



# Dairy Report 2013

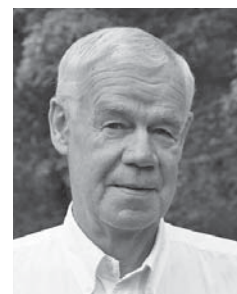
For a better  
understanding of  
milk production  
world-wide



**IFCN**  
International Farm  
Comparison Network

Dear friends,

It is a pleasure for us to summarise the highlights of our research and network activities in 2013.



### The IFCN Mission

When looking at the dairy chain as a whole, the majority of costs, resources used, emissions generated and political challenges fall in the milk production segment. That is why the IFCN is driven by our mission to create a better understanding of milk production worldwide.

### Status of the network in 2013

A milk production profile was created for 95 countries, representing about 98% of the world's milk production. In the farm comparison **178 typical farms** from **61 dairy regions** in 51 countries were analysed. For the first time, Japan is included in this analysis.

### Highlights 2012

#### IFCN Dairy Conference 2013:

It was a great pleasure and honour to be in Turkey June 3 to 5 and having the Turkish Milk Council as host for this event. This year researchers from 41 countries participated.



#### IFCN method work has focused on

- Improving the IFCN world milk price indicator
- Real time milk and feed prices estimation
- Real time & monthly farm economic estimation
- Estimating the global number of dairy farms
- 10 year IFCN global dairy baseline

**Regional milk movement:** This year a special focus was to update milk production per region in the country and monitoring shifts within countries.

**Farm structure analysis:** This analysis and the introduction of IFCN standard size classes allow a global and comparative overview on how farm structures have developed in countries and world regions.

**The IFCN Supporter Conference 2013:** This conference was held in Oxford, UK, September 16 to 18 with Arla acting as host.



#### IFCN Regional Workshop in India 2013:

This event, held in Ludhiana, November 19 to 21 aims at supporting dairy development in India by using IFCN knowledge. The following IFCN supporter companies acted as hosts:



### IFCN Dairy Report 2013

**Chapter 1: Cost comparison:** This chapter summarises results on costs, returns, profitability and productivity of dairy farms worldwide

**Chapter 2: Global monitoring:** This chapter gives a broad monitoring on specific dairy issues such as milk prices, feed prices and milk : feed price ratio.

**Chapter 3: Milk production fact sheets:** This profile, prepared for 95 countries, gives a comparable overview related to:

- Milk density within countries
  - Dairy farm numbers and farm structure and its developments
  - Price trends for milk, feed, land, beef and quota prices
- Moreover, the key results are summarised at the beginning of the chapter via maps of the world and Europe.

**Chapter 4: Special studies:** This chapter summarises special studies on method issues and other important studies performed.

### A word of thanks

We would like to extend our heartiest thanks to all our scientific partners, agribusiness partners, our institutional partners and also to the people working in the IFCN Dairy Research Center. It was a pleasure to serve the network in 2013 and we are looking forward to our activities in 2014.

We are looking forward to continuing our monitoring work and are quite excited to see how dairy farm economics have improved in 2013 as a result of rising world market prices for milk and declining feed prices.

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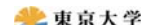
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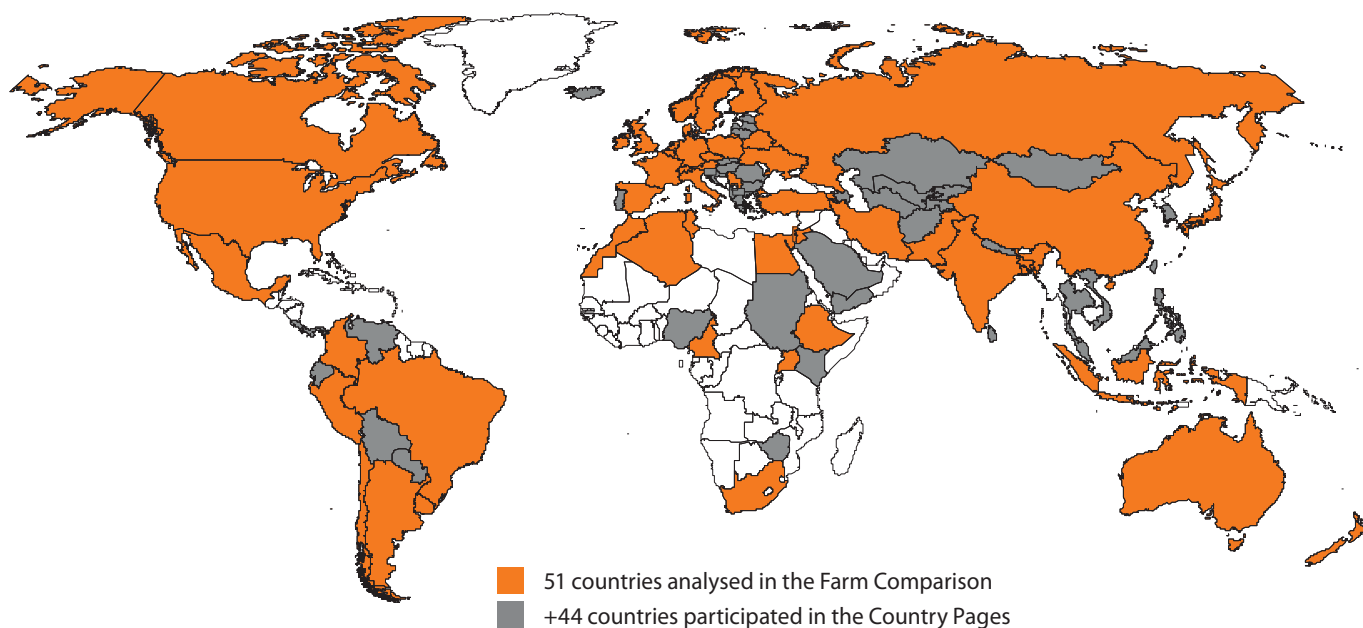
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India pictures by T. Hemme

## Which countries are participating in the IFCN Dairy Report activities in 2013?



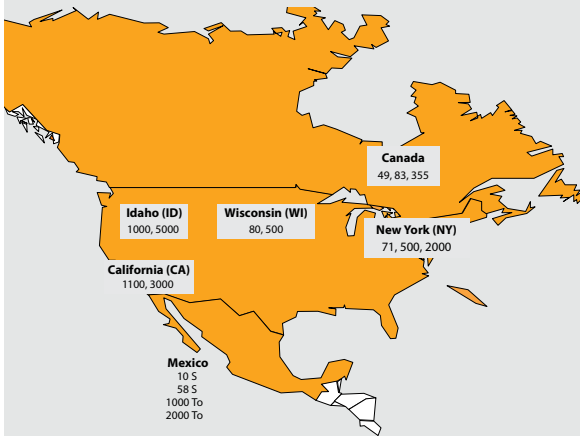
Year	Countries included in		No. of farm types analysed*	Topic of Country Report	IFCN Dairy Conferences
	farm comparison	country profile analysis			
2000	8	8	21	Ex-post analysis 1996–2000	Sep-00
2001	20	20	52	Country reports on milk production	Jun-01
2002	24	24	72	Dairy production systems survey	May-02
2003	27	24	76	Farm structure analysis 1990-2001	May-03
2004	31	31	92	Dairy sector profile 1981-2001	Jun-04
2005	33	41	102	Milk production fact sheet 1996-2003	May-05
2006	34	60	103	Dairy sector & chain profile 1990-2004	May-06
2007	38	73	120	Milk production fact sheet 1996-2005	Jun-07
2008	44	78	134	Dairy sector & chain profile 1996-2007	Jun-08
2009	46	80	147	Milk production fact sheet 1996-2008	Jun-09
2010	44	86	143	Dairy sector & chain profile 1996-2009	Jun-10
2011	49	90	157	Milk production fact sheet 1996-2010	Jun-11
2012	51	91	171	Dairy sector & chain profile 1996-2011	Jun-12
2013	51	95	178	Milk production fact sheet 1996-2012	Jun-13

\* Farms analysed in Chapter 1 and 4





## North America



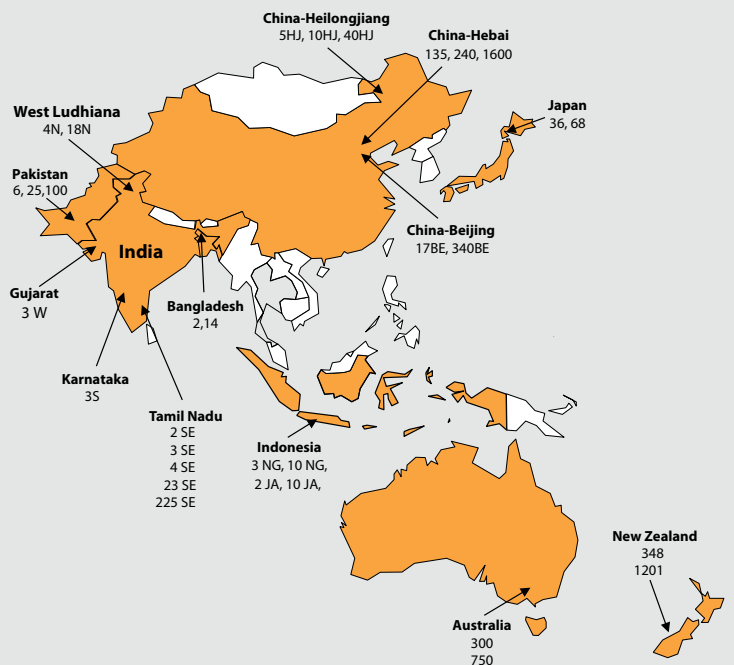
## Europe and Middle East



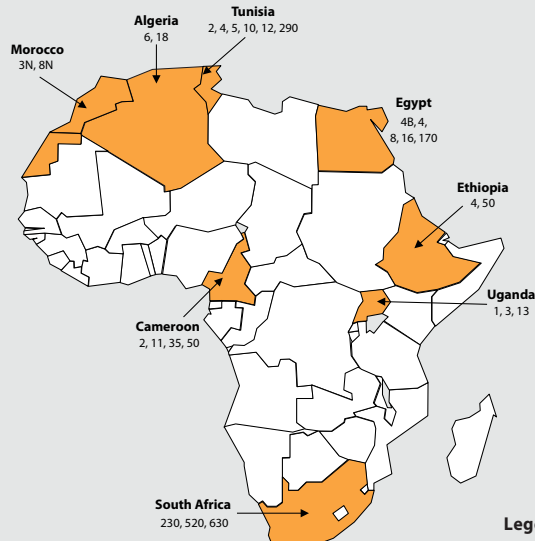
## South America



## South East Asia and Oceania



## Africa



**Legend:** Numbers indicate the number of cows in the typical farms.

++ = Farms better managed than average, AMS = Automated Milking System (robot), B = Buffalo, BE = Beijing, bio = Organic, CA = California, CN = Central North, DP = Dual purpose, E = East, HJ = Heilongjiang, JA = Jabung, MC = Massif Central, N = North, NG = Ngatang, NW = North West, NY = New York, PR = Parana, S = South, SE = South East, SW = South West, To = Torreon, US-ID = US-Idaho, W = West, WI = Wisconsin



## What is IFCN?

*We are the leading, global knowledge organisation in milk production...*

When looking at the dairy chain as a whole, the majority of the costs, resources used, emissions generated and political challenges fall in the milk production segment. That's why the IFCN is driven by our mission:

*... we create a better understanding of milk production worldwide.*

## Core competence

The IFCN core competence is in the network of dairy researchers, companies and stake-holders of the dairy chain who have built trust the last 14 years to openly share and discuss dairy issues. This and the annual working process make the IFCN an on-going knowledge creation system.

## Core values

The IFCN is independent from third parties and is committed to **truth, science and reliability** of results.

The IFCN and all its partners commit themselves not to get involved in any discussions or activities that may infringe any applicable competition law.

## Organisational setup

IFCN stands for International Farm Comparison Network. The dairy branch of the IFCN was founded in 1997.

The IFCN has a **Dairy Research Center (DRC)** with 20 employees, co-ordinating the network process and running dairy research activities. The **IFCN Board** has the mandate to support the IFCN management in the strategic development and guarantee transparency in the operation to the members of the network.



The IFCN Board is composed of the following members: Anders Fagerberg (chairman), Luc Morelon (nominated by the supporters), Ernesto Reyes (nominated by the researchers), Uwe Latacz-Lohmann (Kiel University), Olaf Rosenbaum (legal and fiscal expertise) and Torsten Hemme (MD).

## Why is the IFCN useful for a dairy region?

To have a prospering dairy region, a clear strategy of all stakeholders is required. The participation in IFCN provides information about the global developments of the dairy sector and the competitive position of a dairy region in it. Moreover, it identifies potential points for improvement.

## Who benefits from the IFCN work?

### 1. Dairy farmers

Dairy farmers benefit from knowing about their competitiveness in a globalized dairy world. Moreover, they get access to information about alternative production systems.

### 2. Milk processors

Information about the production costs in specific milk regions is a key element for the competitiveness of the milk processor.

### 3. Farm input suppliers

Information about farm economics and global dairy developments are very good tools to guide strategic discussion and decisions within the company.

### 4. Policy makers

The link with the IFCN knowledge provides the policy makers with facts and figures for political discussions. Moreover, the IFCN tools permit the evaluation of alternative policy scenarios.

### 5. Research organisations

Cooperation with IFCN offers access to methods, models and data which increases the capacity in dairy research and teaching. Technically, the IFCN provides:

- **Benchmarking:** Analyse your dairy region in a global context.
- **Networking:** Link yourself to the leading network of experts in your research topic.
- **Access to data:** Send in 2 farm types and get the world in return.
- **Promotion:** Promote your institution nationally and internationally.

## Partnership with the IFCN network

The IFCN offers different kinds of partnership for the various stakeholders of the dairy chain.

For further information please contact us ([info@ifcndairy.org](mailto:info@ifcndairy.org))

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Nadira Sultana



Mohammad Uddin



Helga Weber



Karin Wesseling



Lukasz Wyrzykowski



Elgin Giffhorn

Institutional partners



Agribusiness partners of the IFCN

Milk processing



Milking and barn equipment



Health and hygiene



Feed



Farm machinery



Genetics for animal & plants



Other branches of the dairy chain







Tajikistan picture by Anastasiya Shtaltovna









Mongolia

## Chapter 1 – Comparison of the typical farms 2012

Authors: Asaah Ndambi, Dorothee Boelling, Mohammad Mohi Uddin, Maria Schmeer, Rebecca Kühl  
with the contribution from researchers mentioned on page 2-3 of this report

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## Introduction

The IFCN Dairy Research Center aims to „create a better understanding of milk production worldwide“ by describing dairy farms around the world and explaining farm economics for the year 2012. For this report, 178 farms in 63 dairy regions and 51 countries were taken into consideration. They represent 90% of the total world milk production. The model version TIPI-CAL 5.3 was used with an extended check on data plausibility.

## The IFCN approach: a unique tool for benchmarking dairy farms worldwide

The IFCN method is based on the selection of typical farms that represent the most common farm types which produce the highest share of milk within a region or country. This method has the potential to consider diverse farm types covering a high variation in dairy production systems. Milk is standardised to energy corrected milk in order to make a global comparison. The IFCN approach considers all cash and non-cash costs of the dairy enterprise and returns from milk and beef sales, as well as direct subsidies and other sources of income. More details on the methodology can be found in the Annex.

## The EU and USA produce milk at the worldwide average cost level

When dividing all the dairy regions into three different cost categories, countries in central and Eastern Africa, CEEC, South America (without Brazil), and Oceania, which produce milk at costs between 35 and 40 US-\$ per 100 kg ECM, may be grouped together. Most countries of the European Union and United States, Israel, Jordan, China and Brazil can be found within the range of 40 to 60 US-\$. This also coincides with the average cost of production for all 180 farms analysed, which was 47 US-\$. Japan, Switzerland, Norway, Finland, Iran, and Canada are the most cost-intensive countries with costs of more than 70 US-\$.

## Lower profitability of dairy farms in 2012 when compared to 2011

After a short recess in 2011, profitability decreased again in 2012. In general, a lower percentage of farms worldwide managed to generate a profit higher than 1 US-\$/100 kg milk. In Western Europe, the share of farmers in this category dropped by 5% to 15%, while in the other world regions, this percentage varied between 40% (CEEC) and 80% (Africa and South America). In Asia and Oceania, more than 20% of the farms showed a farm profit between -1 and +1 US-\$. These farms were on the brink of profitability and will switch with the slightest change in cost or return structure.

## The cost of milk production varies greatly between farms in Africa and Asia but is less variable in the US and Oceania

Costs of milk production only present a huge range depending on the economic situation in the country and the production system used. In some African countries, only 4 US-\$ are necessary to produce 100 kg ECM, while up to 128 US-\$ are required in high cost countries like Japan to produce the same amount of milk. The widest range in costs between farms was observed in Africa and Asia due to heterogeneity in farming systems, while it was lowest in Oceania and the USA. In 2012, costs of milk production only were nearly 50% higher in China than in Germany (approx. 60 US-\$ versus 40 US-\$, respectively).

## The world milk price dropped below production costs for the majority of countries

The amount of milk being produced at world milk price level decreased to 12 %, due to the sharp drop of the world milk price indicator from 44.1 US-\$ in 2011 to 36.7 US-\$ per 100 kg ECM in 2012, which was transmitted to a greater or lesser extent to national prices. Both Argentina and New Zealand, as large suppliers to the world market, managed to produce milk at this cost level. All other major producers had production costs above the world milk price indicator. This situation is the reverse to that of the previous year, when three quarters of the milk was produced below world market level.

## The high level of feed costs further increased the opportunity costs of land

As mentioned above, the feed price continued increasing and reached an all-time high of 351 US-\$/ton in 2012. This had a direct impact on the economics of farms with a high dependence on purchased feed costs, e.g. in Jordan and China. In Western Europe and on family farms in North America, more feed is produced on site, and the changes in feed prices are not fully reflected in their opportunity costs of land. When including the increase of concentrate prices in the calculation of the feed production costs on own land, the opportunity costs of land would rise by 2.1 US-\$ per 100 kg ECM in Wisconsin, 1.3 US-\$ in Bangladesh and less than 1 US-\$ in Germany. These additional opportunity costs of land depend strongly on yield levels and feed prices.

## Dual purpose cattle constitute a substantial part of milk production in some regions

In many African and also Latin American countries, dual purpose cattle, where beef contributes as much to the income as milk, represent a substantial way of milk production. This year, farms from Colombia and Mexico with dual purpose cattle were included in the Dairy Report for the first time. The costs from the P&L account were below 30 US-\$ per 100 kg ECM, but low land productivity and high land prices increased the opportunity costs of land.

## Another year of volatile costs and prices stressed the importance of regular benchmarking

2012 showed again a high volatility in feed and milk prices and this volatility will continue in the future. Therefore, it is becoming increasingly important for farmers to benchmark their farm economics in order to be able to react in good time. The new "Real time farm economics" tool is, especially in the case of family farms, a way to compare the costs of milk production only with the income required to make a living.

## EU policies face some changes in the near future

Major changes are planned within the Common Agricultural Policy of the European Union. In 2015, the quota will be abolished. In 2012, 6 countries exceeded their national quota, while the EU-27 remained below the global quota by nearly 5%. Another adjustment which will have an influence on dairy production systems is 'greening', i.e. crop diversification, establishment of ecological focus areas and maintenance of permanent pasture. From 2015 onwards, 30% of the direct payments will be based on the compliance with these ecological measures.



## 1.2 Regional overview of costs and returns of the dairy enterprise

### Introduction

Cost competitiveness of dairy production varied greatly and was heavily dependent on the production conditions and environment around the dairy farms. In order to gain an insight into some of the differences, the typical dairy farms were clustered by world regions.

### Method:

#### Selection of typical farms

The IFCN method was based on the selection of typical farms that represent the largest number of dairy farms in a region in terms of size, livestock systems, labour organisation, technology used, etc. For details on the typical farm approach see Annex 3.

#### Clustering of farms

All farms analysed in Chapter 1.6 – 1.12 were clustered into eight different world regions. The charts show the average value for all farms within each region and in the first four charts, the range from the lowest to the highest value within the region. This chapter simplifies some parameters which are shown in more detail in Chapters 1.6-1.12. The size of the clusters varies from 4 to 34 farms per cluster and the selection is therefore not really representative in a statistical sense, so the results should be interpreted with care.

#### Calculation of share of feed cost

This was obtained by dividing the total feed cost by the total cost of milk production. Feed cost was calculated using the activity based costing (ABC) obtained by allocating all costs of the profit and loss (P&L) account into five activities (feed, feeding and manure handling, milking, cow handling, management, and infrastructure).

### Results for herd size and milk yield

**Herd size:** Based on regional averages, the largest dairy farms were located in North America, followed by Oceania and the CEEC, while the smallest dairy farms were located in Africa and Asia. In the Americas, Oceania, Asia and CEEC, business farms with several thousand dairy cows have been analysed.

**Milk yield:** Three groups of regions could be distinguished; high yield regions (Western Europe, North America and Middle East) having about 8,000 kg ECM per year or more, moderate yield regions (Oceania, South America and CEEC) with yields usually between 5,000 and 6,500 kg ECM and low yield regions (Africa, Asia; mainly household and family farms) with yields usually below 4,000 kg ECM. The highest variation in milk yield was observed in Africa, Asia, and South America where traditional pasture based dairy production systems using low yield local cows existed alongside high yield concentrate based systems with Holstein Friesian cows. The lowest variation was observed in North America and Oceania with more homogenous production systems.

### Results - cost of milk production

Low cost regions (Africa, CEEC, South America, and Oceania) had a cost level of about 30 to 40 US-\$/100 kg ECM. The high cost world regions, Western Europe, North America and the Middle East presented costs of more than 50 US-\$. Asia joined this group for the first time.

### Explanation:

**Indicators:** All indicators represent a simple average for all farms in a cluster.

**Data:** All farms analysed in Chapter 1.6 are included. Classification of the typical farms is documented in Annex 4. Year: 2012; Uruguay, New Zealand, Australia = season 2011/2012, India = financial year 2012/2013. **Regions:** Western Europe (34 farms): All EU-15 countries analysed in Chapter 1 + NO and CH. North America (12 farms): CA and US. Middle East (10 farms): IL, JO, TR and IR. Africa (16 farms): TN, DZ, MA, EG, UG, CM, ET and ZA. CEEC (14 farms): PL, CZ, RS, UA, BY, RU and AM. South America (18 farms): MX, CO, AR, UY, CL, BR and PE. Asia (18 farms): IN, PK, BD, ID and CN. Oceania (4 farms): AU and NZ.

**Result variables:** The variables are similar to those described in Chapters 1.7 and 1.9. **Cost of milk production:** Costs from P&L account minus non-milk returns + opportunity costs + quota costs. **ECM:** Energy corrected milk (4% fat, 3.3% protein). **Entrepreneur's profit:** Milk price – cost of milk production only (for details see Chapter 1.11)

### Share of feed cost as a percentage of total cost

Among the high cost countries, the share of feed cost on total cost increased from 47% in Western Europe, 53% in the US and 68% in Asia to 72% in the Middle East. The main driver for this was the proportion of feed produced on the farm. Due to a further increase in feed prices in 2012, farms with high dependence on purchased feed (e.g. Jordan and Iran) showed a clear difference in feed costs compared to Western European farms which produced more of their feed on site. It is very probable that the costs for farms producing their own feed were underestimated, as the changes in feed price were not fully reflected in their opportunity costs. The IFCN feed price increased from 230 US-\$/t in 2010 to 318 US-\$ in 2011 and to an all-time high, 351 US-\$, in 2012. In Africa and the CEEC, the share of feed cost on total cost was around 50%, while it ranged between 60-65% in South America and Oceania. The low proportion of feed cost shown in Western Europe and the CEEC was mainly because other costs (such as quota and high labour and building costs) made feed costs comparatively smaller, whereas these other costs constituted a very small share of costs on the Asian, Middle East and African farms.

### Returns of the dairy enterprise

Regions with high costs (North America, Asia, and Middle East) also had high milk prices, which ranged between 50 and 65 US-\$/100 kg milk. Meanwhile, the lowest prices (<40 US-\$/100 kg milk) were found in the CEEC and Oceania. High milk prices in Asia were, in particular, from Japan where the milk price exceeded 100 US-\$/100 kg milk. Cattle returns were high in the regions of Middle East, CEEC, and Asia with more than 10 US-\$/100 kg ECM and very high in Africa (21 US-\$/100 kg ECM). They were low in Oceania and North America with less than 5 US-\$/100 kg milk. Coupled subsidies of 1 to 6 US-\$/100 kg ECM were observed in Western Europe, Middle East (Turkey), CEEC and Northern Africa (Algeria, Morocco). Moreover, in Western Europe and in CEEC, 4-6 US-\$ of decoupled subsidies were paid. Some farms in Asia received small amounts of decoupled subsidies. In 2012, the US farms had very few or no direct subsidies, similar to farms in South America and Oceania.

