

Chapter 2

Global Dairy Sector: Status and Trends

2.1	Summary	16
2.2	Global price trends for feed and dairy products	18
2.3	Milk production trends	20
2.4	Farmers' milk prices and milk:feed price ratio	22
2.5	Dairy farm numbers world wide	24
2.6	Pattern of dairy trade and milk processing	26
2.7	Milk consumption and its drivers	28

Pictures on this and previous double page: Harvesting (Pictures by: Katja Seifert, Khalid Mahmood)



2.1 Summary

Introduction

This chapter contains an analytical overview of major global trends in milk and feed prices, milk supply, dairy sector structures, trade in dairy products and consumption.

World market prices for feed and dairy products

During the period 1981 to 2005, the calculated world market price for milk ranged between US\$10/ton or and US\$25/ton. However, in 2007, it increased rapidly by 75 percent to more than US\$45/ton as a result of the rise in price of skimmed milk powder (SMP) and butter from US\$1 000 to 2 000/ton to US\$4 000/ton in response to a shortfall in milk availability relative to world demand.

In the past, increases in demand were driven mainly by population growth, whereas they are now increasingly fuelled by rising per capita milk consumption in developing countries (see Section 2.7). The deficit in world milk production since 2004 did not have a major effect on prices at first as additional supplies of about 2 million tons/year were available from stocks in the United States of America (USA) and the European Union (EU). However, prices increased dramatically once these supplies were exhausted (SMP: end-2006; butter: mid-2007). Climatic events and policy interventions (hindering of exports) may also be seen as determinants of this price development. IFCN estimates the additional volume of milk needed to 'balance' the markets at lower price levels as 2 to 4 million tons/year or about 0.5 percent of world milk production.

Milk will likely become one of the most volatile agricultural commodities in future. This is because of: (a) the strong influence that small changes in the quantities available internationally have on world market prices; (b) the length of time before there are increases in milk production as a result of price changes; and (c) delayed reaction of the demand to changing dairy commodity prices. The key challenges to making a reliable forecast of world market prices for milk are the nature of consumer reaction to rising milk prices and the response of dairy farmers with regard to supply, especially in low-cost dairy regions. Another key determinant of milk prices is feed, which directly affects milk production through increased costs and, indirectly, higher land prices.



World market prices for feed

In 2006, the world market price of the IFCN feed price indicator, which is based on prices of soybean meal and corn, was US\$128/ton, and ranged from US\$115/ton in Belarus to US\$467/ton in the Republic of Korea.

In 2007 the IFCN feed price indicator increased by 48 percent from its historical level of US\$150/ton. By June 2008, it had reached US\$350/ton, representing an increase of 133 percent over the levels of 1981 to 2006.

The fact that growth in world supplies of grain has not kept up with growing demand has led to historically high prices. Demand for grain is driven by the need for food, feed and fuel, and the nutriment needs of the ever-growing world population. Higher incomes in developing countries push up the demand for animal-based food, which leads to greater need for feed. Higher energy prices and policies that promote bio energy drive the use of crops for energy production and, thereby, push up the prices of feed and land.

The Organisation for Economic Co-operation and Development (OECD) and the Food and Agricultural Policy Research Institute (FAPRI) forecast that, over the long term, feed price levels will be about 50 percent higher than those of 2002 to 2006. It follows, therefore, that, compared with June 2008, grain prices will fall by about 30 percent in the coming years.



² The world market price for milk was calculated based on world market prices for butter and SMP and assumptions from ZMP on processing costs and technical coefficients.



Global milk production

South Asia and EU-25 are the most important dairy regions, accounting for 44 percent of global milk production. In the period 2002 to 2007, world milk production grew by 13 percent, or by an average of 15 million tons of energy-corrected milk (ECM) per year – mainly driven by production increases in China, India and Pakistan. Overall, therefore, developing countries relying predominantly on smallholder dairy production systems have increased their shares in world milk production.

Producer milk prices in selected world regions

Section 2.4 illustrates the extent to which domestic milk prices mirror/follow world market prices. As a general rule, prices in Eastern Europe, Latin America, Oceania and indeed in most developing countries, closely follow world market levels. In contrast, milk prices in the USA and countries of the EU, which have tariffs ranging from 50 percent to 120 percent, have been historically 50 to 150 percent above the world market price. Other countries that protect their dairy markets are Canada, Japan, Republic of Korea, Norway and Switzerland, where milk prices exceed US\$50/100 kg. Nevertheless, milk prices vary from country to country, determined by local milk supply and demand and degrees of integration into the world dairy market. The lowest milk prices (less than US\$20/100 kg) were observed in Argentina, Belarus, Indonesia, Pakistan, Uganda and Uruguay.

Milk:feed price ratios

The milk:feed price ratio is defined as the price of milk divided by that of compound feed. The highest milk:feed price ratio (more than 2.5) was observed in North America, where, as a likely consequence, the most intensive milk production systems are found. Farming systems that have lower milk yields and make little use of compound feed are observed in countries with a milk:feed price ratio of less than 1.5. However, it should be borne in mind that this rule does not apply to all the countries covered by the analysis.

Trade in dairy products and self sufficiency

Very few countries are self-sufficient with regard to milk. The main milk-surplus countries are Argentina, Australia, New Zealand, USA, Uruguay and countries of the EU and Eastern Europe. The main milk-deficit countries are Algeria, China, Japan, Mexico, the Philippines and Russia. In the period 1990 to 2004, overall milk exports increased from 4.4 percent to 7.1 percent of total production while the share delivered to formal milk processors increased from 14 percent to 24 percent.

Global milk consumption

The majority of the world's population lives in developing countries, particularly in Asia. Population growth was the main driver of increased demand for dairy products over the period analysed. However, per capita consumption increased significantly in a few but highly populated countries, among them China, Indonesia and Viet Nam.

Based on milk equivalent (ME), average per capita global milk consumption amounts to about 100 kg of milk/year, with very significant differences between countries/regions. Per capita consumption in Western Europe is in excess of 300 kg of milk/year compared with less than 30 kg (and even sometimes as little as 10 kg) in some African and Asian countries. It may be expected that increasing income levels will stimulate the demand for milk and dairy products, meaning that future milk production will need to increase by more than 1.8 percent per annum. Should this not be the case, dairy prices will rise significantly over past levels.

2.2 Global price trends for feed and dairy products

Introduction

The key determinants of milk production are world market prices for milk and feed, as illustrated in this section.

World market prices for feed

Prices for corn, as energy feed, and soybean meal, as protein feed, have been used for the purpose of this analysis. In 1981-2006, the world corn price averaged US\$109/ton, fluctuating between US\$90/ton and US\$120/ton. It rose to US\$162/ton in 2007 and, in the first six months of 2008, to US\$241/ton or 121 percent above the 1981 to 2006 average and 48 percent over the 2007 price. The time series shows that high prices were recorded in 1996, 2007 and 2008 because of strong demand for food, feed and fuel.

The average world market price of soybean meal in 1981-2006 ranged between US\$150/ton and US\$260/ton, averaging US\$212/ton. After the peak in 2004, it stayed close to US\$200/ton until it rose to US\$307/ton in 2007 and averaged US\$457/ton in 2008 (January to June).

The IFCN feed price indicator - combining corn and soybean meal prices - shows an average of US\$140/ton for the period 1981-2006. It rose to US\$206/ton in 2007 and to US\$305/ton in 2008 (January-June). In 2004, 2007 and 2008 prices were significantly above the historical average compared with relatively low levels in the period 1999 to 2003.

World market prices for dairy products

The average world market price of butter in 1981-2006 was US\$1 580/ton, fluctuating between US\$1 000/ton and US\$2 000/ton. It shot up to US\$2 886/ton in 2007 and, in the first six months of 2008, increased further to US\$4 021/ton.

Development of the average world market price for SMP showed levels of less than US\$1 000/ton between 1981 and 1987; moderate prices of US\$1 000 to 2 000/ton, similar to those of 1988 to 2004; and record prices of close to US\$2 500/ton in 2006, US\$4 250/ton in 2007 and US\$3 750/ton in the first six months of 2008. Prices of SMP in 2006 and 2007 were significantly higher than those of butter but fell below in the first half of 2008.

