
- **Recognition of the importance of dairy to the diet, economy and environment**
- **Recognition of the efforts being made by the industry to meet the Government's agenda**
- **Commitment to ensure that any regulatory intervention is evidence based, proportionate and implemented in a way that allows the industry time to adapt**
- **Continued support for R&D so the industry we can raise its productivity and efficiency**
- **Recognition of the need for the industry to restructure and consolidate so that UK dairy businesses can remain competitive.**

Contents	Page
Foreword and Overview	2 - 3
1. Consumers	5
2. Dairy and nutrition	10
3. Greener dairy	13
4. Dairy farmers	19
5. Milk processors	27
6. Retailers and customers	31
7. Europe and the Common Agricultural Policy	33
8. World dairy trade	39
9. Research and development	44
10. A bright future	46

1. THE UK CONSUMER

1.1 Consumption of Dairy Products

The overwhelming majority of people in the UK eat dairy products.

According to a telephone survey of 800 consumers produced in June 2009 for The Dairy Council, 97.4% of people regularly eat or drink dairy products. This gives the dairy industry one of the highest degrees of market penetration of any consumer product and makes dairy foods extremely important to the wellbeing of the nation.

Table 1 – Average dairy consumption per person per week (2008)

Product	Unit	Quantity	% change from 2007	% change 1998
Whole milk	ml	410	-2.4	-39.5
Semi-skimmed milk	ml	987	+0.5	+1.8
Skimmed milk	ml	158	-8.2	-4.3
Hard cheese – cheddar	g	62	-7.1	+0.4
Hard cheese – other UK	g	11	n.c.	-10.8
Hard cheese – foreign	g	7	-11.3	+3.9
Cottage, soft natural or processed cheese	g	31	-6.3	+36.7
Cream	ml	21	-4.3	-2.9
Yogurt and Fromage Frais	ml	202	+2.9	+41.1
Condensed milk	ml	17	-6.1	-23.3
UHT milk	ml	9	-19.2	-29.0
Dairy desserts – fresh	ml	40	+0.4	+28.3
Butter	g	40	-2.4	+11.8

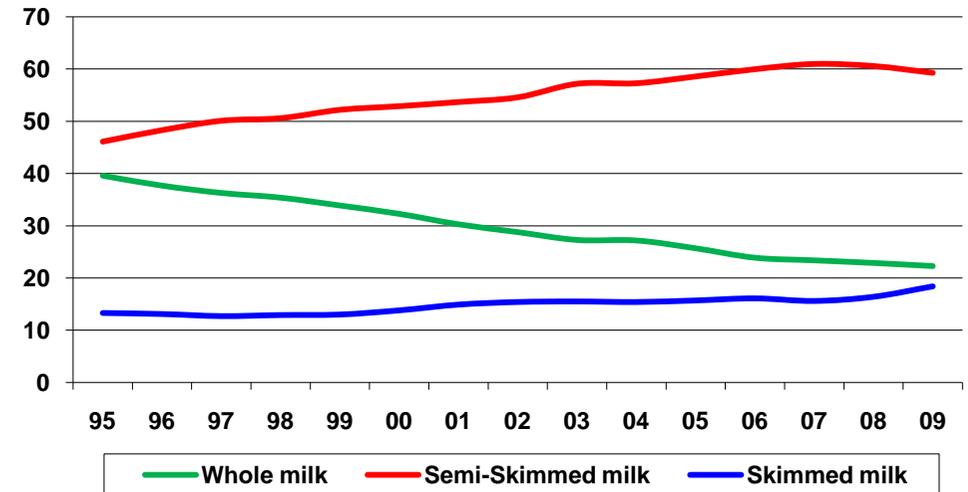
Source: Family Food Survey

Liquid milk is the most commonly consumed product, with 96% of the population in the week of the survey. Cheese comes a close second, on 91% of consumers. Of the 97% of people who eat dairy products regularly, nine out of ten of them say they eat dairy every day.

1.1.1 Liquid Milk

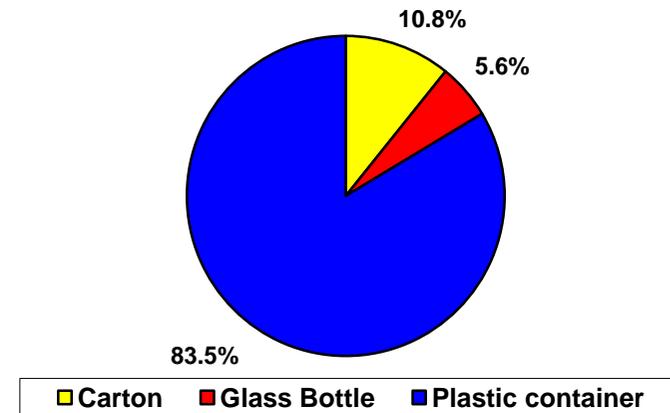
Whole milk consumption has fallen by 33% over the last 10 years, whilst consumption of semi-skimmed has risen by 14% and skimmed by 40%. More than 80% of liquid milk is now sold by retailers in plastic containers, with less than 20% of milk sold in glass bottles or cartons.

Graph 1 – Sales of Milk by Type (% market share)



Source: DairyCo, Kantar Worldpanel

Graph 2 – Sales of Liquid Milk by Container Type 2009 (Retail)

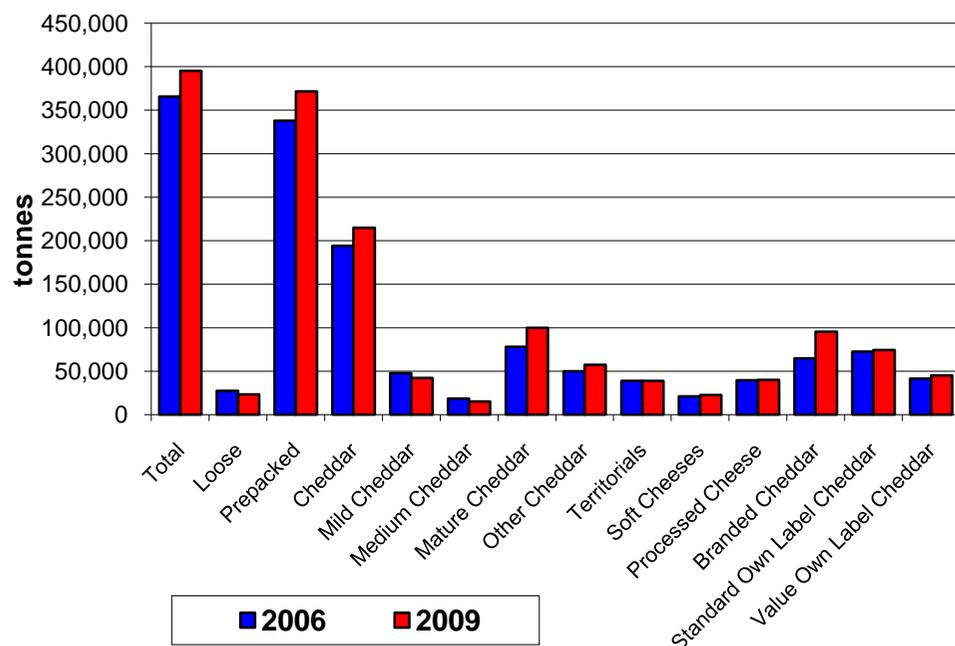


Source: DairyCo, Kantar Worldpanel

1.1.2 Cheese

The cheese market in the UK has also seen healthy growth of 8% over the last four years. Total sales to households (which includes imported products) increased by 5% in 2009 to £2.4bn. Growth has been particularly strong in the packaged cheese market, where sales are up 6% over the past year. There has also been a strong evolution towards mature Cheddars.

Graph 3 – Sales of Cheese by Type in 2006 and 2009



Source: DairyCo, Kantar Worldpanel

1.1.3 Other fresh products

Fresh products continue to grow strongly, particularly yogurts where consumption has risen 32% since 2000. The key driver for of growth in has been the rise in consumption of functional foods, such as probiotic and prebiotic yogurts and yogurt drinks.

Table 2 – UK Annual Consumption of Fresh Dairy Products

(‘000 tonnes)	2003/04	2004/05	2005/06	2006	2007	2008
Yogurt	504	540	583	592	572	590
Fromage frais	61	62	67	72	71	71
Cream	63	61	68	72	70	67
Dairy desserts	311	284	307	309	302	319

Source: Defra

Even though the rapid growth in the functional foods market has started to decrease over the past couple of years, revenue growth in 2007 was still a very healthy 8.7%. Over the same period, sales of probiotic yogurts outperformed the sector with an increase of 16.3%.

1.2 Healthy Eating and Dairy Products

Widespread public concern about obesity and calorie intake has led the dairy industry to develop a comprehensive range of lower fat varieties of dairy product. The trend towards lower fat products began decades ago with semi-skimmed and skimmed milks, and it is still continuing for liquid milk with the development of 1% fat and below milks. Low fat and reduced fat cheese have also seen positive growth.

Table 3 – Consumption of Low-fat Dairy Products – year ending Dec 2009

Product	% change from y/e Dec 2008
Lower-fat milk	+ 1.6
Lower-fat cheese	+ 3.0

Source: Kantar Worldpanel

The dairy industry has worked closely with senior Food Standards Agency officials through the Dairy Partnership to help deliver its strategy of cutting saturated fat from 13% of consumers’ energy intake to 11%. As part of this work, Dairy UK spent £50,000 on research by Campden into the consumer acceptability of 1% fat milks. The conclusion was that most consumers thought 1% fat milk tasted as good as semi skimmed milk. The market share for these milks has grown to 4%.

Consumer requirements for healthy food have continued to evolve and become more complex. The dairy sector has responded by investing in product innovation such as functional yogurts, probiotic and prebiotic products and nutrient enriched milks.

1.3 Drivers of Consumer Choice

Recession and pressure on incomes have affected the main drivers of consumer choice. Price has become the top driver for store choice and, once in the store, price is also the key factor in product choice, ahead of convenience, health and ethical criteria.

Table 4 – Change in Top Criteria Informing Consumer Choice

2010 Rank		2008 Rank
1	Price	4
2	Knowing Ingredients	2
3	Fat Content	3
4	Brand name	1
5	Sell by Date	5
6	Sugar Content	8
7	Salt Content	6
8	Country of Origin	7
9	Food Taste	9

Source: IGD

The dairy industry in the UK has put a lot of emphasis on developing products and packaging that respond to consumers' increasing sophistication. A range of products has emerged to meet ethical or 'source of origin' criteria

Chief amongst these has been emphasising the origin of dairy products. Growing public interest in the origin of food and production methods has led to the creation of world-leading traceability systems and direct relationships between retailers and dairy farmers.

Dairy UK and the dairy industry is developing its own guidance in support of mandatory country of origin labelling on dairy products, recognising the location of manufacture. We believe this issue represents a major

opportunity for the industry. A significant number of products, particularly cheeses, are already marketed on the basis of their association with regions of the UK.

The industry has also supported significant price promotions to maintain the market share of branded products. And it has also worked hard to develop new formats of packaging, such as the recent innovation of using space-age Velcro to seal bags of cheese, extending product life.

1.4 Organic Milk

According to the Soil Association, dairy products accounted for 33% of sales of organic food and drink in multiple retailers last year, worth £447m. This is in spite of a 5.5% dip from 2008 as recession-hit shoppers switch to lower value products. Organic sales made up 6.7% of the yogurt category in 2009, 3.4% of liquid milk sales and 1.5% of the cheese market.

Organic liquid milk sales edged up 1% last year, with organic cheese up 8% from a low base. However, organic yogurt fell by 7%.

Table 5 – Retail Sales of All Milk and Organic Milk

(Million litres)	All Milk	Organic	Percentage of Total Sales
2003	4,703.2	55.7	1.18
2004	4,726.6	71.0	1.50
2005*	4,858.5	135.4	2.79
2006	4,838.9	162.5	3.35
2007	4,940.1	166.5	3.37
2008	4,983.3	174.1	3.49
2009	5,006.3	168.1	3.36

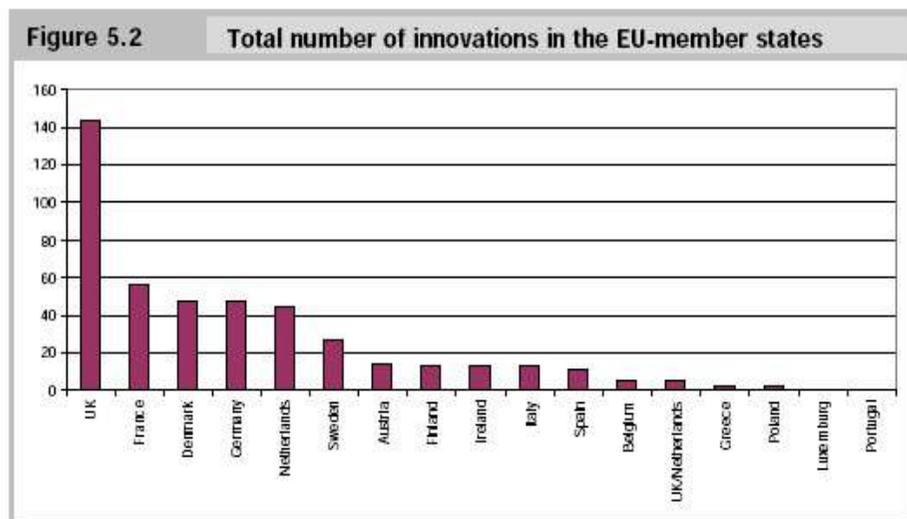
Source: DairyCo Datum, Kantar Worldpanel

Whilst market shares may be relatively low, the growth potential remains significant and the organic industry is planning for growth.

1.5 Innovation and brands

The UK's investment in product innovation leads the EU. According to a March 2009 report on the Competitiveness of the EU Dairy Industry undertaken by the Dutch research institute LEI Wageningen UR (one of the research institutes of Wageningen University), the UK has the highest level of product innovation of all EU Member States.

Figure 1 – Total Number of Innovations in the EU Member States

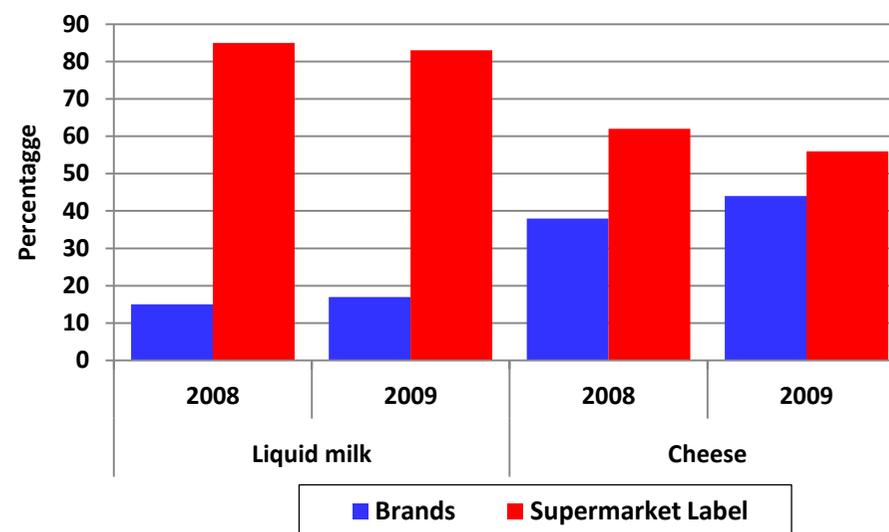


Particular focuses for innovation include:

- Health concerns: Functional and enriched foods
- Lifestyle issues: Convenience products
- Ethical choices: Organic products
- Provenance: Locally supplied products
- Quality: Premium products

One of the major drivers of the value obtained from milk is the possession of brands. The UK dairy industry is working hard to increase the proportion of branded products in its portfolio.

Graph 4 – Brands versus Supermarket Label in 2008 & 2009



Source: Industry Estimates

1.6 Marketing – Make Mine Milk

Make Mine Milk is a £9m promotional campaign for liquid milk. The total budget is spread over three years, with £2.4m provided by the EU and the remainder coming from the industry. Launched in April 2010, Make Mine Milk focuses on young people aged 15 to 24 years in England, Scotland and Wales, with a secondary target of families with children and adolescents.



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The campaign aims to convince consumers that milk is healthy and relevant to them, to re-

engage people emotionally with milk and to start improving consumer attitudes towards the dairy category. Hitting these objectives could increase consumption by over 300 million litres during the 3-year programme, with further increases in subsequent years.

Celebrity is the core of the campaign, and Make Mine Milk kicked off with pop star Pixie Lott and TV chef Gordon Ramsay sporting the milk moustache. A succession of famous faces is scheduled to appear in the campaign, drawn from world of music, film, fashion, sport and the media. They are calculated to appeal to both adolescent and teenage girls as well as mums and their children. The campaign also features a strong PR and social media element.

Industry funding for the campaign is being provided by major dairy companies. The campaign is being facilitated by the Milk Marketing Forum, a sub-committee of The Dairy Council, which is a wholly own subsidiary of Dairy UK.