### Share of farms with entrepreneur's profit

In 2012, Oceania appeared to be the most profitable region with none of its farms making a profit below minus 1 US-\$/100 kg milk. Africa, Mid East and South America seemed more profitable than North America, CEEC, and Asia. Western Europe was the least profitable region with only 12% of their farms having an entrepreneur's profit (excluding decoupled subsidies) of >1 US-\$/100 kg milk. In general, the proportion of farms with an entrepreneur's profit above 1 US-\$ decreased from 60% in 2011 to 55% in 2012. In nearly all regions, the proportion of farms making less than minus 1 US-\$ profit increased.

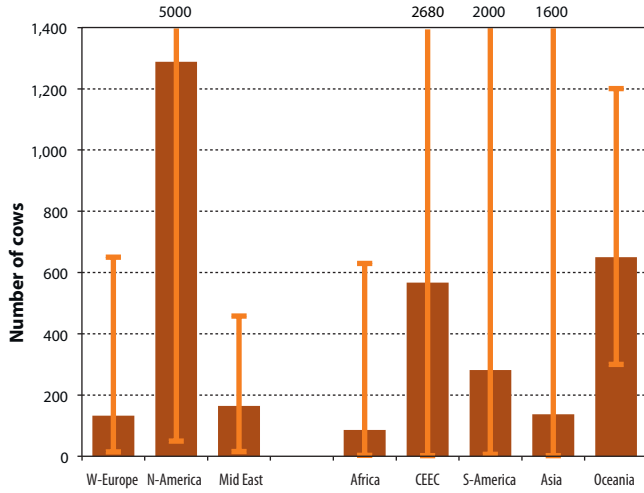
### Conclusions

Cost levels increased by approximately 2 US-\$ in 2012 compared to 2011. Feed costs accounted for 45 - 75% of the total costs. Non-milk returns were very important in four regions: Western Europe, Middle East, Africa and CEEC. Profitability decreased in 2012 compared to 2011, and farms in Western Europe and Asia experienced the highest increase in non-profitable farms.

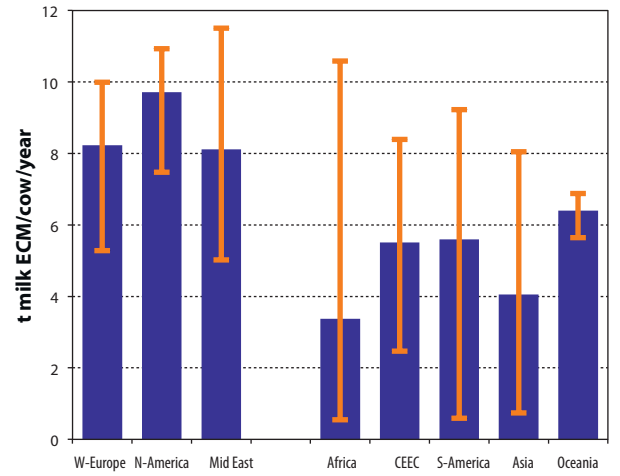
## 1.2 Regional overview of costs and returns of the dairy enterprise

### General farm description

#### Herd size

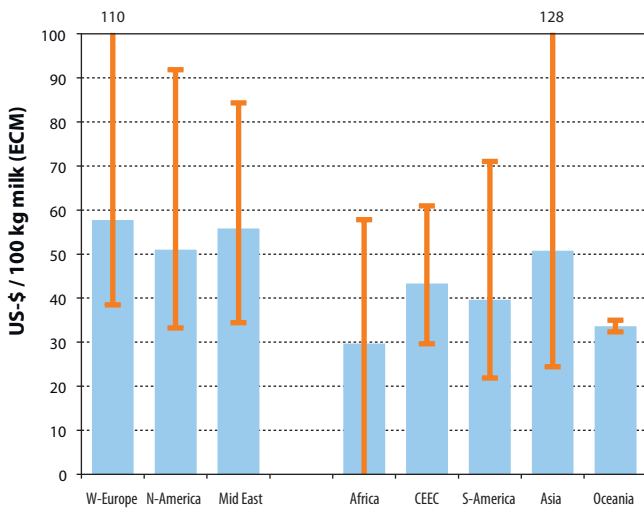


#### Milk yield

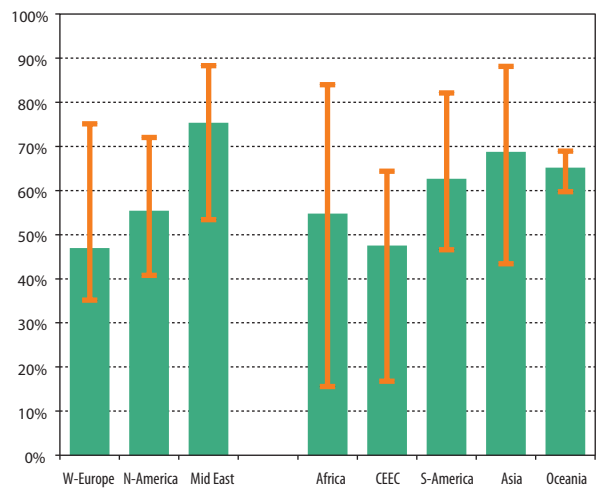


### Farm costs

#### Cost of milk production only

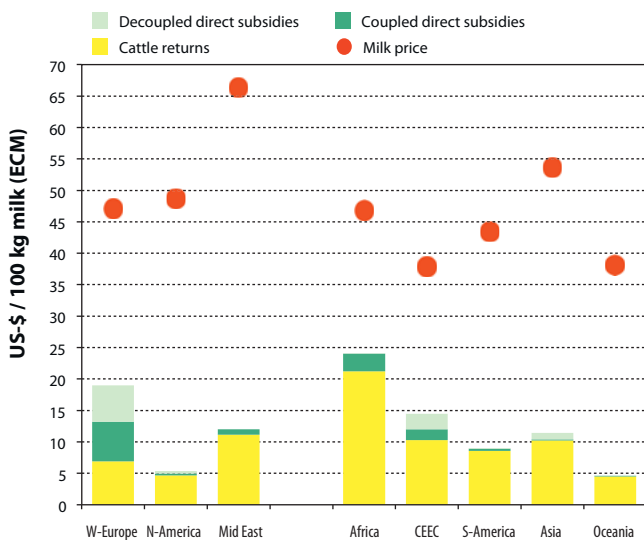


#### Share of feed cost on total cost



### Farm profitability

#### Returns of the dairy enterprise



#### % of farms with entrepreneur's profit



↔ The lines indicate the min – max range

## 1.3 Milk supply curves 2012

### Introduction

The aim of this chapter is to create quasi world milk supply curves which combine the specific cost levels and the milk volume per country in one chart. It is another way of presenting the IFCN results in addition to cost charts. It should be understood that the supply curves are based on a wide range of farming systems (production functions), few farm types and many estimations, so they depict an aggregate effect, hence the term quasi supply curve. Moreover, differences in milk quality were not taken into account. The results, therefore, should be interpreted with care.

### Method

This chapter was based on the farm sorting shown in Chapters 1.4 and 1.5. Four different milk supply curves were created by a combination of the two cost levels (average and larger farms) analysed by IFCN and the difference between milk produced and milk delivered to processors.

### Milk produced: supply curve for average sized farms

This supply curve was based on the average sized typical farms analysed (see selection Chapter 1.4) and the milk volumes produced. The 51 countries analysed represented 90% of the world milk production. Assuming that the selection of countries would be representative for the world, about 16% of the world's milk was produced at costs which were equal to, or below, the world market price for milk in 2012 (36.1 US-\$/100 kg milk).



### Explanation:

**Selection of average sized dairy farms:** See Chapter 1.4. **Selection of larger typical dairy farms:** See Chapter 1.5.

**Milk production data:** Figures are in ECM and represent the year 2012, Source: IFCN Dairy Report 2013.

### Milk produced: supply curve for larger farms

The supply curve was based on the larger typical farms analysed in each country and the milk production per country. If all the milk in these countries were produced by these farms, then 13% of the world's production in 2012 would have been produced at a lower cost than the IFCN world market price.

### Milk produced vs. milk delivered in 2012

As a high share of the world's milk was consumed on the farms or used on the "local" informal markets, a second set of milk supply curves was developed. These curves were based on the milk volumes delivered to milk processors. Based on these estimates, the countries analysed represented more than 90% of the milk which was delivered to processors. High volumes of milk that did not reach the processors were found in India, Pakistan, Brazil and a number of countries in CEEC. As these countries belonged mainly to the low cost milk producers, the supply curve based on milk delivered looked different from that based on milk production.

### Milk delivered: supply curve for average sized farms

This supply curve was based on the costs of the average sized typical farms analysed in each country and the milk volume delivered to processors. Assuming that the selection of countries was representative for the world, 12% of the world's milk delivered was produced at a cost equal to, or below, the IFCN world milk price level of 2012.

### Milk delivered: supply curve for larger farms

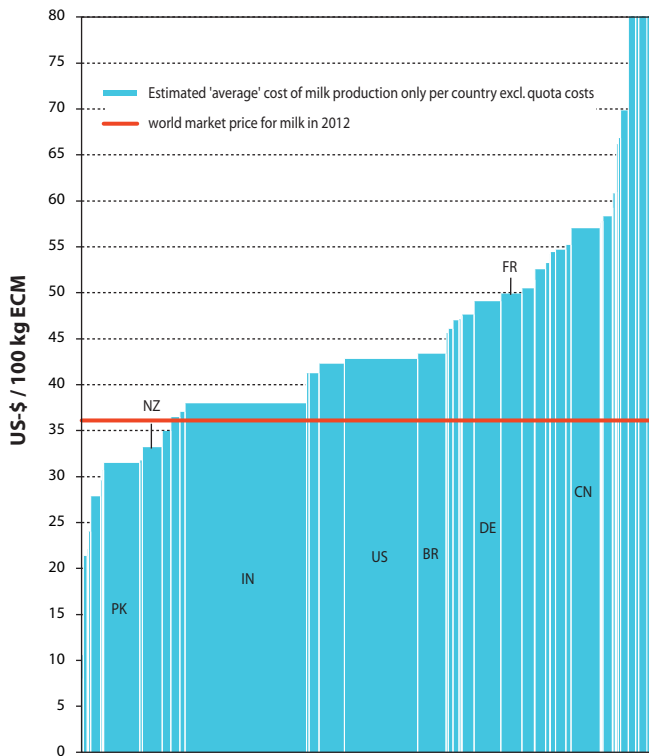
This supply curve is based on the costs of the larger typical farms analysed in each country and the milk volume delivered. If all the milk in these countries was produced by these farms, then 14% of the "world's formal milk" in 2012 would have been produced at a cost equal to, or below, the IFCN world market price level of 2012.

### Future world supply situation

The milk supply curves give an indication of what the equilibrium world milk price might be under more liberal dairy trade conditions, assuming that all delivered milk was tradable internationally. Based on the situation analysed in 2012 with its feed prices, beef prices, direct subsidies, exchange rates and farming systems, 20% of the milk produced on average sized farms was delivered at a milk price less than, or equal to, 40.0 US-\$/100 kg. In the case of the larger farms, 52% of the milk produced was at this value. At a price level of 40 US-\$/100 kg, "marginal milk suppliers" were India, Germany and the US, while low cost suppliers were Australia, New Zealand and Argentina.

**Milk produced: supply curve for average sized farms 2012**

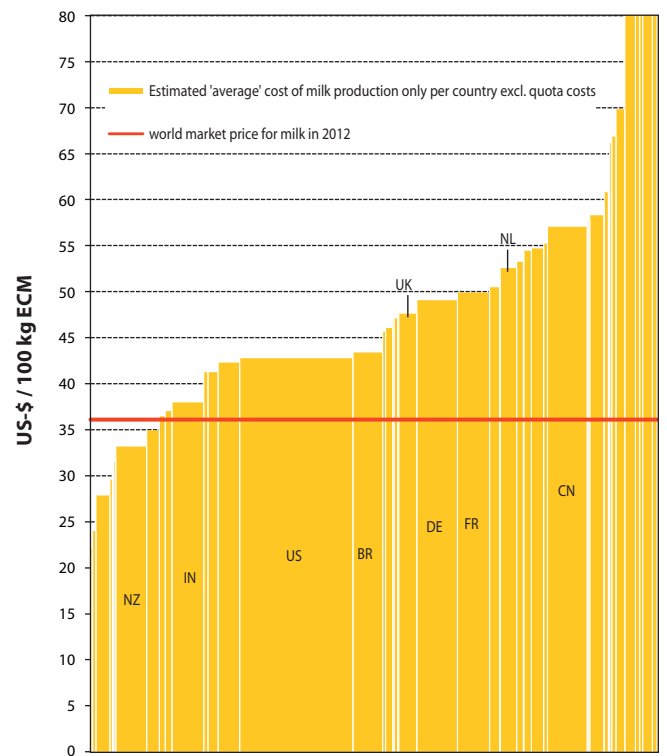
Based on the average sized dairy farms analysed and milk produced



Milk production per country (sorted and accumulated)

**Milk delivered: supply curve for average sized farms 2012**

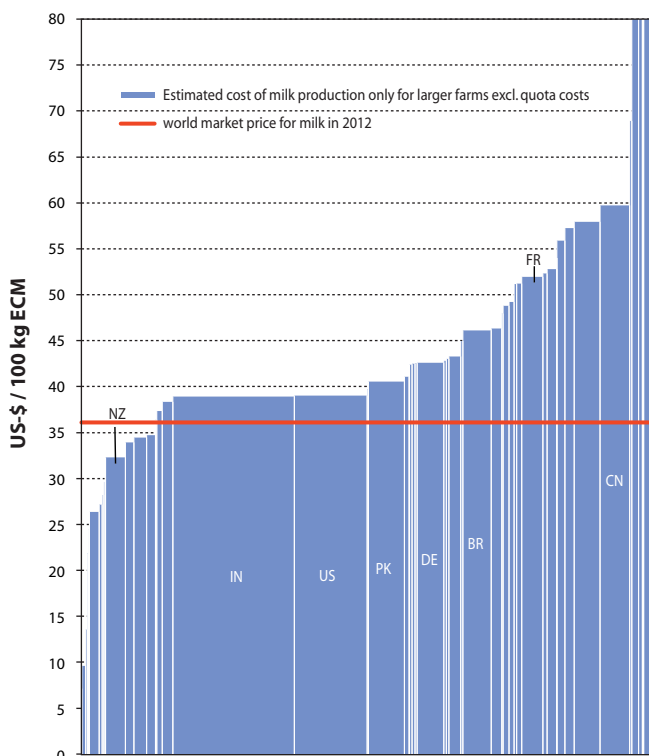
Based on average sized dairy farms analysed and milk delivered



Milk delivered to processors per country (sorted and accumulated)

**Milk produced: supply curve for larger sized farms 2012**

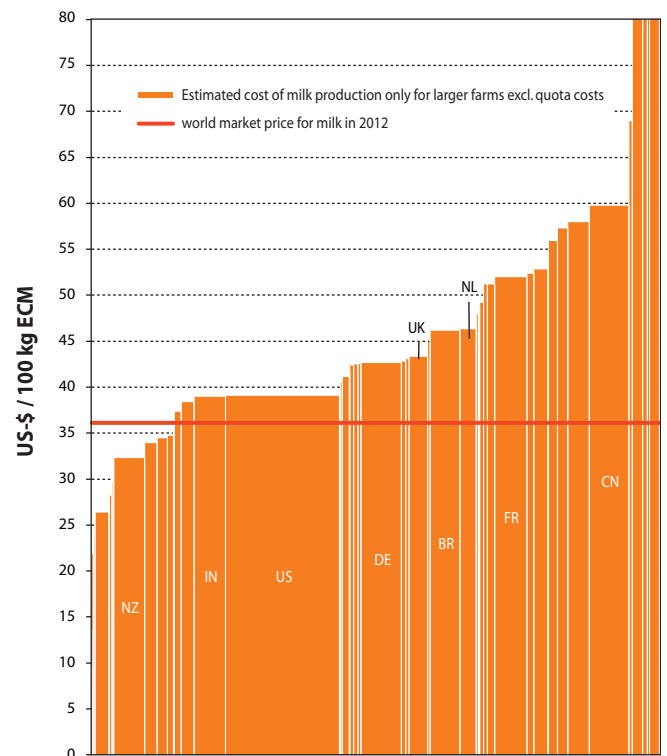
Based on the larger typical dairy farms analysed and milk produced



Milk production per country (sorted and accumulated)

**Milk delivered: supply curve for larger sized farms 2012**

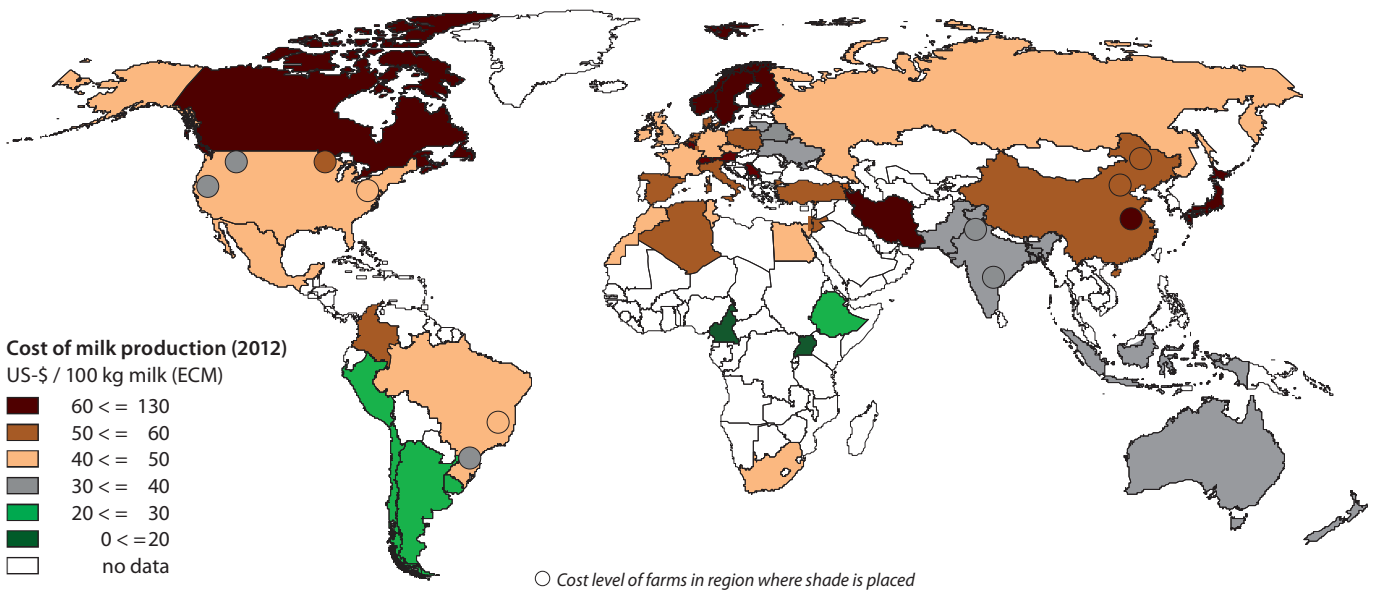
Based on the larger typical dairy farms analysed and milk delivered



Milk delivered to processors per country (sorted and accumulated)

## 1.4 Cost of milk production on average sized farms in 2012

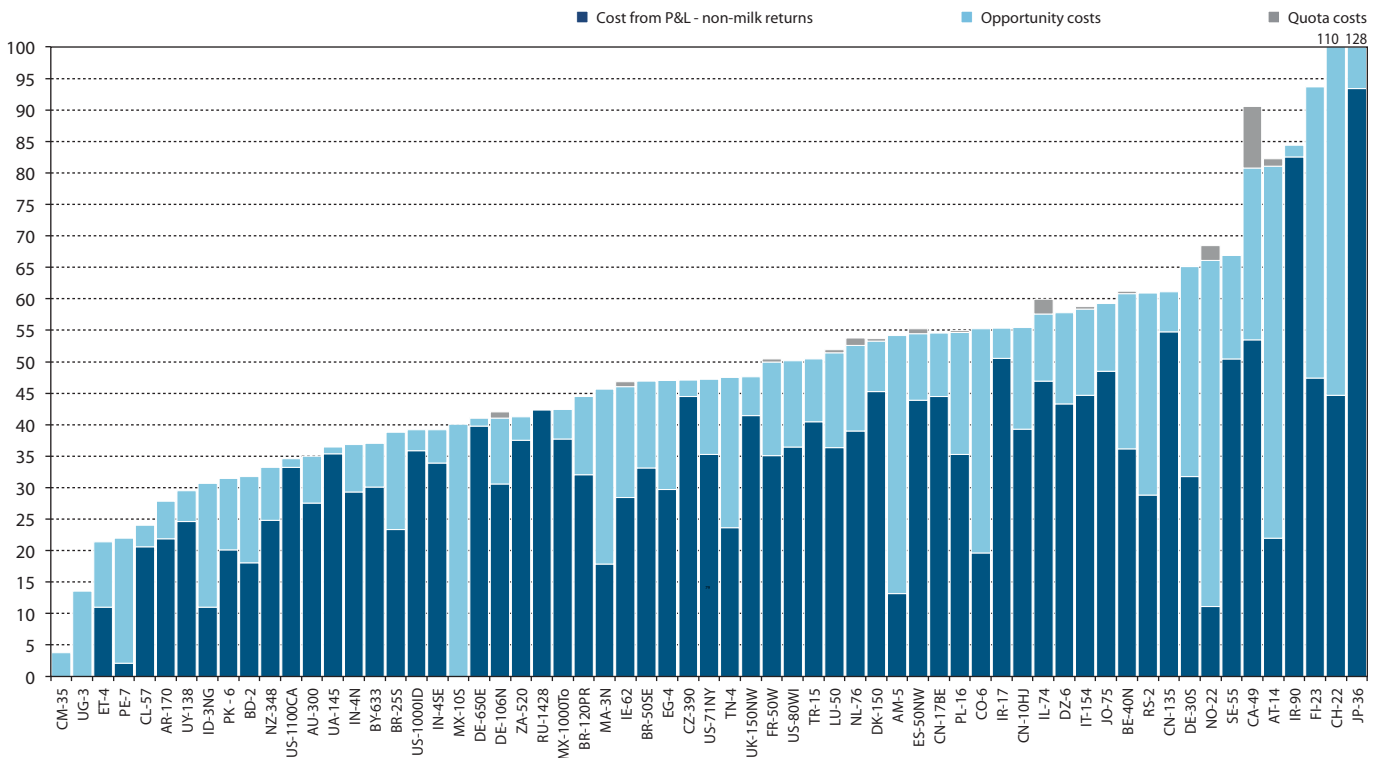
### Cost of milk production on average sized farms in 2012



**Indicator:** Cost of milk production (excluding quota cost) of the "average sized" farms analysed in the countries.

### Cost of milk production on average-sized farms per dairy region in 2012

US-\$ / 100 kg milk (ECM)



#### Explanation:

**Farm code: Example:** CM-35=35-cow farm in Cameroon (details see Annex A.5)

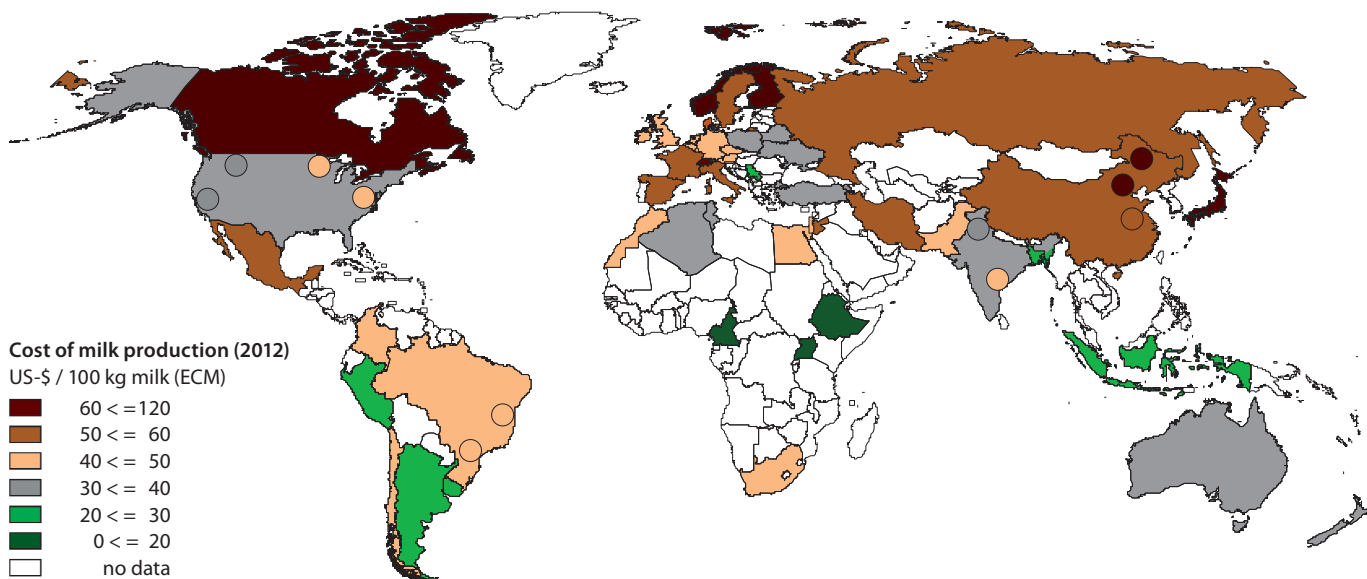
**Indicator on the map:** Cost of milk production only (excluding quota costs) of the "average sized" farms analysed in the countries. For details see Chapter 1.7. This indicator was also used for farm sorting in the cost chart and for the milk supply curves in Chapter 1.3.