Explanation of variables/sources of data

2008*: Average January-June 2008.

Feed prices: World Bank. Soybean meal: CIF Rotterdam, Corn: FOB USA Gulf.

Butter and SMP prices: United States Department of Agriculture AMS Dairy Market News 2008, Oceania prices: SMP (1.25 percent fat), butter (82 percent fat).

IFCN feed price indicator: Calculation: 0.3 kg soybean meal price + 0.7 kg corn price.

Exchange rates: www.oanda.com, 2008. Exchange rates before introduction of the Euro are estimates based on the EU currencies.

Adapted from IFCN Dairy Report 2008, Chapter 2.2

Butter and SMP prices can be converted into prices per kilogram of fresh milk based on assumptions of the processing cost and technical coefficients provided by the Zentrale Markt- und Preisberichtsstelle GmbH (Central Market and Price Reporting Agency, ZMP). Expressed in United States dollars, three periods of 'world market' prices of liquid milk can be distinguished:

- **Very low** – 1981 to 1987: US\$8-13/100 kg
- **Volatile** – 1988 to 2006: US\$12-26/100 kg
- **New levels since 2007:** more than US\$46/100 kg

Expressed in Euro, milk prices stayed at around €15/100 kg, with significant increases in 1989, 2000 and 2001, and with major drops in 1986, 1987 and 1990 (see below for €/US\$ exchange rate fluctuations).

Milk:feed price ratios

From 1981 to 2007, milk prices were more volatile than those of feed. The milk:feed price ratio, which indicates how much feed a dairy farmer can buy with the proceeds of one kilogram of milk, increased steadily from 0.7 kg in 1981 to 2.3 kg in 2007. The price of milk stabilized in the first half of 2008 while that of feed continued to rise and the milk:feed price ratio fell back to 1.5, a level at which low-input milk production systems become more favourable. Milk prices and farm profits were 'high' in 2007 but fell back in 2008, as the milk price development was overtaken by feed price increases, especially in high-input systems. With the new level of milk and feed prices, the milk:feed price ratio will need to be updated.

United States dollar/Euro exchange rate developments

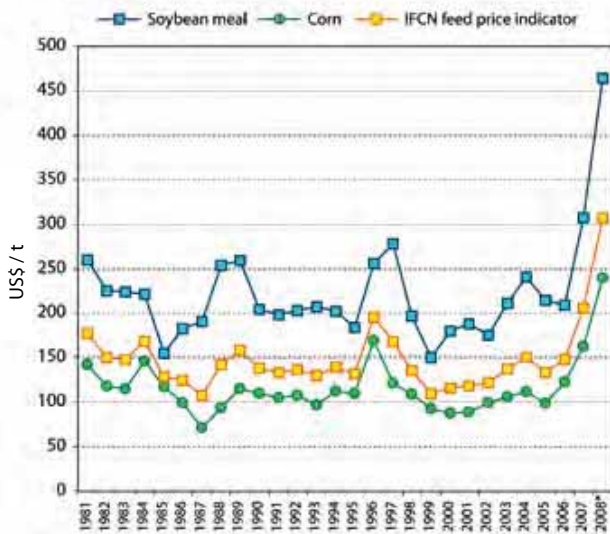
As far as exchange rates are concerned, this long-term series shows that there was a slight devaluation of the United States dollar against the Euro until 2001 and a stronger one since then. The US dollar was very strong in the periods 1983 to 1985 and 2000 to 2002 but weakened in 2007 and 2008 when it fell below the historic lows of 1992 and 1995.

Conclusions on future world market prices of milk

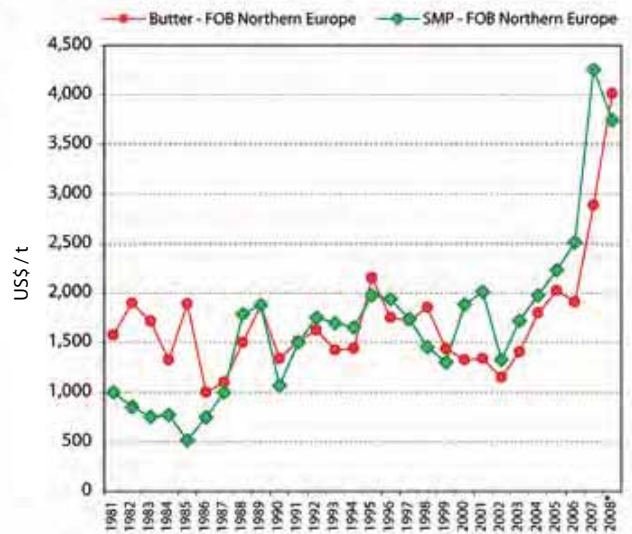
World milk prices have reached a record high, and a significant degree of volatility may be expected in the future. This means that future world milk prices may well range between US\$15 and US\$50/100 kg milk.

2.2 Global price trends for feed and dairy products

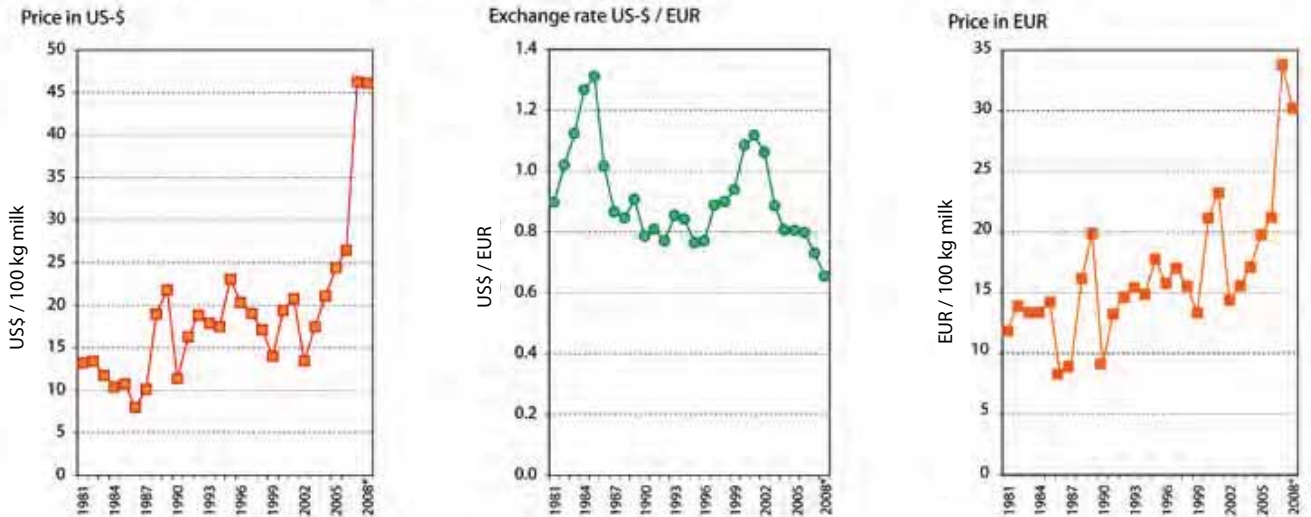
World market prices for feed



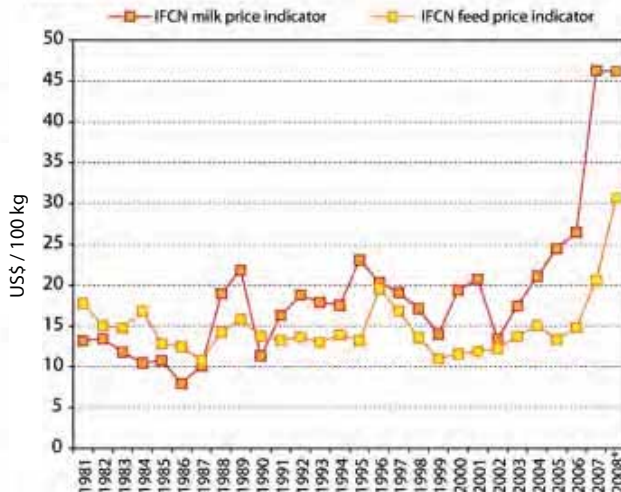
World market prices for dairy products



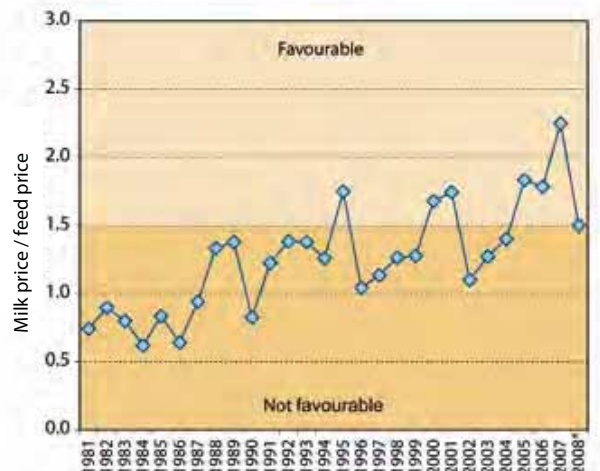
IFCN world milk price indicator in US-\$ and EUR