1.7 School Milk

Providing milk to nurseries, primary and secondary schools offers significant nutritional benefits to children and encourages them to develop a lasting habit of consuming healthy dairy products. Free milk is available to under-fives in registered nurseries. Subsidised milk is available for 5- to 11-year olds attending primary school and to secondary school pupils.

The EU School Milk Subsidy Scheme pays a modest subsidy on 44,011 tonnes of liquid milk and yogurt consumed annually by primary school children. The current subsidy rates are €0.187 per litre from the EU and a further 3.98p per litre from the Government.

Around £1m has now been made available by the Government to promote milk consumption, nutrition and healthy eating in schools from September 2010. This money represents a partial reallocation of the £1.5m previously made available to 'top up' the EU subsidy.

The UK dairy industry actively promotes milk consumption in schools and the EU/UK Subsidy Scheme. From September 2007, semi-skimmed milk became one of only three groups of drinks available in schools, the others being fruit juice and water.

Dairy UK and Consumers

Dairy products are a profoundly important part of the nation's diet and contribute to the quality of life in the UK. Consumer priorities are constantly shifting and are currently focused on value.

The dairy industry:

- **will continue to adapt to these changing needs.**
- **will keep working proactively with the Government and its agencies to assist in the delivery of public dietary objectives.**
- **has developed a comprehensive range of products to meet the spectrum of the nation's preferences.**
- **recommends Government commit to clear country of origin labelling on all dairy products.**
- **is committed to continuing co-operation with the FSA through the Dairy Partnership and the Department of Health to help deliver a better diet for UK consumers.**

Dairy UK will continue to facilitate the development and execution of industry generic marketing campaigns to improve consumer appreciation of the merits of dairy products.

The dairy industry is firmly focused on product innovation and it now has a robust and credible record of achievement that it can be proud of. Innovation is regarded as the key to increasing the value in the dairy supply chain, from farm gate to retail shelf.

2. DAIRY AND NUTRITION

2.1 Nutrition and Health

Milk, cheese and yogurt are nutrient rich (nutrient dense). Nutrient rich foods provide a lot of nutrients per calorie. In the UK, dairy foods make a major contribution to the nutrient needs of all age groups.

Good nutrition has a profound impact on health because the human body needs a variety of nutrients to function correctly. People eat foods, not individual nutrients, so it is important that they get the maximum amount of nutrients possible per calorie from the foods they consume.

In addition to vitamins and minerals, dairy foods contain bioactive compounds which appear to offer health benefits in conditions such as high blood pressure and type-2 diabetes. Milk is also an important means of re-hydration

2.1.1 Nutrients in Milk, Cheese and Yogurt

The nutrient most commonly associated with dairy foods is calcium, but dairy is not a one-nutrient food. Milk, cheese and yogurt are sources of good quality protein, fatty acids, carbohydrate, and a host of essential vitamins and minerals.

2.1.2 Dairy and Calcium in Childhood, Adolescence and Adulthood

Eating dairy foods is an easy way to consume the nutrients needed for good bone health because they contain calcium, phosphorus, magnesium and protein. Dairy calcium is also easy for the body to absorb, which is not the case for all forms of calcium from other foods.

Childhood and adolescence are stages of life where bone is growing and calcium is being laid down for future years. Bone is a living tissue which is constantly being regenerated by the body. By the mid- to late-20s, bone has reached its maximum length. From around thirty five onwards more bone cells are lost than replaced. Although our genetics largely determine whether we will develop osteoporosis or not, diet and lifestyle factors can influence how healthy our bones are and the rate at which they can repair themselves. Following a healthy diet, and having a lifestyle which includes

plenty of weight bearing exercise, is one way of maintaining bone health and slowing the rate at which bones become fragile. Failure to build strong bones during childhood, adolescence and early adulthood can lead to an increased risk of developing this bone disease.

Figure 2 - The Functions of Nutrients in Milk



Just as dairy is not a one nutrient food, calcium is not a single function nutrient. Calcium is also necessary for normal nerve and muscle function, including the heart muscle. It is needed for normal blood clotting and for the release of hormones such as insulin. Calcium is required to maintain normal blood pressure and is involved in digestion. We cannot make calcium in our bodies, so if we do not get enough from food, the body will use calcium from bone for all of these essential functions. Many foods contain calcium but dairy foods are the major source of it in the UK diet.

2.1.3 Dairy: A Positive Role in Chronic Conditions

There is epidemiological evidence which suggests that some dairy foods may play a protective role in a number of chronic conditions, particularly type-2 diabetes, stroke, and certain cancers such as colon cancer. How dairy foods do this is not fully known, but it is believed to involve certain nutrients and bioactive compounds. Since dairy foods appear to be more protective in many cases than single nutrients, it has been suggested that dairy may allow nutrients and other components to act together in a way that could be beneficial to health. Consuming dairy foods as part of a healthy balanced diet does not increase the risk of chronic disease.

There are many mixed messages given to consumers about dairy, and numerous myths blame milk for a variety of conditions. Many of these myths are part of folklore and continue to be passed on without any scientific basis. Others are born out of inconsistent science.

Dairy is often accused of causing conditions like diabetes, heart disease, stroke and cancer. Chronic conditions such as these are a result of interplay between genetics and environmental factors. Of the environmental factors, diet may play a part but it is the whole diet, and not just one food group, which increases the risk of disease.

2.1.4 Milk and Sport

Milk naturally contains many of the elements provided by specifically formulated commercial sports drinks. Recent studies suggest that skimmed milk is just as good, and in some cases better, as a sports aid than sports drinks.

Skimmed milk has been shown to out-perform a commercially available sports drink in rehydrating cyclists after exercise. Milk's ability to rehydrate is largely due to the presence of salts such as sodium and potassium which the body loses during exercise.

Milk may also help reduce exercise induced muscle damage (EIMD). EIMD is the result of a breakdown of protein structures within muscle. Milk has been shown to limit the effects of EIMD, by providing protein and carbohydrate, which may help increase protein production and reduce protein breakdown within the muscles

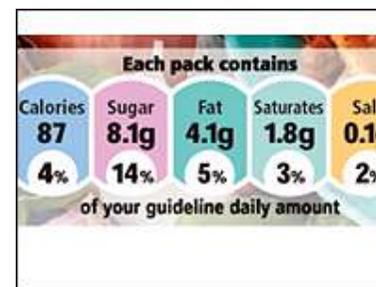
2.1.5 Food Labelling: GDAs and Traffic Lights

Growing demand for healthier foods has led to a number of initiatives to help consumers understand nutrition and the foods they eat. These include a number of mandatory and voluntary nutritional labelling programs such as Guideline Daily Amounts and the Traffic Light system, which was launched by the Food Standards Agency in 2006.

The food and drink industry, along with the retailing sector, have recognised the importance of providing nutritional information to consumers. The Institute of Grocery Distribution developed the Guideline Daily Amounts (GDAs) labelling system which is based on a diet meeting the recommendations of the Committee on Medical Aspects of Food and Nutrition Policy. This is translated into a set of guideline amounts for men, women, adults and children for calories, fat, saturated fat, carbohydrates, sugars, protein, fibre, salt and sodium.

The GDA system has been adopted by a number of retailers, food manufacturers and industry organisations such as Tesco, Kellogg's, Danone, Nestlé, the British Retail Consortium and the Food and Drink Federation. It has also been supported by the European Parliament as part of the proposed Regulation on Information to Consumers.

Figure 3 – An Example of GDA Labelling



Source: IGD – GDA Best Practice Guide

2.2 Nutrient Density as a Concept

Nutrient density and nutrient richness are terms used to describe foods and beverages which provide a substantial number of nutrients for relatively few calories. Milk, cheese and yogurt are nutrient dense/rich.

Although nutritional density is not a new concept, it is one which is increasingly being adopted around the world as a means of communicating about foods. Dairy organisations worldwide are working with the scientific community to express nutrient density in a form that is acceptable to regulators and health professionals, and which can also be used with the consumer. The US is leading this work and has already developed consumer applications.

The concept of nutrient density could also have potential benefits in the area of the environment. By comparing the amount of a given food needed to provide the same nutrients as, for example, 30g of cheese, it is possible to evaluate the environmental cost of different foods. By this measure, dairy may be an environmentally efficient way of nourishing people. Further research on this area is being considered in a number of countries.

2.3 The Dairy Council

The Dairy Council (www.milk.co.uk) provides evidence-based information on the nutritional benefits of dairy products as part of a healthy balanced diet. The Dairy Council is solely funded by Dairy UK.

Dairy UK and Nutrition

Milk and dairy products are nutritionally rich and complex foods that have a crucial role to play in a healthy balanced diet.

- **Consumers need access to accurate and easy to use information about foods, and nutrition in general.**
- **GDA's are the best way to provide this information.**
- **A nutrition education programme reinforces the importance of a balanced diet containing all food groups is a priority.**
- **This programme would be of significant benefit to the nation's health.**
- **Processors have reduced the saturated fat content of mainstream dairy products.**

Government should be more proactive in communicating the nutritional benefits of dairy products and less focused on addressing negative food constituents, such as fat and salt.

3. GREENER DAIRY

3.1 The Dairy Sector and Environmental Policy

The dairy industry is committed to improving its environmental footprint. Amongst the many initiatives being pursued by the industry the most important is the Milk Roadmap.

The Roadmap was published in May 2008 and sets out challenging targets for improvements in the dairy industry's environmental performance. Targets include reducing water and energy use, cutting greenhouse gas emissions and slashing waste to landfill.

The Roadmap sets targets for 2010, 2015 and 2020 and dairy farmers, processors and retailers are making great progress against their targets.

Figure 4 – Roadmap targets for Farmers and Processors

Sector	Target	Status
Farmers	50% of dairy managed farmland entered into Environmental Stewardship Scheme	On target: 45% of farmers so far
	5-15% reduction in water use	First report due in 2010
	65% of dairy farmers actively nutrient planning and therefore reducing nitrogen runoff	On target: 47% of dairy farmers had an up-to-date nutrient plan
	30 farms piloting on-farm anaerobic digestion for improved sustainability & generation of energy from renewable sources	Unknown: gathering data
	95% dairy farmers have a manure management plan	On target: 94.8% of farmers to date
	95% have farm health plans	On target: 95.1% of farmers
	Dairy farmers to improve energy efficiency by 15%	Unknown: gathering data
Processors	All processors to meet or beat energy and CO2 reductions of the climate change agreements	On target: Met 2008 target and on course to meet 2010 target
	10% recycled plastics in packaging materials	On target: Should reach 10% incorporation rate for milk bottles by end of 2010
	Environmental benchmarking and best practice programme.	On target: Dairy UK has launched a Benchmarking tool and will be developing a best practice programme in 2009 and 2010.
	Annual sustainability report (will evaluate success with targets)	Published 2009

For 2010 dairy producers committed to 50% of dairy managed farmland being entered into an Environmental Stewardship Scheme. One year ahead of schedule they were already at 45% of farmland. In addition, the production sector committed to 65% of dairy farmers actively nutrient planning by 2010 and is on target (according to a survey in 2008) with 47% of dairy farmers stating they have a Nutrient Management Plan which is updated on a yearly basis. Producers are also making good progress against 2015 targets on carbon footprinting and trialling new technologies to reduce emissions from agriculture.

Milk processors are set to meet 2010 targets on recycled plastic in milk bottles, environmental benchmarking and meeting government targets on carbon reductions and energy efficiency.

By the end of the year, 10% of the HDPE plastic used to make milk bottles will come from recycled sources. Expanding on this initiative will depend upon the growth in doorstep collection of recycled post consumer waste from the doorstep - which is being encouraged by Defra and WRAP and needs to be supported by initiatives from Local and National Government. Reductions in the collection of recyclable plastics will put pressure on the industry to meet this target.

An environmental benchmarking tool has been launched which will capture data relating to a wide range of processors' environmental metrics including, energy use, greenhouse gas emissions, packaging and waste. To date the tool has collected data on well over 50% of the total milk processed and almost 100% of the liquid milk processed in the UK.

3.2 The Dairy Industry's Carbon Footprint

The recently published United Nations Food and Agriculture Organisation (UN FAO) report "Greenhouse Gas Emissions from the Dairy Sector - A Life Cycle Analysis" shows that the emissions from global milk production, processing and transportation make up just 2.7% of global emissions.

The study has also demonstrated that efficient farming and processing in the EU, and particularly Western Europe, mean that while the EU produces around 25% of the total global production of milk, they account for only 15% of the emissions, with the second lowest emissions per kg of milk at about 1.5 kg CO2 eq.

This study is in line with a report from CE Delft published in 2009, which showed that the emissions from the dairy sector in developed countries such as the UK accounted for less than 2% of the total.

However the dairy industry is not complacent on this issue and at home in the UK and in the world's other key dairying countries, the industry has committed to reducing the environmental impact of production and consumption. That's why the dairy industry united in September 2009 to sign the Agenda for Action in Berlin, pledging to reduce carbon emissions through the following five actions:

- Develop a standard carbon footprinting methodology for dairy products
- Promote the adoption of global best practice in the dairy sector
- Help establish tools to measure and monitor emissions from farms and factories
- Promote farmers' understanding of agricultural emissions and opportunities for reduction
- Align research to develop cost effective mitigation technology

Both the Agenda for Action and a supporting "Green Paper" that catalogues some of the many initiatives already under way can be viewed online at www.dairy-sustainability-initiative.org

It is also important to note that many of the impacts of the industry on the environment are also positive, such as maintaining the UK's landscape of open pasture land which is an important aesthetic and leisure amenity.

3.3 Measuring the Carbon Footprint

The UK dairy industry has committed to measuring, monitoring and reducing carbon in the dairy supply chain. Dairy UK is working with DairyCo and the Carbon Trust to establish a common approach to carbon footprinting for dairy. The aim of the project will be to produce dairy sector specific guidance on the application of PAS 2050, which sets out the broad rules for carbon footprinting. The project is also intended to develop a Dairy Footprint Expert to carbon footprint dairy products.

3.4 Dairy Farmers and the Environment

The industry is improving the environmental performance of dairy farmers through the Milk Roadmap. The main targets for farmers are to adopt nutrient planning, register dairy land for the Entry Level Stewardship scheme and to adopt renewable energy to reduce the greenhouse gas balance from dairy farms.

Dairy farmers however face increasing environmental restrictions and regulations, covering a number of topics:

- Control of Pollution (silage, slurry and agricultural fuel oil)
- Nitrate Vulnerable Zones and Action Programme of Measures
- Waste management licensing, Duty of Care and others
- Water resources: Discharge Consents, Anti-Pollution Works Notices
- Sludge (use in agriculture)
- Groundwater authorisations
- Water Abstraction Licences
- Protection of habitats and wildlife

These regulations can have serious implications on the cost efficiency of dairy farms.

3.5 Dairy Farming and Greenhouse Gas (GHG) Emissions

The key GHG emission from dairy farming is methane, which is a by-product of the enteric fermentation of grass, forage and other feed in the cow's rumen, the largest of its four stomachs.

Over one year, methane emissions from the national dairy herd add up to 1% of the UK's emissions. To place this in context, transport contributes 24%. GHG emissions are also caused by energy used in field operations and farm buildings, and energy used in processing and distribution.

Opportunities exist for dairy farmers to improve their GHG emissions through, for example, the use of on-farm anaerobic digestion, use of biofuels in agricultural vehicles, increased energy efficiency, and increased feed efficiency.

The dairy industry is carrying out research to investigate cost effective ways of reducing GHG from dairy farms, including studies looking at:

- Improving the ratio of methane emissions per unit of product, by increasing cow longevity
- Increasing milk yield per cow, recognising that on many units yields may already be at optimum levels in terms of economic viability and animal welfare
- Enhancing the efficiency of rumen microbial action through changes in diet type, and the use of feed additives to reduce methane production
- Avoidance of low quality forage that stimulates methane production
- Increased take-up of anaerobic digestion (AD) to produce biogas and reduce uncontrolled methane emissions from stored manures and slurries. AD can also export low-carbon electricity and heat services, which should be given credit in any overall greenhouse gas balance.
- Nutrient planning to ensure that the efficiency of nitrogen utilization in plants and animals is optimised, thereby reducing the overall emissions of nitrous oxide and methane

3.6 Nitrate Vulnerable Zones (NVZ)

In July 2008 Defra announced changes to the NVZ Action Programme for England which will impose significant costs on dairy farmers. The changes

- extend the NVZ area from 55% to 70% of land in England
- prevent farmers from spreading slurry for up to four months per year depending on soil type
- require dairy farmers to have five months' slurry storage capacity. Farmers will have three years starting from January 2009 to meet this new storage requirement

The new Action Programme will cost farmers the equivalent of 1.34 pence per litre of milk over a 10 year period, according to a report commissioned by Dairy UK from the farm consultants Promar International. Defra provided only limited advice to farmers in England, but grant aid is being provided by the devolved administration to assist farmers affected by NVZ legislation.