**Selection of average sized farms:** In most cases the farm type closer in size to the country's average was chosen (see Chapter 1.6).

**Special cases:** In countries where different regions or farming systems were analysed, the average sized farm from each region was used in the cost ranking.

For the cost maps, an average cost calculated from all average sized farms (from the different regions) was used for the whole country. This was the case in China, Germany and the US. In Brazil, the southern region was used for the map. In addition, the regional cost levels have been indicated by the colour of the circles positioned in the respective regions.

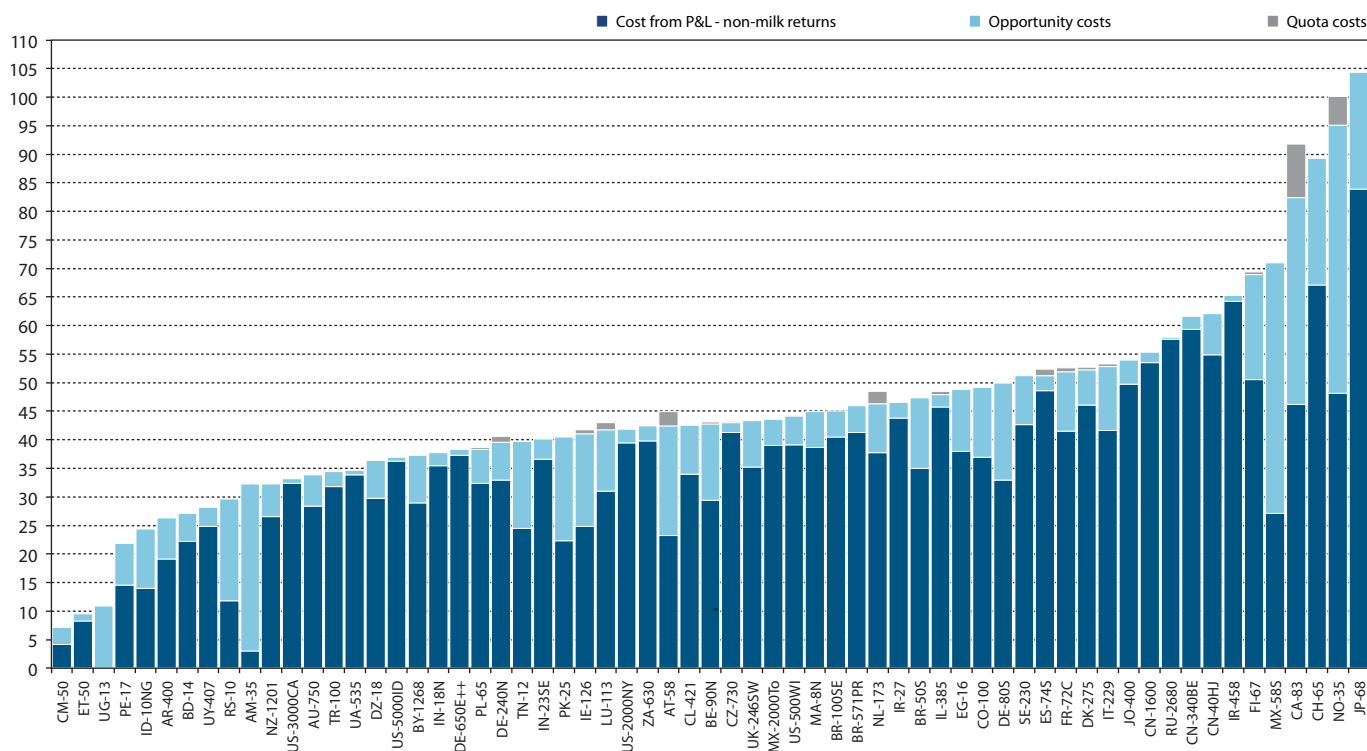
Cost of milk production in larger farms in 2012



Indicator: Cost of milk production (excluding quota cost) of the "larger" farms analysed in the countries.

Cost of milk production on larger farms per dairy region in 2012

US-\$ / 100 kg milk (ECM)



Explanation:

**Farm code: Example:** CM-50 = 50-cow farm in Cameroon (details see Annex A.5).

**Indicator on the map:** Cost of milk production only (excluding quota costs) of the "larger" farms analysed in the countries. For details see Chapter 1.7. This indicator was also used for farm sorting in the cost chart and for the milk supply curves in Chapter 1.3.

**Selection of larger farms:** In most cases the second farm type was chosen (see Chapter 1.6).

**Special cases:** In countries where different regions or farming systems were analysed, the larger farm from each region was used in the cost ranking.

For the cost maps, an average cost calculated from all larger farms (from the different regions) was used for the whole country. This was the case for China, Germany and the US. In Brazil, the southern region was used for the map. In addition, the regional cost levels have been indicated by the colour of the circles positioned in the respective regions.



## 1.6 Description of the dairy farms analysed

### Background

The IFCN estimates that globally, the average dairy farm size was 2 – 3 cows per farm in 2012. In order to “create a better understanding of milk production worldwide”, the aim of this chapter is to give some background information on the farms analysed, and also explain the tendencies observed which justify the current situation. In 2013, we analysed 178 farms with herd sizes ranging from 1 (one) cow to 5000 cows. The detailed analysis in Chapters 1.6 – 1.12 covered 126 typical dairy farms from 61 dairy regions and 51 countries from all over the world, which represented 90% of the total world milk production. We distinguished between country and dairy region, as large countries with a high regional variation in milk production (Brazil, China, USA) were split up into different regions. For each region analysed, two farms, i.e. one average sized farm and one larger farm, were used. For more details on this method see Annex A4. Furthermore, there were countries or regions where two different **management levels** on the same farm size were modelled (East Germany). In this case, the second and better managed farms were of the same size as the first and were marked as “++”.

**Special case of China-Beijing:** The CN-340BE was a “cooperative” farm where an investor set up the farm infrastructure (barn, parlour, feed storage, roads, electricity, etc.). Small farmers (with 3 to 40 cows) rented these facilities, as well as services, such as milking, veterinary and insemination, by supplying milk to the investor at a lower price. CN-17BE represented the small farms in this unit whereas CN-340BE represented the whole “cooperative” unit (20 farmers with 17 cows each on average, plus the investor as farm owner).

### Method

**Farm size:** This represented the average number of dairy cows (dry and lactating) per farm per year. The statistical average of dairy farms represented the country average in 2012. Family and household vs. business farms: Household farms, family farms, and family partnerships were defined as family/household farms, while corporate farming systems, cooperatives, and any other legal set-up were termed as business farms.

**Milk yield:** The total volume of milk/cow/year: first approach, based on natural content (not adjusted), second approach, energy-corrected milk (ECM; 4% fat, 3.3% protein).

**Holstein Friesian vs. other breeds:** All farms having pure HF cows were marked blue on the chart. Farms marked as having “other breeds” included those with HF crossbreeds and other breeds, for example dual purpose breeds (Norway, Switzerland), local cattle breeds (Brazil, Cameroon), and buffaloes (Egypt, India, Pakistan).

### Comparison of Farm size

**Countries influenced by a quota system had small family farms:** Mainly farms in Western Europe, Canada and Israel. Average and larger farms in these countries were, in general, family owned. Average sized farms usually had between 35 and 50 cows while larger farms had up to 200 cows. Some exceptions: Norway, Finland and Austria where geographical conditions and land tenure systems hindered development of larger farms.

**Eastern European countries had large farms and/or very small farms:** In general, before 1990, the agricultural policy of Eastern European countries aimed at developing large farms. After 1990 different trends were noticed a) large farms were maintained (Belarus, the Czech Republic) b) large scale farms were reorganised. In addition, subsistence agriculture was an important part of agricultural production and a high proportion of the cows were kept in smaller household farms with less than 10 cows (Ukraine, Russia) c) after the year 2000, extra-large farms, “agro holdings”, with more than 2000 cows were set up (Ukraine, Russia) d) the family farm culture became stronger in Poland, where 80% of Polish dairy farms kept less than 20 cows.

**Developing and transition countries had small farms with less than 15 cows:** Most farms in Africa and Asia, and a few farms from Latin America (Peru and Colombia) generally had less than 15 cows. Here we distinguished two groups of farms: **1. subsistence farms** having 1-5 cows or buffaloes (average sized farms in Bangladesh, India and Pakistan). **2. Small-scale market-oriented farms** with 5-15 cows (larger farms in Algeria, Bangladesh, Egypt, India, Indonesia and Pakistan). A third group of farms, the **business farms** with more than 100 cows (Egypt, Pakistan and South Africa) are shown in Chapter 1.13 of this report.

**In North and South America and in Oceania with no quota system, family farms were growing into larger farms** where family labour provides only a small share of the total labour requirement: This was the case in the USA, Argentina, Uruguay, Australia and New Zealand.

**Oceania is the world region with the highest statistical average farm size in the world:** Both Australia and New Zealand had a statistical average of above 200 cows per dairy farm. Only South Africa reached similar herd sizes. The low prices paid in these countries demanded low production costs. Therefore, farmers ran pastoral systems with low building costs and took advantage of economies of scale.

**High milk yield:** Dairy herds with Holstein Friesian cows and intensive management and feeding systems reached a milk yield of more than 7,000 kg up to 11,000 kg. This was the case in Western Europe, some CEEC countries, USA, and Israel. In general, about 70% of all farms analysed had a pure Holstein Friesian herd.

**Moderate milk yield:** These were usually grazing based farms with less intensive feeding and/or management system as well as farms with breeds other than Holstein Friesian, such as dual purpose dairy breeds. These farms generally had a milk yield of 4,000 to 7,000 kg, and were found mainly in the CEEC, Latin America, China, and Oceania.

**Low milk yield:** These farms usually had a milk yield of less than 4,000 kg and were mainly found in Africa, South and South East Asia and other countries which had buffaloes, local breeds, and crossbreeds with a high share of local genetic composition.

**Natural content vs. ECM:** The buffalo farms in Egypt, India and Pakistan, as well as the farms in Finland, New Zealand, and some other countries had higher fat and protein content (>4% and >3.3%, respectively) giving them an advantage in milk yield due to the ECM conversion. On the other hand, most farms in the Middle East, North America and Latin America had a lower fat and protein content giving them a disadvantage in milk yield due to the ECM conversion.

### Explanation of variables

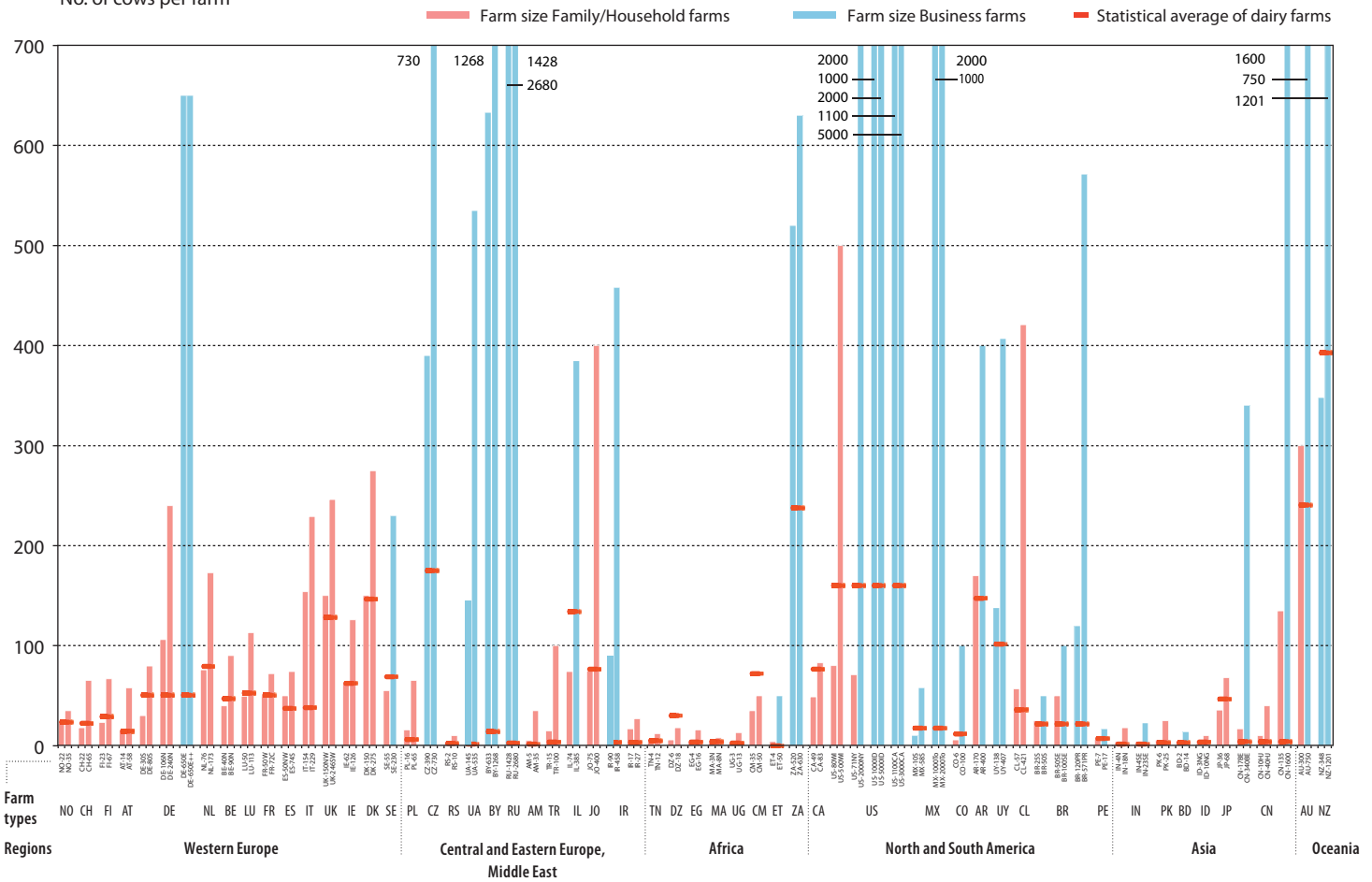
**Farm codes:** Example BR-25S = Brazilian 25-cow farm in Southern Brazil (details see Annex 5). **Year of data collection:** 2012; Uruguay, Australia, New Zealand = season 2011/2012, India = financial year 2011/2012. The farms from Japan were analysed for the first time; their results should be treated with care.

**No. of cows:** Average number of dairy cows (dry and lactating) per year. Statistical average of dairy farms: Country average 2012. **Milk yield:** Milk yield per cow and year (Energy-corrected milk (ECM), 4% fat, 3.3% protein).

# 1.6 Description of the dairy farms analysed

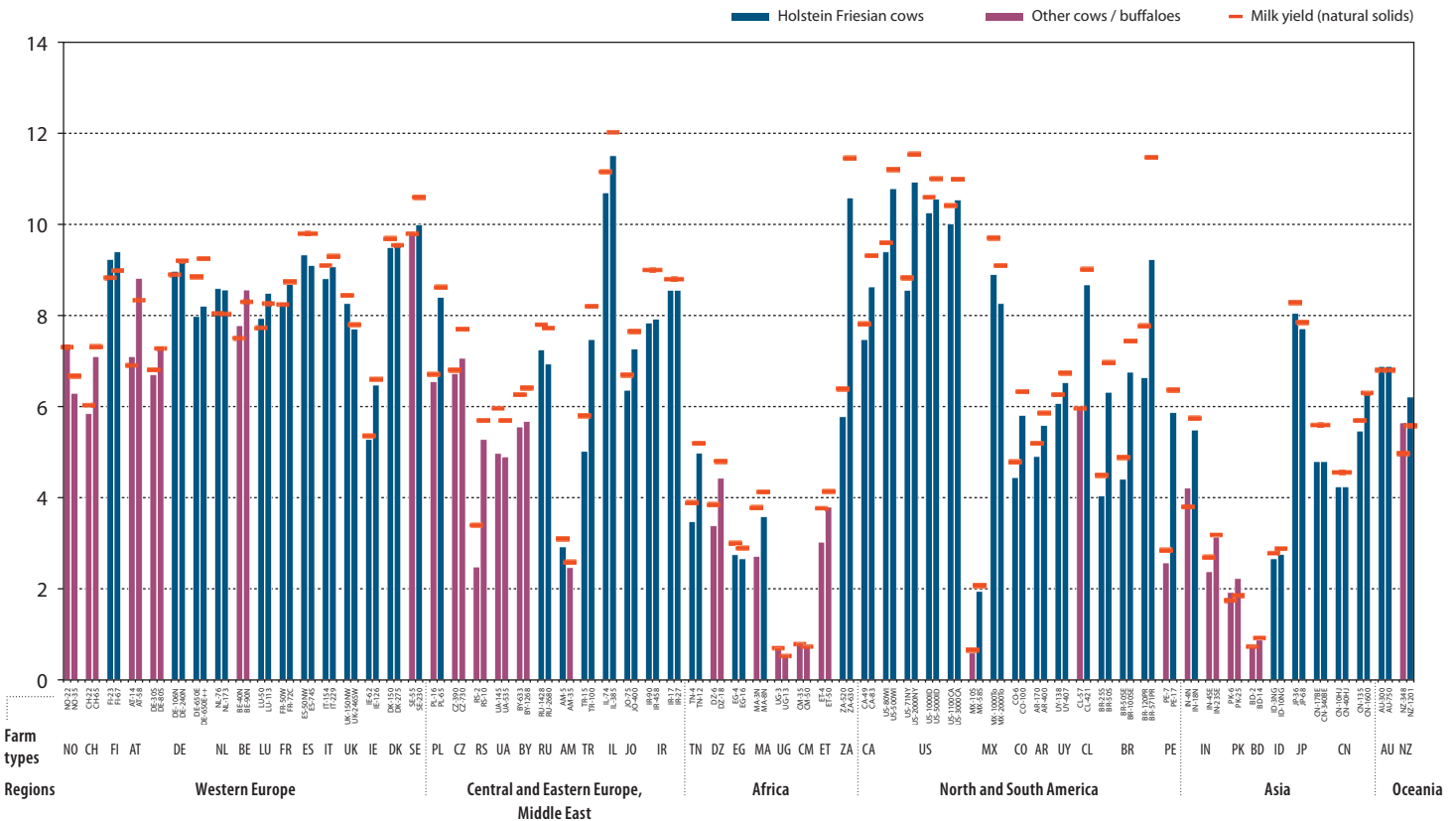
## Farm size

No. of cows per farm



## Milk yield

1,000 kg milk (ECM) / cow / year



## 1.7 Cost of milk production only

### Background

Cost of milk production is the main cost component of the dairy chain. It also gives an idea of the competitiveness of production in various regions. In addition, a comparison of the cost of milk production only and the milk price provides the opportunity to determine and compare the profitability of the farms.

### Method

The total costs from the profit and loss analysis were related to the total returns of the dairy enterprise, including milk and non-milk returns (cattle returns and coupled subsidies). In this chart, the non-milk returns were subtracted from the total costs to show a graph which can be compared with the milk price. They were shown separately from the other costs in order to indicate the effect of opportunity costs. In some cases, the non-milk returns were higher than the cash cost of the dairy enterprise. In these cases (Cameroon and Uganda), the bars on the charts are striped and show the opportunity cost only. For more details on the IFCN cost method, see the chart on the next page and Annex 7.

### Key findings on cost of milk production only

**Low cost regions:** Based on the average sized farms, three low cost regions were identified a) Argentina, Peru, Uruguay, and Chile (CL-57) b) Central and Eastern Africa c) Some small scale farms in the CEEC. Some selected countries in Asia also had low costs. The lower cost was mainly due to cheaper input costs, use of low input systems and more beef orientation in some farms.

17% of the analysed farms in this chapter had costs above 60 US-\$.

14% of the analysed farms in this chapter had costs below 30 US-\$.

### Lowest and highest cost countries in the world

Top 5 lowest cost countries	Top 5 highest cost countries
1. Cameroon	1. Switzerland
2. Uganda	2. Japan
3. Ethiopia	3. Norway
4. Peru	4. Canada
5. Armenia	5. Finland

**Western Europe:** The leading farms in Western Europe had costs in the range of 40-55 US-\$. On average, the cost in Western Europe remained stable (see 1.2) compared to 2011.

**The US:** The large farms in New York, Idaho and California had costs between 33 and 42 US-\$. The cost increase between 2011 and 2012 ranged from 2-5 US-\$ for the US farms.

**Costs on the larger farms in Brazil, Mexico and North Africa varied between 40 and 45 US- $\text{\$}$ :** These farms were slightly above the level of most US farms. Clear economies of scale can be seen in these countries; the typical farms faced higher costs per 100 kg ECM than the large farms.

**The CEEC:** Costs consolidated in 2012 and were partly below the high level which was experienced in 2011. The economies of scale were evident between the household and corporate farms in the region.

**Oceania:** The costs in Oceania were moderate and showed little variation, ranging between 32 and 35 US- $\text{\$}$ , and were similar to the costs in US-California.

### Explanation of variables

**Farm codes:** Example BR-25S = Brazilian 25-cow farm in Southern Brazil (details see Annex 5). **Year of data collection:** 2012; Uruguay, New Zealand = season 2011/2012, India (not farms in SE-India) = financial year 2011/2012. The farms from JP were analysed for the first time; their results should be treated with care.

**Costs from P&L account:** Costs as calculated in the Profit and Loss account.

**Non-milk returns:** Cattle returns (calves, heifers, cull cow receipts, excluding VAT) and coupled direct subsidies (including VAT surplus). Note: Decoupled subsidies were excluded in this analysis.

**Opportunity costs:** Costs for using own production factors (land owned, family labour input, and equity including quota).

**Quota costs:** Quota rents paid + opportunity cost for quota owned (3% interest on quota value). Special case: Due to very high non-milk returns and low milk yields, costs of milk production only in rural farms in Cameroon (CM-35) and Uganda were negative.

**Milk price:** Average milk prices (excluding VAT) adjusted to energy corrected milk (ECM, 4% fat, 3.3% protein).

**Non-milk returns:** The beef returns and subsidies (coupled subsidies) played a great role in the increasing non-milk returns, therefore reducing costs, (based on) according to our approach. Direct subsidies were important for European farms, while beef returns were especially important in Africa. Beef prices stayed at a high level in 2012 and partly kept the cost of milk production down. Therefore, farm profitability was also favoured in 2012.

**Quota costs:** The quota costs generally decreased in the EU countries where the quota system is expected to end in 2015. However, the costs were still high in the Netherlands, Luxembourg, and Austria. In the Netherlands, quota prices clearly decreased, but were still on a high level. In Luxembourg, quota prices even increased for a short period of time during the previous year, despite the announced end of the quota in 2015. This trend has since reversed, as was expected. Quota costs in Israel and Canada were relatively stable as their quota systems were expected to continue.

### Cost P&L – non milk returns vs. Opportunity costs

The proportion of opportunity costs on total costs varied greatly among the various farms. These differences may be due to one or more of the following reasons: a) **Farm size and location:** Small farms and/or farms from less favoured regions in Europe (Norway, Switzerland, Austria, Finland), which were usually family farms, also had a very high proportion of opportunity costs since they had to use large amounts of family resources to produce milk. b) **Feeding systems:** Farms which produced a higher proportion of feed from their own land had higher opportunity costs, while those with a higher proportion of purchased feed had higher costs from the profit and loss account. This would also be noticeable in the grazing farms where the greater intensity of supplementation would increase the costs from the profit and loss account.