World milk and feed prices



World market: Milk / feed price ratio



2.3 Milk production trends

Introduction

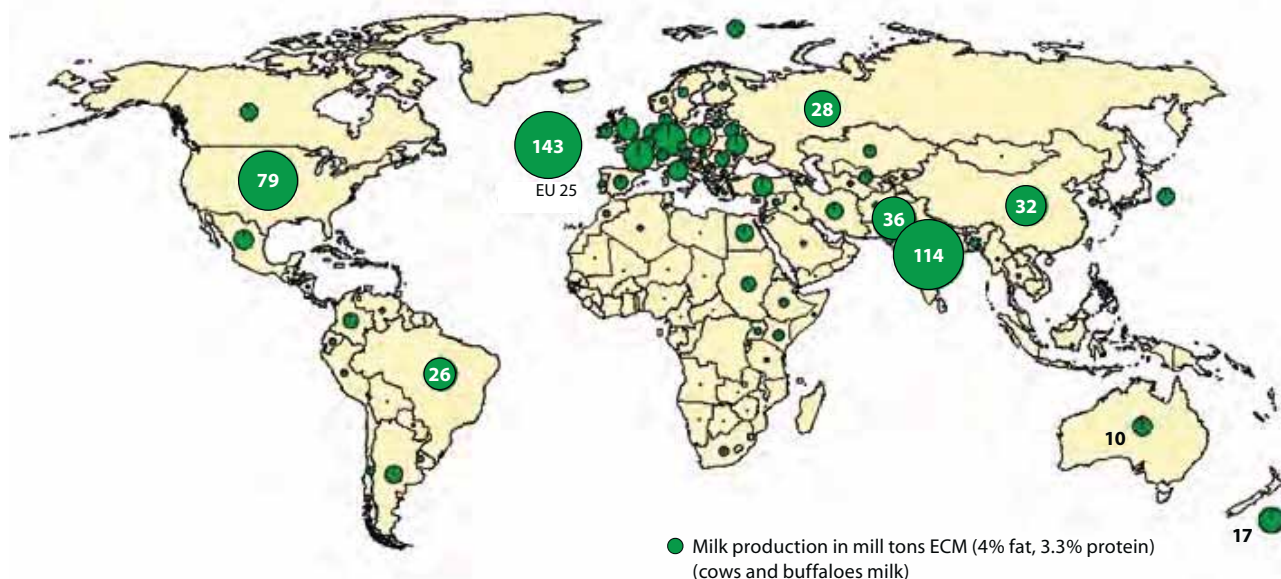
This section provides both an overview of milk production levels in different parts of the world, and recent trends. The milk production charts are based on an IFCN analysis for 2006-2007 compared with 2002, undertaken in 2008. The analysis was based on milk production surveys (cow and buffalo milk) in 78 countries and on secondary data from organizations such as the Food and Agriculture Organization of the United Nations (FAO). The milk production volumes of all animal species have been standardized to 'energy corrected milk' (ECM, 4.0 percent fat and 3.3 percent protein). The data for milk fat and protein content are based on national statistics or, in the absence of such statistics, on estimates.

Shares in global milk production

World milk production is derived from cows, buffaloes, goats, sheep and camels. As shown in the map in 2007/2006 the major milk production regions are:

- **South Asia:** 23 percent of global production, mainly India and Pakistan.
- **EU-25:** 21 percent, mainly Germany and France.
- **USA:** 12 percent.

Milk production in 2007



Source of data: National statistics, ZMP (for EU-15), FAOSTAT.

Explanation of variables/sources of data

Milk: All types of milk (cow, buffalo, goat, sheep and camel) converted to ECM. Data for fat and protein content: based on national statistics or estimates

Source of data: National statistics from IFCN partner countries (2002-2007); exception Iran, Ethiopia and Pakistan: data 2002-2006; FAO Production Yearbook data for all other countries (2002 to 2006).

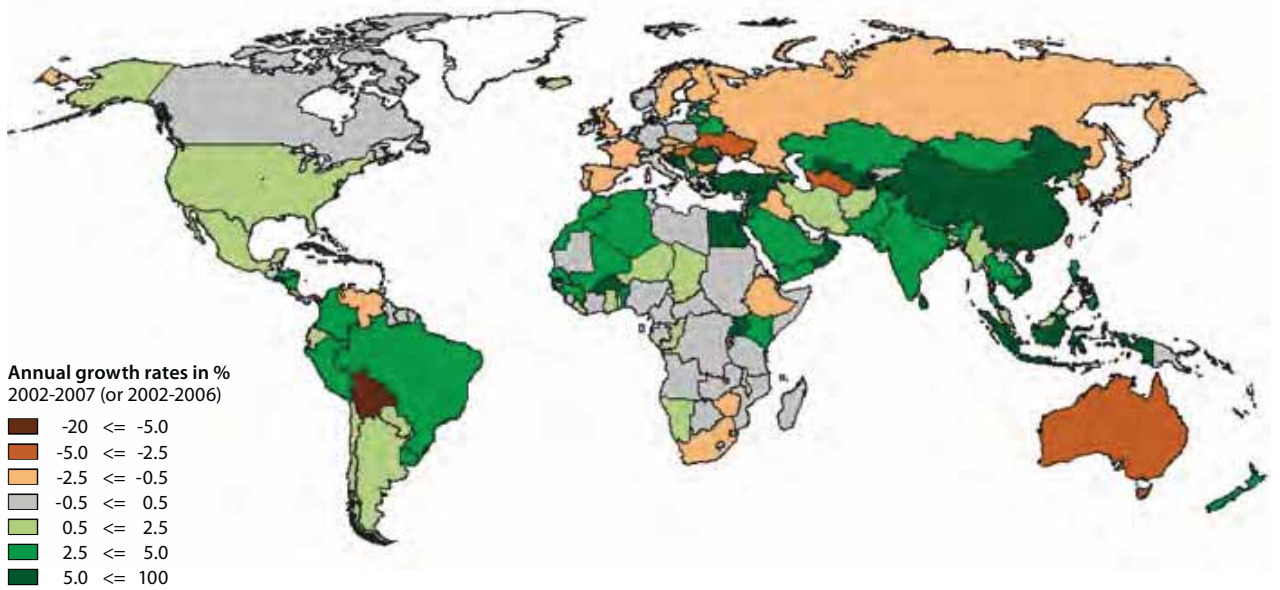
Adapted from IFCN Dairy Report 2008, Chapter 3.2

- **CIS:** 10 percent, mainly the Russian Federation and Ukraine.
- **Latin America:** 10 percent, mainly Argentina, Brazil, Colombia and Mexico.
- **East and Southeast Asia:** 8 percent, mainly China and Japan.
- **Africa:** 5 percent – the largest milk-producing countries are Egypt, Kenya, South Africa and Sudan.
- **Oceania:** 4 percent.
- **Near and Middle East:** 4 percent, mainly Iran and Turkey.