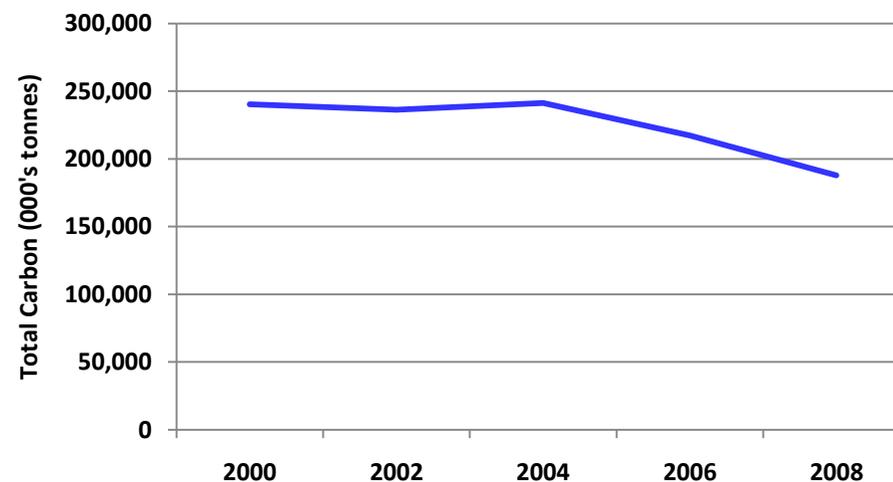
3.7 Climate Change Agreement (CCA)

Since April 2001, the Government's Climate Change Levy has added up to 15% to the cost of energy used by dairy processors. However, energy intensive sectors, such as dairy, that enter a Climate Change Agreement to reduce emissions receive a major discount on the levy.

The government has announced that the scheme will be extended to 2017 and is in consultation on the structure and rules of the extended scheme. However the dairy sector is disappointed that the government has decided to reduce the maximum rebate for the CCA from 80% to 65%, which will cost the dairy sector just under £1m a year and send the wrong message to sectors which have been reducing emissions over the last 10 years.

The dairy sector CCA is managed by Dairy Energy Savings Ltd, which is operated by Dairy UK.

Graph 5 – Carbon Emissions from CCA Sites



Source: Dairy UK / Defra

Since the agreement was set up, in excess of 150 milk processing sites have joined the dairy sector CCA, saving those companies approximately £4.5m per annum. In energy terms, the CCA has reduced emissions by 16% since the 90s.

3.8 Environmental Permitting Regulations

In April 2008 Defra introduced the Environmental Permitting Regulations which has streamlined and combined separate waste and pollution control (PPC) systems so there can now be a single environmental permit and common procedures.

All sites processing more than 200 tonnes of milk per day have been required to obtain a permit from the Environment Agency which sets targets to cut waste and emissions to land, air and water and requires sites. The permit therefore requires that companies implement a robust Environmental Management System at each of its sites. Evidence shows that sites that do reduce emissions and waste will also be reducing costs.

In 2009 Dairy UK worked with the Environment Agency and other food sector associations to develop a new Environmental Management toolkit designed to help smaller businesses to comply with environmental legislation. The toolkit will help food & drink manufacturing businesses to improve sustainability, reduce costs and cut the risk of pollution.

3.9 Environmental Benchmarking and Reporting

Dairy UK has developed an environmental benchmarking tool for its members. The tool will allow users to benchmark their performance with complete anonymity against others in the industry. It covers a number of metrics including, energy use, water use and waste.



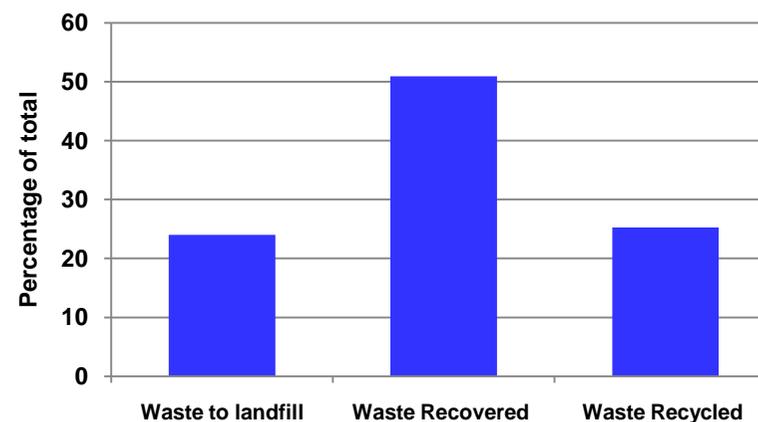
In 2009, Dairy UK received data on well over 60% of the total milk processed in the UK and almost 100% of the drinking milk. As well as collecting this data and sharing best practice, the processing sector has committed to publishing the information annually to track the industry's improvement. The data is published in Dairy UK's annual Sustainability Report in November, which is available from the Dairy UK website.

3.10 Industrial Energy Efficiency Accelerator Programme

Over the last year the dairy sector has been participating in the first phase of the Carbon Trust's Industrial Energy Efficiency Accelerator (IEEA) programme. The IEEA is designed to look in detail at the key energy intensive processes in the industry and identify measures to increase efficiency. The programme is designed to go beyond conventional energy audits by looking in detail at production strategy, processes and equipment. In dairy, that means looking at new technologies to reduce emissions in pasteurisation, cleaning in place (CIP) and considering overall energy use to find reductions for the next 20 years.

3.11 Waste

Graph 6 – Treatment of Waste from UK Processing Sites 2009



Source: Dairy UK

In common with most manufacturers, dairies produce waste which has to be disposed of. Major sites have targeted zero waste to landfill by 2015, ensuring that all solid waste will either be reused, recycled or recovered.

In 2008, dairy companies were already diverting 76% of the solid waste produced on site from landfill into either recovery or recycling. And some of the biggest sites are close to 100%.

3.12 Water Use

Water is an important resource and cleaning is the main consumer of water in dairies. The dairy sector is committed to continual improvement in water efficiency and through the Milk Roadmap has set a target of 0.5 litres of water used per litre of milk produced by 2020. This would lead to a saving of approximately 5.6 billion litres of water per year.

Water use is also monitored through the environmental benchmarking tool. The major milk processors have managed to reduce water consumption by 20%. New plants, water recycling and better effluent treatment have saved 840 million litres of water, equivalent to 9% of consumption.

3.13 Food Waste

As highlighted by the government's Food 2030 report, household food wastage in the UK is a major issue; eliminating household food waste would deliver major benefits, including a reduction in GHG emissions equivalent to taking one in five cars off UK roads.

The dairy sector is working with key partners such as WRAP (Waste Resource Action Programme) to help identify where food wastage occur in the whole supply chain and in homes in the UK, how much and why it is wasted and to develop projects and programmes to help to reduce food wastage in the UK. This work includes the support of WRAP's "Love Food Hate Waste" campaign.

3.14 Packaging

The dairy industry is committed to improving the sustainability of its milk packaging systems and there have been a number of initiatives that have sought to achieve this. Specific work historically has focused on light-weighting of poly bottles by blow-moulding technology providers.

The industry has supported a project aimed at turning the plastic milk bottles recycled by consumers back into new plastic milk bottles through a process "super cleaning" plastic. The first milk bottle using this recycled material was launched in February 2007. Now in 2010 almost all milk bottles sold through the major retailers have 10% recycled plastic, reducing the carbon footprint of each bottle.

The dairy sector programme to enable recycled material to be included in all UK plastic HDPE milk bottles will ultimately reduce the amount of virgin material used by around 50,000 tonnes. The success of this initiative is due to teamwork between milk processors, retailers, packaging suppliers and the government.

A range of other projects aims to tackle packaging, from selling milk in plastic pouches to cutting the weight and increasing the recyclability of cheese packaging.

3.15 Anaerobic Digestion

Anaerobic digestion (AD) is a well-established and proven technology capable of converting low-value organic materials, for example food and agricultural waste, into high value renewable energy in the form of methane-rich biogas.

Given the great potential for AD to produce renewable energy, reduce carbon emissions and waste, the dairy industry is investigating the feasibility of large, centralised AD plants within the UK dairy supply chain. In 2009 Dairy UK supported an application through WRAP's Environmental Transformation Fund to develop a digester at BV Dairies in Shaftesbury capable of producing 75,00KWh of energy per week. The project will demonstrate the role anaerobic digestion can play within the food manufacturing process - providing a means of treating liquid waste where it is produced.

Dairy UK and the Environment

The dairy industry is meeting its environmental challenges head on by measuring and improving its performance and has set itself a series of ambitious environmental targets running to 2020.

The Milk Roadmap, drawn up with Government, is being emulated overseas and must remain the primary tool for directing environmental improvements in the UK.

The dairy industry:

- **is committed to reducing greenhouse gas emissions in the UK.**
- **can produce significant amounts of renewable energy through anaerobic digestion.**
- **Urges Government to support this technology**

Consumers are confused by the meaning of carbon labels on food packaging, which do not communicate improvements in the supply chain behind the product. Government should ensure that any carbon labels are relative to emission savings and the nutritional value of foods.

Water footprinting – calculating the water used to make something - is moving up the agenda. But the environmental impact of water use depends on where and how it is collected from and returned to the environment.

4. DAIRY FARMERS

4.1 Dairy Farmer Numbers

The number of dairy farms in the UK has been declining at a steady rate of between 2.8% and 6.3% per year since the latter part of the last century, with an acceleration seen in England over the last 10 years.

The number of animals in the national herd has also been falling whilst the average farm size has been rising. At the same time, the average milk yield per cow in the UK has also been rising which, until recently, offset the decline in cow numbers.

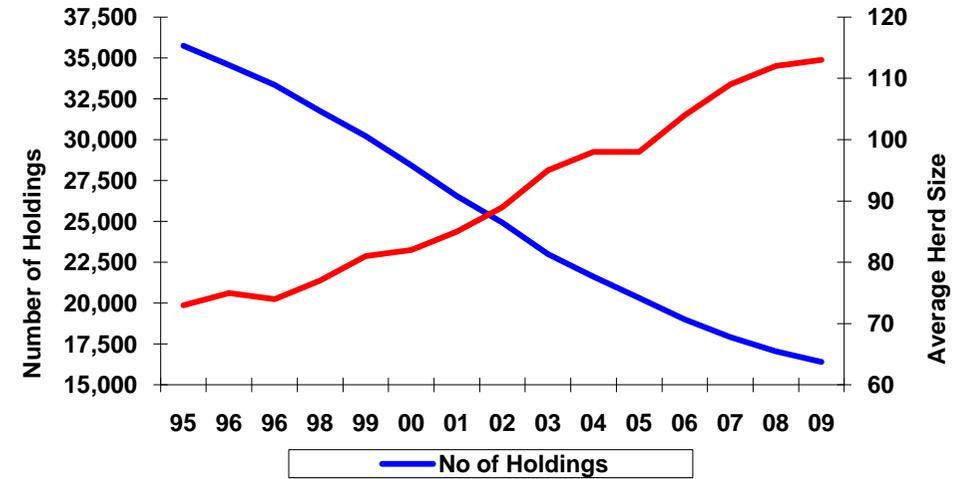
Table 6 - Average Herd Size in the UK

	Holdings	Dairy Herd (000 Head)	Average Herd size
1995	35,741	2,603	73
1996	34,570	2,587	75
1997	33,352	2,478	74
1998	31,753	2,439	77
1999	30,221	2,440	81
2000	28,422	2,336	82
2001	26,556	2,251	85
2002	24,930	2,227	89
2003	22,992	2,192	95
2004	21,616	2,129	98
2005	20,313	1,998*	98
2006	19,011	1,979*	104
2007	17,915	1,954*	109
2008	17,060	1,909*	112
2009	16,404	1,857*	113

* New series

Source: Defra

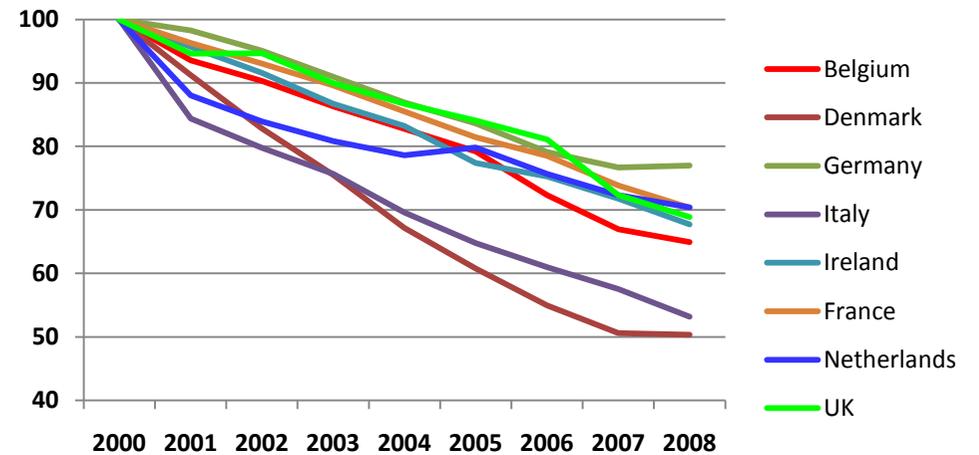
Graph 7 – National Herd Size and Number of Holdings



Source: Defra

The trend to fewer larger farms is almost universal throughout the developed world, but the rate of exit in the UK is comparably lower than some of our European counterparts.

Graph 8 – Decline in EU Producer Numbers (Index: Year 2000 = 100)

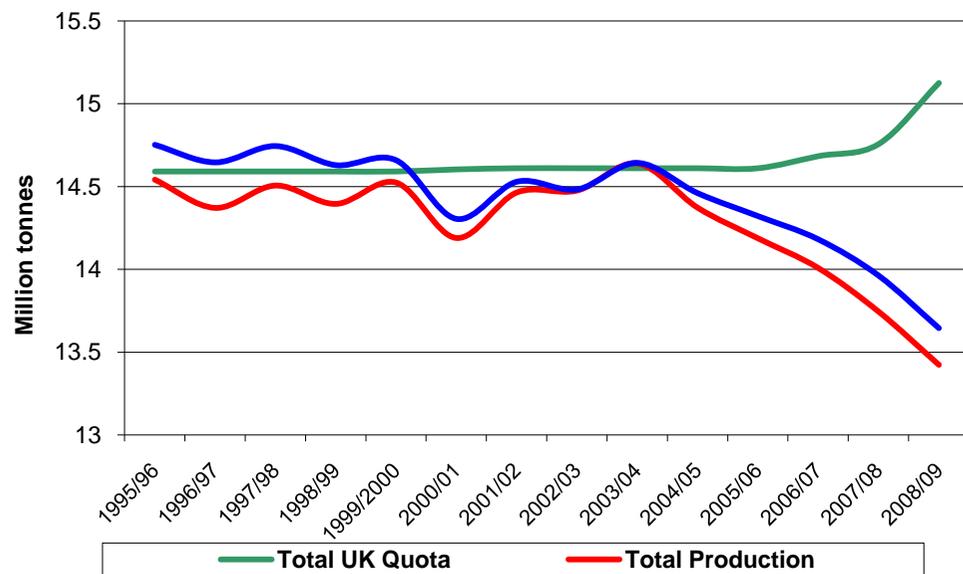


Source: Dairy UK

4.2 Milk Output

The milk production year runs from April to March of the following year. Prior to 2004 UK milk production had been close to national quota of around 14.6 billion litres per year. Since then, production has been on a downward trend and but recently there are signs of stabilisation.

Graph 9 – Milk Production and Quota



Source: EU Commission

The trend in milk production is determined by a large variety of factors, which are analysed in a report published by DairyCo in January 2009 on 'Factors Affecting Milk Supply'.

The strongest negative influence on production has been a shortage of replacement animals. A forecast rise in availability of dairy animals in 2011 and 2012 could stabilise and reverse the falling trend in milk production.

Farmer confidence linked to milk prices is the most important long term influence on milk production. The rise in farm gate prices in 2007 and 2008 brought a much needed boost to farmer confidence, although a portion of this increase was eroded by rises in input costs.

Since then, producer confidence has improved and the 2010 DairyCo Farmer Intentions Survey revealed that for the first time since the survey began in 2004, extra milk produced by dairy farmers planning to increase their production is expected to cover those leaving the industry.

The survey recorded a rise in confidence levels, in particular for those dairy farmers who are part of a dedicated supply chain. Though 9% of UK dairy farmers intend to leave the industry within the next two years, equating to around 1,174 dairy farmers, 32% of farmers are planning to increase production.