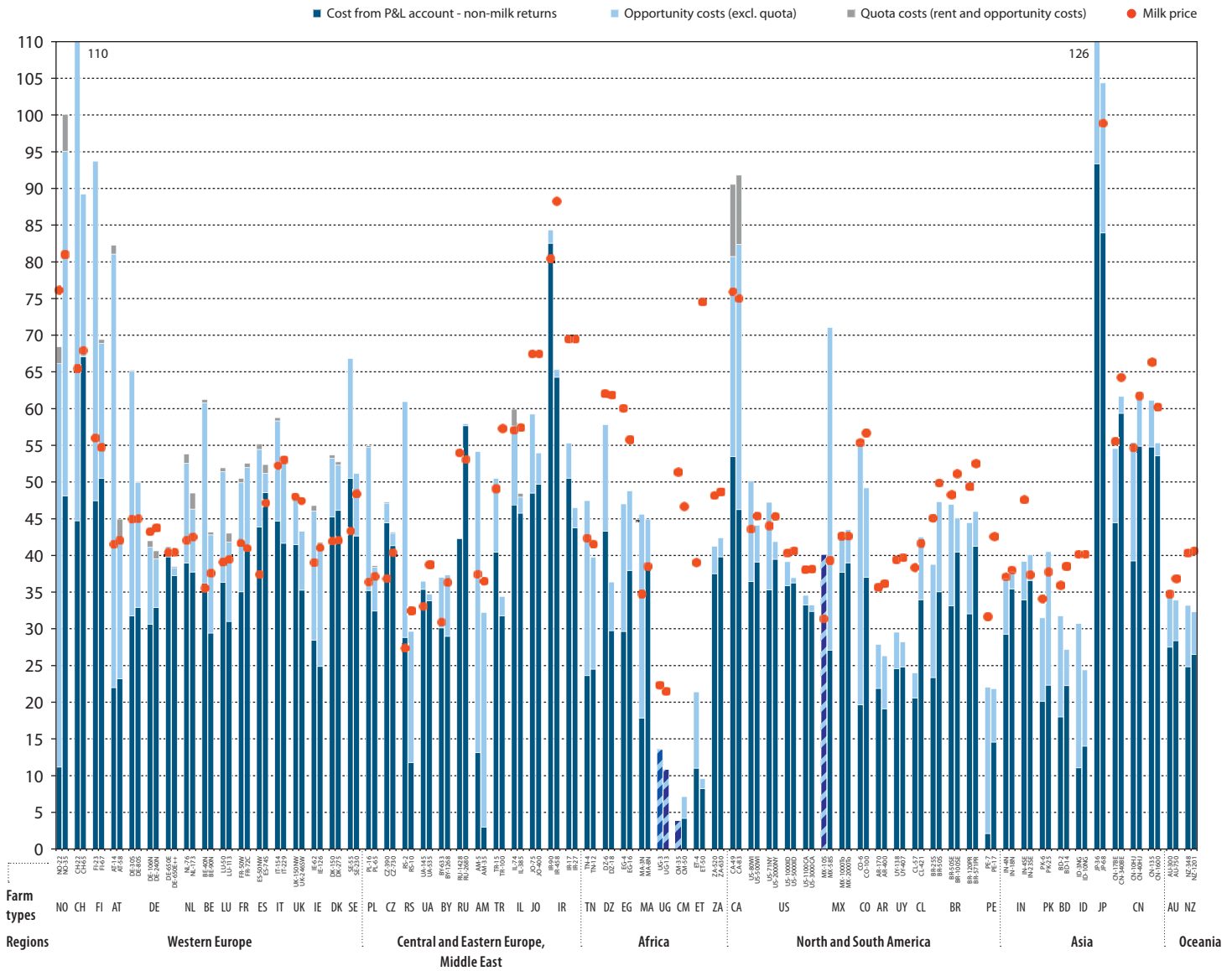
The non-milk returns were higher than the cash cost of the dairy enterprise in the beef producing farms of Cameroon, Uganda, and in the south of Mexico. This was due to the fact that these farms had beef-producing breeds and made a higher share of their returns from beef sales than from milk. In these cases, the charts are striped and show the level of opportunity costs only.

**Feed costs:** The IFCN feed price indicator escalated from 230 US- $\text{\$}$  per ton in 2010 to 318 US- $\text{\$}$  per ton in 2011, and then to an all-time high of 351 US- $\text{\$}$  per ton in 2012. Feed costs increased by more than 50% in the last two years, a quarter of this increase taking place in 2012. This rise per ton added more costs to the profit and loss account. Furthermore, rising concentrate costs will have an influence on land prices in the long run and therefore indirectly increase the opportunity costs for land used for milk production.

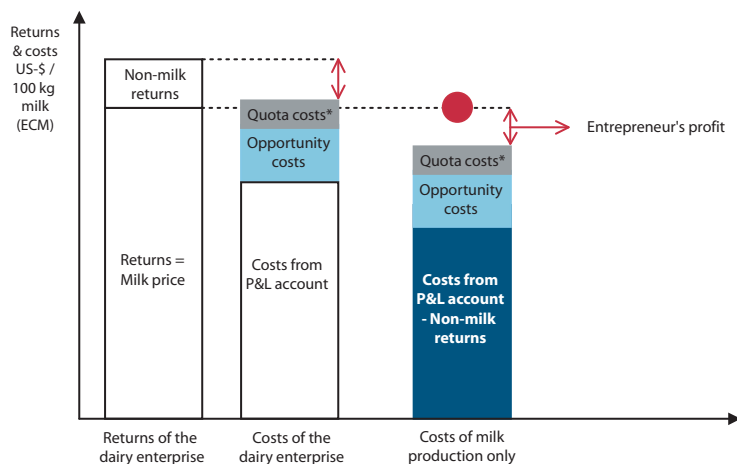


Cost of milk production only

US-\$ / 100 kg milk (ECM)



Method



The total costs of the dairy enterprise are related to the total returns of the dairy enterprise including milk and non-milk returns (cattle returns and coupled direct payments). Therefore the non-milk returns have been subtracted from the total costs to show a cost bar that can be compared with the milk price. This figure explains the method.



## 1.8 Total costs and returns of the dairy enterprise

### Background

The graph in Chapter 1.7 presents a simplified picture of milk production costs and Chapter 1.9 shows a more detailed picture of non-milk returns. A combination of total farm costs and all farm returns gives us a holistic view of the farm economics. The graph in this chapter shows the total costs of the dairy enterprise per 100 kg ECM compared to four different return levels making it easier to understand how dependent the farms are on the different side returns (non-milk returns).

### Method

The graph considers the following four return levels: 1) **Milk price:** Average milk prices (excluding VAT) adjusted to energy corrected milk (ECM, 4% fat, 3.3% protein). These would be the returns if all direct subsidies and all beef returns were zero. 2) **Milk price + non-milk returns:** Milk price + cull cows, calves, heifer returns + changes in livestock inventory + other returns such as selling manure. These would be the returns if all direct subsidies did not exist. 3) **Milk price + non-milk returns + coupled subsidies:** This represents the return structure of the farm without decoupled subsidies. 4) **Milk price + non-milk returns + all subsidies:** This represents the total returns of the farm including all direct subsidies (coupled and decoupled). For details on direct subsidy approaches see Chapter 1.10.



### Explanation of variables

**Farm codes:** Example BR-25S = Brazilian 25-cow farm in Southern Brazil (details see Annex 5). **Year of data collection:** 2012; Uruguay, Australia, New Zealand = season 2011/2012, India (not farms in SE-India) = financial year 2011/2012. The farms from JP were analysed for the first time; their results should be treated with care.

**Cash costs:** Cash costs for purchased feed, fertiliser, seeds, fuel, maintenance, land rents, interest on liabilities, wages paid, vet + medicine, water, insurance, accounting, etc. (excluding VAT).

**Depreciation:** Depreciation on purchase prices for buildings, machinery (excluding VAT). The interest rate on liabilities is set at 6% for all countries.

**Opportunity costs:** Costs for using own production factors (land owned, family labour input, and equity excluding quota). The interest rate on equity is set at 3% for all countries.

### Which farms were only slightly affected by changes in non-milk returns?

Non-milk returns were low and had little impact on incomes of farms in South Africa, Canada, USA, Uruguay, Chile, Argentina, India and New Zealand. These low non-milk returns could be due to low cattle and beef prices and/or high milk yield and also the absence of direct subsidies for the countries in South America, Asia, and Oceania.

### Which farms would be affected by changing beef/cattle prices?

If the beef and cattle prices decreased significantly as during the BSE crisis (*ceteris paribus*), some farms would be affected significantly. These would be mainly farms in the CEEC and Africa as well as in Norway, Switzerland, Austria, Bangladesh, Japan, Indonesia, and Mexico-South.

### Which farms would make a loss without direct subsidies or if all subsidies were decoupled?

If direct subsidies were not made, or were completely decoupled, some farms would no longer be able to cover their costs from the profit and loss account (*ceteris paribus*) and would generate a negative farm income (without decoupled subsidies). These farms would be in Switzerland, Spain, Sweden, and also CZ-390 and BY-633.

### Which farms received additional (decoupled) subsidies?

This chart permits comparisons between countries which had already decoupled most of the direct subsidies, with those which still had coupled subsidies.

### Method comparison: Difference in costs per 100 kg ECM

The costs shown in Chapter 1.7 and 1.8 were different, especially for farms with high non-milk returns. Method 1 (Chapter 1.7) explained the situation where the milk price covered the net cost of milk, i.e. the full economic costs minus the non-milk returns (coupled subsidies and cattle prices). Method 2 (Chapter 1.8) showed the full economic costs for the dairy enterprise.

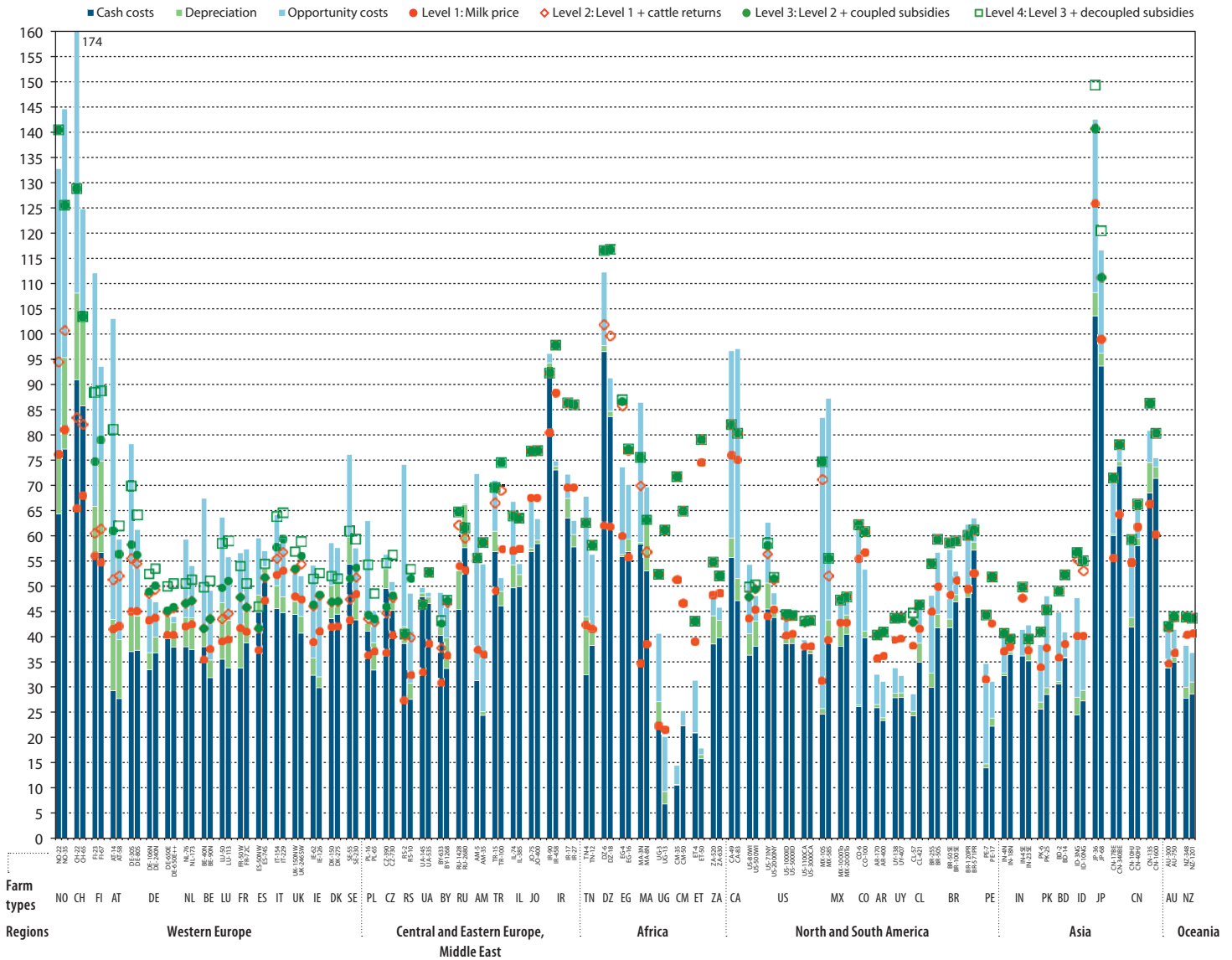
Using cost method 1, the Spanish farm had a 10 US-\$ higher cost than the Austrian farm. By using cost method 2, the costs of the Spanish farm were only 0.5 US-\$ higher than those of the Austrian farm due to the higher non-milk returns.

### Cost difference of a Spanish farm (ES-50NW) and an Austrian farm (AT-58) using two methods

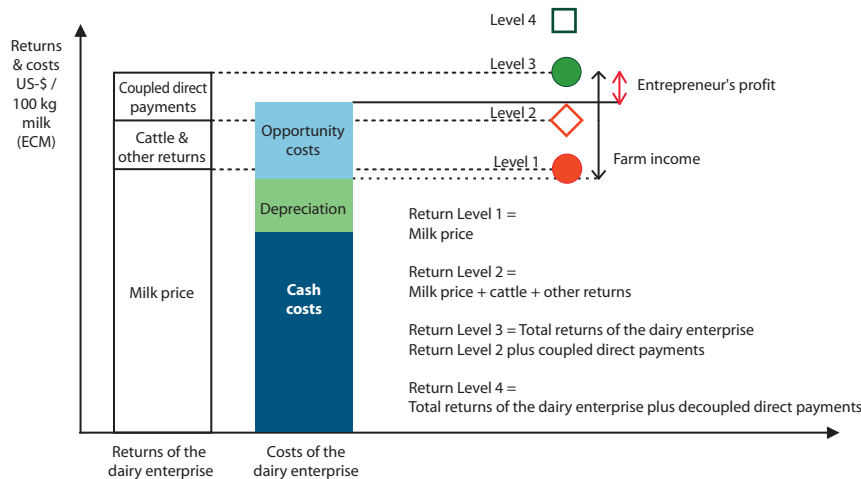
	Cost method 1	Non-milk returns US-\$/100 kg milk	Cost method 2
Farm: ES-50NW	55	4.5	59.5
Farm: AT-58	45	14	59
Difference ES vs. AT	+10	-9.5	+0.5

## Total costs and returns of the dairy enterprise

US-\$ / 100 kg milk (ECM)



### Method



In this graph the total costs of the dairy enterprise have been compared with different return levels of the dairy enterprise.



## 1.9 Returns: Milk price, non-milk returns and decoupled subsidies

### Background

Dairy farms usually have different sources from which they generate returns. Returns from sales were mainly from milk and cattle and sometimes from other sources like manure or surplus feed. A substantial part of farm income could be direct (decoupled) subsidies; while, other subsidies (coupled with fuel, fertiliser, insemination, etc.) were also important in some countries. This chapter presents a detailed view of the components of farm returns and a general idea on milk sourcing potentials.

### Method

**The “world market price for milk”:** This was calculated from the average world market prices for butter and SMP (skim milk powder) (35%), cheese and whey (45%), and WMP (whole milk powder) (20%) in 2012. For details, see Chapter 2.4. **The national average milk price:** Milk price based on national statistics and converted to energy corrected milk ECM (4% fat and 3.3% protein). **Farm specific milk price:** Farm gate milk price (ECM). **Weighted milk price for EU:** This was the average national milk price for all EU countries, weighted by the share of their milk production volumes as compared to the total EU milk production.

**Cattle returns:** Returns from selling cull cows, calves and surplus heifers + /- livestock inventory changes. **Coupled and decoupled direct subsidies:** For details see Chapter 1.10. **VAT balance:** For farms that did not balance the VAT with the tax department, a surplus, if there was one, was shown in one bar together with the coupled direct subsidies, and if there was a deficit, it was included in the cost of milk production.

### Milk prices in 2012 – Overview

Farm specific milk prices range from 21.5 US-\$/100 kg ECM in Uganda to 126 US-\$ in Japan; while, the national average milk prices range from 14.4 US-\$ in Uganda to 79 US-\$ in Norway and Canada, 86 US-\$ in Egypt and 114 US-\$ in Japan. The countries could be grouped into categories according to their farm specific milk prices:

**Milk prices below 40 US-\$/100 kg ECM:** These are UG, BY, PE, CL, AR, PK, UA, AU, MX-south, ET, LU, US-CA, UY, BE, RS, MA, and PL. In Uganda most of the milk was produced in the rural areas where there was no market for milk. Middlemen purchased milk from farmers at very low prices and made a big margin by selling directly to consumers in the urban areas.

**Milk prices between 40 and 50 US-\$/100 kg ECM:** These included the EU countries UK, ES, AT, FR, DE, NL, CZ, DK. Outside the EU, AM, IN, PE, ZA, USA, MA, TN, MX-North, ID, EG, BR, CL, and TR were included in this category.

**Milk prices above 50 US-\$/100 kg ECM:** These were CM, CN, ET, CO, FI, IT, RU, DZ, JO, EG, IL and with the highest milk prices IR, NO, DZ, JO, CA, and JP.

**EU:** The milk price in most EU countries was 5 – 10 US-\$ above the level of the world milk price. In 2012, the weighted milk price for the EU was 41.58 US-\$ which is 13% lower than in the year before and 5.5 US-\$ higher than the world milk price. Finland and Italy had significantly higher milk prices. In the case of Italy, it was probably due to the fact that being a net importing country it could have an additional cost from milk transportation. On the other hand, prices were significantly lower in Poland.

In **Luxembourg and Belgium**, the price level in 2012 was still relatively low, probably still continuing from the low level which originated in the 2009 crisis.

**Belgium:** The milk price was dependent on the amount of milk collected from a farm, i.e. big farms received a higher milk price than small ones. The milk price for smaller farms was lower because milk collectors and processors transferred some of the milk collection costs to the farmers, and on a per litre basis, this amounted to a higher reduction in farms with smaller deliveries.

**Price differentiation:** Milk pricing systems varied in different countries and were a reason for some differences in milk prices between farms within a country. **Peru:** The larger farm participated in a school milk program offering a higher milk price. **India:** The larger farm sold its milk to a dairy processor in a rural area. These followed a transparent price policy. However, the smaller farms did not deliver to the local processor or cooperative, but sold their milk directly to the consumer.

**China:** The CN-17 was part of a cooperative farm. The milk price represented the price farmers received from the investor who had set up the farm infrastructure. The investor received the price shown for farm type CN-340, which included infrastructure depreciation, milking labour cost and bonus for scale. Processors wanted to entice larger farms to grow even further, and therefore offered better milk prices to large scale farms. Moreover, milk quality was often better on larger farms, which was also reflected in the price.

**The Czech Republic:** Domestic prices varied depending on the milk quality (via milk quality payment schemes) and on the dairy company processing the milk (product assortment, capacity utilization and market access). This variation could lead to a difference within a range of about 15 % of the milk price.

**Serbia, Turkey:** The milk price depended on milk quality and quantity, so larger farms usually received a higher milk price as their milk quality was better than on small scale farms, and the production was higher.

### Non-milk returns and decoupled subsidies

**Milk yield versus non-milk returns:** Farms with lower milk yield had higher non-milk returns, when these returns were expressed per 100 kg of milk (Africa, Asia).

**Beef oriented and dual purpose farms** had higher beef returns due to higher beef prices (Norway, Switzerland, and Armenia, but also Mexico, Africa and Southeast Asia).

**Herd management:** Calving interval, culling rate (especially in India and Bangladesh), and breed all affected cattle returns.

**Beef/heifer markets affected cattle returns:** For example in Africa, there was a high demand leading to very high beef and heifer prices, hence higher cattle returns.

**Highest non-milk returns >25 US-\$/100 kg milk:** Norway, Switzerland, Finland, and Sweden, as well as Armenia and African farms from Algeria, Egypt, Uganda and Morocco.

**Lowest non-milk returns:** In New Zealand, South Africa, North and South America, and India where dry cow prices for old animals were low.

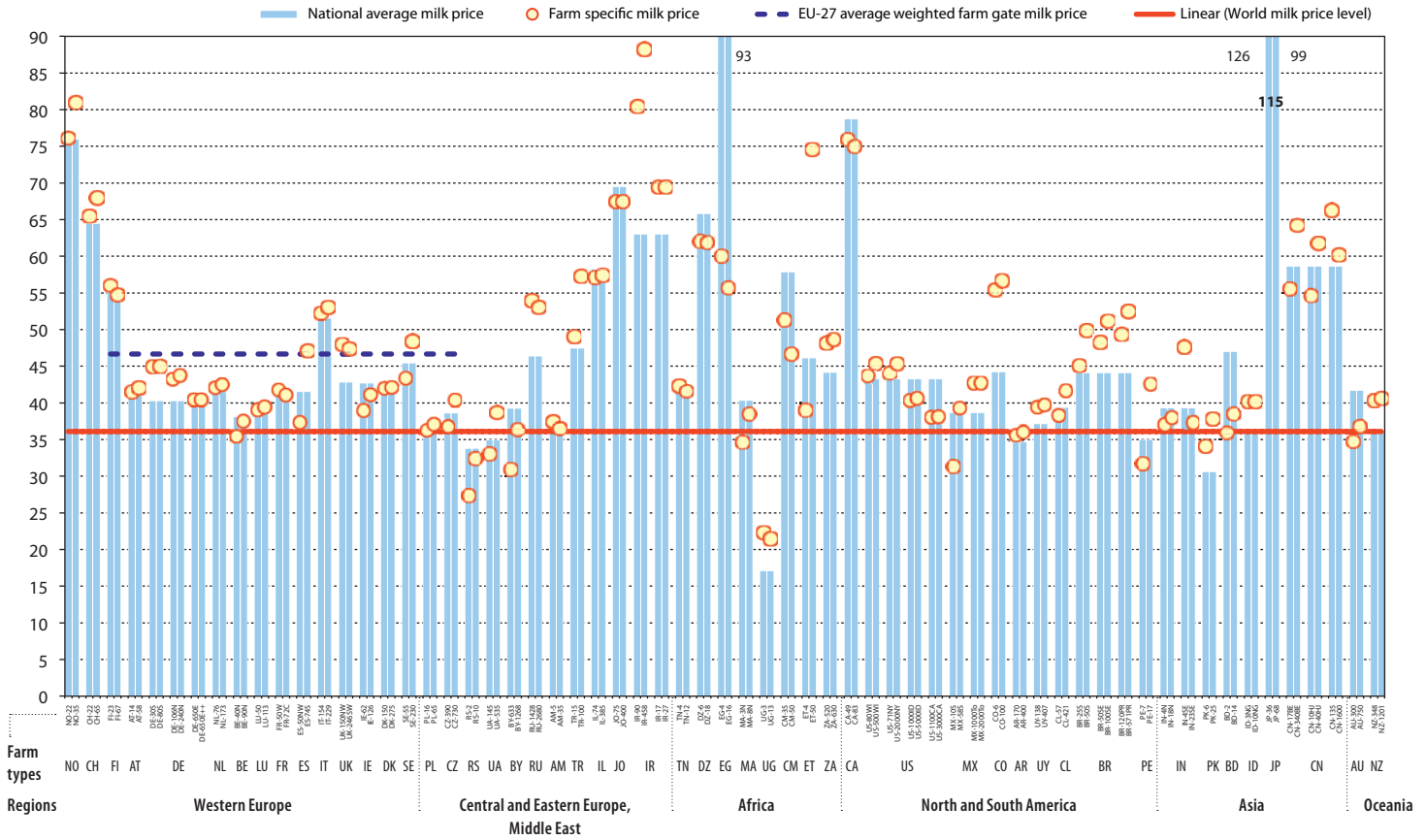
### Explanation of variables

**Farm codes:** Example BR-25S = Brazilian 25-cow farm in Southern Brazil (details see Annex 5). **Year of data collection:** 2012; Uruguay, Australia, New Zealand = season 2011/2012, India (not farms in SE-India) = financial year 2011/2012. The farms from JP were analysed for the first time; their results should be treated with care.