Trends in milk production

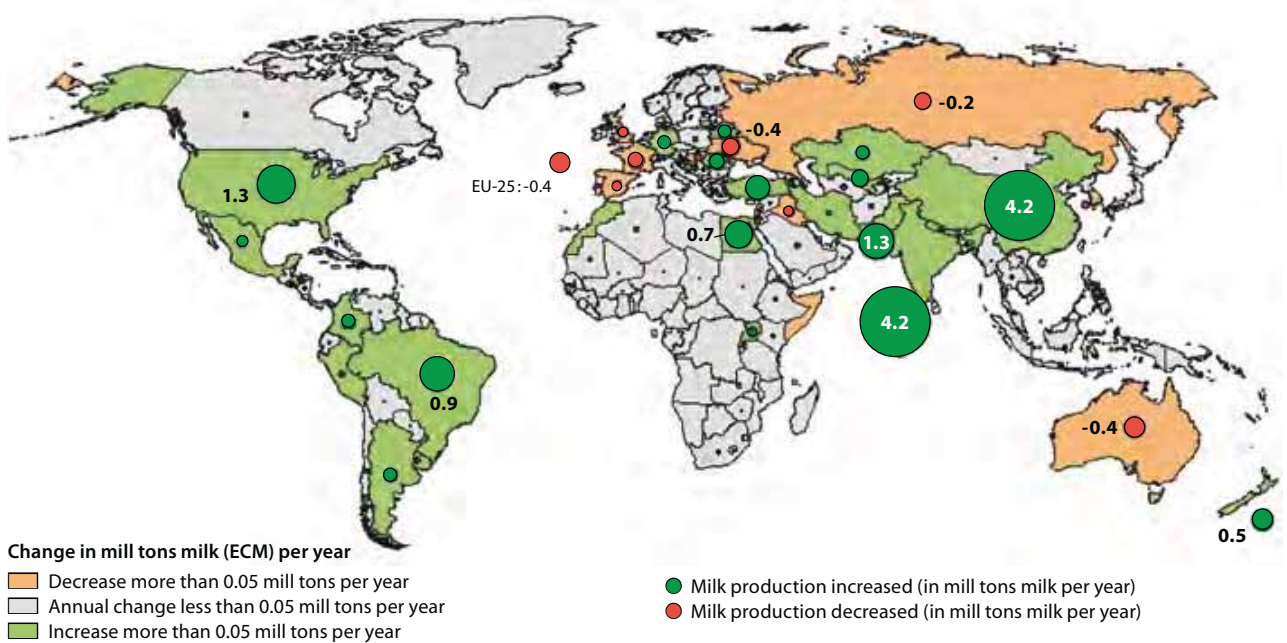
During the five years analysed (2002 to 2007), world milk production rose (by 13 percent) to 697 million tons, making for an aggregate increase of 81 million tons or 15 million tons per annum. China, India and Pakistan alone accounted for about two thirds of all volume growth; most of the remaining growth was in Brazil, Egypt, New Zealand, Turkey and the USA. Together, these eight countries accounted for approximately 85 percent of all milk volume growth in 2002 to 2007.

Milk production – Annual growth rates 2002-2007



Source of data: National statistics from IFCN partner countries (2002-2007); Exception Iran, Ethiopia and Pakistan: data 2002-2006; FAO data for all other countries (2002-2006).

Milk production volume – Annual growth rates 2002-2007



Source of data: National statistics from IFCN partner countries (2002-2007); Exception Iran, Ethiopia and Pakistan: data 2002-2006; FAO data for all other countries (2002-2006).

2.4 Farmers' milk prices and milk:feed price ratio

Introduction

For dairy farmers, the most important factor is the producer price for milk. Therefore this section deals with national milk prices and their relation to feed prices in the countries analysed by the IFCN. The analysis covers 2006, the last year before the start of significant increases in world commodity prices.

Milk prices per country 2006

Milk prices per country range from US\$15 to 74/100 kg ECM and can be grouped into five categories:

- **< US\$20:** New Zealand, Argentina, Uruguay, Paraguay, Uganda, Belarus, Ukraine, Pakistan and Indonesia.
- **US\$20 to 25:** Australia, Uzbekistan, Nigeria, Brazil, Chile, Bolivia, Peru, India and Lithuania.
- **US\$25 to 30:** China, Viet Nam, Poland, Bulgaria, Romania, Turkey, Russia, Kazakhstan, Kenya, South Africa, Colombia, Ecuador and a number of Central American countries.
- **US\$30 to 40:** USA, Mexico, Venezuela, most EU countries, Hungary, the Czech Republic, Estonia, Slovenia, Slovakia, Israel, Iran, Mongolia, Morocco, Algeria, Tunisia, Ethiopia, Cameroon, Thailand, Myanmar, Malaysia and The Philippines.
- **> US\$40:** Canada, Iceland, Norway, Finland, Switzerland, Italy, Greece, Egypt, Sudan, Saudi Arabia, Mozambique, Taiwan, South-Korea and Japan.

Method milk:feed price ratio

The milk:feed price ratio as defined by IFCN as the milk price divided by the price of purchased feed. In simplified form, it indicates how much feed (in kilograms of concentrate) it is possible for a farmer to buy with the sale proceeds from one kilogram of milk. The higher the ratio, the more economical it is to use concentrates to feed the dairy cows. Currently IFCN regards the ratio as favourable for the use of concentrates when it is higher than 1.5, which is when high-input high-yield dairy systems become profitable.

Explanation of variables/sources of data

Milk prices: Average annual price paid per 100 kg milk with 4 percent fat and 3.3 percent protein (excluding VAT).

Source: The results are based on national statistics, FAO and in certain cases based on estimates made by IFCN.

Feed prices: Based on the IFCN feed price indicator : Calculation: 0.3 kg soybean meal price + 0.7 kg corn price, prices for corn/barley and soybean meal are based on national statistics provided by IFCN scientists; FAO; Eurostat. National statistics, surveys, and, in some cases, estimates of the IFCN.

Milk:feed price ratio: Milk price divided by the calculated feed price.

Adapted from IFCN Dairy Report 2007, Chapter 2.2 and 2.5

High milk:feed price ratios (more than 2.5)

Highly favourable milk: feed price ratios of more than 2.5 are found in Canada, Egypt, Greece, Kazakhstan, Mongolia, Saudi Arabia, Sudan and the USA. In most cases, the cause of a high milk:feed price ratio is a very high milk price (up to US\$30/100 kg) while in a few cases it is caused by feed prices significantly below the world market level (such as in Kazakhstan).

Intermediate milk:feed price ratios (1.5-2.5)

Most countries of Europe and the Commonwealth of Independent States (CIS) fall into this category, as well as Argentina, Brazil, Ecuador, Ethiopia, India, Japan, Republic of Korea, Mexico, Morocco and Viet Nam.

Low milk: feed price ratios (less than 1.5)

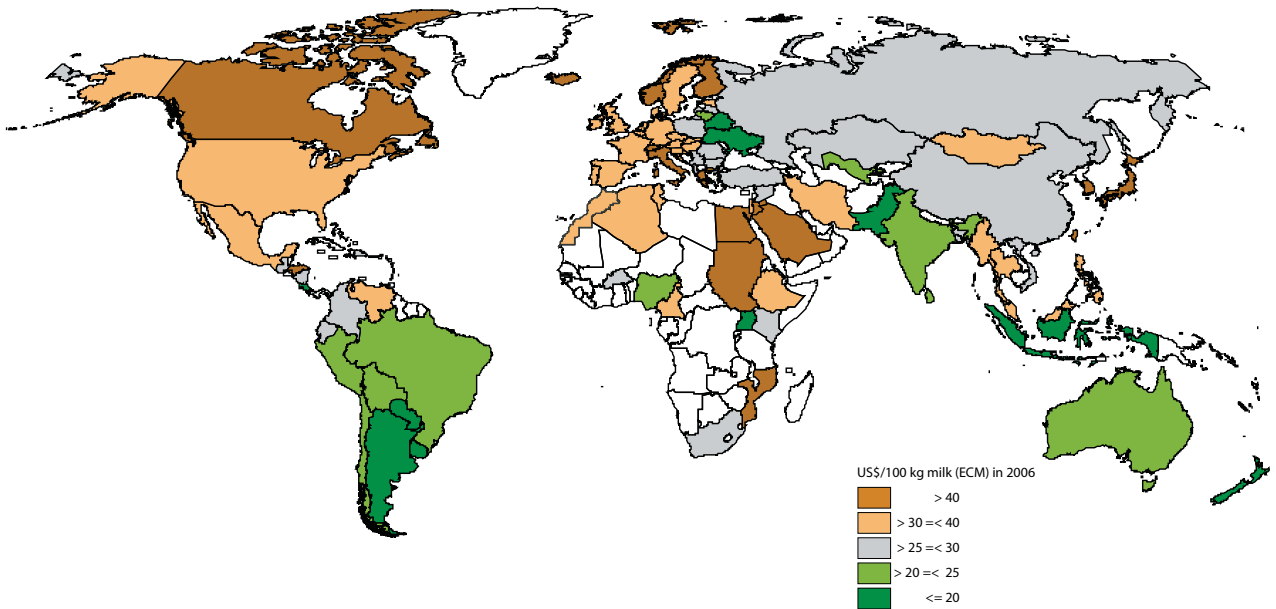
Very unfavourable milk:feed price ratios (of less than 1.0) have been observed in Cameroon, Guatemala, Indonesia, Nigeria and Uganda, whereas they are slightly better (1.0 to 1.5) in Australia, China, Chile, Ireland, Myanmar, New Zealand, Norway, Pakistan, Peru, South Africa, Switzerland, Thailand, Turkey and Uruguay. In most cases, the causes of unfavourable milk:feed price ratios are low milk prices (less than US\$20/100 kg). In a few cases, they are caused by feed prices significantly above the world market level, such as in Switzerland and Norway.