Relative influence of factors affecting milk supply

Positive factors

Greater influence



Increasing farm gate price

- ↓ Increasing cattle imports
- ↓ Slowing in rate of farm exit
- ↓ Increasing lactations per cow

Lower influence

Negative factors

Shortage of replacement cows

- Low levels of investment
- Increased input costs
- Extreme weather conditions
- Increased calving interval

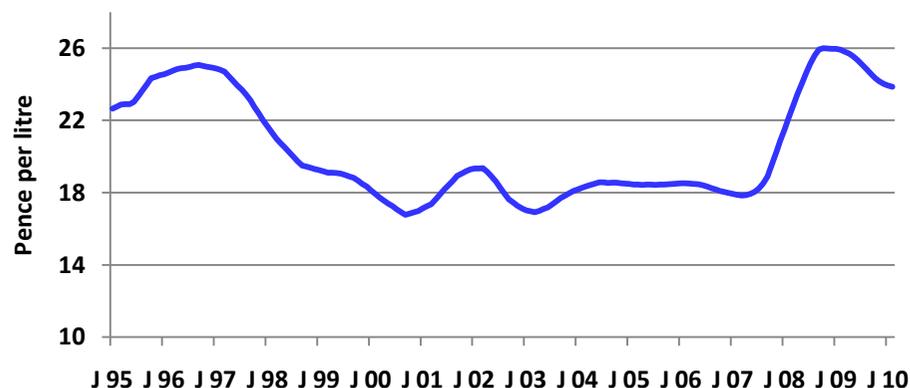
- Regulatory burden
- Availability of labour
- Increased incidence of Mastitis
- Declining forage quality
- Declining genetic progress in milk yield

- TB slaughterings
- Rising cull cow prices
- Breeding for robustness

4.3 Milk Prices

The price of raw milk has been completely de-regulated since the Milk Marketing Schemes were wound up in Great Britain in 1994 and in Northern Ireland in 1995. Prices are now set by commercial negotiations between individuals and groups of farmers and milk buyers in a free and competitive market.

Graph 10 – Producer Price 12 Month Rolling Average



Source: Defra

UK producer prices fell from a peak of 24.87ppl in 1996 to 17.94ppl in 2006, with the greatest part of the fall before 2000. This sustained period of price deflation put farm incomes under considerable pressure with the result that milk production in the UK fell from 2004 until 2010.

Farm gate prices recovered strongly from the middle of 2007, due to the sudden rise in world commodity prices, to reach a peak of 27.27ppl in November of that year. Since then, farm gate prices have fallen back to 23.71ppl, but the positive trend in commodity markets has nudged farm gate prices back up and halted the decline in milk production.

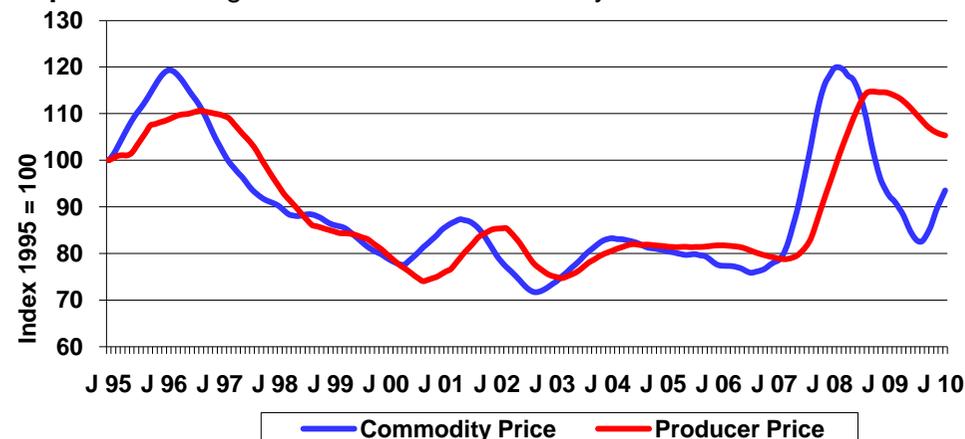
4.4 Currency and Commodities

Commodity products such as butter, powder and Cheddar generally set the underlying trend in the farm gate price of raw milk. This is because most raw milk can be switched between different end uses.

When commodity prices fall, farmers selling raw milk for commodities have an incentive to offer this milk into higher returning markets, so the price of raw milk used in other products then falls to remain competitive. Likewise, when commodity prices rise, milk buyers have to raise the premiums they pay over commodity milk in order to secure their supply of milk. The inherent volatility in milk supply means that commodity prices are cyclical.

Short-term price cycles can mask the long term price trends that the industry needs to base investment decisions upon.

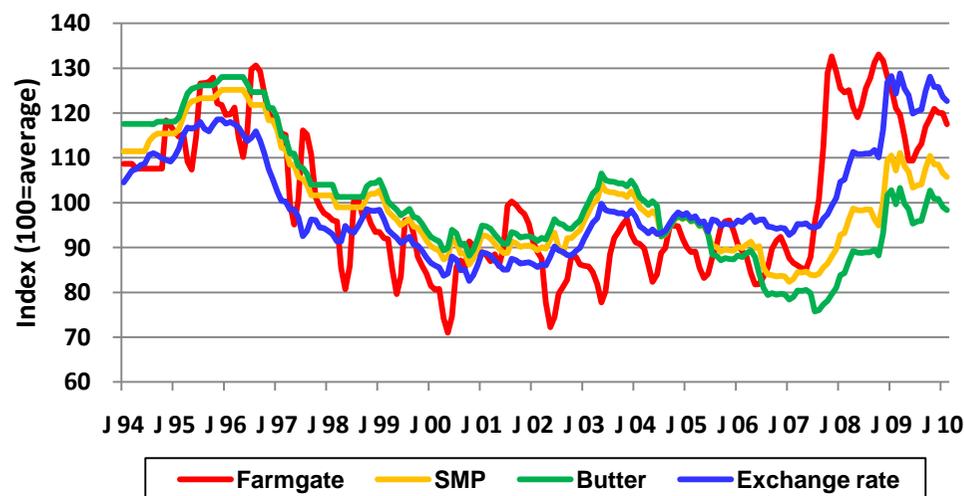
Graph 11 – Farmgate Price versus Commodity Price



Source: Dairy UK

As currency has a major role in driving commodity prices, it is a significant factor in setting producer prices. This can be seen in the chart below.

Graph 12 – Farmgate and Commodity Prices with Exchange Rate



Source: DairyCo Datum

4.5 Variation in Individual Producer Prices

Whilst commodity products set the overall trend in raw milk prices, there is a considerable variation in the price paid to individual producers. These variations reflect:

- premiums to ensure that milk is allocated to fresh product markets such as liquid milk
- short-term supply considerations
- the type of milk buyers operating in any particular area
- capital deduction levies put in place by co-ops to fund investment
- integrated supply arrangements the retailers. This last factor is potentially the most significant for the industry (see below).

The spread between the highest and lowest farmer price can be as much as 7ppl, although generally prices are concentrated to within a few pence of each other.

4.6 Integrated Supply Arrangements

Over the past few years, several major retailers have put in place 'integrated supply arrangements'. Under these systems, a retailer obtains its supply of liquid milk exclusively from a specific group of farmers. The raw milk from these farms is processed under segregated arrangements and delivered as liquid drinking milk to the retailer.

Farmers generally receive a higher price under these arrangements, which vary from retailer to retailer (see table 7 below). As such, the 2,500 farmers on supermarket contracts are partially insulated from the price trends in commodity markets. However, in the long run, the retailer has to ensure that they are competitive with their counterparts at the retail price level.

In exchange for participating in integrated supply arrangements, farmers may be required to deliver different welfare requirements or to meet particular environmental standards set by the retailer.

Because of the sheer volume of milk purchased by Tesco, the farm gate price set by this retailer is seen by many as setting a benchmark for the industry.

Table 7 – Integrated Supply Chain Relationships for the Liquid Market

Retailer	No of Farmers	Pricing System
Marks & Spencer	50	Formula taking account of costs and market returns
Waitrose	80	Negotiation taking account of capital investment requirements
Asda	300	Premium over processor standard price
Sainsbury's	320	Premium over processor standard price
Tesco	1,000	Formula taking account of costs and market return
Morrisons	-	Premium over processor standard prices shared over processor's total non-aligned supply pool

Source: Dairy UK

4.7 Financial Position

Provisional figures indicate that farm incomes have fallen back from the high levels seen in 2008/09. The average 2009/10 Farm Business Income for a dairy farm in England is forecast to be £61,500, which is down 11% on the year. Figures for Wales and Northern Ireland also indicate a decline with Wales also down by 11% to £55,400 and Northern Ireland down by almost 30% to the lowest level for five years at £26,500. However, the figures for England and Wales show incomes significantly ahead of the depressed returns seen over 2004/07.

Table 8 – Average Farm Business Income per Dairy Farm (£)

	2004/05	2005/06	2006/07	2007/08	2008/09	2009/10
England	33,100	33,600	30,800	55,100	69,400	61,500
Wales	28,500	30,600	30,500	51,300	62,200	55,400
Scotland	n.a.	n.a.	47,165	69,600	78,400	n.a.
N.Ireland	24,900	28,700	27,300	58,700	37,500	26,500

Source: Defra

4.8 Efficiency and Restructuring

There is a considerable divergence in the cost efficiency between the most efficient and the least efficient dairy farms.

Table 9 – Analysis by Performance Quartiles

	Lower Quartile	Upper Quartile
Lowland Herds (£ per cow)		
Total Dairy Output	1,336	2,191
Total Variable Costs	738	822
Total Gross Margin	598	1,370
Less Favoured Areas (£ per cow)		
Total Dairy Output	1,241	2,011
Total Variable Costs	766	912
Total Gross Margin	475	1,098

Source: "Farm Business Survey 2008/2009 – Dairy Farming in England":
Rural Business Research Unit – The University of Nottingham

This reflects the fact that many individuals are involved in dairying as a lifestyle choice and are prepared to use the capital of their business to maintain themselves. The proportion of the UK milk supply accounted for by this type of farmer is falling rapidly as they reach retirement.

At the other end of the spectrum are business minded individuals who require a competitive rate of return on capital employed, otherwise they will take their capital and expertise elsewhere.

In the medium term, improvements in business efficiency can be achieved by improvements in farm management. In the longer term, cost efficiency requires fixed costs to be spread over a larger scale of operation. This means that there is a direct correlation between farm size and efficiency.

Table 10 – Analysis of Efficiency by Herd Size

Herd size (cows)	<80	80-130	>130
Lowland Herds (£ per cow)			
Total Dairy Output	1,568	1,828	1,928
Total Variable Costs	677	830	858
Total Gross Margin	891	998	1,070
Less Favoured Areas (£ per cow)			
Total Dairy Output	1,446	1,752	n.a.
Total Variable Costs	697	929	n.a.
Total Gross Margin	749	823	n.a.

Source: "Farm Business Survey 2008/2009 – Dairy Farming in England":
Rural Business Research Unit – The University of Nottingham

4.9 International Competitiveness

UK dairy farms are amongst the most cost efficient in the EU and stand comparison with non-EU countries such as the USA. This in combination with our natural climatic advantages means that the UK is well suited to meet the growing global demand for dairy products.

Table 11 – UK Production Costs Compared to Other Countries

Cost of production US\$/100 kg	
India	20
Ireland	24
New Zealand	25
Australia	27
United Kingdom	30
United States	33
Germany	35
The Netherlands	35
France	36
Spain	40
Poland	43
Denmark	52

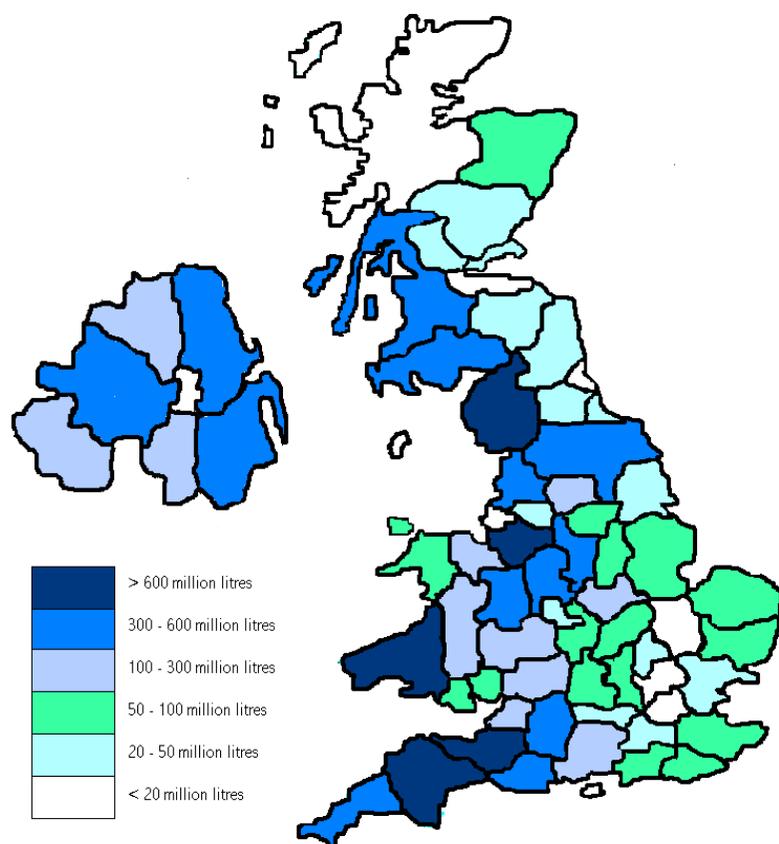
Source: International Farm Comparison Network

4.10 Geographical Distribution of Dairy Farmers

Milk quota has become largely irrelevant to dairy farmers and its price has sunk close to zero. Its main use is as a means of identifying where in the country milk production is concentrated, since farmers must hold quota to cover the milk they produce.

Quota figures reveal that milk production is becoming increasingly concentrated in the southwest and northwest of England, mainly Devon, Somerset, Cheshire and Cumbria. There is also a significant movement in quota from England to Wales, Scotland and Northern Ireland, indicating increasing production in these countries.

Figure 5 – Map of UK Production



Source: Rural Payments Agency

4.11 Seasonality of Milk Production

Milk production follows a seasonal trend with traditional peak production in May after the calving season and a trough in October/November as grass becomes poorer. Weather conditions can have a big impact and the level of butterfat and protein in milk also varies seasonally.

4.12 Animal Health and Welfare

Dairy farmers have a vested interest in maintaining the health and welfare of their dairy cows. There are powerful moral as well as economic reasons for keeping livestock productive for as long as possible.

The industry operates a farm assurance scheme to ensure dairy farmers meet benchmark standards of animal welfare and product quality. The scheme is called Assured Dairy Farms and is overseen by a board nominated by Dairy UK, the NFU, the British Cattle Veterinary Association, the Scottish Milk Forum and the British Retail Consortium.

Farmers are inspected every 17 months and the quality of the assessor is further verified by a system of random audits. The scheme is also part of Assured Food Standards (AFS), which is the umbrella organisation of all the major farm assurance schemes operated in the UK. As such milk assured under the scheme is entitled to carry the Red Tractor Logo which is operated by AFS.

4.12.1 Production systems

There are a range of different farm systems available for producing milk. They run from small scale, extensive units where animals are exclusively grazed to more intensive units where cows may be housed for all or part of their lactation. A farmer's choice of system will depend upon the resources and space available on the farm, the characteristics of the milk required by the purchaser and the capital available.

The choice of system is the farmer's alone. But whether the unit is large or small, fully grazed or indoor, animal health and welfare are key concerns. Extensive research over the years demonstrates that good husbandry, not farming system, determines animal health and welfare. A good stockman

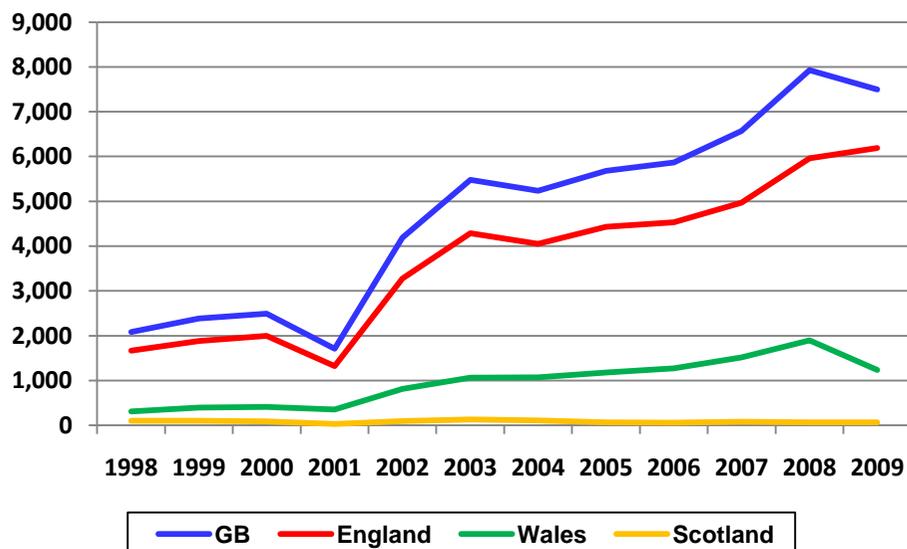
can ensure that cows are well kept in any system, and this is what UK farmers strive to achieve.

Farm assurance standards aim to set a high bar for animal health so that consumers can be confident that their milk and dairy products are produced responsibly and respectfully. Some 95% of UK milk is farm assured, covering all the major brands and retailers.