**Milk prices:** Average milk prices (excluding VAT) adjusted to energy corrected milk (ECM 4% fat, 3.3% protein).

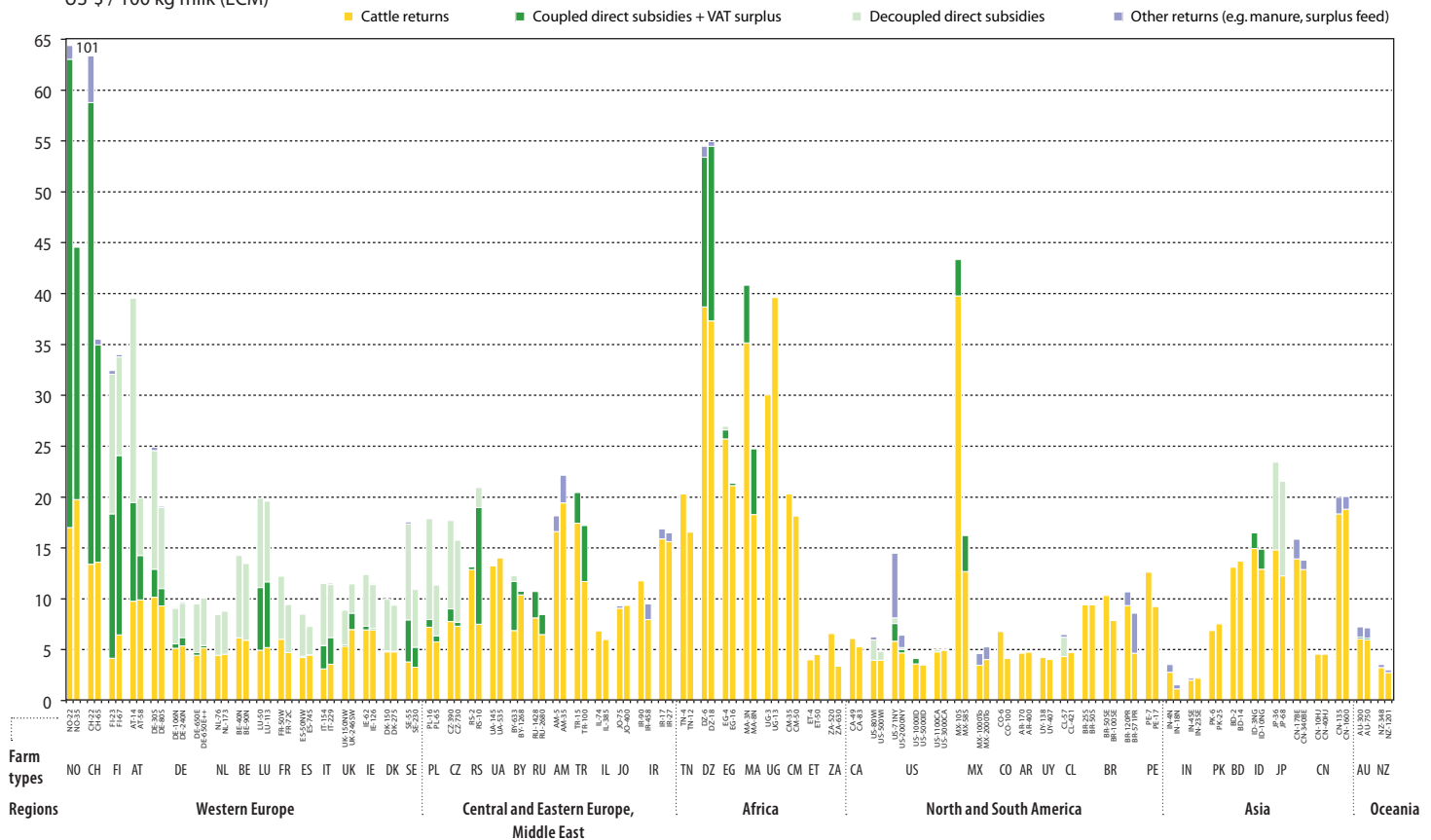
## Milk prices in 2012

US-\$ / 100 kg milk (ECM)



## Non-milk returns and decoupled subsidies

US-\$ / 100 kg milk (ECM)



### Background

The cash incomes of dairy farmers in the EU and in some other regions of the world were strongly influenced by different types of subsidies and payments. This chapter shows the different levels of these subsidies on the typical farms. Furthermore, as the handling of direct subsidies varied greatly from country to country, additional information about the subsidies is given. It must be taken into consideration that the policies were very complex and only a short overview can be given in this chapter.

### Policies and subsidies in different countries in 2012

Subsidies included all cash transfers from the government to the dairy farms such as direct payments (e.g. in the EU) and other forms of subsidies such as acreage payments, payments per kg milk, and payments per cow, fuel subsidy, social payments and special regional programmes. In most cases, investment aid and interest subsidies have not yet been taken into account, as the data collection did not allow quantification at this stage.

### Coupled direct subsidies vs. decoupled direct subsidies

All subsidies which were “coupled” to the milk production were considered as coupled subsidies. **Decoupled subsidies** existed in the EU, Serbia, some parts of the USA, Mexico, Chile, and Japan. These were transfers per ha as a direct aid to the farmer and not linked to the product which was produced. From this definition, decoupled subsidies could not directly be allocated to dairy and were therefore not considered in the graphs in Chapter 1.7. Since they influenced the income of farmers, they were shown here and in Chapter 1.8 and in the farm income in Chapter 1.11. So as to be able to specify decoupled subsidies per kg milk on the charts, the decoupled subsidies were allocated to the dairy enterprise based on the hectares of land the dairy enterprise used or the alternative allocation concept used.

### EU Situation 2012

In the EU, farmers received three major types of public support: a) Coupled direct payments and b) decoupled direct payments in terms of entitlements which are not linked to production (payments of the first pillar), c) special subsidies for sustainable farming which were also decoupled (payments of the second pillar). Regarding the decoupled direct payments of the first pillar (entitlements), farmers received money based on the amount of cultivated land and payment claims per ha. If land was rented, the payment rights usually belonged to the farmer, but might also be negotiated between the farmer and the landowner.

Regarding special subsidies for sustainable farming, farmers could join programmes for sustainable land management, consumer safety and animal welfare. Via these programmes, farmers received money for special operations in their fields which protected the environment. Additionally, there were programmes for less favoured areas. Farmers had to abide by several EU-regulations and a list of rules called “cross compliance” to obtain all these subsidies of the first and second pillar.

By 2013, the coupled direct payments of the first pillar must be reduced to 10 – 15 % of the national envelope. The strategy of transformation was very different in each country of the EU. Some countries, such as the Netherlands, Belgium, Denmark, and Spain, had already decoupled most of their direct payments, whereas other countries, for example Austria and Finland, still had a high share of coupled payments. The coupled subsidies

in Luxembourg were subsidies of the second pillar or national aids, e.g. investment aids, electricity subvention, aids for paying a replacement in the case of the farmer’s illness or vacations, and aids in case of an emergency situation (low milk price, high feed costs).

### EU Situation in the years to come

The milk quota is scheduled to expire in 2015. Therefore, the EU decided in the 2009 ‘Health Check’ reform that national quotas shall be increased by 1% every year so that their value is slowly eroded, in order to prepare a soft landing in 2015 when production is liberalized without a quota. In 2011/2012, six member states - Austria, Ireland, the Netherlands, Germany, Cyprus and Luxembourg - exceeded their milk quotas, triggering “super-levy” penalties of about € 79 million. Despite the overrun of the quotas by these six Member States, total EU deliveries remained 4.7% below the global quota volume (EU Commission, 2012)<sup>1</sup>.

Besides the abolishment of the quota, a greening element will be introduced in 2015, i.e. some 30% of direct payments would depend on three measures: crop diversification (arable farmers would have to cultivate at least three crops a year, none accounting for more than 75% of the surface and each for at least 5%), 5% of the land should be devoted to an ecological focus area and the maintenance of permanent pasture. Two extra payments would be allowed, one for areas with natural constraints and the other for young farmers, both subject to limitations, a maximum of 5% of the national envelope and 2% of the Pillar 1 national envelope, respectively (EU Commission, 2013)<sup>2</sup>.

### Levels of coupled direct subsidies

**> 15 US-\$/100 kg milk (ECM):** The highest coupled subsidies were received in the non-EU countries Norway and Switzerland where all subsidies were coupled. In the EU country Finland, a major part of all subsidies were coupled payments and reached approximately 15 US-\$/100 kg milk ECM. In Algeria, the direct subsidies for milk production were also quite high (16 US-\$/100 kg ECM).

**5-10 US-\$/100 kg milk (ECM):** Coupled subsidies were found in the EU-countries Austria, Luxembourg, and extra-EU-countries Morocco and Turkey.

**< 5 US-\$/100 kg milk (ECM):** Most of the European countries which had not yet been completely decoupled, were in this range, as well as farms in Egypt, USA, Mexico, Russia, and Indonesia.

### Details on direct subsidies:

**Norway:** Area subsidies differed according to the region, the rate being highest for the first 25 hectares of grassland. Livestock and vacation subsidies (refund for actual expenses to farm workers) were highest for the first animals. Structural income support for milk production: a subsidy per dairy cow up to the first five cows; subsidies for grazing livestock.

**Switzerland:** All direct subsidies were coupled to the agricultural use of land and to roughage-consuming livestock units. Subsidies were connected to special requirements called “proof of ecological performance” (cross-compliance) and differed according to the region. Special programmes existed for animal-friendly housing, organic farming and ecological compensation areas.

**EU:** The following programmes are common: “organic farming” (AT, DK, DE, FI, IT), “renunciation of means of production” (AT), “farming in less favoured

### Explanation of variables

**Farm codes:** Example BR-25S = Brazilian 25-cow farm in Southern Brazil (details see Annex 5). **Year of data collection:** 2012; Uruguay, New Zealand = season 2011/2012, India (not farms in SE-India) = financial year 2011/2012. The farms from JP were analysed for the first time; their results should be treated with care.

**Exchange rate to US- $\$$ :** Average value for analysed time period. **VAT balance:** Farms that do not balance the VAT with the tax department have either a positive or a negative balance, which is income relevant. The surplus of the VAT is shown in one bar together with the coupled direct subsidies. **Source for subsidy policy information:** European Commission, national data.

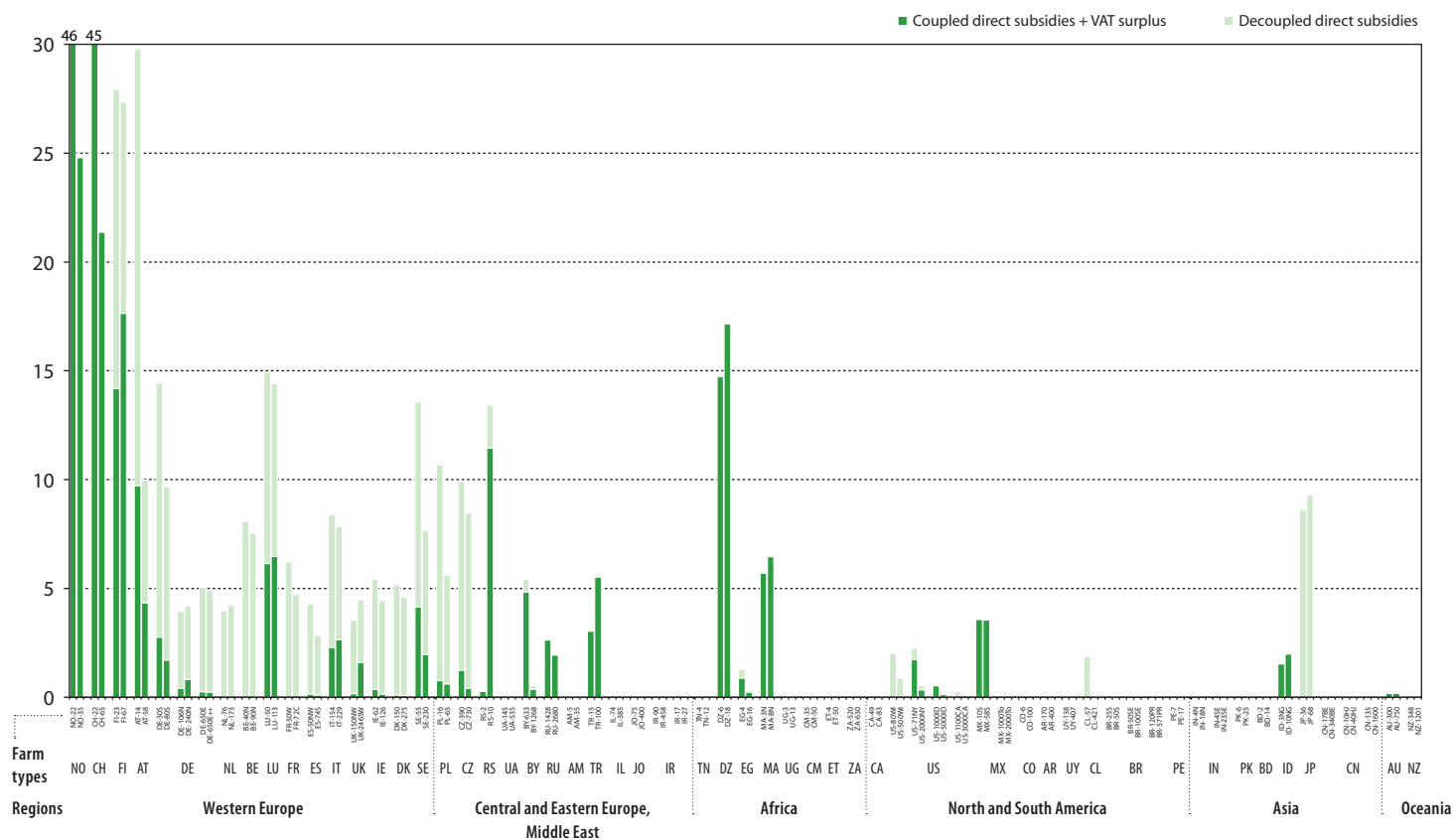
<sup>1</sup> EU Commission 2012. Quota year 2011/12: Six Member States have exceeded their milk quota. IP/12/1116

<sup>2</sup> EU Commission 2013. Political agreement on new direction for common agricultural policy. IP/13/613



## Direct subsidies

US-\$ / 100 kg milk (ECM)



areas" (AT, DE, ES, LU, SE, FR, CZ, PL, IT, NL), "grassland farming" (SE, FR, IT, DE), "nature protection" (LU, PL, CZ, DE, NL), "regional milk quality" programmes (ES), "slaughter payments" (ES, NL).

**Germany:** Since 2009, a payment for each litre of Diesel used on the farm has been made. In 2012, 0.215 € per litre Diesel was paid.

**Serbia:** Farmers, who were registered, received subsidies for potential genetic improvement in cattle, which was paid per cow, from 4 up to 100 cows. A "milk premium" was also paid per litre of quality milk (class I) which was sold to the dairy processor. To receive this subsidy, farmers had to deliver a minimum of 3,000 and up to maximum of 3,000,000 litres of milk per quarter. Farmers who paid social insurance, which was often not the case, were eligible to receive an additional decoupled support per ha (for up to 100 ha/farm) of agricultural land in use.

**Belarus:** Milk producers received subsidies for feed, fuel and fertiliser, which added up to about 0.5-1.5 US-\$ per 100 kg ECM direct subsidies for the milk delivered to a dairy processor.

**USA:** Dairy farmers in the USA were eligible to receive Milk Income Loss Contract (MILC) payments when prices fell below trigger levels. MILC payments were made on current production but limited to 1,350 metric tons per farm. Moreover, there was a Dairy Product Price Support Program which intervened on the market at specified prices for SMP, butter, cheese, and a Dairy Export Incentive Program subsidising exports. More programmes in planning were the Dairy Production Margin Protection Plan and the Dairy Market Stabilisation Plan. These programmes were aimed at stabilising prices for a certain amount of production.

**Morocco:** The government initiated a program called Plan Maroc Vert 2009-2020 in order to increase national milk production. Farmers received access to subsidies of major inputs like purebred heifers, forage seeds, mil-

king equipment, harvesting machinery, building investments and so on.

**Algeria:** Farmers received a subsidy of 12 DZD (0.16 US-\$)/litre of milk from the government.

**Chile:** The government began a system of incentives for sustainability of "agro-environmental" agricultural land (ex-SIRSD) in 2010. It was established for a period of 12 years with focus on small farms. It consisted of non-refundable financial aid, to co-finance activities and practices to restore degraded agricultural soils and/or to maintain the agricultural land which had already been recovered.

**Indonesia:** The concentrate price of 200,000 IDR/100kg (22.7 US-\$) was subsidised by Nestlé, the processing company so that the farmer paid 30,000 IDR (3.4 US-\$) less per 100 kg of compound concentrate.

### Support for modernisation and investments in dairy farming

In some countries, the government supported the dairy sector with investment aid or subsidised interest rates (in the cases of NO, CH, FI, AT, DE, NL, LU, ES, UK, IE, SE, PL, CZ, RS, BY, RU, IL, CA, US, DZ, MA). However, there was a large variation in the type and level of support from country to country. In the new EU member countries, there were several programmes for investment subsidies.

### VAT system for dairy farms could have positive, but also negative effects on farm incomes

In Austria, Germany, the Netherlands, Luxembourg, Italy, Ireland, and Poland, farms could choose between keeping all VAT receipts as income and considering VAT expenses as costs or doing financial bookkeeping without VAT. In Switzerland, the farms paid VAT for their inputs but did not receive VAT for their outputs. The VAT balance added up to between -3 and +3 US-\$ per 100 kg milk.

### Background

Chapter 1.8 shows the total costs of milk production and Chapter 1.9 shows all farm returns. This chapter summarises the different profit levels for the farms. The advantage of these graphs is that they give an idea of the regions where farmers can be motivated through a higher profit margin from the dairy business. **The farm income** indicator describes the income based on the profit and loss account, which is generated by the farm. On family farms, this income is the basis for covering the family livelihood and capital growth. Farm income, both including and excluding decoupled subsidies, is shown. The reason for this is that, in some countries, decoupled subsidies are also a strong determinant of farm profitability. **The entrepreneur's profit** shows whether the farms are able to cover their full economic cost without decoupled subsidies. This means that all costs from the profit and loss account can be covered and family owned production factors (labour, land, capital and quota) can be paid at a market price (opportunity costs). If this is positive, a farming system depends less on government support and is more sustainable financially. In addition, the return to labour shows how much entrepreneur's profit an employee, or the farmer, generates per hour's work on the farm. A comparison made of the **return to labour** with the average wage level calculated per farm, gives an indication on how the farm is able to pay the labour it uses. A farm where the return to labour is lower than the average wage level calculated, may stay in business until a generation change takes place or as long as the farmers are satisfied with the wage level they generate.

### Method

**Farm income (without decoupled subsidies):** Returns (excluding decoupled subsidies) minus costs from profit and loss account of the dairy enterprise. **Farm income (including decoupled subsidies):** Returns (including decoupled subsidies) minus costs from profit and loss account of the dairy enterprise. **Entrepreneur's profit:** Total returns (excl. decoupled subsidies) minus full economic costs (costs from P&L account + opportunity costs) of the dairy enterprise. **Return to labour:** Entrepreneur's profit plus labour costs divided by total labour input. To show the impact of decoupling, the decoupled subsidies per hour are shown in the graph above the return to labour.

**Average wages on the farm:** This figure represents the gross salary plus social fees (insurance, taxes, etc.) the employer has to cover. See calculation details below. Decoupled subsidies per hour: total decoupled subsidies of the dairy enterprise divided by total labour input.

### Farm profit results

**EU case:** The EU farms are mainly family farms which are influenced by the quota system. In addition, due to the high input costs, the EU farms have the lowest entrepreneur's profits (without decoupled payments). Only the better farm from Eastern Germany, the United Kingdom, and the larger farms

in Northern Germany were able to make a positive entrepreneur's profit (without decoupled payments). All farms analysed had a positive farm income when all direct subsidies (coupled and decoupled) were considered. Decoupled payments account for more than half of the farm income on the farms in Finland, France, Denmark, Czech Republic, and Poland, and on the average sized farms in Austria, the Netherlands, Belgium, Luxembourg, Spain, Sweden and the large farm from Eastern Germany.

**The most profitable farms are from Africa:** Uganda, Cameroon, and Ethiopia are the top countries in terms of entrepreneur's profit. These are mainly countries with grazing farms having very low input systems and/or high beef prices and therefore making high returns from beef per 100 kg ECM. Due to the fact that most of the farms in Central and Eastern Africa are usually in rural areas with limited infrastructure, milk marketing could be a problem. In addition, due to the low milk yields of these animals (<3,000 kg/cow/year) and the small farm size (<30 cows), the total farm income per year is usually not very high. However, supervised dairy cooperative development is an on-going approach to ameliorate these problems.

### Return to labour

For reasons of simplification, three levels based on the average wages on the farm in US-\$/hour can be described:

**> 20 US-\$/h:** These were the farms in Norway, the Netherlands, Sweden, Oceania, Canada, Switzerland, Denmark, the average farm in Japan and also one of the Russian farms.

**Between 10-20 US-\$/h:** This category included most farms in Western Europe, Israel, the USA, Argentina, Uruguay and Chile, and the larger farm in Japan.

**< 10 US-\$/h:** This was the case in most countries in the CEEC, Africa, Latin America and Asia where labour is much cheaper compared to the other regions. Spain was also included.

### Which farms were competitive on the local labour market?

These were the farms for which the return to labour exceeded the wage level calculated for this farm type. They included most of the farms in Africa, Asia, Middle East, Australia, New Zealand and South America, and also a few European farms, e.g. in Norway, the UK, and Germany.

Top performing dairy farms in their regions based on return to labour input:

<b>Western Europe:</b> Norway	22 cows	34 US-\$/h
<b>CEEC:</b> The Czech Republic	730 cows	4 US-\$/h
<b>Middle East:</b> Iran	27 cows	37 US-\$/h
<b>Africa:</b> South Africa	630 cows	11 US-\$/h
<b>North America:</b> US-California	3000 cows	35 US-\$/h
<b>South America:</b> Argentina	400 cows	24 US-\$/h
<b>Asia:</b> Japan	36 cows	21 US-\$/h
<b>Oceania:</b> New Zealand	1201 cows	62 US-\$/h

### Explanation of variables

**Farm codes:** Example BR-25S = Brazilian 25-cow farm in Southern Brazil (details see Annex 5). **Year of data collection:** 2012; Uruguay, New Zealand = season 2011/2012, India (not farms in SE-India) = financial year 2011/2012. The farms from JP were analysed for the first time; their results should be treated with care.

**Exchange rate to US-\$:** Average value for analysed time period. **Calculation of average wages on the farm:** Total labour costs (wages paid plus opportunity costs) divided by the total hours worked. For this calculation the number of hours worked by the employees and the family has been estimated by experts. Opportunity costs for labour: time a skilled worker would need to do the job done by the different family members, multiplied by the salary for a skilled worker in the country/region. Alternative option is to take the hours the family worked multiplied by the weighted average salary of the family members





## 1.12 Asset structure and return on investment

### Background

The asset structure and the return on investment analysis determine the returns from farm assets, and can be a useful indicator to compare the profitability of investing in dairy farming around the world. In this report, a historical measurement is taken so it cannot be used to determine where to invest in the future, but it does determine where the best investments were made. The capital stock explains the level of investments per 100 kg milk (ECM) to be made on a typical farm. The return on investment is shown in order to rank the farming systems from this perspective.

### Method

**Calculation of farm assets:** Land, livestock, cooperative shares and quota by market price, machinery and buildings by book values. **Return on investment - operating (operating ROI):** (Entrepreneur's profit without decoupled subsidies + estimated interests (on non-land, non-quota assets) + interests on quota + opportunity costs for land (by land rents)) / all farm assets.

**Return on investment - assets (ROI of assets):** Changes in asset values (from price changes for land, buildings, machinery, livestock, quota and shares in a cooperative) / all farm assets. This is a new indicator and the results should be treated with care. **Inflation rate:** Obtained from the International Monetary Fund (2013).

### Results on asset structure

**An investment of 100 US-\$ is needed for production of every 100 kg of milk:** This was the case in the CEEC, Middle East, Africa (except North Africa), USA and Mexico.

### Composition of assets

**High share of land:** Land assets represented an important part of the total assets and contributed to more than 40% of total assets in Oceania, USA and most of the farms in Western Europe, Latin America and Asia. Since rented land was not considered a farm asset, the farms which had a higher proportion of rented land also had a lower proportion of land assets. This was the case with the farms in the CEEC, Eastern Germany, France, Uganda and Cameroon. Moreover, feed lot farms, e.g. in China, USA, Jordan or Iran, operating without any agricultural land, had a low proportion of land assets.

**High share of livestock:** Livestock values played an important role on farms which operate without any, or very little, owned land as seen in many farms in CEEC, Africa, Indonesia and China.

»Other« assets: In most farms this was circulating capital which could barely be seen in the graph. In New Zealand "other assets" mainly represented shares in the dairy cooperative Fonterra which accounted for about 10% of the farm assets.