Conclusions

From the milk:feed price ratio, it is possible to obtain an indication of which types of dairy farming systems fit best into a given country or region. For instance, a high milk:feed price ratio indicates that it may be profitable to intensify a farming system. Once the milk:feed price ratio starts to fall – driven either by falling milk prices or increasing feed prices – 'extensification' of the system might be preferable.

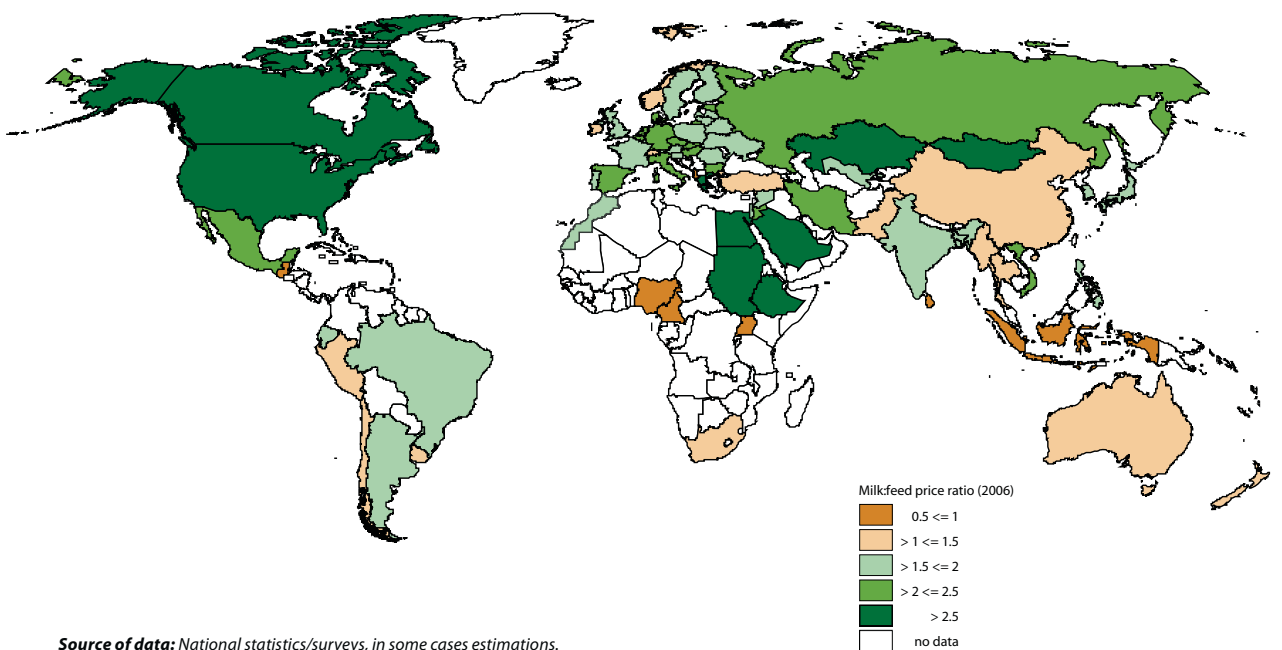
2.4 Farmers' milk prices and milk:feed price ratio

Milk prices in US\$ per 100 kg milk ECM in 2006



Source of data: National statistics/surveys, in some cases estimations.

Milk:feed price ratio 2006



Source of data: National statistics/surveys, in some cases estimations.

2.5 Dairy farm numbers world wide

Introduction

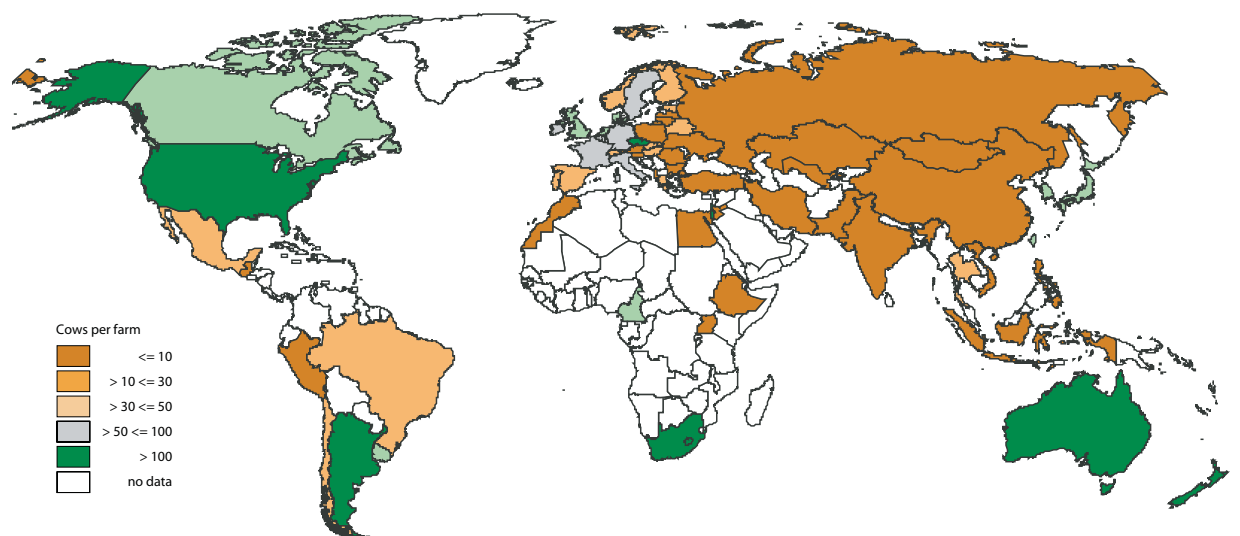
This section describes the structure of the dairy sector in selected countries, in terms of farm numbers and average dairy herd size. The aim of this chapter is to analyse the number of dairy farms / farming households world wide and also identify trends in farm numbers. This analysis is based on the latest data available covering the year 2005.

Dairy farm numbers

In 2005, there were some 115 million dairy farms in the 73 countries for which the IFCN has detailed information. Based on this number IFCN estimated a total number of dairy farms for 2005 of 149 million considering all countries. Assuming that the average farm household comprises five to six persons, about 750 to 895 million people, or 12 to 14 percent of the world population, directly depend to some extent on dairy farming.

The number of dairy farms is highest in India and Pakistan (75 and 14 million, respectively), followed by Brazil, China, Ethiopia, Iran, Romania, Russia, Turkey, Ukraine and Uzbekistan with 1.0 to 2.5 million dairy farms each. Farm numbers in the EU-15 countries (533 851) and the USA (78 300) seem rather low in comparison.