4.12.2 Bovine Tuberculosis

Bovine Tuberculosis (TB) has been spreading in England. This has resulted in the imposition of movement orders on a growing number of farms and the slaughter of cattle.

Graph 13 - Number of Herds Under Movement Restriction



Source: Defra

Animals slaughtered because of TB breakdowns amounted to more than 25,000 in 2009. The cost to the British taxpayer in compensation to farmers rose to more than £50m in 2008/09.

The failure to address the disease in England is not matched in either Scotland or Wales. In September 2009, Scotland was officially granted TB-free status. In order to protect this status, livestock imported to Scotland from other parts of the UK must comply with enhanced TB control measures.

The Welsh Assembly Government has put in place a comprehensive programme to eradicate TB across Wales. This includes more testing of cattle, identifying and getting rid of the disease in cattle at an earlier stage and improving on farm practices in Wales. The Welsh Assembly Government has also agreed a pilot badger culling programme, although this is being challenged in the High Court by the Badger Trust.

4.12.3 Johne's Disease

Johne's disease is a chronic, debilitating disease of cattle resulting in reduced milk yield and infertility. The disease has been slowly spreading throughout Europe for many years and in December 2009, Defra published the results of a 2006 survey estimating the herd prevalence in the UK as 35%. Because Johne's is highly infectious, passing from dam to calf, most herds in the UK will eventually be infected unless action is taken.

Dairy UK's Farmers' Forum organised a conference alerting milk producers to the importance of addressing this issue, and has set up an Action Group to increase awareness among industry leaders. The Group is preparing a strategy to tackle the disease that involves milk producers, veterinarians and milk processors. Organisations including the BCVA, the NFU, and DairyCo are supporting this initiative.

Dairy UK and Farmers

UK dairy farmers are professional, dedicated and efficient. They are also competitive by international standards and the industry is in a strong position to make a major contribution to global food security.

- **Government's commitment to dairy farming in England will be judged on what measures it introduces to reduce Bovine TB.**
- **Dairy farmers are restructuring their businesses to achieve the greater efficiency demanded by a competitive market place.**
- **Greater farming efficiency and competitiveness will mean larger dairy units, run to the highest standards of animal health and welfare.**
- **Government must support this important process.**
- **De-regulation of the raw milk market has significantly improved the efficiency of the dairy industry.**
- **Contractual arrangements in the UK are now probably the most diverse and sophisticated in Europe.**

Defra's plan to set up an independent body to share the cost and responsibility of controlling animal disease must give the livestock sector meaningful input into Defra's plans to set up an independent body on the control of animal disease.

The Government must give greater emphasis to R&D expenditure that improves the productivity of dairy farming and in particular helps the industry to meet its environmental obligations.

5. MILK PURCHASERS AND PROCESSORS

5.1 Industry Organisations

Of the six major organisations leading the UK dairy industry:

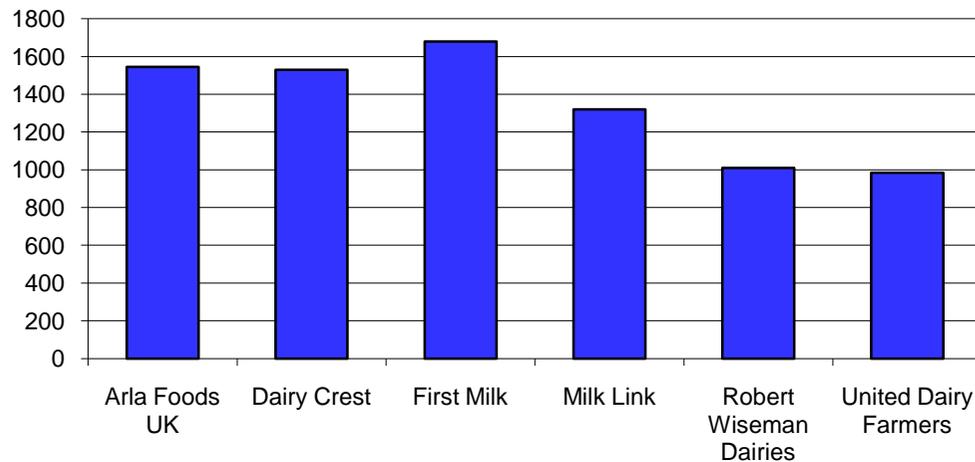
- Three of them are UK based dairy farming co-operatives: First Milk, Milk Link and United Dairy Farmers.
- Two are PLCs quoted on the stock market: Dairy Crest and Robert Wiseman Dairies
- The sixth is Arla Foods, which is now wholly owned by the Scandinavian co-op Arla (Amba).

This relatively low level of industry concentration means that further opportunities for industry rationalisation and merger still exist.

5.2 Milk Purchasers

The organisation that holds the contract with a farmer to purchase the milk produced from the farm can be a farmer co-operative, private dairy company or a plc. Currently the co-op First Milk purchases the largest volume of milk from dairy farmers.

Graph 14 – Volume of Milk by Purchaser (million litres)



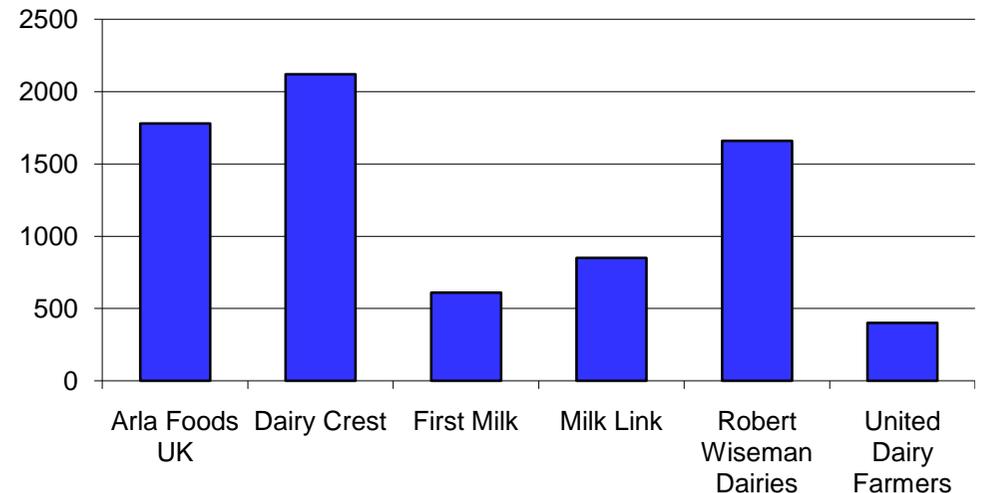
Source: Industry Figures and Dairy UK Estimates

Not all the milk bought by purchasers from farmers is dealt with in the processing operations owned by the purchaser. Consequently, a lot of the milk bought from farms by purchasers is sold on to other organisations for processing. This is especially true of the major co-ops. That is why there is usually a disparity between the volumes of milk purchased by a co-op and the volumes of milk that it processes.

5.3 Milk Processors

Organisations that process milk can be a co-op, private dairy company or a PLC.

Graph 15 – Volumes of Milk Processed (million litres)



Source: Industry Figures and Dairy UK Estimates

Almost half of the milk produced on farms in the UK is processed into liquid milk. After liquid milk the key dairy products are cheese, powders, condensed milk, butter and cream.

Growth in cheese production and falling raw milk production have eroded milk powder production in the UK by 40% in the last 10 years. Other products that have been in decline include condensed milk, which has seen a reduction of almost 50% over the last decade.

Trends in the utilisation of milk over 2009 reflect a reduction in cheese production due to the pressure of the recession and industry stock levels resulting in an increase in the production of butter and milk powders.

Table 12 – Utilisation of Raw Milk for the Manufacture of Dairy Products

(Million litres)	2008	2009	Percentage change 2009-2008
Production of raw milk	13,120	13,005	-0.9
Imports	49	75	+53.1
Total available	13,169	13,080	-0.7
for liquid consumption	6,678	6,621	-0.8
for manufacture	5,840	5,733	-1.8
Butter	229	242	+5.7
Cheese	3,635	3,393	-6.7
Cream	249	257	+3.2
Condensed Milk	332	308	-7.2
Milk Powders	933	998	+7.0
Other	461	535	+16.1
Dairy wastage and stock change	92	293	+218.5
Exports	559	433	-22.5

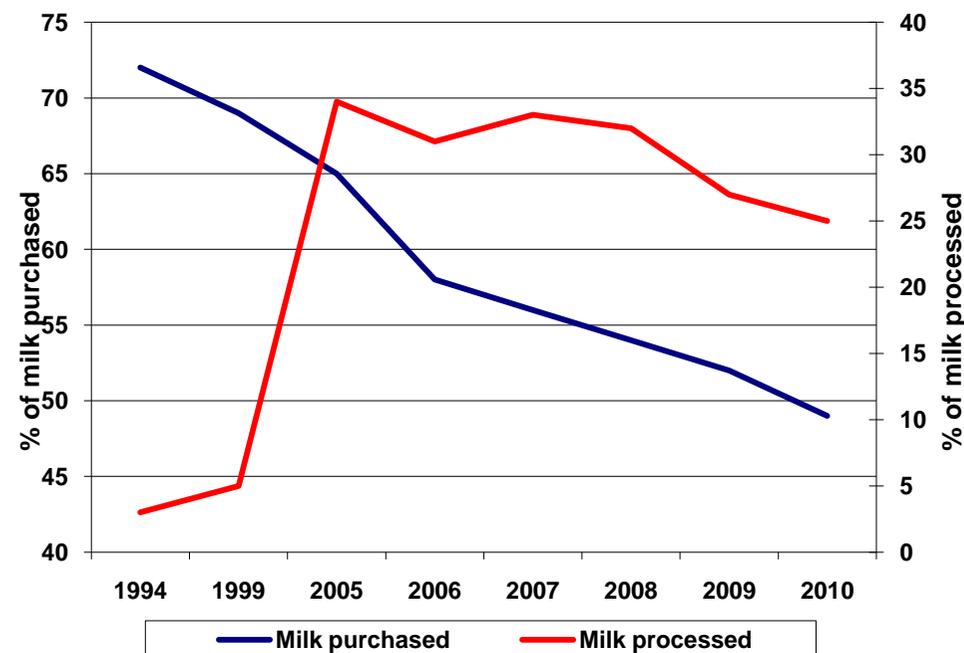
Source: Defra

5.4 Ownership of Processing Capacity

Until 2009, co-operatives' share of milk processing capacity had been rising since de-regulation in 1994, when it stood at only 3% of milk production. The investment in processing by co-ops is designed to obtain a greater share for farmers of the value added generated in the supply chain.

If the Scandinavian co-op Arla (Amba) is included through their ownership of Arla Foods UK, then nearly 49% of UK processing is owned by farmers of one nationality or another.

Graph 16 – Evolution of Co-op Processing



Source: Industry Figures and Dairy UK Estimates

There are ownership links between dairy farmers and dairy companies. In May 2008, UK farmers supplying milk to Arla Foods acquired a 7% stake in the company through a joint venture owned equally with Arla's Scandinavian parent co-op. First Milk also owns a 10% shareholding in Robert Wiseman Dairies.

5.5 Structure of Milk Processing Sites

In England and Wales, dairy plants which process over 100 million litres of milk account for over 90% of the volume of milk processed. In particular this reflects the industry's investment in large extremely efficient processing plants in the liquid milk sector.

Table 13 – England and Wales Size of Dairy Companies (2008)

Size Band	Companies Processing Milk		Volume of annual intake		
	(litres)	Number	% of Total	Million Litres	% of Total
1 million and under		11	16.2	4.7	...
1 - 10 million		14	20.6	60.3	0.6
10 - 30 million		14	20.6	234.3	2.4
30 – 100 million		10	14.7	535.5	5.6
Over 100 million		19	27.9	8,800.9	91.3
Total		68	100.0	9,635.7	100.0

Source: DairyCo, Defra

5.6 Investment by Dairy Processors

Dairy processors, whether co-op or private, are sustaining a high level of investment in the UK. Annual capital investment by the top five dairy organisations in the UK has exceeded £100m for the past five years.

Table 14 – Capital Investment by the Top Five UK Dairy Businesses

Year to March	Capital Investment (£m)
2005	121.6
2006	104.5
2007	119.1
2008	139.2
2009	131.2

Source: Dairy UK

The biggest single recent investment by the dairy industry has been by Robert Wiseman Dairies in a state-of-the-art £80m liquid milk processing plant in Bridgwater, Somerset. The plant has the capacity to meet 10% of

the UK liquid milk processing needs and has been designed to meet exacting environmental standards.

5.7 Competitiveness of UK Milk Processors

UK dairy processors are efficient compared to their international counterparts. In a Defra funded study published in 2007, the international competitiveness of UK dairy processors was evaluated by KPMG. Using publicly available data, the study compared the seven largest UK processors against a sample of 27 companies drawn from Europe, USA, Australia, New Zealand and Argentina.

Overall, the study concluded that UK companies generated higher levels of value added per employee and delivered higher levels of profitability in terms of return on capital employed. These results indicated that UK dairy companies were efficient at utilising the assets available to them, compared to their international counterparts.

The efficiency of UK dairy processors is the inevitable result of the intense competitive pressures they are subject to in meeting the demanding requirements of their customers and of competing with each other for business. This has generated a sustained process of rationalisation and plant closure. The intensity of this rationalisation process demonstrates that processors do not enjoy guaranteed margins and only the most competitive and efficient can remain in business.

5.8 Dairy Company Strategy Report

In late February 2010 DairyCo, the levy funded development body for dairy farmers, published a 'Company Strategy and Performance Report' which reviewed the strategies and performance of the top seven milk processors in the UK.

The report reinforced the view of an industry that is developing in the right direction. The report showed that the industry was investing heavily in the future, increasing product innovation and product differentiation and adjusting to cope with the challenges and opportunities that lie ahead.

5.9 Staff Training: Project Eden

The processing industry has faced particular challenges in recruiting and training staff for mid-management technical areas. Through Project Eden, the industry is addressing this problem by the creation of a three year degree course in Dairy Technology at Reaseheath College.

The first 26 students started the course in September 2009. The course was developed jointly by Dairy UK members in conjunction with Reaseheath College, the National Skills Academy for Food and Drink and the Northwest Regional Development Agency.



The course has now been reinforced by the creation of a new, multi-million pound, state of the art training dairy at Reaseheath College which opened for business in April 2010. The facility, which cost £5m, represents a massive investment in the future training of industry personnel.

Dairy UK and Processing

UK dairy processors are efficient, dynamic and informed by a strong sense of corporate social responsibility. They are investing heavily in the industry and have the strength to deliver on commitments entered into in partnership with the Government. Producers are responsible for a sizeable portion of UK processing capacity.

- **A strategy of consolidation is central to the industry's future prosperity as both companies and co-ops need to grow to match their customers.**
- **Government should rebalance competition policy to take account of the interests of the producing and processing sectors to allow them to become truly global in scale.**
- **Companies also need to continue to invest in the scale of operation at the plant level to improve efficiency.**
- **This will mean further consolidation of production into fewer locations.**
- **This will help to improve the industry's costs and reduce its environmental footprint.**

6. RETAILERS AND CUSTOMERS

6.1 Distribution of Dairy Products

Most UK dairy produce is ultimately intended for human consumption and over 70% is produced in consumer packs. The vast majority is sold to intermediaries, the most important of which are the major retailers. Only a small proportion of the industry's output is sold direct to the consumer by dairy companies via the doorstep delivery service or through local markets.

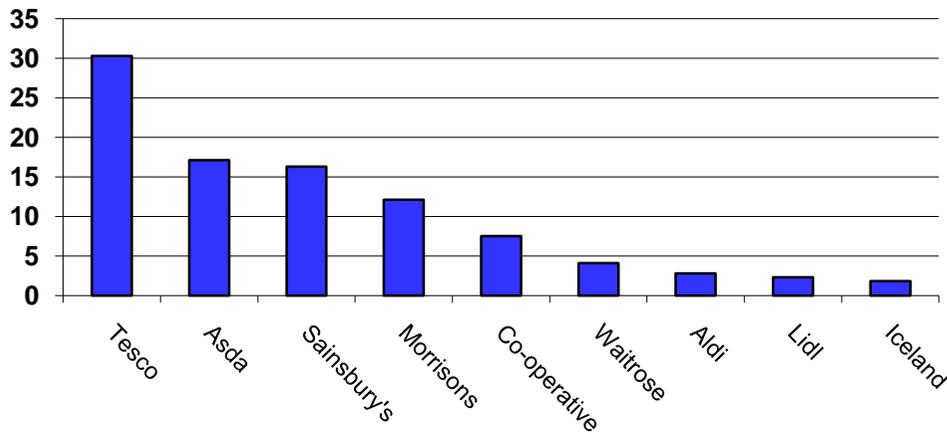
Other major customer segments include wholesale distributors, catering outlets, institutional customers (hospitals, schools, prisons), food processors, traders and export customers.

6.2 Sales by Sector

6.2.1 Retailers

The retail market is dominated by four major retailers, Tesco, Asda, Sainsbury's and Morrisons, who between them account for 76% of all grocery sales in Great Britain. Tesco is by far the largest retailer with a grocery market share of 30.3%, followed by Asda and Sainsbury's, which account for 17.1% and 16.3% respectively.