**High share of quota:** Found in Norway, Canada and the average farm in Israel. This was mainly due to the high quota value and the quota transfer systems in these countries.

### Differences within one country

**Germany:** Farms were located in different regions with diverse production systems and divergent land prices.

**Israel:** Since 2008, cooperative farms have not been allowed to buy or sell milk quota. For this reason, the milk quota value in IL-385 decreased to zero.

**Tunisia:** The land assets were higher in TN-4 compared to TN-12 due to the higher market value in the surrounding area of Tunis where TN-4 was based as well as a higher demand for land in the region.

**India:** The difference in asset input was driven by the production systems (with/without land)

**China (CN-17):** This farm had hardly any machinery or building assets of its own, as it was part of the cooperative CN-340, from whose owner the dairy barn was hired, and who also provided the milking machine and the labour for milking the cows of CN-17.

### Return on investment (ROI)

Since 2009, not only the ROI from operating business (operating ROI) but also the ROI from the assets' price changes (ROI of assets) have been calculated. Both figures presented on one chart give a good indication of the investment profitability of a particular farming system. In 2012, there was a significant increase in asset values in many countries, notably Poland, Armenia and many Latin American countries. In some cases, this added to the high operating ROI, in others it compensated for low operating ROI.

**Highest ROI – Africa, Middle East, South America and Asia:** These were regions with very high return on investment (generally above 20%).

**Moderate ROI – US, Oceania, CEEC, and Germany:** Almost all these countries (have) had? a return on investment within the range of 10-20%.

**Low ROI – the EU:** In these regions, it was generally close to/or below zero since the calculation exclude(s)d? decoupled payments.



### Explanation of variables

**Farm codes:** Example BR-25S = Brazilian 25-cow farm in Southern Brazil (details see Annex 5). **Year of data collection:** 2012; Uruguay, New Zealand = season 2011/2012, India (not farms in SE-India) = financial year 2011/2012. The farms from JP were analysed for the first time; their results should be treated with care.

**Exchange rate to US-\$:** Average value for analysed time period.

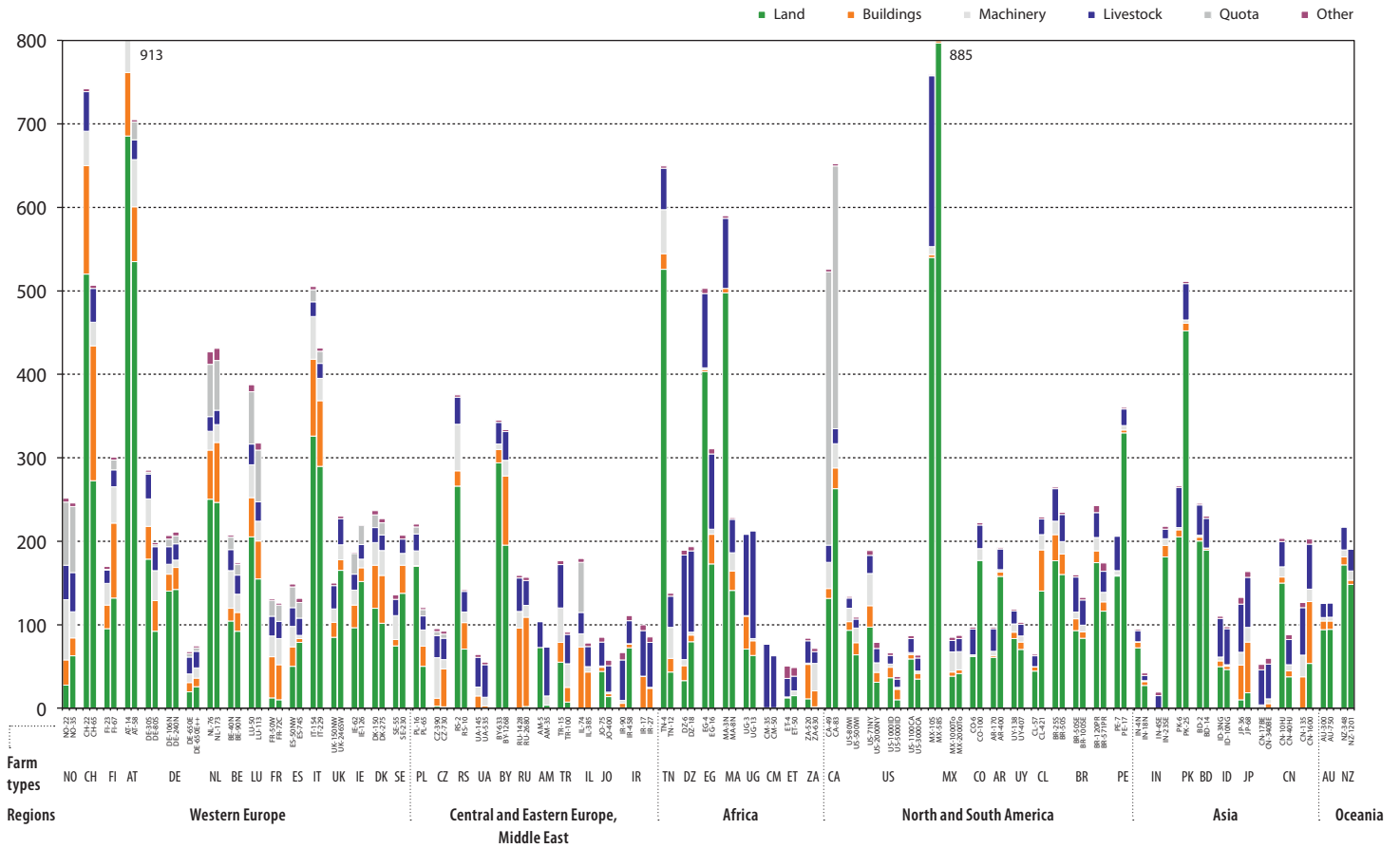
**Method challenge 1 ROI:** Calculation of farm assets for Russia: The depreciation system is very complicated; investments in machinery and buildings were made many years ago and are already fully depreciated. For these reasons the value of buildings and machinery in assets tends to be underestimated.

**Method challenge 2 ROI:** In farms with decoupled subsidies, the ROI calculated can be overestimated as these payments keep land prices at a high level.

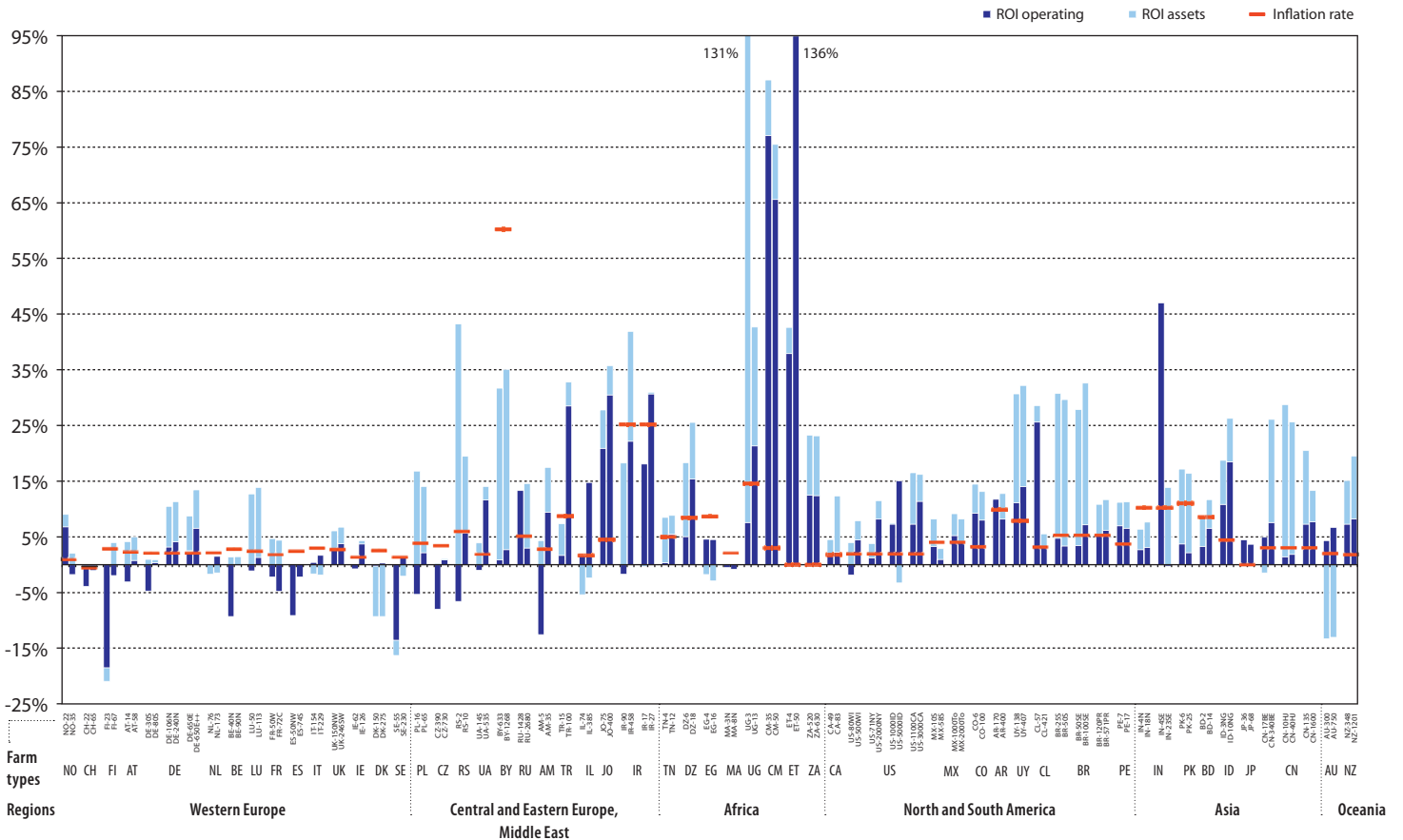
**Method challenge 3 Return to labour:** Calculation of return to labour for farms with a negative entrepreneur's profit: the calculations in these farms result in a negative return to labour and so far, only the decoupled subsidies per hour have been shown.

Asset structure of the dairy enterprise

US-\$ / 100 kg milk (ECM)



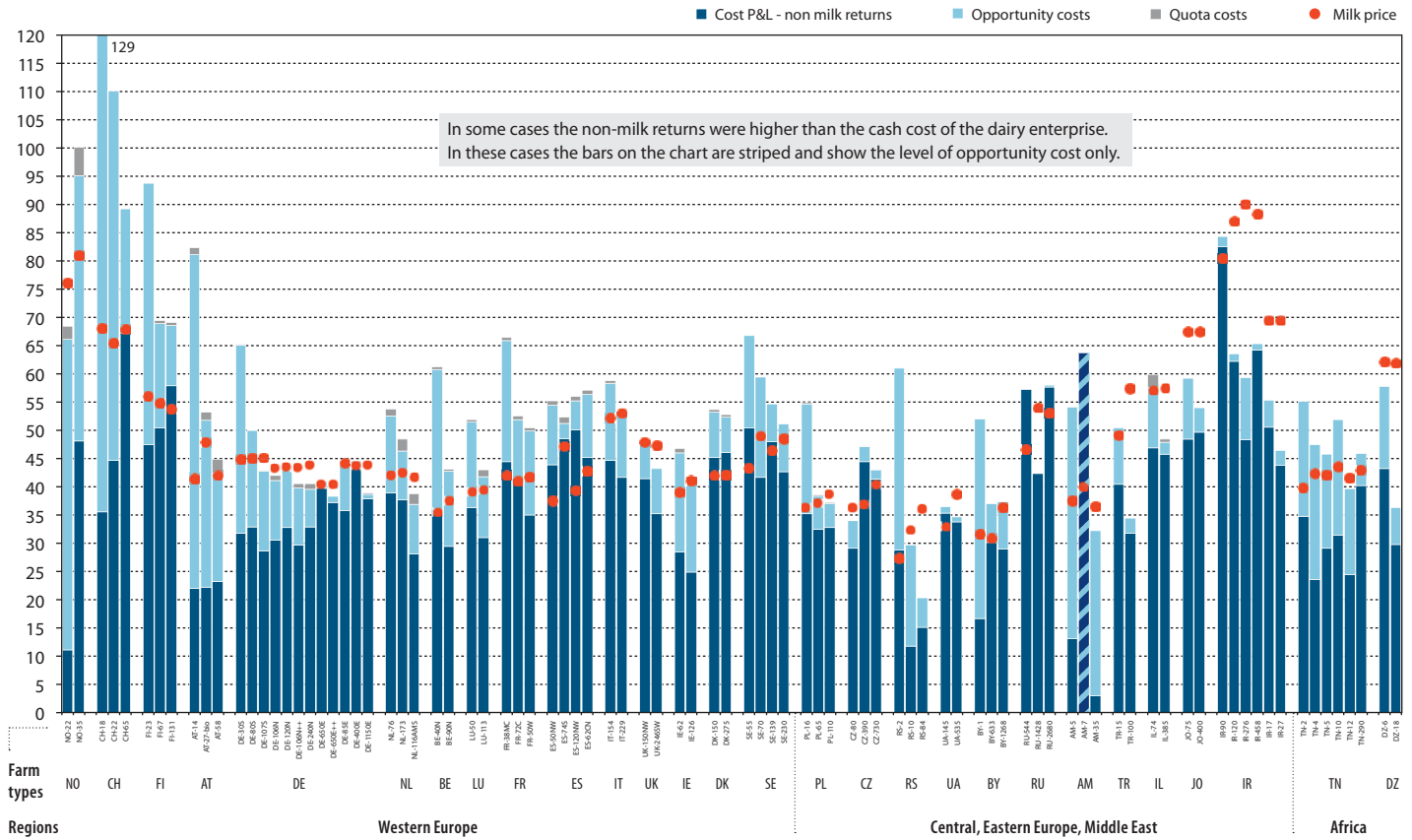
Return on investment (ROI)



# 1.13 Overview of all typical farms analysed – costs and returns

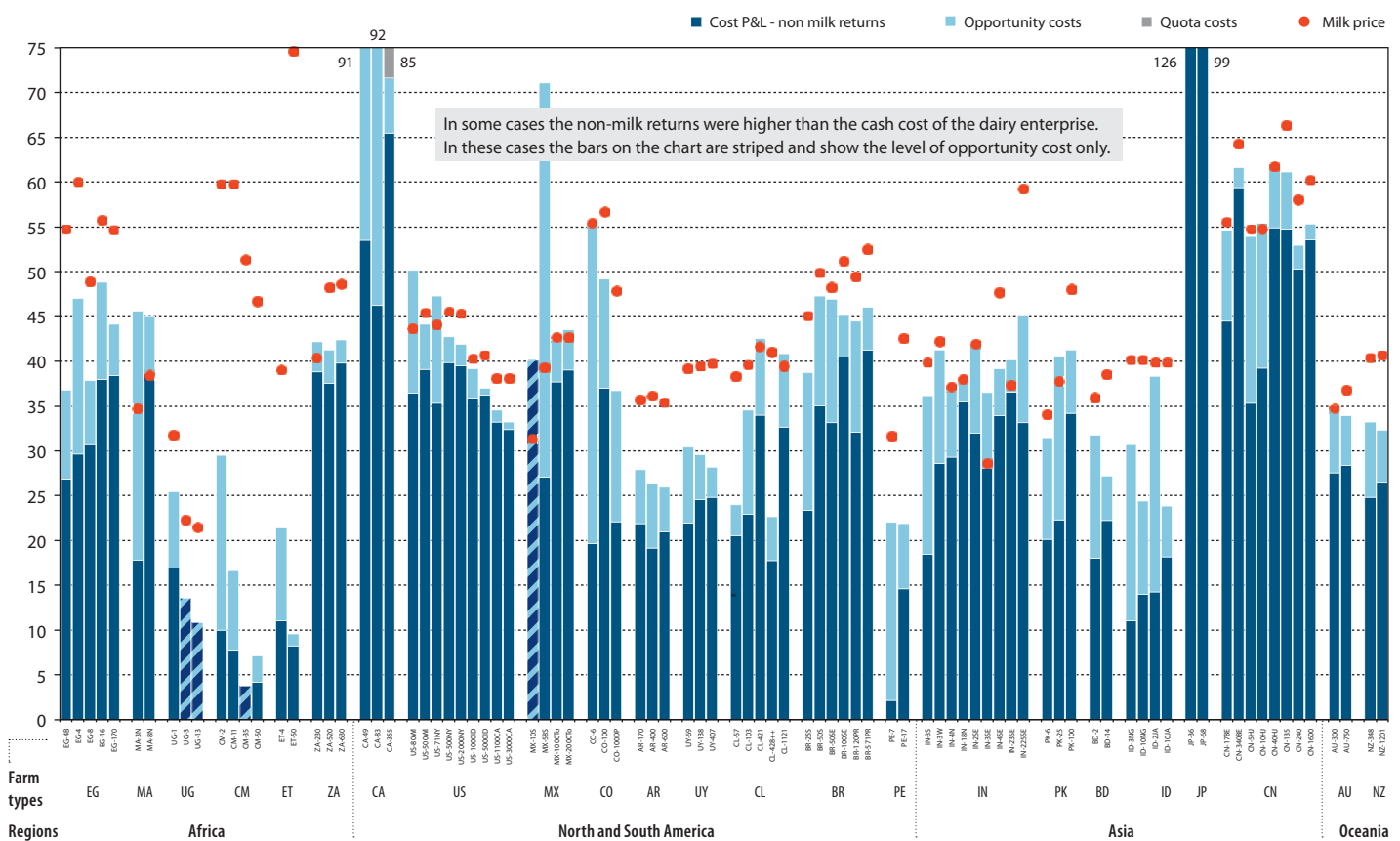
## Cost of milk production only

US-\$ / 100 kg milk (ECM)



## Cost of milk production only

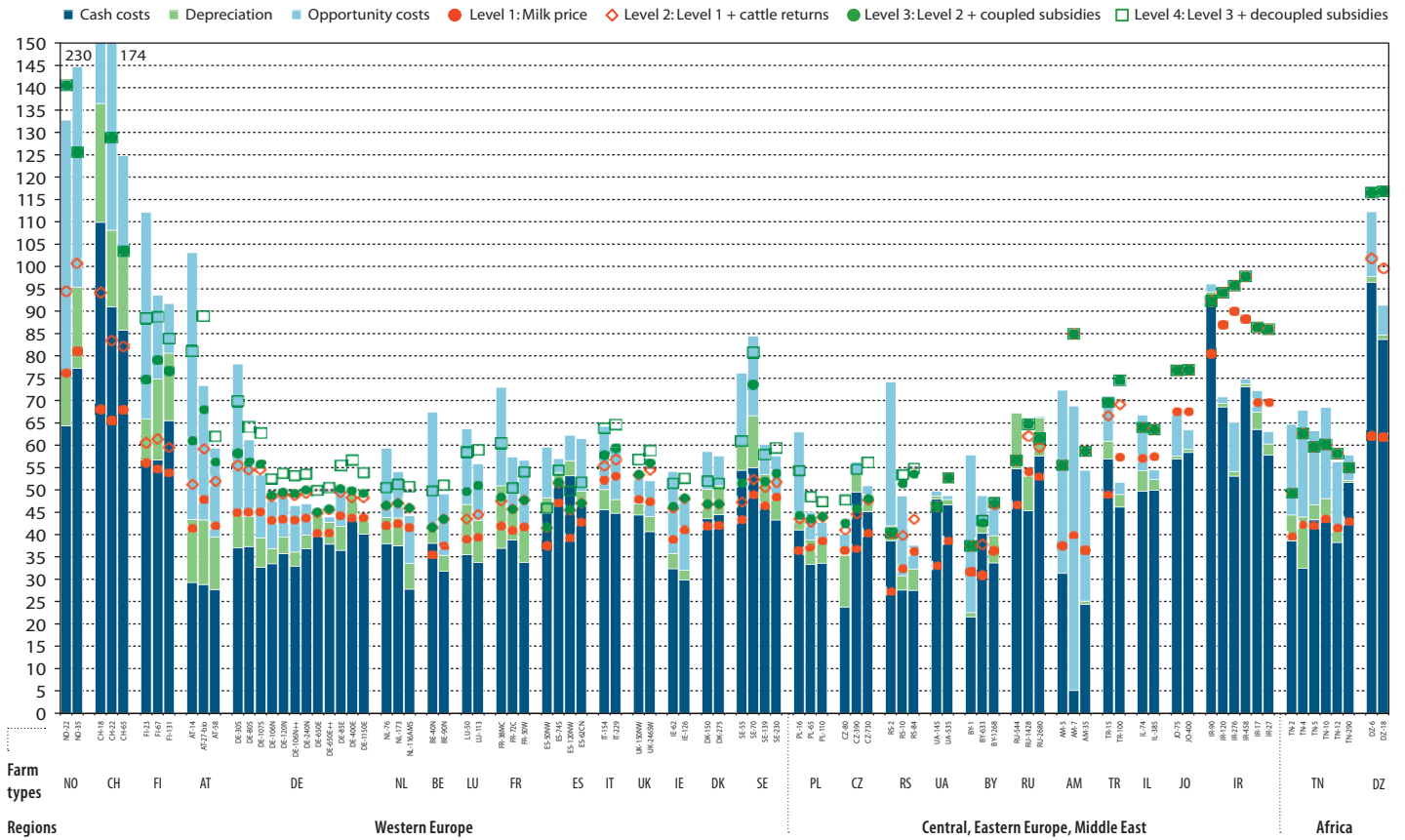
US-\$ / 100 kg milk (ECM)





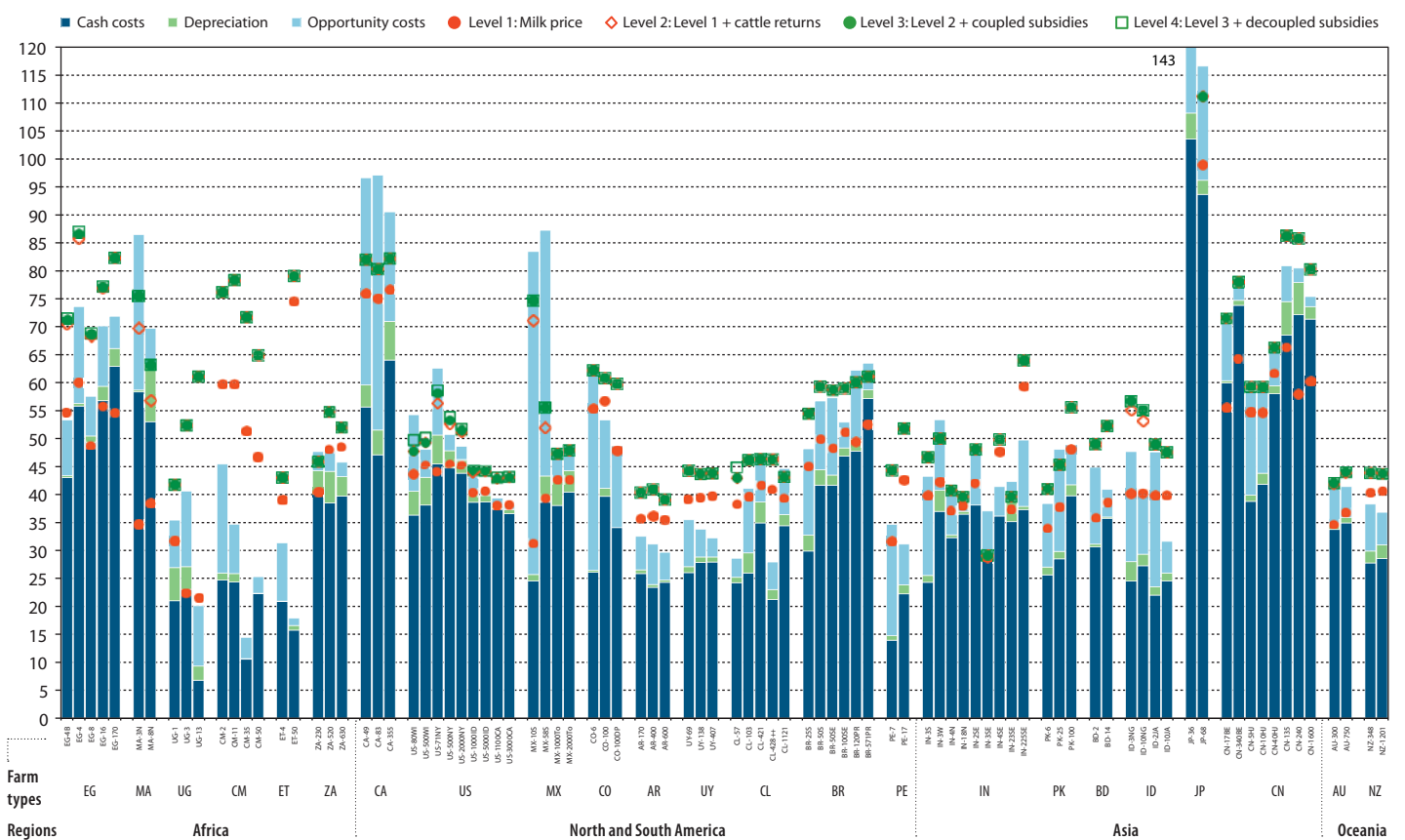
**Total costs and returns of the dairy enterprise**

US-\$ / 100 kg milk (ECM)



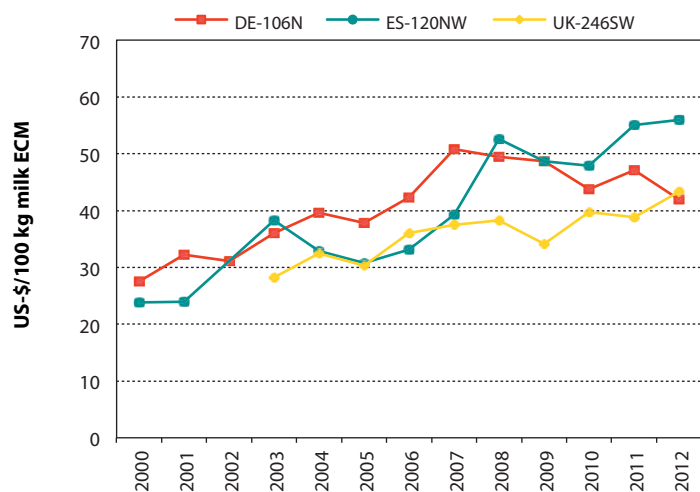
**Total costs and returns of the dairy enterprise**

US-\$ / 100 kg milk (ECM)



## Cost of milk production only

### Western Europe

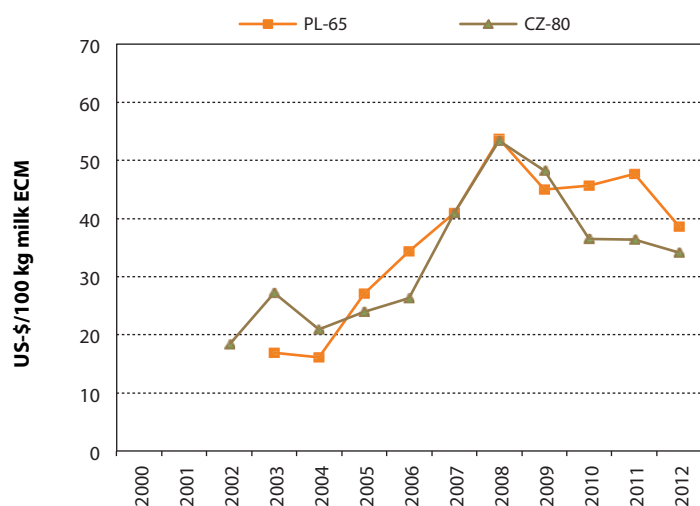


**Germany (DE-106N):** This farm type stands for an average farm in Northern Germany, producing about 40% of the milk in this dairy intensive dairy region. The costs of this farm increased continuously until the year 2007, in line with an appreciation of the currency and de-coupling of direct payments. The general economic developments during the years 2008 to 2010 led to lower resource prices, which caused a slight decrease in production costs. In 2011, costs rose again by 8% due to higher feed and land cost combined with reduced direct payments. In 2012, the cost decreased by 11% which was attributable to the weakening of the Euro against the Dollar and an increase in herd size from 98 to 106 cows.