Average dairy herd size



Data: Data refer to the year 2005 if available. If not available other years or estimates were taken.
Source of data: National statistics.

Adapted from IFCN Dairy Report 2007, Chapter 3.6

The development of dairy farm numbers shows two trends. In Argentina, Australia, Brazil, Europe, Japan, New Zealand, South Africa and the USA, numbers dropped by 2 to 10 percent per annum between 2000 and 2005 compared with annual increases of 0.5 to 10 percent in most developing countries.

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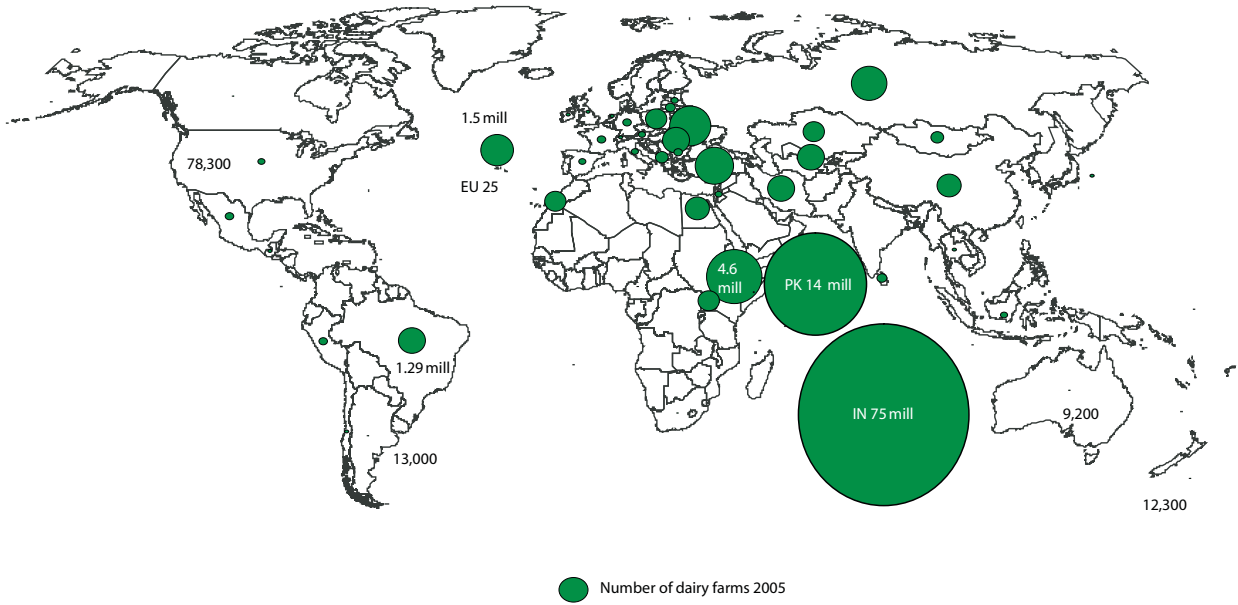
Dairy herd sizes

IFCN estimates that, globally, the average dairy herd size is 2.4 cows. In most countries, especially in Africa, Asia, Eastern Europe and parts of Latin America, the vast majority of dairy farms comprise less than ten cows, and only 15 countries have an average dairy herd size of more than 50 cows. The six countries with average dairy herds comprising more than 100 cows are: Argentina, Australia, Czech Republic, New Zealand, South Africa and the USA.

In most countries, average dairy herd sizes (0 to 5 additional cows per farm) did not change significantly in 2000-2005. The greatest increases during that period were observed in New Zealand (+79), Australia (+42), USA (+28), Denmark (+25), South Africa (+19), Israel (+16) and the Netherlands (+10).

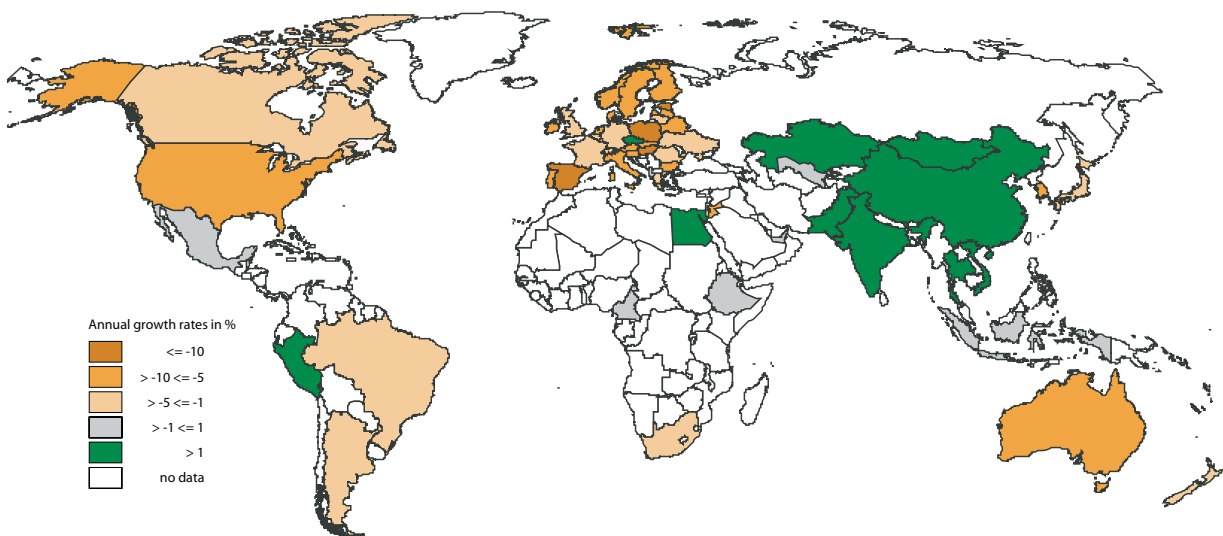
2.5 Dairy farm numbers world wide

Number of dairy farms in 2005



Data: Data refer to the year 2005 if available. If not available other years or estimates were taken.
Source of data: National statistics.

Number of dairy farms – Annual growth rates 2000-2005



Data: Data refer to the year 2000 and 2005 if available. If not available other years or estimates were taken.
Source of data: National statistics.

2.6 Pattern of dairy trade and milk processing

Introduction

This section describes the pattern of world dairy trade, the purpose being to identify the major dairy exporters and importers and illustrate the degree of self sufficiency and milk processing structure by country. The analysis is based on that of the IFCN undertaken in 2006 covering the period 1990 to 2004. It should be mentioned, however, that the core competence of the IFCN relates more to milk production rather than to trade and milk consumption.

Top ten net exporting/importing countries

The following table shows the largest net milk exporters/importers in 2003-2004. It should be noted that the list is based on net trade figures, that is, the balance of exports of milk after subtracting the quantities imported converted to ME.

	Net exporters	Net importers
1	New Zealand	China
2	EU-15	Mexico
3	Australia	Japan
4	EU-10 New members	Algeria
5	USA	Russian Federation
6	Argentina	Philippines
7	Ukraine	Saudi Arabia
8	Belarus	Indonesia
9	Uruguay	Nigeria
10	Switzerland	Viet Nam



Explanation of method/sources of data

Sources of data: FAO, ZMP, USDA, EUROSTAT, national statistics or estimates; for some cases no statistics were available.

Analysis: The IFCN dairy sector model for 2006, using the milk equivalent 'total solids' concept. Milk production was adjusted to ECM.

Milk processing: These data are based on the IFCN survey done in 2006 based 2004 data. Data for milk delivered to processors was based on national statistics. Tradable dairy products comprise condensed milk, cheese, dry milk products, butter/ghee.

Self-sufficiency in milk production: National milk production/milk consumption.

Adapted from the IFCN Dairy Report 2006, Chapter 3.4, IFCN Dairy Report 2005 4.19

Milk self-sufficiency, surplus and deficit

Few countries are self-sufficient in milk, which means they import more dairy products than they export. Very low self-sufficiency rates in milk (less than 25 percent) were observed in Bahrain, Democratic Republic of the Congo, Côte d'Ivoire, Gabon, Gambia, Ghana, Jamaica, Kuwait, Liberia, Malaysia, Papua New Guinea, Philippines, United Arab Emirates and Viet Nam.