Graph 17 – Share of Grocery Market (% share)



Source: Kantar Worldpanel

6.2.2 Where Consumers Shop

The weekly shop is still a key feature of UK shopping habits, with about 55% of adults shopping this way, but the trend is decreasing with more and more consumers, 24%, opting for multiple visiting.

As well as the growth in the supermarket sector, consumers are also using convenience stores on a more regular basis with more than 75% of adults using them at least once a week. Convenience stores are often used for 'top up' shopping for products such as milk and bread.

6.2.3 Doorstep Sales

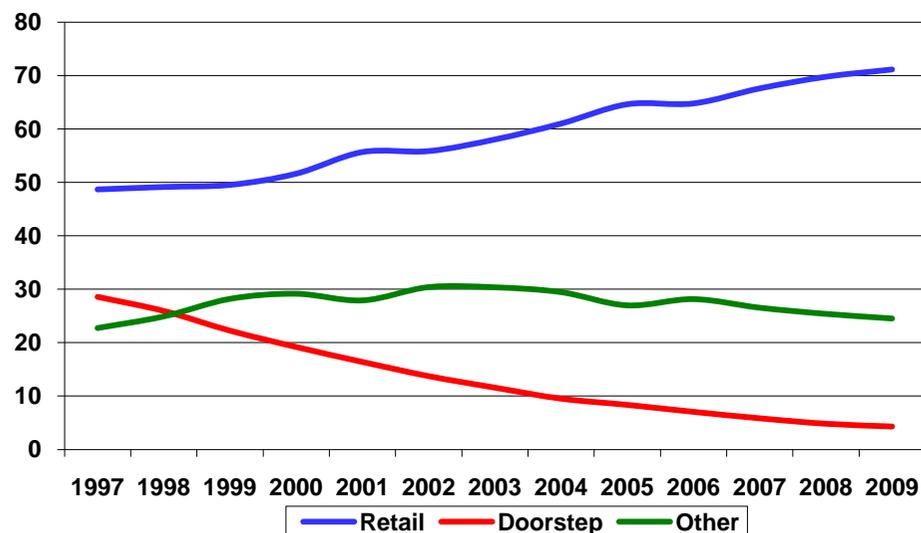
The industry still sells around 1.3 million pints of milk per day direct to the consumer in returnable glass bottles through the doorstep delivery service.

The much valued doorstep market, which stands at less than 10% of the liquid market, remains a favourite with millions of customers. The sector is being driven by an increasing demand for convenience amongst consumers and a significant degree of innovation in the type of services and products made available to the consumer.

Dairy UK's popular website www.findmeamilkman.net allows new customers to simply sign up for a doorstep delivery online, and the public's tremendous support for doorstep delivery is celebrated annually through the Milkman of the Year Competition.

Twenty years ago, sales via the doorstep accounted for 27% of raw milk production and 78% of household liquid milk sales. However, since retail prices for liquid milk were deregulated in 1984, doorstep deliveries have been in decline as shops could sell milk more cheaply. Despite this decline, doorstep delivery and the milkman remain national icons.

Graph 18 – UK Milk Sales by Outlet (% share)



Other: distribution to restaurants, schools, hospitals, etc

Source: Defra, DairyCo Datum, Kantar Worldpanel

6.2.4 Out of Home Consumption

The sale of food and drink for consumption out of home is a growth market. Public sector use accounts for about 30% of this market, with private sector restaurants, pubs and hotels making up the rest. Although the growth in out-of-home consumption has slowed during the recession, the IGD forecasts that consumers will spend as much on eating out as they do on food to eat at home by 2025 (Source: IGD Research).

6.2.5 Ingredients Sector

This covers the use of milk products as an ingredient in food processing. This can range from biscuits, cakes and confectionery to readymade meals. It is an enormously diverse sector and the fragmented nature of this market means that little data is available. This sector is growing as consumers eat more processed or prepared foods.

Dairy UK and the Industry's Customers

The industry's route to the final consumer is evolving and it now relies on a range of intermediary distributors, principal among which are the retailers. Partnership between these distributors and the supply chain is maximising benefit for consumers, retailers, processors and farmers.

- Retailers remain the industry's major gateway to the consumer.
- They provide the greatest opportunity to the sector for improving its relationship with consumers
- Creation of an Ombudsman would help to enforce the Groceries Supply Code of Practice.
- An Ombudsman would help to provide confidence that the GSCOP will operate effectively to eliminate contractual practices that transfer risk down the supply chain.

Dairy UK does not expect an Ombudsman to fundamentally transform the industry's commercial environment and the industry's future lies firmly in working co-operatively with retailers to maximise value from the market place.

7. EUROPE AND THE CAP

7.1 Market Snapshot

There is an enormous range in scale of production, average farm size and producer price throughout the EU. The UK is the third largest producer of milk in the bloc and also has the third highest average herd size.

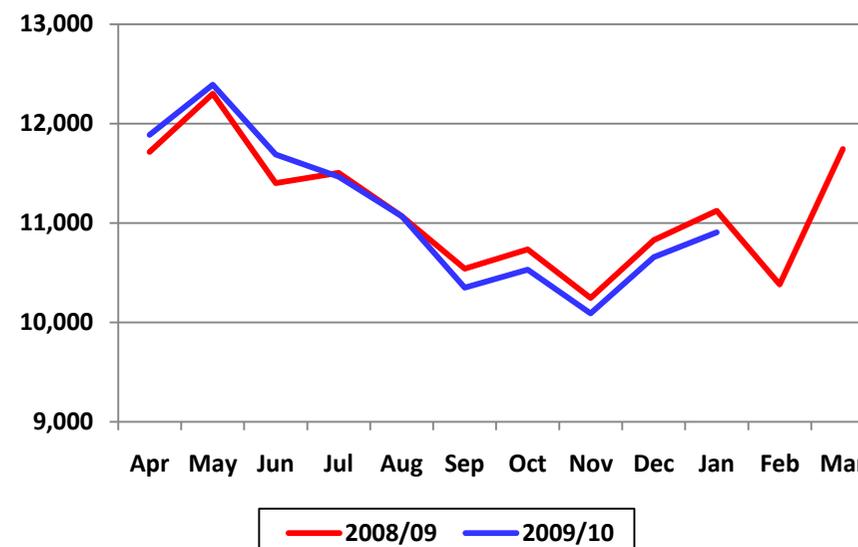
Table 15 – Europe Key Data for 2009

Country	Milk Deliveries (000t)	Farm Numbers	National Herd (000 head)	Average Herd Size	Average Producer Price (€/100kg)
EU-27	135,091	2,568,038	24,156	9	31.82
EU-15	116,008	423,630	17,878	42	33.77
New member states	17,384	884,008	4,370	5	29.31
Austria	2,682	47,500	525	11	33.97
Belgium	3,092	13,800	524	38	34.63
Denmark	4,497	4,900	551	112	31.65
Finland	2,271	13,300	296	22	37.59
France	23,491	96,500	3,759	39	31.52
Germany	27,681	99,000	4,087	41	32.63
Greece	714	9,250	150	16	38.67
Ireland	5,231	19,600	1,088	55	34.95
Italy	10,803	39,700	1,839	46	34.37
Portugal	1,844	12,100	306	25	31.66
Spain	5,858	23,100	903	39	35.35
Sweden	2,949	7,490	366	49	31.30
Netherlands	10,988	22,100	1,468	66	32.82
United Kingdom	13,647	14,400	1,977	137	29.43

Source: European Commission

7.2 EU Milk Production

Graph 19 - EU Milk Production 2008/09 & 2009/10 (Million Tonnes)



Source: DairyCo Datum

Total EU milk production for the first 10 months of the 2009/10 milk year was 0.4% below 2008/09, and most of the decrease came in the first few months of the year. Belgium, Germany and Denmark have all recorded increases of around 3% whilst production in most countries has fallen. The decline in production has largely been in response to lower EU farm gate prices experienced in 2009.

7.3 Common Agricultural Policy (CAP)

The CAP for the dairy sector used to consist of a comprehensive suite of market management tools. The European Commission was able to manage the supply/demand balance to achieve 'acceptable' producer prices.

On the supply side, tools included quotas to restrict production, Private Storage Aid to allow manufacturers to store peak production and tariffs to prevent imports.

- Allowing member states to grant state aid to the dairy sector up to a specified ceiling.
- Abolition of the consumption subsidy scheme for butter.
- A requirement for Commission reports in 2010 and 2012 on the 'evolution of the market situation and the consequent conditions for smoothly phasing out the milk quota system'.

Other elements of the Health Check package simplified the system of direct payments and shifted funds over to rural development under a process dubbed 'modulation'. Member states were also allowed to retain up to 10% of direct payments to pay to dairy, beef and sheep farmers in disadvantaged areas.

7.7 Economic Impact of Quota Abolition

Abolishing milk quotas is widely forecast to expand milk production and lower prices, stimulating greater competition at the farm gate. The headline results from the three econometric models used to evaluate the impact of quota abolition against baseline scenarios to 2016 are:

Econometric model	Aglink	FAPRI	EDIM
EU milk production	+5% to 8%	+1.1%	+5.7%
EU prices	-9% to -10%	-11.8%	-4.0%
UK milk production	-3% to +6%	-6.0%	
Prices:			
UK	-7% to -9%		
England and Wales		-6.0%	
Scotland price		-6.4%	
Northern Ireland		-11.9%	

Aglink – OECD: Defra impact assessment of Health Check proposals (2008))

FAPRI - Food & Agricultural Policy Research Institute (2008)

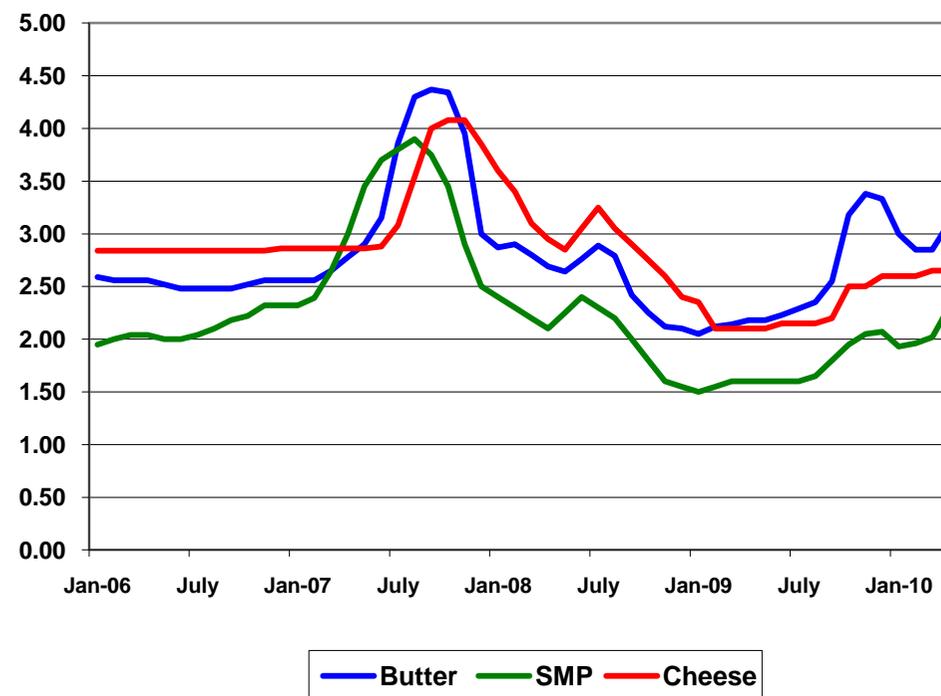
EDIM - European Dairy Industry Model, DG Agri (2008)

Note: Northern Ireland shows a bigger price fall than elsewhere in the UK because of its greater exposure to the world market.

7.8 EU Product and Farm Gate Prices

As with the world market, EU prices surged in 2007. Over 2008 they fell back, but showed some recovery in late 2009, followed by a further easing back.

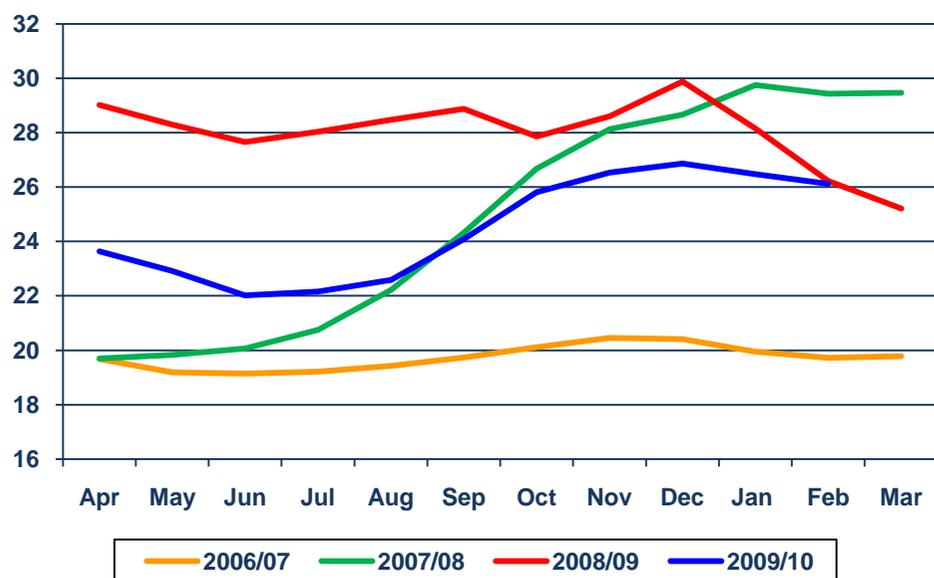
Graph 21 - EU Butter, SMP and Cheese Prices (€ / kg)



Source: DairyCo/DIN

Although the price rise in 2007 was partly driven by the rise in world prices, factors within the EU also contributed. Milk production growth in 2007 was initially below 2006, whilst the demand for dairy products within the EU continued to grow, particularly for cheese. The result for producers was a welcome increase in farm gate prices in 2007.

Graph 22 - Average EU Farm gate Price (Euros/100kg)



Source: DairyCo Datum

As product prices subsided from their peak, pressure mounted on farm gate prices. This generated a strong reaction amongst producers in some member states, and Germany in particular, where producers resorted to a campaign of direct action and milk strikes during the months of May and June 2008. This activity spread to several other EU countries, but not the UK, which was somewhat insulated by the weakening of sterling and the alignment of liquid milk contracts with supermarkets.

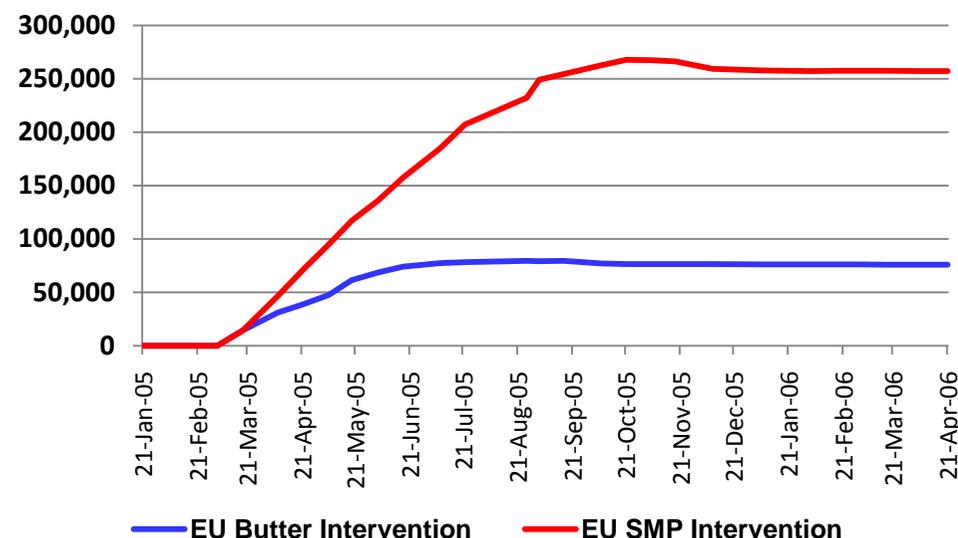
7.9 Dairy Sector CAP and Market Developments

The surge in prices allowed the European Commission in 2007 to cut all subsidy rates for domestic consumption and export refunds to zero, and all stocks were sold out of intervention.

The European Commission also decided to expand milk quotas by 2% for the 2008/09 milk year to allow an increase in milk supply to meet the rise in prices. The surge in prices also helped to sustain political support for the process of reform resulting in the November 2008 Health Check package.

However, the fall in prices in 2008 saw the European Commission reactivate export refunds, open up Private Storage Aid early, and keep intervention purchasing going for a full year, regardless of the volume tendered. The result has been a significant accumulation of stocks.