**Spain (ES-120NW):** This farm denotes a larger farm type which stands for about 30% of all the dairy cows in Spain. The reverse trend was observed on the Spanish 120 cow farm. After a slight decrease in costs in 2010, a steady increase was observed for 2011 and 2012, although the cost increase in 2011 was substantially higher (15%) than in 2012 (2%). The main reasons were feed and capital costs.

**United Kingdom (UK-246SW):** This farm type belongs to the group of farms with >100 cows, representing 70% of all the dairy cows in the UK. A slight decrease in the cost of milk production only for UK-246SW was observed in 2011 due to increased productivity and higher direct payments. This was followed by an increase in cost (11%) in 2012, mainly as a result of an increase in feed and forage in combination with a slight decrease in milk yield.

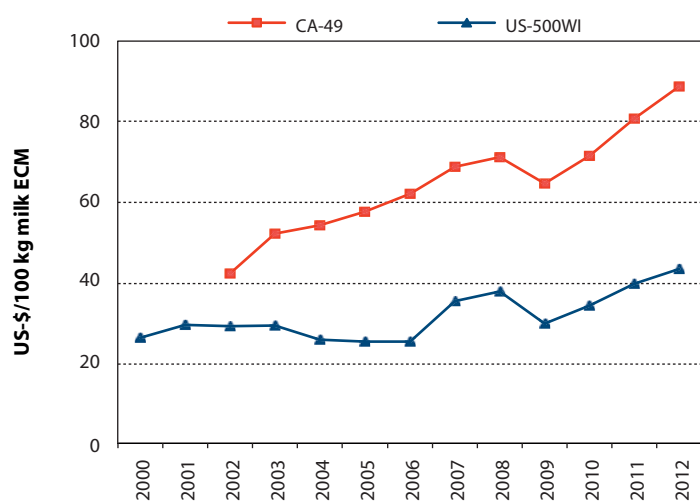
### Central and Eastern European countries



**Poland (PL-65):** This farm type represents a larger family farm type in Poland, producing about 30-40% of the total milk in Poland. The cost of the 65-cow Polish farm continued to rise from 2003 to 2008. Then costs fluctuated until 2012. The important decline in costs in 2012 (19%) was mainly due to a decrease in liabilities, indicating lower capital cost, and also lower machinery cost compared to the previous years.

**Czech Republic (CZ-80):** This farm type belongs to the group of farms with less than 100 cows, representing about half of the Czech farms. Also in the Czech Republic the currency appreciation to the US-\$, plus increasing labour prices after EU accession, led to higher costs until 2008. The cost decreased for CZ-80 from 2008 to 2012, although it was only minor in the last two years. These developments were mainly driven by a steady increase of direct payments and a decline of capital costs as from 2008.

### North America



**Canada (CA-49):** This farm represents an average sized family farm, producing about 40% of the total milk in Canada.

The costs for the Canadian dairy farm have followed a continuous upward trend since 2009. The strengthening of the Canadian dollar to the US-\$ has also amplified the cost increase. The cost reached the highest level in Canadian history in 2012 (91 US-\$/100 kg ECM). The latest cost development has mainly been affected by increasing labour and, especially, by land prices, with a notable increase in quota cost in 2012 associated with change in the milk composition.

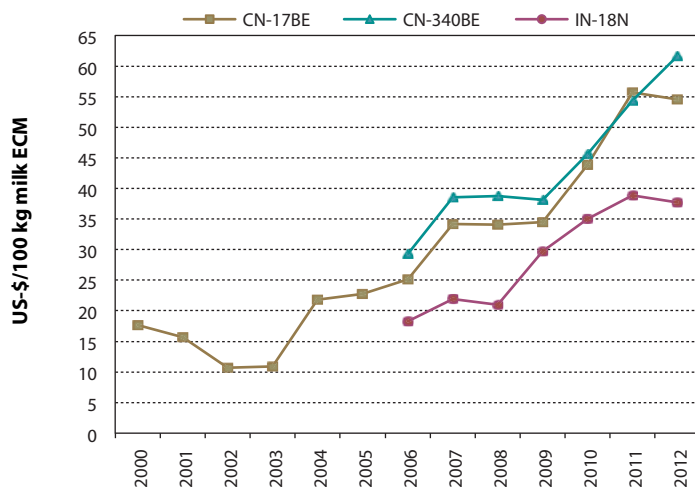
**USA (US-500WI):** This farm type represents a larger family farm type and roughly 30% of milk in the USA. Costs were relatively stable from 2000 to 2006, but increased sharply until 2008 due to higher feed prices. In the same way as CA, there was also a decline in 2009. Then prices for feed and other inputs (fertiliser, fuel, etc.) rose again and led to the highest peak (44 US-\$/100 kg ECM) in 2012 which is the highest value recorded under these production conditions

### Explanation of variables:

Cost of milk production only is the sum of costs from profit and loss account and opportunity costs minus non milk returns. All costs are in US-\$ with the value in each year. The results may differ slightly from the previous Dairy Reports. The TIPICAL model has been improved and some farm data have been corrected after the publishing of the earlier Dairy Reports. Moreover, in some cases „jumps“ in costs were caused by changes in herd size on farms or improved panel/data sets.

Cost of milk production only

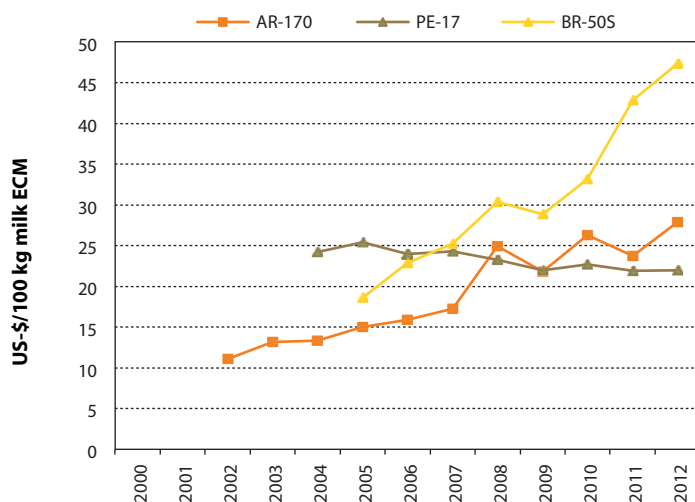
Asia



**China (CN-17BE, CN-340BE):** This typical farm with 340 cows represents a larger farm type in China but not the very large farms. We estimate that this farm type represent 30-40% of the milk produced in China. The cost of milk production on Chinese dairy farms kept rising steadily and surpassed the level of 50 US-\$/100 kg ECM in 2011. For the larger farm, the cost increase continued in 2012 and reached more than 60 US-\$/100 kg ECM. This extreme cost increase was especially due to a strong rise in feed and labour prices. In addition, the Yuan has been revalued to the US-\$ since 2006. The smaller farm, however, could compensate this development and the prices stabilised because of decreasing labour costs in 2012.

**India (IN-18N):** This farm denotes a larger farm type in India, currently representing 20% of the cows, but a huge proportion of the milk delivered to a processor. The production cost in India showed a permanent upward trend coming from 18.3 US-\$/100 kg ECM in 2006 up to 38.9 US-\$/100 kg ECM in 2011. The main drivers of this development were increasing feed and land prices as well as the extraordinary rise in salaries. This increase stopped in 2012 as rising input costs were compensated by a higher milk yield per cow.

South America

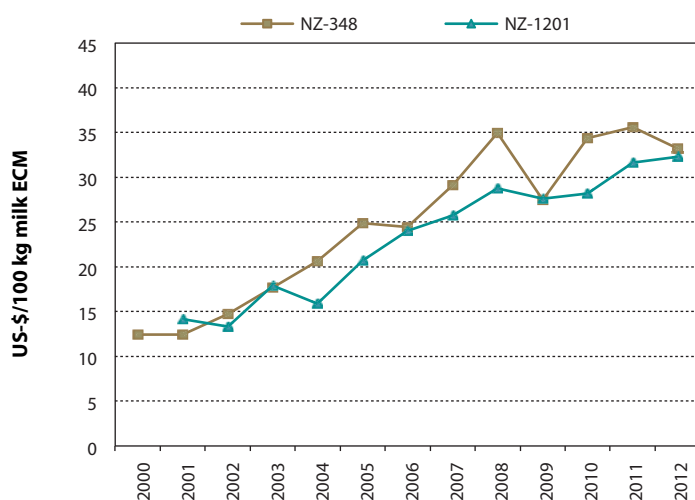


**Argentina (AR-170):** This farm represents an average sized farm in Argentina which keeps about 40-50% of the cows. The costs of this farm have more than doubled since 2002. This trend has slowed down in the last 5 years and costs are more volatile. After a cost decrease in 2011, there was a new increase in 2012. This last development was mainly driven by the combination of a decrease in milk yield due to unfavourable weather conditions and a global cost increase (concentrates, inputs, etc) in a stable milk price scenario.

**Peru (PE-17):** This farm stands for a larger farm, producing about 30% of the total milk in Peru. The cost development of Peruvian dairy farms showed an exceptional trend compared to all the other nations analysed. Costs have tended to decrease since 2004 driven by increasing farm productivity, higher non-milk returns and reasonably stable input prices.

**Brazil (BR-50S):** This farm denotes a larger farm in the South of Brazil, representing about 35% of all cows in this size segment. The costs of this farm has been steadily increasing since 2009, due to a revaluation of the Brazilian Real in 2010 and 2011 (16%) which pushed production costs in US-\$ terms. The latest increase in 2012 was not as large as the previous one. There was a devaluation of the Brazilian Real back to the level of 2009 in nominal terms in 2012. However, the increase in labour costs was stronger than the devaluation of the Real, leading to increasing costs in 2012.

Oceania



**New Zealand (NZ-348, NZ-1201):** These two farms symbolise the average sized and larger farm type in New Zealand and thus represent about 80% of the milk production in New Zealand. The cost of milk production increased between 2009 and 2011 when observed in US-\$. During the period analysed, the cost development was highly influenced by the devaluation of the US-\$ compared to the national currency. Due to that fact, and increasing input prices such as land and labour, costs rose by 150% on average over the last 10 years. The cost drop in 2009 was shaped by the extraordinary weakening of the NZ-\$. This was directly followed by a reverse trend in 2010, which was caused by a major drought. Non-irrigating dairy farms (NZ-348) lacked pasture growth and therefore lost productivity compared to irrigated farms (NZ-1201). In 2012, the cost of milk production stabilised for the larger farm with only a minor increase, while costs decreased by 7% for NZ-348. The increase in input costs was mainly overcompensated by a higher milk yield per cow.











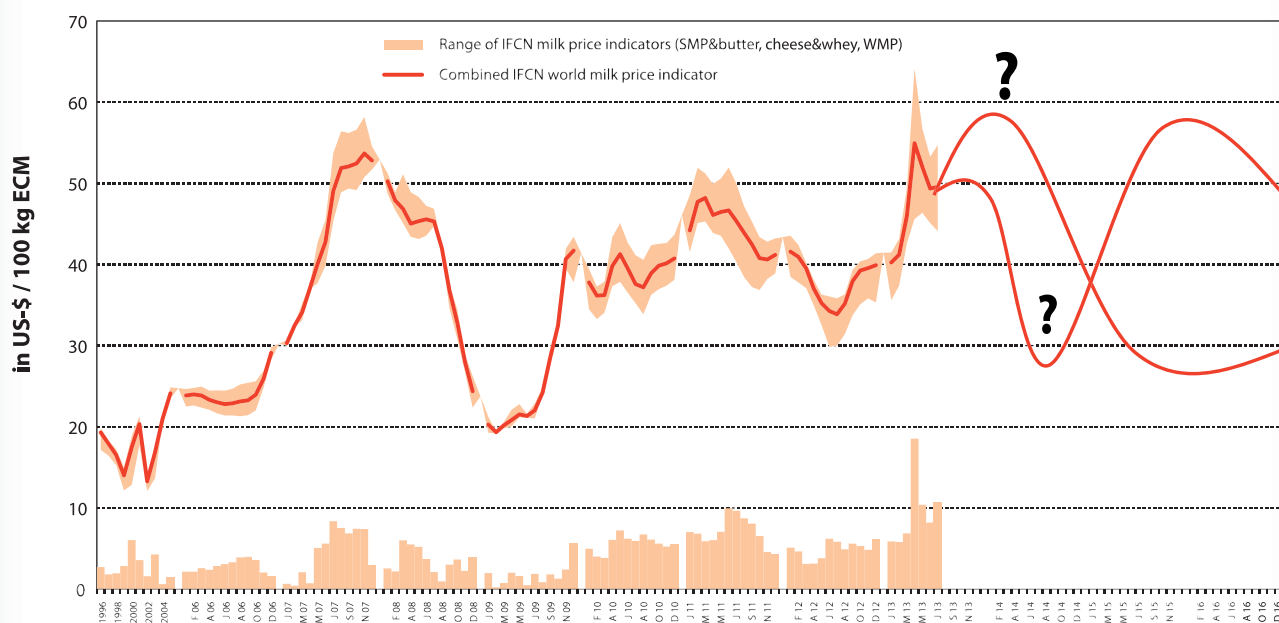
Previous and this page: IFCN Dairy Conference 2013

## Chapter 2 – Global monitoring dairy economic indicators 1996 – 2012

Authors: Lukasz Wyrzykowski, Eva Schröer-Merker, Judit Kühn, Massoumeh Nasrollahzadeh, Karin Wesseling, Helga Weber with the contribution from researchers mentioned on page 2-3 of this report

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### Combined IFCN world milk price indicator



Combined IFCN world milk price indicator: weighted average of 3 IFCN world milk price indicators: 1. SMP & butter (35%), 2. Cheese & whey (45%), 3. WMP (20%)



### Introduction

The aim of this chapter is to monitor the development of the dairy chains, and define trends and drivers. In January 2013, IFCN published the New Combined IFCN world milk price indicator (for details, see: [www.ifcndairy.org](http://www.ifcndairy.org)). Changes in historical world milk price data as compared to those which appear in former IFCN Dairy Reports are due to improvements in the methods used to obtain this price indicator.

### 16-year history & outlook (1996-2013): World market prices for oil, feed and milk

**Prices:** The period of 1996 - 2006 is represented by low, stable world prices. From 1996 to 2006 the world milk price was on average 19 US-\$/100 kg milk, with low annual changes ranging from 1 to 7 US-\$/100 kg milk. The feed price was on average 14 US-\$/100 kg feed, with even lower annual changes ranging from 0.1 to 4 US-\$/100 kg feed. The IFCN milk and feed price indicators left the long-term price range of 13 to 24 US-\$/100 kg milk and of 11 to 20 US-\$/100 kg feed in 2007. Since then they have fluctuated between 19 and 55 US-\$/100 kg milk and 20 and 41 US-\$/100 kg feed. The period between 2007 and 2013 shows a wide range of oil prices between 40 and 133 US-\$/ barrel on the monthly basis. Since 2007 the number of periods of fluctuation seems to be increasing. Shocks in prices and high fluctuations lead to great uncertainty on the world market. There was a negative impact on the milk : feed price ratio, especially when the feed price exceeded the milk price in 2009 and 2012, affecting dairy farms based on intensive compound feed production systems.

**Correlation:** The preliminary results of the correlation between the price for milk, feed and oil on an annual basis are determined by significant  $R^2$  in the period 1996-2012. The highest correlation was noticed by milk and oil prices on the level of 0.91. The second highest was the milk and feed prices with 0.80. The same approach for monthly basis shows a lower level of correlation, 0.66 and 0.47 respectively. The long term period shows positive and significant correlation between the world prices. Since 2007, and especially since the roller-coaster event in prices and short stabilization in 2010, the  $R^2$  is lower than 0.50. This phenomenon is the result of destabilization of the world market due to the financial crisis.

**Tentative outlook:** Preliminary observation of prices in Q1-2013 shows a significant increase in world market prices. After the shock in the milk price of 34 US-\$/100 kg in July 2012, and its stabilization at the end of the year at a level of 40 US-\$/100 kg of milk, the milk price jumped to 55 US-\$ in April 2013 and fell slightly to 49 US-\$ in June. The changes in the behaviour of commodity prices (milk, feed, oil) indicate they may remain at high levels, which could lead to a high milk : feed price ratio and higher costs.

### World milk price development and its drivers

The basis for a better understanding of changes in the dairy sector is to identify the development of the prices. Starting points for high price developments were observed in 2007, April 2009 and August 2012, while the lowest prices were noticed in December 2008 and in July 2012.

**Low supply drove the price increase at the end of 2009 and strong demand supported the high price level until mid-2011:** The low supply was, on one hand, a result of limited supply as a reaction to poor farm economics the previous year and the El Niño Effect which led to a slowdown in production growth in 2009. On the other hand, there was a recovery of the general demand after the global financial crisis. Furthermore, there has been an on-going high demand from China on the world market, since the Melamine Crisis in 2008. In addition, other dairy related food scandals caused distrust of the national dairy sector and extensive structural changes, which have not yet been completed. This strong demand supported the high prices in 2011 at a moment when, simultaneously, there was a record high milk supply growth.

**Increasing supply forced the price decrease starting mid-2011:** Continuously high milk prices during more than two years led to a positive supply response globally. Thus, although there was a strong international demand

for milk, a surplus developed. This, in turn, led to a softening of prices, and a rebuilding of the previously low stock levels. The global demand in 2011 was supported, among others, by the Arab Spring, Foot and Mouth disease in South Korea and the Fukushima incident in Japan.

**Lower milk supply and increase in prices in August 2012:** A lower milk production, especially in Western & Eastern Europe, North & South America and Oceania, led to an increase in milk prices in Q3 -2012, due to the high export share of these regions in dairy world trade. One of the reasons for the decrease in production was the high level of the world's feed price, which affected regions based on concentrate feed. Additional reasons were the low level of stock and the strong world demand for milk, all of which caused the significant milk price development in Q1-2013.

### National milk price trends

Farm gate prices decreased in 2012 in over 72% of the countries monitored and the national milk prices reflected the decreasing world milk price trend (for details, see chapters 2.3 and 2.4). On average national milk prices decreased by 3 US-\$/100 kg ECM from 53 US-\$/100 kg ECM in 2011 to 50 US-\$/100 kg ECM in 2012. There was a difference in the degree and timing of the price transmission from world to national markets.

**EU-27:** The average milk price in EU-27 decreased from 47 to 42 US-\$/100 kg ECM. The highest price was in Cyprus 68 US\$/100 ECM kg and the lowest in Romania 28 US-\$/100 kg ECM. **CIS countries:** These countries showed a wide range of prices and developments. In Russia, prices were higher than the world market price (52.5 US\$/100 kg ECM in 2012), but they were following the world market price trend. **USA and South America:** A slight decrease of 6-8% was observed in Argentina and USA. Argentina stayed a little below, and USA above, the world market price of 37 US-\$/100 kg milk in 2012. **Asia:** Prices in Japan, Pakistan and India increased in the range of 1 -2 %. Countries like China and South Korea showed a growth in a range of 5-8%. **Oceania:** Prices also decreased in New Zealand from 40 to 36 US-\$/100 kg ECM.

### National feed price trends and milk : feed price ratios

In 2012 the world milk : feed price ratio decreased by 24% to 1.05. This was due to the increase in world feed prices outweighing the increase in world milk prices. This occurred in nearly 3/4 of the countries at a national level, thus leading to a deterioration of national milk : feed price ratios in 2012. A high milk : feed price ratio provides opportunities for intensive farming systems with high yields. Once the milk : feed price ratio is below 1.5, low input farming systems with moderate yield levels become more favourable.

### Monthly developments and key facts

Annual information is essential, but monthly developments are of increasing importance in a highly dynamic world. The graphs in chapter 2.5 illustrate the monthly milk production growth in combination with price transmission from world to national markets on a monthly basis, the absolute distance of national milk prices in relation to the world market price and key facts. The degree of connection to the world market as well as the price patterns varied greatly from country to country. Also, milk production developments show a high diversity, impacted, among others, by production systems, climatic conditions, price developments and policy impacts. In the Country Pages of chapter 3, monthly price developments for 95 countries are shown.

### Latest developments in monthly world market prices for oil, feed and milk

The analysis in chapter 2.2 shows the monthly price developments for oil, feed and milk for the time frame 2002 to June 2013. Milk prices have been increasing by 31% in the twelve months prior to June 2013, while feed prices increased 3.7 US-\$/100 kg (+10%) in the same period. This led to a world milk : feed price ratio at an acceptable level of 1.4 in June 2013. The oil price declined by 9% in the six months prior to June 2013, after one year of relative stability.

## 2.2 Global trends in oil, milk and feed prices 1981-2013

### Introduction

This chapter aims to illustrate the long term price trends relevant to milk production in the world.

### Annual world market prices in US-\$

#### Oil price

In the first six months of 2013 the oil price was 107.5 US-\$/barrel, still stable from 111.7 US-\$ in 2012 (-3.8%), and 11% above the historical high price of 2008 (96.8 US-\$/barrel). It is far beyond the level of the 1980s and 90s, which was on average 21 US-\$/barrel.