Share of milk processed in tradable dairy products

Tradable dairy products comprise condensed milk, cheese, dry milk products, butter/ghee, which, due to processing are far less perishable (and bulky) than liquid milk. A high share of tradable dairy products in relation to national milk production indicates that a considerable amount of milk passes through the formal sector, but also that the national dairy industry is exposed to competition from other countries in a liberal agricultural trade environment. Globally, countries can be divided into three groups with respect to the shares of milk processed into tradable products:

High shares (more than 50 percent): Australia, Belgium, Czech Republic, Denmark, France, Germany, Ireland, Netherlands and New Zealand convert more than 50 percent of their milk production into tradable dairy products.

Moderate shares (30-50 percent): Results of around 30 to 50 percent were observed for Argentina, Chile, Estonia, Italy, Finland, Hungary, Iceland, Japan, Republic of Korea, Lithuania, North America, Peru, Poland, Sweden, Switzerland and Venezuela.

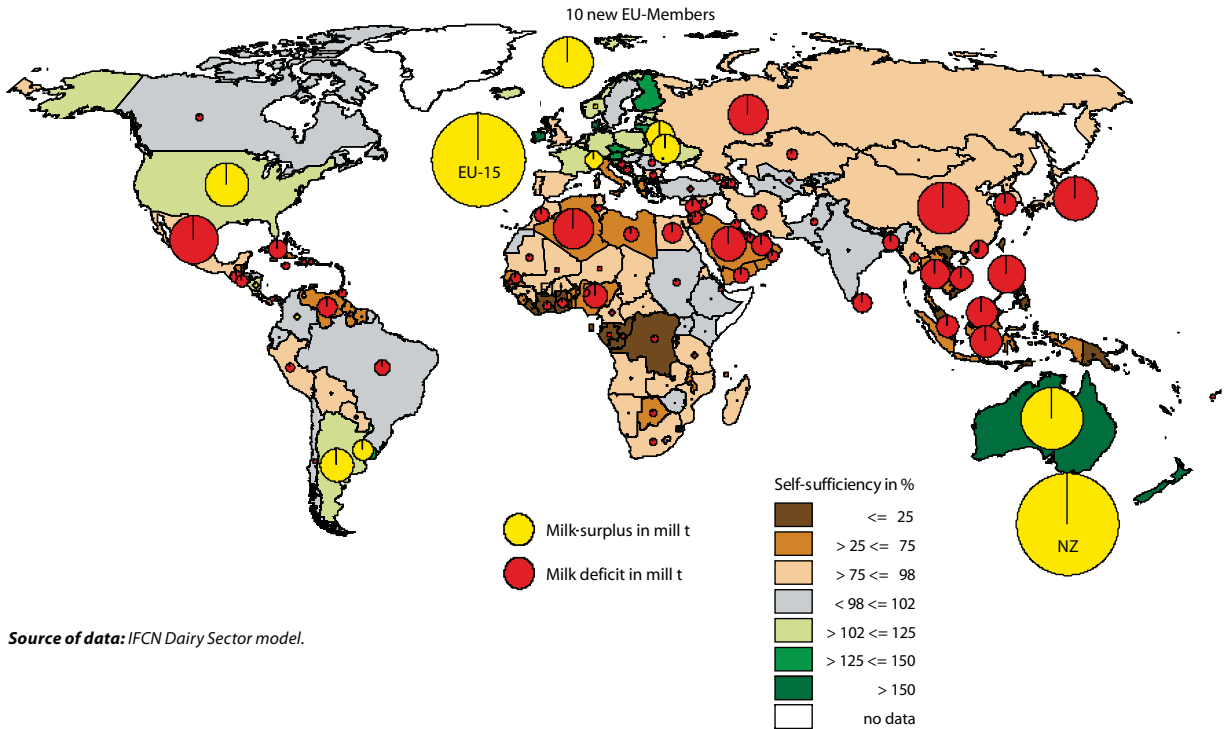
Low shares (less than 30 percent): In developing countries the share of milk processed into tradable dairy products is rather low (0 to 20 percent), as seen for instance in Africa, Asia and countries of Latin America. Low shares have been also observed for Spain, Ukraine and Russia.

Share of milk production traded

Based on the analysis 2004 about 7.1 percent of world milk production is traded internationally (Intra-EU trade excluded). With respect to milk delivered to milk processors, we estimate the share traded internationally to be in the order of 24 percent.

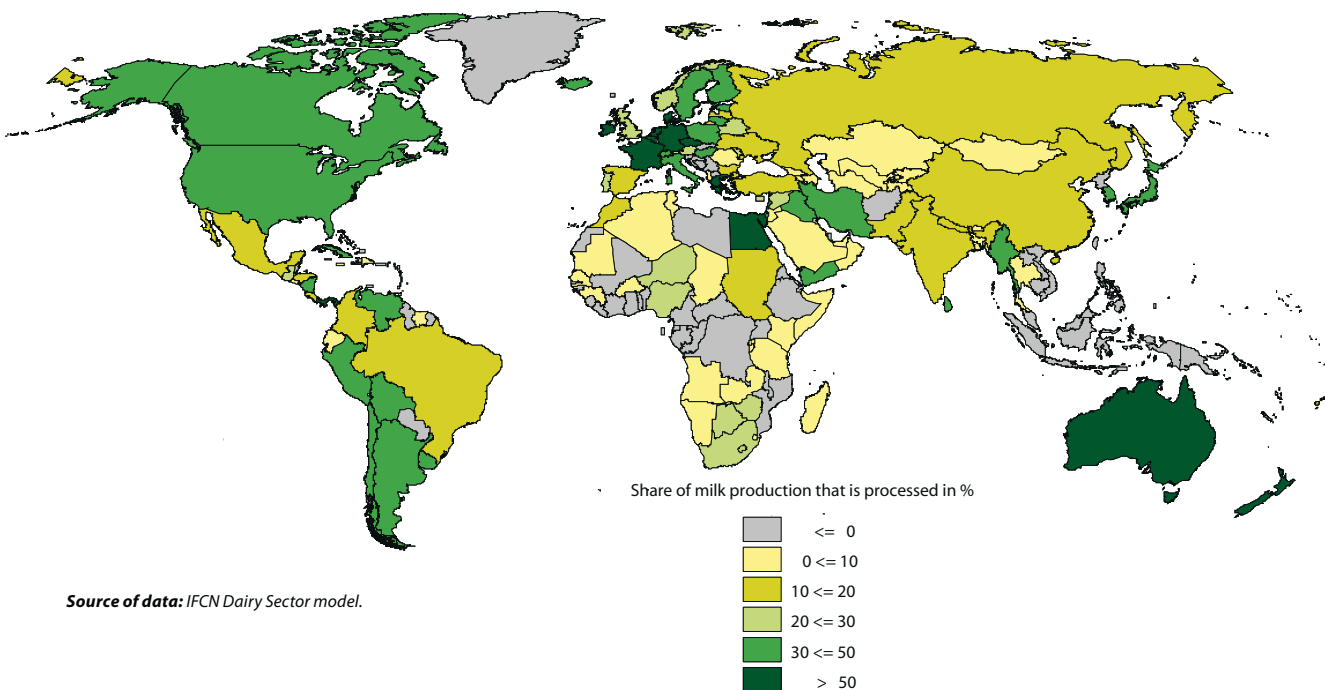
2.6 Pattern of dairy trade and milk processing

Surplus / deficit of milk and dairy products (2004)



Source of data: IFCN Dairy Sector model.

Share of milk processed in tradeable products



Source of data: IFCN Dairy Sector model.

2.7 Milk consumption and its drivers

Introduction

Milk demand is driven by two factors: per capita milk consumption and population. The aim of this section is to give a global overview of both indicators via world maps, with a description of country-specific differences. The analysis covers the year 2004 as it refers to the trade analysis shown in Section 2.6.