Graph 23 – EU Intervention Stocks (tonnes)



Source: European Commission

In addition to these measures the EU in October 2009:

- Adopted a regulation prolonging the intervention periods for butter and skimmed milk powder.
- Agreed in principle to put the dairy sector under the scope of the emergency powers clause to allow a faster response by the EU.
- Adopted a general exemption to state aid rules for all agricultural undertakings allowing payments by member states of up to €15,000. This exemption covered the dairy sector.
- Agreed in October 2009 to set up a High Level Experts Group on Milk (see below)

A €300m dairy fund was also created by the Commission, which was paid directly to dairy farmers across the EU. The UK's share of this was £29.26m, which Defra decided (after consultation) to pay at the rate of 0.2p per litre of milk produced between October 2008 and September 2009. This equates to around £1,800 per dairy farmer.

Some member states also put their own resources into helping dairy farmers, raising concerns about fair competition. France put together a €250m bank loan scheme and a state funded €30m interest repayment scheme, while Germany sped up rural development funding aimed at the dairy sector. Supermarkets in some countries raised retail prices to benefit dairy farmers.

The subsequent recovery in prices saw export refunds withdrawn in October and November 2009. The Commission has repeatedly said it intends to sell out stocks without damaging the market, with the first sales made in May.

7.10 Creation of the High Level Experts Group (HLEG) on Dairy

The High Level Experts Group was set up in response to intense political pressure from European dairy farmers over the collapse in prices in 2009. The group consists of senior civil servants from each member state meeting under the chairmanship of the European Commission.

Its aim is to discuss mid- and long-term measures to stabilise the dairy market and dairy farmers' income and to enhance market transparency. Areas of focus include milk contracts, farmers' bargaining strength, market management tools, transparency and information to consumers, competitiveness in the sector and a futures market for dairy.

After holding a number of evidence gathering sessions, the group has presented recommendations in June 2010, which included inviting the Commission to:

- Consider guidelines or legislation to enhance the use of contracts
- Consider legislation to exempt producer organisations that only negotiate the price of milk for their members from competition law
- Examine further the introduction of interprofessional organisations using the model from the fruit and veg sector

EU Agriculture Commissioner Dacian Cioloş is sympathetic to these views and has said he will probably bring forward proposals specifically for the dairy sector ahead of any proposals on the future of the CAP. The work of the HLEG could have far reaching implications for supply chain relationships in the dairy sector.

7.11 Further Reform of the CAP

In April, Farm Commissioner Dacian Cioloş formally launched the public debate on the future of the CAP. He has asked how the CAP can contribute to Europe 2020, the EU's strategy for 'smart, sustainable and inclusive growth'. A website has been created, and an independent body will then produce a summary of these contributions before a conference in July. The Commission will then present its communication on the CAP at the end of 2010.

Discussions on the future of the CAP run in parallel to discussion on the EU budget for 2013 – 2020. Issues that will come under discussion will include:

- The underlying rationale of the CAP: should more focus be given to supporting secure food production or should environmental issues continue to dominate
- National discretion: pressure on the EU budget may allow member states to finance their own programmes.
- The split between Pillar I (market measures and direct payments) and Pillar II (rural development). The trend in policy has been to shift more resources to Pillar II.
- The future of the single farm payment: The principle of the payment is not in question, but discussion will focus on shifting funds towards new member states that lost out in the original allocation. There will also be a discussion on whether payments to larger farms should be reduced.
- Residual market management tools. This will cover intervention arrangements and alternative approaches to stabilising producer income, such as insurance schemes

Dairy UK and EU Policy

Dairy UK supports the creation of a market led dairy industry. The abolition of quotas and the liberalisation of the CAP is an essential part of that process. However, the industry needs time to adapt, particularly in Northern Ireland, where it is heavily exposed to the world market.

Dairy UK believes:

- The CAP should remain an agricultural policy and focus on making farming more competitive, ensuring food security and addressing extreme price volatility.
- The CAP should remain 'common' and avoid giving member states discretion to take their own measures and distort the internal market.
- Farmers need the single farm payment to help stabilise their incomes and compensate them for the EU's higher regulatory costs.
- To address price volatility the EU should continue to provide an intervention safety net.
- It is critical that any recommendations arising from the High Level Experts Group should not affect the integrity of producer co-ops.
- Any measures must not jeopardise the long term relationships necessary for the development of integrated supply arrangements.

Dairy UK also believes that any exemptions from EU competition law should not result in distortions to the UK raw milk market.

8. WORLD DAIRY TRADE

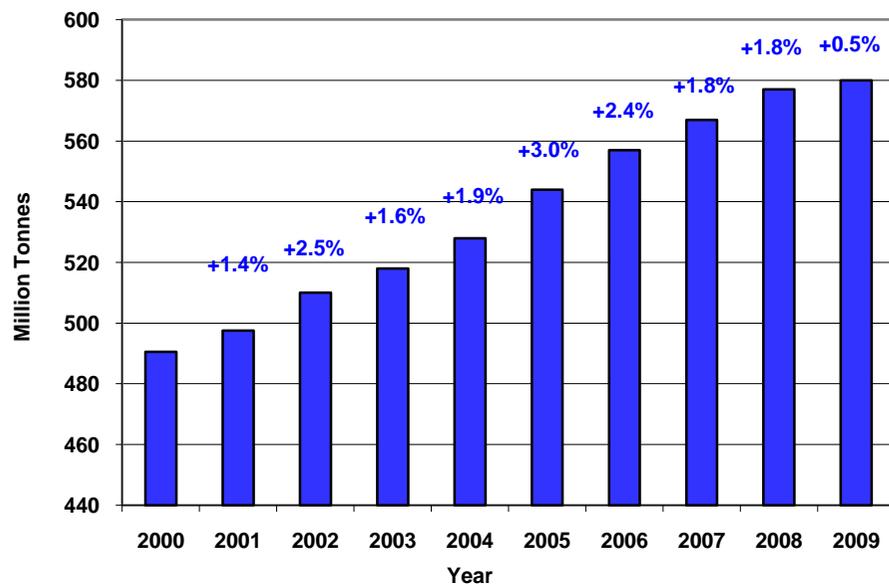
8.1 World Milk Production

World milk production is on an upward trend. Over the past nine years the average annual rate of growth has been 1.9%.

Compared to 2008, the growth in milk production in 2009 was slightly below trend at 0.5%. This slowdown in the rate of growth was largely in response to the decline in prices seen over 2008 and early 2009.

Graph 24 – World Milk Production (million tonnes)

Source: IDF



Source: International Dairy Federation

Around 30% of world milk output continues to be from the 'informal sector' where milk produced by very small farmers is either consumed on the farm or marketed locally. The shift away from the informal sector towards milk being delivered to dairies for processing is one of the main underlying trends in the global dairy industry.

8.2 Milk Production by Country

Table 16 - Summary of Major Milk Production Forecasts for 2009 and 2010 (million metric tons)

	2007	2008	2009 forecast	% change 08/09	2010 forecast	% change 09/10
Australia	9,870	9,500	9,670	+2	9,570	-1
EU-27	132,604	133,848	133,800	...	134,000	...
China	35,252	34,300	28,445	-17	31,290	+10
New Zealand	15,640	15,141	16,601	+10	17,021	+3
United States	84,211	86,179	85,820	...	85,230	-1
Total	277,577	278,968	274,336		277,111	
% change		0.5	-1.7		1.0	

Source: USDA December 2009

The EU has remained the world's largest milk producing region accounting for 23% of global output. The US has remained the largest milk producing country, accounting for 15%. China continues to grow rapidly and now accounts for almost 5% of world output.

Australian output has contracted over recent years due to drought and now stands at 17% below the peak of 11.61 million tonnes achieved in 2001. New Zealand is continuing to expand, but at a slower rate.

8.3 Structure of the World Market

8.3.1 Exports

Milk and dairy products are largely consumed in the region where they are produced. The tradable surplus for any country is generally a fraction of total production, with the exceptions of Australia and New Zealand. Consequently, the world market remains a marginal market, accounting for only around 7% of world output.

Table 17 - Pattern of World Trade 2008 (volume of product exported and % of milk production)

	Volume of Product Exported (million tons milk equivalent)	% of Domestic Production
EU	12.5	8
New Zealand	11.8	73
USA	6.0	7
Australia	3.8	41
Belarus	2.1	34
Argentina	1.6	16
World	42.0	7

Source: IDF: The World Dairy Situation 2009 Bulletin

8.3.2 Imports

Table 18 - Major Dairy Commodity Importing Countries in 2008

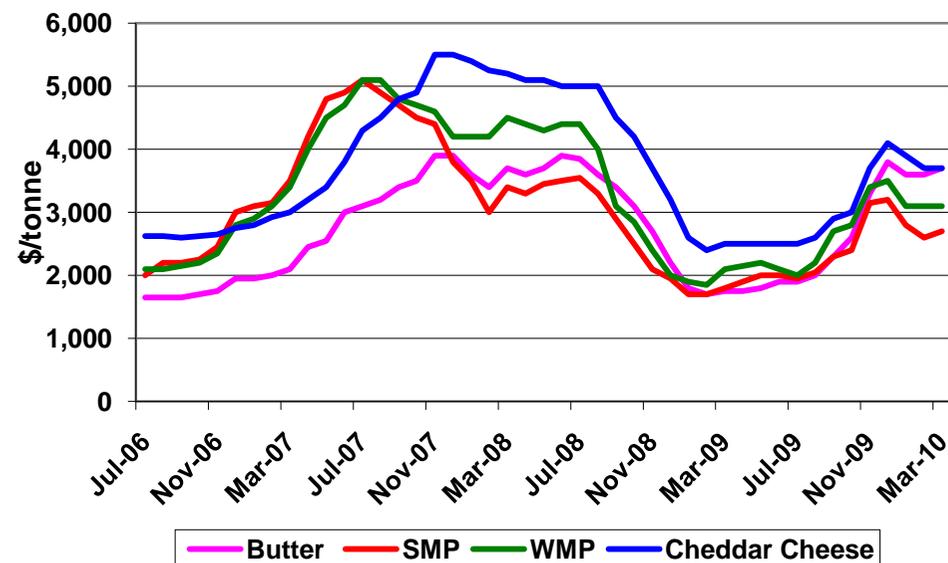
	Volume of Product Imported (Million Tons Milk Equivalent)	% of World Imports
USA	3.9	9
Russia	3.4	8
Mexico	2.3	5
Japan	2.2	5
Algeria	2.2	5
EU	1.8	4

Source: IDF: The World Dairy Situation 2009 Bulletin

The most significant structural changes since 2007 have been the EU just managing to overtake New Zealand as the largest exporter and Russia reclaiming its spot as the second largest importer from Mexico.

Price volatility has also become a major feature of the market, with prices surging to record levels in 2007, subsiding in late-2008, recovering in late-2009 and partially subsiding again in recent months. Factors behind volatile prices include very small changes in production growth, the state of world food stocks and changes in demand caused by economic growth or decline and population growth.

Graph 25 - World Dairy Commodity Prices



Source: DIN consultancy

Recent recovery has been due to the slowdown in the growth in milk production in 2009 and a partial recovery in demand as economies have come out of recession. Longer term, world prices are expected to remain higher than the average over the past 10 years. The *OECD-FAO Agricultural Outlook 2010-2019* report says rising energy and vegetable oil prices will push up dairy prices by 16% to 45%, especially on butter. Most observers also expect high degrees of volatility.

8.4 Trade Policies

Historically the world market has been heavily influenced by the trade policies of the major consuming countries and regions.

The EU, US and India have all maintained significant tariff barriers to protect their domestic markets. The US maintains a differential pricing system that effectively cross subsidises exports. As part of the Common Agricultural Policy (CAP) the EU has used export refunds to bridge the gap between prices on the domestic market and those prevailing on the world market.

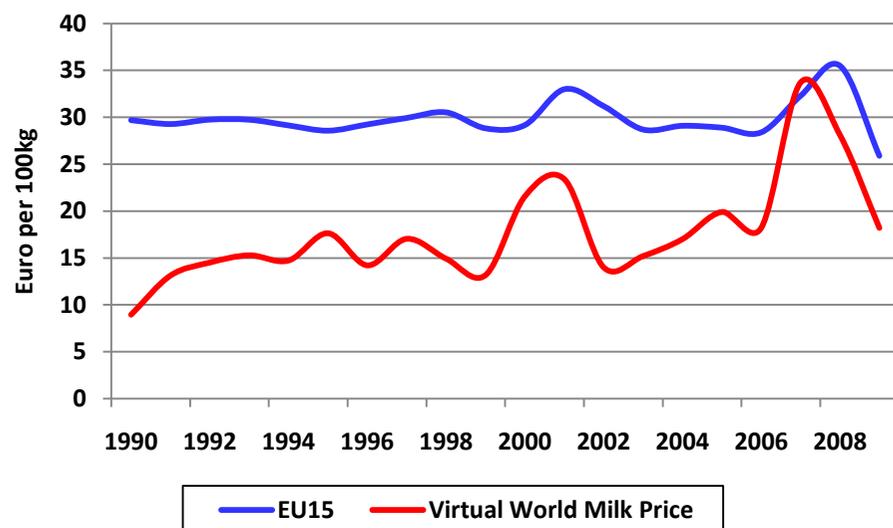
A WTO agreement will go some way to reducing the importance of these trade policies and their impact on the world market. Talks are now stalled, but the last draft agreement for agriculture prepared in December 2008 (the 'Modalities') would require:

- a minimum average tariff cut of 54%
- export refunds to be eliminated by 2013
- a ceiling on expenditure on trade distorting domestic support

8.5 EU and the World Market

The EU used to rely heavily on export refunds to manage its relationship with the world market. The surge in world prices allowed the EU to cut back export refunds until they reached zero in mid-2007. They were reintroduced, though, after the subsequent collapse in world prices and pressure from member states. The recovery in world prices saw export refunds for skimmed milk powder (SMP) being withdrawn in October 2009 followed by those for butter, whole milk powder (WMP), condensed milk, fresh products and cheese in November.

Graph 26 - EU and World Market Prices



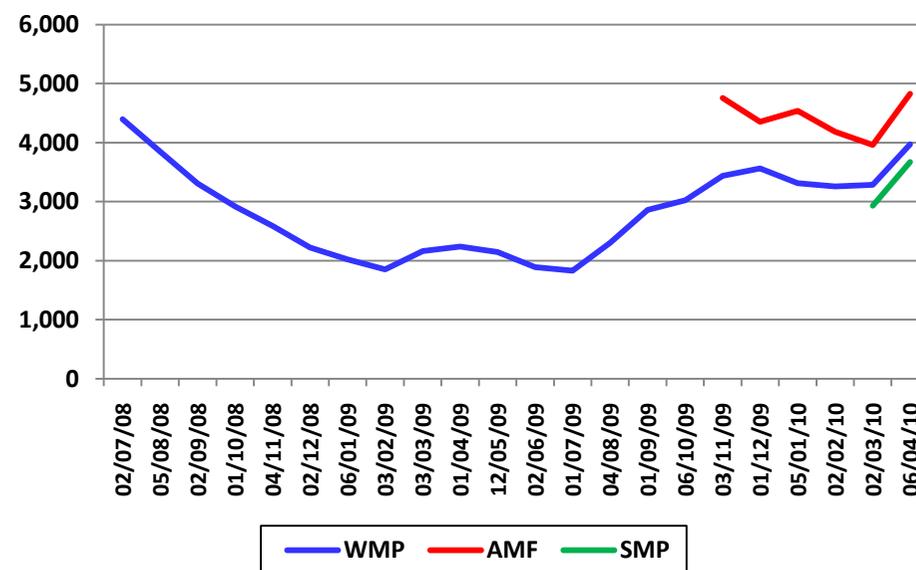
Source: European Commission

Longer term, the policy of the European Union is to reduce the dairy industry's reliance on all forms of market support, including export refunds. The EU's exportable surplus will have to be priced competitively with the world market, which will influence the price prevailing throughout the bloc. Greater exposure to the world market will bring with it greater price volatility compared to the stability created by the CAP.

Recent price volatility, and the reduced influence of the CAP on market prices, means that there is growing interest in the development of a futures market for dairy products to help the industry manage its pricing risks. Three exchanges have announced their intention to launch such products.

An electronic auction system for milk powders has been developed by New Zealand dairy co-op Fonterra, which brings greater price transparency to the world market. The range of products offered in the monthly auctions has recently been expanded with the addition of Anhydrous Milk Fat (AMF) in November 2009 and Skim Milk Powder (SMP) in March 2010.

Graph 27 – Fonterra Auction System Results (\$US/Mt, FAS)



Source: Fonterra *global*/DairyTrade

8.6 UK dairy trade

Dairy companies in the UK can export to the world market, and the industry in Northern Ireland is heavily dependent on doing so. When there is a significant divergence between the EU and world market then the competitiveness of UK exports depends on the availability and value of export refunds.

The actual pattern of UK trade in dairy products is shaped by the following:

- UK milk production is insufficient to meet domestic consumption because of quotas and lack of confidence among farmers.
- Sales of high value dairy products in Great Britain are focused on the market for direct consumption by domestic shoppers.
- The import tariff quota between the EU and New Zealand effectively results in New Zealand butter being directed primarily to the UK market.
- Butterfat generated from the manufacture of low fat milks is exported from the UK as bulk cream.
- The dairy industry in Northern Ireland is heavily reliant on exports of raw milk to the Republic of Ireland and whole milk powder to destinations all over the world.

These structural factors mean that UK's limited exports tend to be of lower unit value than imports into the UK.

Table 19 - UK Dairy Imports in 2009 - tonnes

Product	EU	Non-EU	Total
Liquid milk	57,471	0	57,471
Cream	66,328	0	66,328
Skimmed milk powder	45,188	0	45,188
Whole milk powder	36,395	0	36,395
Evaporated and condensed milk	38,385	4	38,389
Yogurt	132,654	577	133,231
Butter	73,866	190	74,056
Cheese	394,003	20,121	414,124
of which processed cheese	40,256	321	40,577
of which Cheddar	110,910	18,555	129,465

Source: Dairy UK

Table 20 - UK Dairy Exports in 2009 – tonnes

Product	EU	Non-EU	Total	% of UK production
Liquid milk	84,516	886	85,402	1.3
Cream	62,434	1,114	63,548	24.9
SMP	18,977	2,397	21,374	35.0
Whole milk powder	18,813	30,279	49,092	120.6
Evaporated and condensed milk	3,734	237	3,971	3.8
Yogurt	19,740	543	20,283	7.1
Butter	13,837	1,780	15,617	13.1
Cheese	91,464	13,150	104,614	29.5
of which processed cheese	19,745	83	19,828	58.3
of which Cheddar	26,510	5,001	31,511	13.2

Source: Dairy UK

Dairy UK and the World Market

The world market will increasingly shape the UK industry's commercial environment in the future. Fundamentally, it will positively underpin the industry's future and a wider range of commercial opportunities.

- **Trade in dairy products presents opportunities, but fluctuations in the value of sterling are a source of income volatility to the whole industry.**
- **A weak pound drives industry prosperity while a strong pound erodes it.**
- **Exports remain an enormous potential market for the future.**
- **Population growth and rising incomes will ensure that the UK dairy industry operates in an environment of growing demand for the foreseeable future.**
- **Our strong preference is for trade liberalisation to be undertaken through a multi-lateral framework.**
- **If WTO talks resume, any final package must give the industry sufficient time to adapt and it must not discriminate against the UK.**

While we support the move to a more liberalised commercial environment, there may be occasions when export refunds can protect the sector from excessive price volatility. Dairy UK therefore welcomes the Commission's move to use refunds when justified by market circumstances.

9. RESEARCH & DEVELOPMENT

9.1 Innovation in the Dairy Sector

The dairy industry is one of the most technologically complex and sophisticated of all the food sectors in the economy. The future of the industry rests on continuous technological progress. This requires sustained research and development to allow the industry to change and improve its operating methods.

There are a range of drivers and opportunities for innovation in the dairy sector. They include:

9.1.1 Maintaining product safety

The safety of dairy products is an absolute pre-requisite to the future sustainability of the sector. The main threat is from zoonoses - animal diseases that can be transmitted to humans. It is important that the research capability exists to identify potential zoonotic hazards and deal with them rapidly.

9.1.2 Improving efficiency

CAP reform will place an even greater requirement on the industry to be cost efficient in order to maintain competitiveness. This needs to be addressed at every level of the supply chain. Opportunity areas for progress include:

- Main feed inputs: improving the nutritional value to dairy cows of grass and other feed inputs
- Efficiency of the dairy cow: the ability of the cow to convert feed inputs into milk can still be improved through breeding
- Health and wellbeing of the dairy cow: mastitis, lameness, infertility and Johne's disease are the principle challenges to the productivity of dairy cows
- Energy efficiency: this can be addressed at both farm and processor level

- Processing innovation: further developments are possible in isolating and manipulating milk fractions
- Product innovation: developing new dairy products, including non-food uses for dairy fractions.
- Management capability and methods: higher levels of professionalism at all levels of the supply chain.
- Scale of operation: cost efficiency is usually attained by increasing the size of operation in order to achieve economies of scale through spreading fixed costs.

9.1.3 Sustainability

The industry is committed to minimising its environmental impact. In the long term the main challenge will be to respond to the climate change agenda through reducing greenhouse gas emissions from the sector. This means reducing methane emissions from cows and improving energy efficiency at all levels of the supply chain.

A growing emphasis on the sustainable diet will also oblige dairy to explain its nutritional benefits more clearly to consumers and legislators. There is a compelling case to consider a food's sustainability as a combination of its nutritional efficiency and environmental impact. Many dairy foods are exceedingly efficient, because they contain high levels of many nutrients per calorie. At the same time, the environmental impact of dairy products in the UK is falling, and is already among the lowest anywhere in the world.

9.1.4 Exploiting by-products

The industry will need to find further opportunities for exploiting by-product or waste streams. This includes using anaerobic digestion technology both at farm and processing levels.

9.2 Factors Limiting Innovation

There are constraints on the ability of the industry to meet these challenges and opportunities.

- a. Capital: the industry operates on thin margins. It does not have the funds necessary to sustain a large R&D capability that can meet all of its needs.
- b. Co-ordination: public R&D activity in the UK and EU is not always tightly co-ordinated or communicated to ensure maximum value. There is no framework to identify the specific needs of the sector at an EU level or for research results to be shared across member states.
- c. Education and extension services: the fragmented nature of dairy production means that sustaining innovation at farm level requires a significant effort of communication and education into new technologies and techniques.
- d. EU response to new technology: the EU stance on new technology such as GM and cloning has been defensive or openly hostile.
- e. Consumer attitudes: the importance of dairy to the diet means that consumers are naturally cautious about innovations that challenge their perception of dairy farming and dairy products.

9.3 Research and Development Activity

R&D activity for the sector is undertaken through a range of public and privately financed initiatives. The wide dispersal of R&D effort makes it hard to see the extent of activity relevant to the UK dairy industry.

However it is clear that in the long-term the industry needs the partnership of Government funding either at the UK or the EU level to maintain its competitiveness. The industry on its own does not have the resources or the research capability to meet its long term requirements.

Dairy UK and Research and Development

The dairy industry, the UK Government, EU and member states need to maintain and increase their contribution to long term research and development to sustain the development of the EU dairy industry.

- **The EU is shifting expenditure away from market management with a view to making the sector more internationally competitive.**
- **The EU dairy industry will not be able to compete with low cost producing regions unless it can sustain its technological capability.**
- **Shifting EU budgetary resources over to R&D is a logical consequence of the evolution of EU agricultural policy.**
- **Priority are establishing dairy's place in a sustainable diet and animal disease threats.**
- **Efforts must be made to create a framework that allows the industry at an EU level to determine research priorities.**

If the UK or the EU is to restrict the adoption of new technologies by the dairy industry then it must take action to ensure the maintenance of a 'level playing' field with the EU's competitors.

10. A BRIGHT FUTURE

10.1 Vision for the Future

It is in everybody's interest that the UK dairy industry should be able to grow in size. A vibrant and thriving industry will provide more skilled jobs on farms and in manufacturing; it will drive innovation and quality; and it will allow greater investment in efficiency and lowering carbon emissions.

10.2 Growth

From a purely economic perspective, the two factors that drive growth in demand for dairy products are population size and economic growth. However, there is also a strong desire on the part of the dairy industry to move demand into new and innovative products that respond to new consumer needs and grows value, to the benefit of the whole supply chain.

10.2.1 Consumption Growth

Table 21– Consumption Forecasts ('000 tonnes)

	2009	2018	% change
World	37,815	45,092	19.2
OECD	20,552	23,178	12.8
Non-OECD	17,263	21,914	26.9
EU-27	11,703	12,868	10.0
United States	5,855	7,036	20.2
Japan	526	536	2.0
China	1,995	2,494	25.0
India	4,291	6,205	44.6
Australia	395	428	8.3
Mexico	648	788	21.5
Sub-Saharan Africa	645	846	31.1
Algeria, Egypt	1,259	1,638	30.0
Brazil	1,354	1,711	26.4
Russia	1,809	2,079	14.9
Ukraine	381	526	37.9

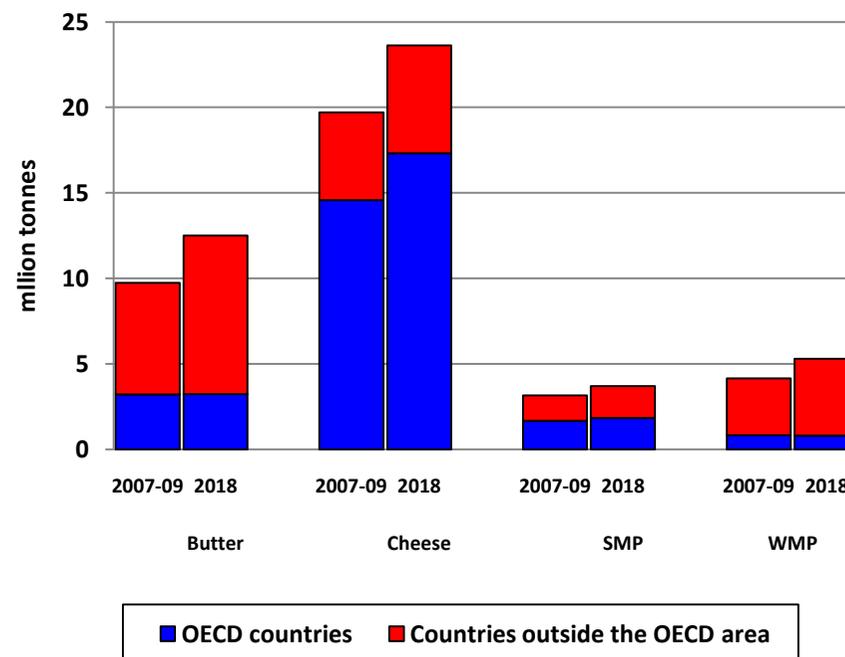
Source: OECD

Global demand for dairy products is predicted to grow by 16% between 2009 and 2018, equivalent to an annual growth rate of almost 2%.

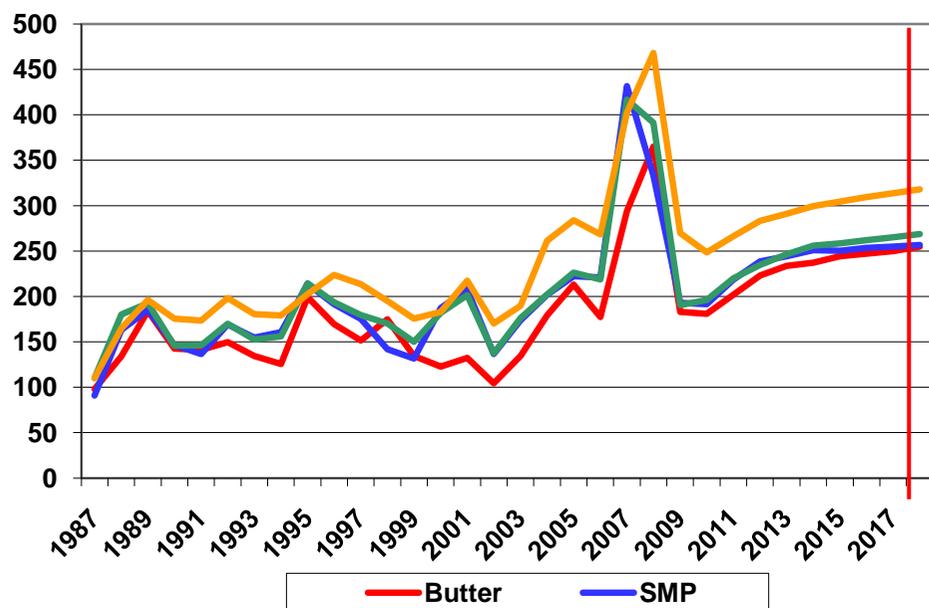
Traditional markets such as the EU, Japan, and Oceania are expected to see lower annual growth of 1% or less. Demand in North and Central America is forecast for year-on-year growth of between 2% and 3% over the same period, while the Middle East, India and Sub-Saharan Africa are slated for even stronger increases of around 3% annually. Demand in China is also predicted to grow strongly.

OECD countries are forecast to see consumption growth focused on cheese.

Graph 28 – Outlook for Dairy Product Consumption



Graph 29 – Trends in World Dairy Prices (US\$ / 100kg)



10.2.2 Supply Growth

Dairy farming will present an opportunity for many regions around the world, but it will take time for this potential to be converted into reality. Whilst there is some possibility that growth from low cost countries could partially displace the EU from the world market, the willingness of these countries to engage in export-led growth will be tempered by the growing demand in their own domestic markets.

Growth will also be limited by competing demand for land from biofuels, and the increases in feed prices this will entail, which will affect the profitability of production systems that are not grass-based.

The UK and EU dairy industry will be well placed to serve the growing world demand for dairy products. Given the importance of EU production to meeting global demand it can be stated with confidence that the future global price environment will be a level that will reward efficient EU producers.

The complexity of milk as a raw material and the range of the processing technologies available to the industry mean that it is well placed to take advantage of the increasing sophistication of consumer demand. The UK dairy industry is working hard on innovation to develop the range of products to meet this demand. The future of the industry ultimately depends on achieving a closer relationship with the consumer based on trust and informed understanding.

10.3 Supply Chain Development

The trend in recent years for the supply chain has been efficiency gain and product innovation on one hand, and a growing sense of co-operation between different links in the chain on the other hand.

On farms and in factories, economies of scale are being pursued with the development of larger units and greater processing capacity. From planning applications for 1000-cow plus farms to the commissioning of 'super-dairies' capable of processing more than 300 million litres of milk per year, this trend is vital if the industry is to remain competitive.

Arla Foods UK has announced plans to build the world's largest liquid milk dairy just outside London. This massive vote of confidence in the UK dairy sector would see the creation of a dairy that could process one billion litres of milk per year.

The development of integrated supply arrangements, where retailers pay a premium to source milk from groups of dedicated farmers also looks set to intensify. The retailers are using these groups to guarantee security of supply and to set up points of difference with other supermarkets in terms of production standards. It is likely that retailers will deepen their involvement with processors and groups of dairy farmers, and begin to extend the model to dairy products other than liquid milk.

This is to the benefit of the whole dairy sector, and helps supply the extra value that consumers say they want. Farmers reaped the benefits of these arrangements during the last downturn in world markets, when UK milk prices remained relatively robust. It is vital that the recommendations of the EU's High Level Expert Group on Dairy do not jeopardise any of these positive development (see chapter 7 for more).

10.4 Addressing Future Challenges

The environment and nutritional agendas are driving much of Dairy UK's work on behalf of the sector at present. This is true of dairy farmers and processors.

Not only will these drivers of change and improvement intensify, but they are being combined in the form of the sustainable diet. This is a concern to ensure that consumers understand the environmental and nutritional consequences of the diet they choose.

The dairy industry supports these developments, but recognises that there is a knowledge gap that needs to be filled if we are to measure foods for their full impact. As in all areas of nutrition, we believe it is important to consider whole, balanced diets, rather than individual foodstuffs.

However, Dairy UK is planning research into the sustainability of dairy foods. We believe that the many initiatives to keep reducing the environmental impact of dairy foods which are under way, will stand the industry in good stead. Combined with the fact that many dairy foods are a rich and efficient source in nutrients, we firmly believe that dairy has a strong role to play in a truly sustainable diet.

Dairy UK and its members would prefer to work in partnership with government to deliver on the sustainable diet agenda.

Dairy UK and the Industry's Future

Confidence in the future is vital for a successful dairy industry. The industry's mindset needs to be grounded on informed optimism.

- **Global population pressure should underpin sustained growth in demand for all food types and dairy in particular.**
- **In conjunction with a constructive partnership with Government, this should create a positive environment for the UK dairy industry to prosper.**
- **The industry is located in a wealthy country where dairy products (and fresh products in particular) are deeply embedded in the food culture.**
- **Our farms are focused on efficiency; our processors are dynamic and investing for the future.**
- **There are multiple opportunities still to be explored by the industry to add value to milk.**
- **Our supply chain mechanics rival and in many cases lead the best in the world.**

Dairy UK will work to ensure that the industry can realise its commercial potential and looks to Government to be partners in this process.

NOTES

ABOUT DAIRY UK

Dairy UK represents the interests of the United Kingdom's dairy farmers, milk producer co-operatives, manufacturers of dairy products, processors and distributors of liquid milk. Between them, Dairy UK's members handle almost 85% of United Kingdom milk production.

Although principally focused on providing its membership with information and political representation, some of Dairy UK's other activities include:

- operating the dairy sector Climate Change Agreement (CCA) through its wholly owned subsidiary Dairy Energy Savings Ltd
- funding the activities of The Dairy Council
- operating a roll container repatriation scheme
- undertaking issues and crisis management on behalf of the industry
- running high profile, topical conferences and seminars that are open to non-members
- producing benchmark-setting industry reports and publications
- taking a lead within the European Dairy Association and International Dairy Federation

For an electronic version of this publication and for further details on Dairy UK and its activities, please visit our website:

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