Method – Per capita milk consumption

The method used to calculate per capita consumption is described in the IFCN Dairy Report 2004, which is based on 'milk equivalents' (MEs) so as to account for the consumption of milk in its different forms, such as yoghurt or cheese, in addition to liquid milk. The per capita consumption was calculated as follows: milk production (in ME) minus exports (in ME) plus imports (in ME) plus/minus changes in stocks (in ME) divided by human population. The 'total solids' method was used to convert dairy products into ME. It should be mentioned that the results differ significantly when alternative methods for ME conversion are used. For details, see Chapter 3.6 of the IFCN Dairy Report 2004.

Per capita milk consumption per country

As a general rule milk consumption is high in developed countries and low in the developing ones, and appears to be particularly low in tropical and subtropical climates. Based on country-specific estimates of per capita milk consumption, the following three categories have been defined:

- **High, more than 150 kg per capita/year:** Argentina, most CIS countries, Costa Rica, Ecuador, Europe, Honduras, Israel, Lebanon, North America, Oceania, Turkey, Uruguay and others such as Pakistan and Sudan.
- **Medium, 30-150 kg per capita/year:** India, Japan, Republic of Korea, North and Southern Africa, most countries of the Middle East and Latin America (except Argentina, Ecuador and Uruguay).
- **Low, less than 30 kg per capita/year:** China, Ethiopia, Yemen and most countries of Central Africa and East and Southeast Asia

Population status 2004 and trends

About 60 percent of the world population live in South, East and South-East Asia, with China and India alone accounting for about 38 percent. Another 14 percent is to be found in Africa. In all these countries (except India, Pakistan and some African countries), milk consumption is generally below 30 kg of milk (ME) per capita. Western Europe and North America account for 11 percent of the world population with an average per capita consumption of approximately 300 kg of milk (ME) per year.

Examples of milk demand growth

Some simple examples illustrate how milk demand can develop: once milk consumption in China (2004 = 22 kg of milk (ME) per capita) increases to the level of Japan (78 kg of milk (ME) per capita) it will require about 72 million tons of milk, which is almost equal to the production volume of the USA. Once milk consumption all over India increases from 93 kg milk per capita to the level typical of the richer states of Punjab and Haryana (IFCN estimate 200 to 250 kg milk per capita), this will call for an additional 17 million tons of milk – which is more than the EU-25 was producing in 2006.

The two drivers of milk demand

In past years, milk consumption has risen by 10 to 20 million tons per year, one driver being human population growth. A global population growth rate of 1.2 to 1.3 percent per year means 75 to 80 million more people each year. Using the world average per capita milk consumption, this would mean that population growth accounts for an increase in milk consumption of 7 to 9 million tons per year. The second driver of milk consumption is increasing per capita consumption. However, this driver in turn depends largely on per capita income developments, especially in developing countries.



Explanation of method/sources of data

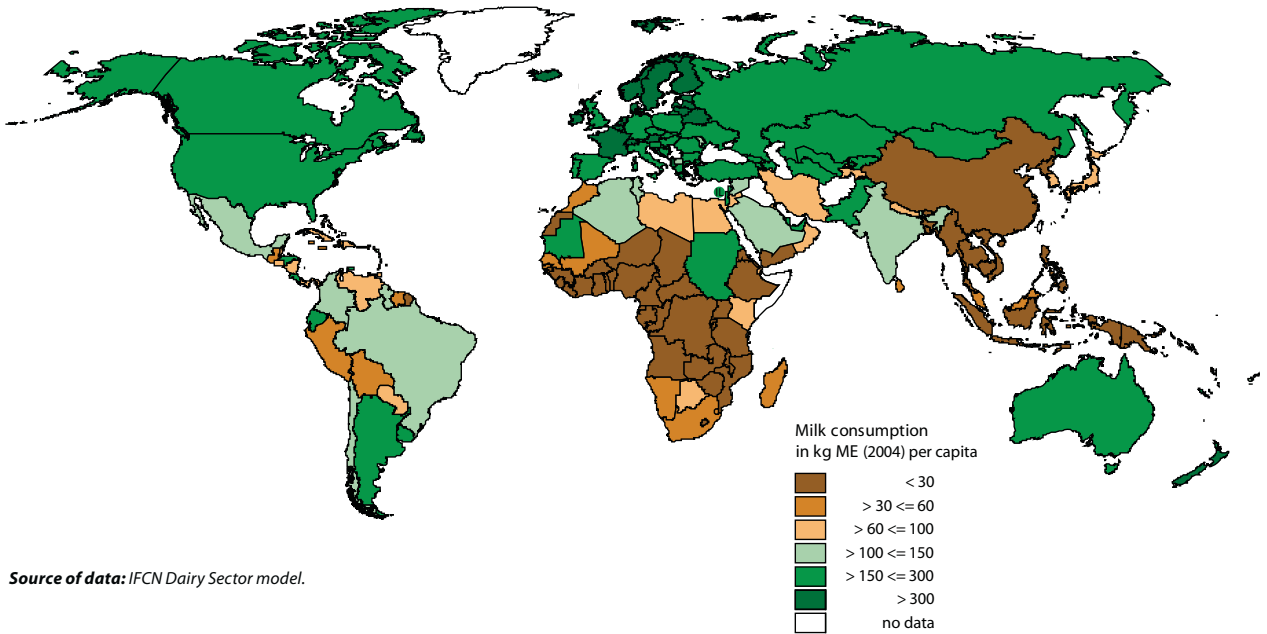
Method: The 'total solids' method was used to convert dairy products into ME

Source of data: IFCN Dairy Sector model, Analysis done in 2006

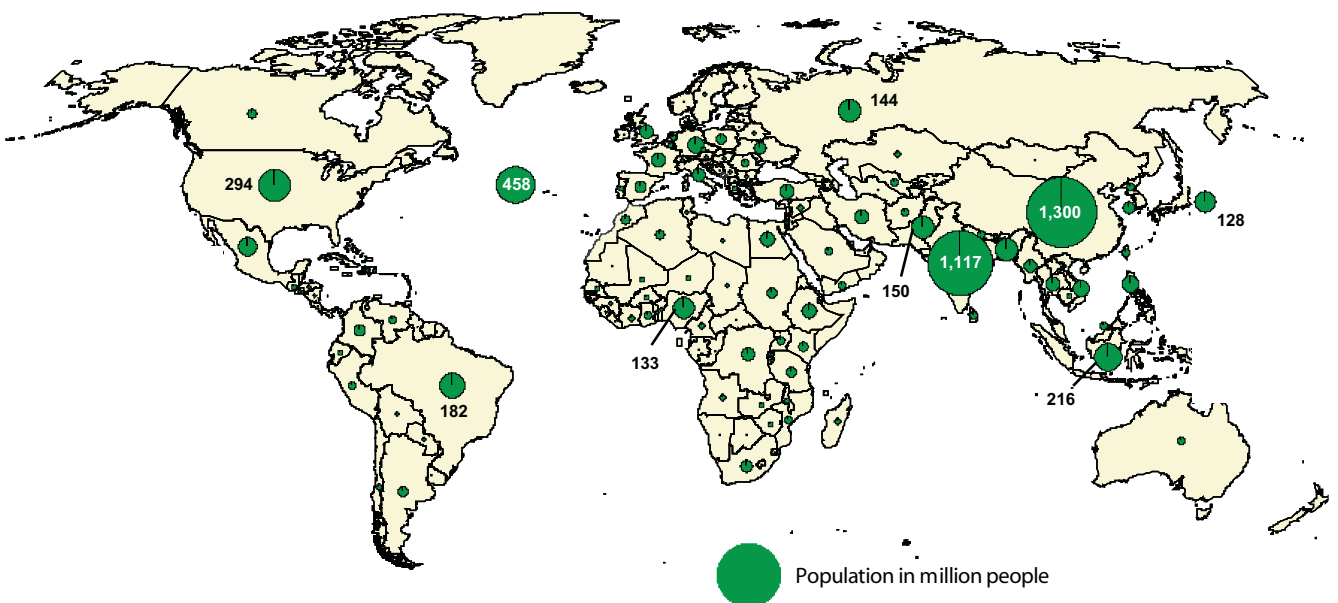
Adapted from IFCN Dairy Report 2006, Chapter 3.6

2.7 Milk consumption and its drivers

Per capita milk consumption in kg milk equivalent (ME) in 2004



Population in 2004





India



Uganda