#### Feed price

From 1981 to 2006 the world feed price was on average 13.8 US-\$/100 kg feed, but with strong fluctuations ranging from 10.8 to 19.5 US-\$/100 kg feed. From this level the price increased by 86% in two years, from 14.3 US-\$ in 2006 to 26.7 US-\$ in 2008. In 2009 the price fell 16% to 22.4 US-\$/100 kg feed. In 2010 it increased only slightly by 3% to 23.0 US-\$/100 kg feed. However, in 2011 it increased again strongly by 39% to 31.8 US-\$/100 kg feed, above the historical high of 2008 (26.7 US-\$/100 kg). For 2012, the price was 9.5% higher than the 2011 level, at 35.1 US-\$/100 kg feed. For the first six months of 2013 the feed price rose slightly reaching a level of 35.4. This indicates a positive trend in the feed price. The calculation of the IFCN feed price indicator is based on 70% corn (energy feed) and 30% soybean meal (protein feed).

#### Milk price

The world milk price has shown strong fluctuations over the years. It ranged from 8.0 to 44.5 US-\$/100 kg milk in the period analysed of 1981-2012. The historical peak in 2007, which showed a 100% increase in one year, was followed by a strong decrease to 26.2 US-\$ in 2009. In 2010, the milk price increased from 32.5% to 38.8 US-\$/100 kg milk. In 2011 the milk price was 44.5 US-\$/100 kg milk, and, in the same way as oil and feed, was above the historical highs of 2007/08. During 2012, the price, at 37 US-\$/100 kg milk, was on average 17% below the 2011 level. For the first six months of 2013 the price was 49 US-\$/100 kg milk. A sharp increase of about 20% brought the milk price to a higher level than in 2007. The world milk prices are based on the weighted average of 3 IFCN world price indicators: skim milk powder & butter (35%); cheese & whey (45%) and whole milk powder (20%).

In the period 1981-2012 a number of fluctuations were observed.

**Lower price levels** were observed in: 1986, 1990, 1999, 2002 and 2009

**Higher price levels** were found for: 1989, 1995, 2001, 2007, 2011 and possibly 2013

### Monthly world market prices: opposing trend in 2013 – oil, feed, milk

#### Oil prices have declined strongly since March 2012 and continue decreasing in 2013

The monthly oil price development was characterised by a strong decrease since the peak in March 2012 (125.4 US-\$/barrel), which was followed by a price increase of 9.5% in March 2011, when the oil price was 114.6 US-\$/barrel. From 2012 to mid-2013 the price followed a negative trend, remaining at 102.6 US-\$ in June 2013. The oil price in March 2013 was 102.3 US-\$ which was 22.5% less than the same month the previous year.

#### Explanation of variables

**2013\***: January-June 2013.

**Oil prices**: Energy Information Administration and Association of the German Petroleum Industry. Prices: Europe Brent spot price, FOB, in US-\$/bbl (US-Dollars per oil barrel).

**IFCN world feed price indicator**: Source: International Monetary Fund. Specification: Soybean meal: CME futures first contract forward, Corn: FOB US Gulf.

Calculation: 0.3 kg soybean meal price + 0.7 kg corn price.

**Combined IFCN world milk price indicator**: Based on the weighted average of 3 IFCN world milk price indicators: 1. SMP & butter (35%), 2. Cheese & whey (45%), 3. WMP (20%), based on shares of the related commodities traded on the world market. For more details, see: [www.ifcndairy.org/en/output/prices/milk\\_indicator2013.php](http://www.ifcndairy.org/en/output/prices/milk_indicator2013.php)

**Exchange rates**: Oanda.

#### Feed prices have remained stable on the level of 35 US-\$/100 kg during the first six months of 2013

After the peak in June 2008 (33.2 US-\$/100 kg feed) the feed price decreased strongly but not to the same extent as the oil price. In 2009 and until June 2010 the price stabilised in the low 20s. Then this trend reversed and the price ranged on a high level between 27.7 and 34.0 US-\$/100 kg feed from January 2011 to June 2012. The feed price in June 2013 was on the level of 35.9 and is in general remaining stable.

#### Milk prices have increased by 44% in the twelve months prior to June 2013

In 2009 the milk price fell during some months to the levels of 2006 (~20 US-\$), but strong increases in the second half of the year led to a higher average price in 2009. In 2010 the price was stable compared to the previous three years, fluctuating on a high level. Following a price hike of another 5 US-\$/100 kg milk, the first six months of 2011 showed again a fluctuation on a high level. Then a decreasing trend started in mid-2011, declining by -26.5% in the 12 months prior to June 2012. High increase was noticed in the Q1-2013 when the milk price reached 54.9 US-\$/100kg milk in April. In June 2013 the milk price was 49.3 US-\$ and it was higher by 44% than one year before.

#### Summary of global price developments

The three commodities observed have similar price development patterns which are characterised by strong fluctuations especially in recent years. After high prices in 2008, which the world milk price had already reached at the end of 2007, prices decreased strongly in 2009. In 2011 prices were, once more, on a high level even exceeding the historical highs of 2007/08. In 2012 the milk price decreased, feed price became stable and oil prices went up. In 2013 the milk price followed the oil price and presented a significant increase in relation to the feed price which remained stable.

#### Dairy commodity developments

The different dairy commodities traded on the world market (mainly butter, powders and cheese) generally follow similar price development patterns albeit on different levels. The world market trend shown in the new IFCN milk price indicator is based on: skim milk powder and butter (35%); cheese and whey (45%) and whole milk powder (20%), the latter being traded at a premium price compared to other dairy products in 2011/12. This indicator combines major dairy commodities and takes into account their respective shares in the world trade with dairy products.

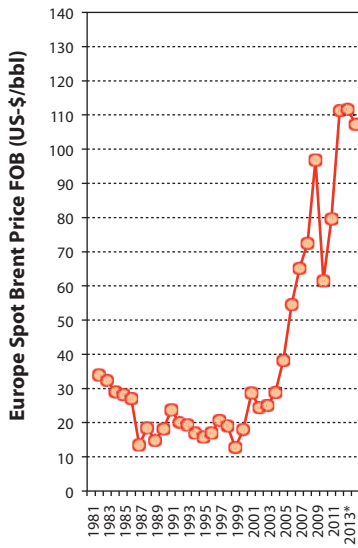
#### Global milk : feed price ratio at an unfavourable low 1.1 in June 2012

The milk : feed price ratio indicates how much feed a dairy farmer receiving global milk prices and paying global feed prices can buy, after selling one kg milk. The ratio is considered as favourable, when it is 1.5 and usually one can conclude that the higher the ratio, the more favourable is intensive feeding. After 2007 the ratio decreased to 1.2 in 2009 but returned to 1.7 in 2010. Rising milk prices in 2011 in combination with a higher feed price made the ratio decrease to 1.4. High feed prices in 2012 decreased the annual average of the ratio to 1.0 and kept a similar level of 1.1 until June 2013. Even with very high prices >50 US-\$/100 kg milk in April and May 2013, the milk : feed price ratio was 1.5.

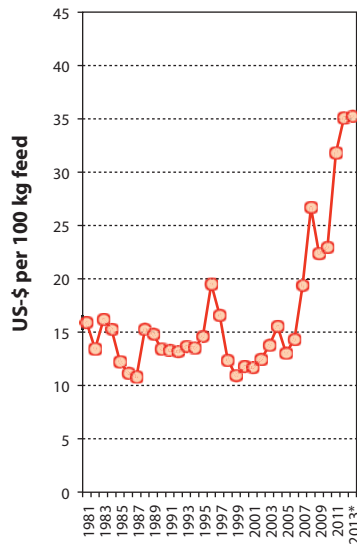
Favourable periods were observed in: 1995, 2000-2001, 2005-2007, 2010-2011 and 2013

### World oil, feed and milk prices in US-\$ - yearly 1981-2013

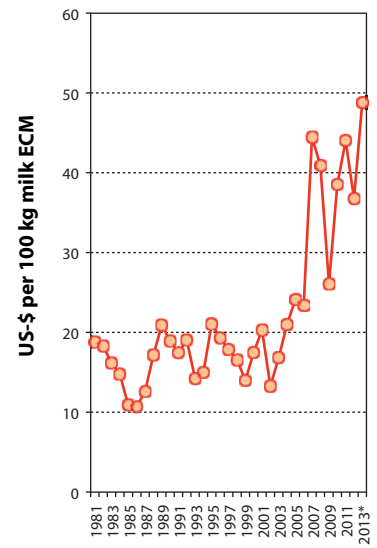
World oil price



World feed price

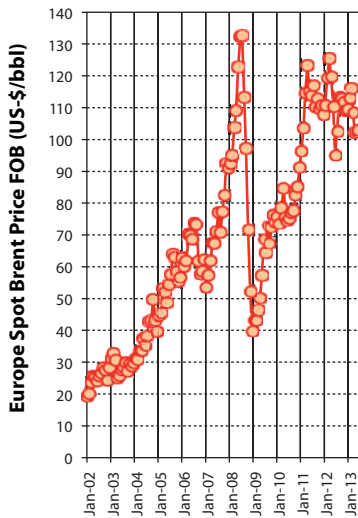


Combined IFCN world milk price indicator

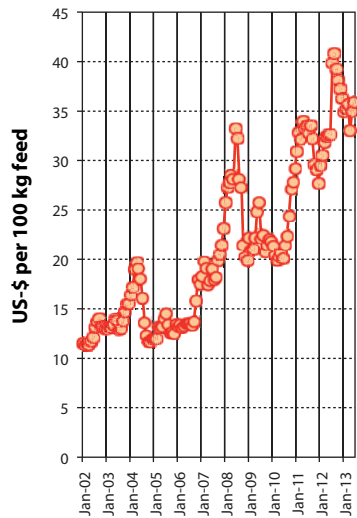


### World oil, feed and milk prices in US-\$ - monthly from January 2002 until June 2013

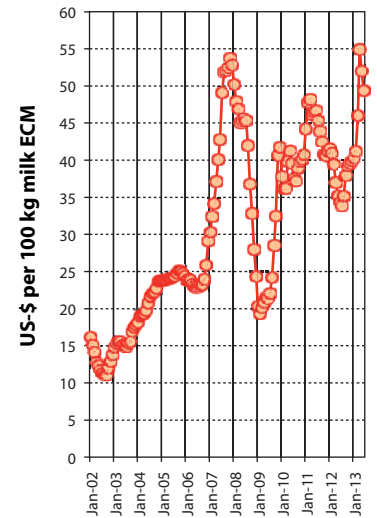
World oil price



World feed price

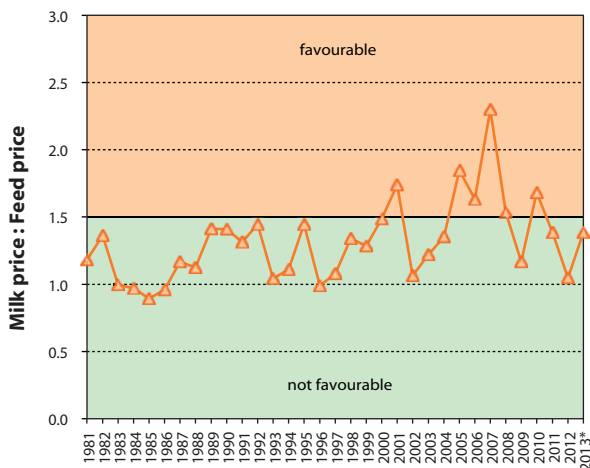


Combined IFCN world milk price indicator

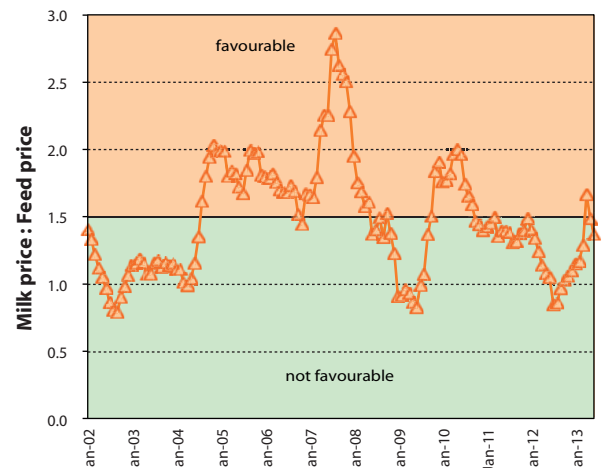


### World market: Milk : feed ratio

Yearly data 1981-2013



Monthly data January 2002-June 2013





## 2.3 Milk prices in 2012 in US-\$

### General remarks

This chapter illustrates the status of the milk price in US-\$ in 2012 for 95 countries and the changes observed from 2011 (in the world maps more countries are included). Detailed milk price developments 1996-2012 per country are shown in chapter 2.4. It is important to note that exchange rate trends have effects on price developments when considered in US-\$ or national currency.

### Milk prices in 2012 in US-\$

In 2012 the world market price of milk was 37 US-\$/100 kg ECM, which is 7 US-\$ or 17% lower when compared to 2011. Milk prices per country ranged from 17 US-\$/100 kg ECM in Uganda to 134.6 US-\$/100 kg ECM in Yemen and can be grouped into the following categories:

- < 20 US-\$: Uganda
- > = 20 < 30 US-\$: Kenya, Nigeria, Romania
- > = 30 < 40 US-\$: Afghanistan, Argentina, Armenia, Australia, Belarus, Belgium, Bulgaria, Chile, Croatia, Czech Republic, Estonia, Hungary, India, Indonesia, Latvia, Lithuania, Luxembourg, Mexico, Nepal, New Zealand, Pakistan, Peru, Poland, Slovakia, Slovenia, Serbia, Sri Lanka, Tajikistan, Ukraine, Uruguay
- > = 40 < 50 US-\$: Albania, Austria, Bangladesh, Bolivia, Brazil, Colombia, Denmark, Ecuador, Ethiopia, France, Germany, Ireland, Kazakhstan, Kyrgyzstan, Macedonia, Mongolia, Morocco, Paraguay, Portugal, South Africa, Spain, Sweden, The Netherlands, Tunisia, Turkey, United Kingdom, USA
- > = 50 < 60 US-\$: Azerbaijan, Cameroon, China, Costa Rica, Finland, Greece, Israel, Italy, Jamaica, Panama, Russian Federation, Thailand, Turkmenistan, Venezuela, Vietnam, Zimbabwe
- > = 60 US-\$: Algeria, Canada, Cyprus, Egypt, Iceland, Iran, Japan, Jordan, Malaysia, Norway, Republic of Korea, Saudi Arabia, Switzerland, Taiwan, The Philippines, Uzbekistan, Yemen

### Milk price trends in world regions from 1996-2012 in US-\$ (see Chapter 2.4)

#### General

In 2012, over 70% of the countries reflected the world market trend by decreasing national farm gate prices. Here it is important to recognize, that the world milk price is based on the weighted average of 3 IFCN world price indicators based on their shares in world dairy trade: skim milk powder & butter (35%); cheese & whey (45%) and whole milk powder (20%). The change from the milk price indicator based only on butter and SMP allows for better reflection of the real world milk price.

#### EU-15

After the milk prices recovered in 2010, they rose again in 2011 and 2012. All EU-15 member states reflected the world market trend. The lowest milk price in 2012 was again found in Belgium (38.1 US-\$/100 kg ECM), the highest milk price at 58.3 US-\$/100 kg ECM, in Greece, followed by Finland (55.1 US-\$/100 kg ECM) and Italy (51.5 US-\$/100 kg ECM). The price range in EU-15 increased from 13 US-\$ in 2010 to 20 US-\$ in 2012.

#### Explanation of variables

**Remarks:** 2012 milk price estimated for some countries, based on trend and expert knowledge. ECM: Energy corrected milk, standardised to 3.3% protein and 4% fat (see Annex A.7 for details). In the text only countries shown in the Country Pages (Chapters 3.10 to 3.104) are included. On the world maps additional countries are shown, if data was available.

### EU-12 and other European countries

All the countries showed a decrease in prices from 2011 to 2012 with -6% in Cyprus up to -16% in Czech Republic. In 2012 Romania showed the lowest price level (27.9 US-\$/100 kg ECM), followed by Lithuania (30.7 US-\$/100 kg ECM) and Serbia (33.2 US-\$/100 kg ECM). Prices higher than the EU-15 average (44 US-\$/100 kg ECM) were observed in Cyprus with a difference of +23.4 US-\$/100 kg ECM, as well as Turkey with a price level of 47.5 US-\$ while Hungary was below with 39.8 US-\$.

**CIS countries:** In 2012 these countries had a wide price range from 35.0 US-\$/100 kg ECM in Ukraine to 72.5 US-\$/100 kg ECM in Uzbekistan. Uzbekistan, Kazakhstan, Turkmenistan and Russia were above the EU-15 average.

**Middle East:** The national prices showed a diverse development pattern with decreasing prices in Israel and Syria and increasing prices in Saudi Arabia, Jordan, Iran and Yemen. The current political situation in Syria and Iran makes data collection and validation challenging.

**Other countries:** These countries also showed a diverse pattern, ranging from -9% in Switzerland to +13% in Kyrgyzstan.

**USA, Central and South America:** Most countries reflected the world market price trend to some degree in 2012. Strong decreases up to -11% or more were observed in Brazil, Uruguay, USA and Argentina. Positive changes in prices were noticed in Peru, Colombia and Chile.

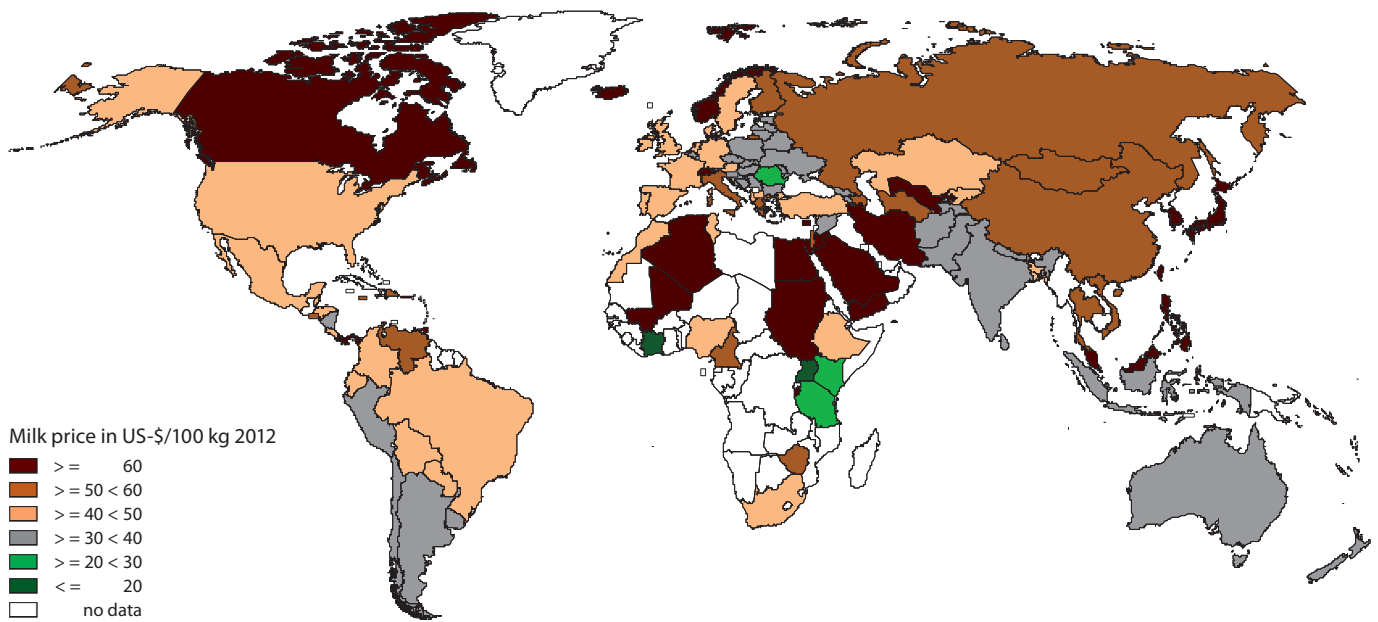
**Asia:** The milk price increased again in most Asian countries. Thus, the Asian milk price status can be categorised in different price levels: 30-40 US-\$/100 kg: Pakistan, Sri Lanka, Nepal, Indonesia, India; >40-50 US-\$/100 kg ECM: Bangladesh, Mongolia; > 50-60 US-\$/100 kg ECM: China, Vietnam and Thailand. There is an increasing number of high-price countries in Asia, with the highest prices found in Republic of Korea, Taiwan, Japan, The Philippines and Malaysia (62-115 US-\$/100 kg ECM).

**Africa:** Here again there is a diverse picture of national milk price developments with one half decreasing and the other half increasing prices. In 2012 there was a farm gate milk price decrease in Sudan, Nigeria, Cameroon, Tunisia, Morocco, Algeria and Ethiopia. The farm gate prices increased in South Africa, Uganda and Egypt.

**Oceania:** The milk prices in Australia and New Zealand follow the world market price closely. Prices decreased in 2012, remaining around the world market level. The average annual milk price went down in New Zealand about -10% to 36 US-\$/100 kg ECM and in Australia about -6% to 39 US-\$/100.

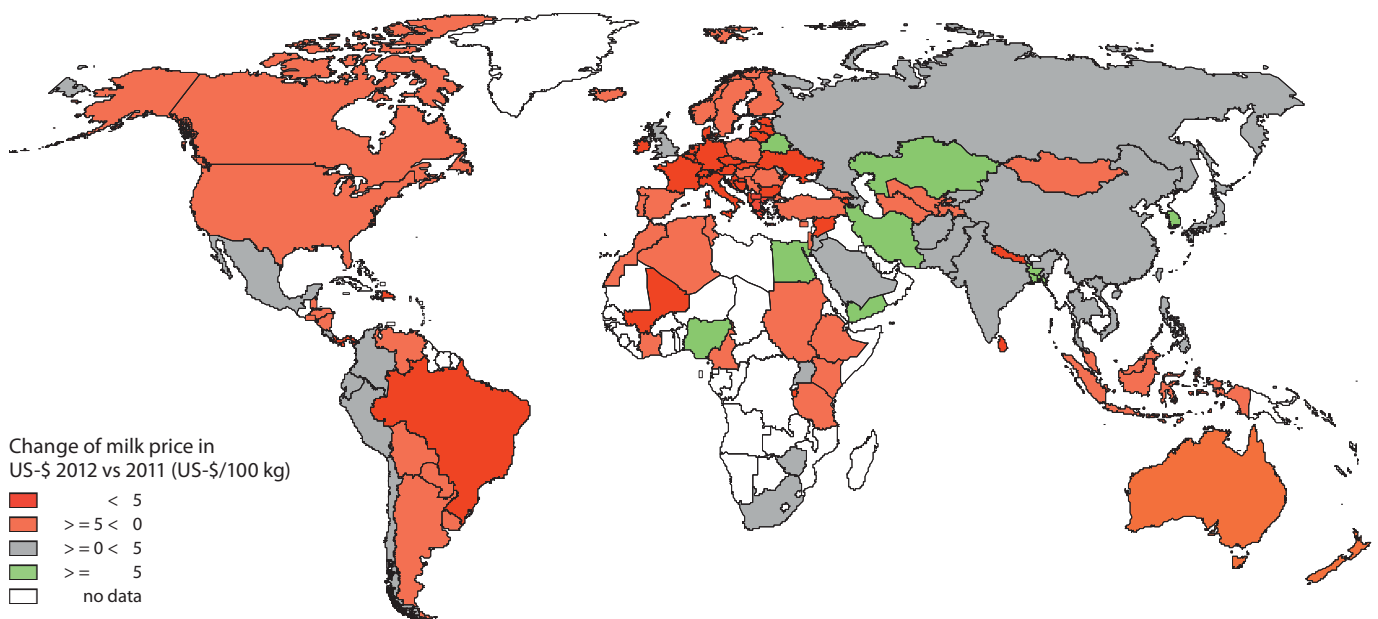


Milk prices in US-\$ 2012



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

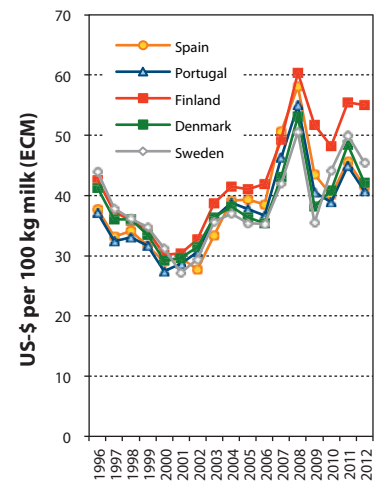
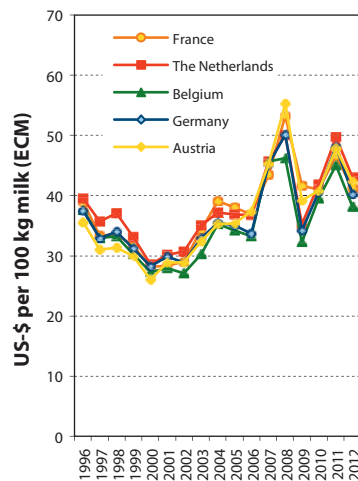
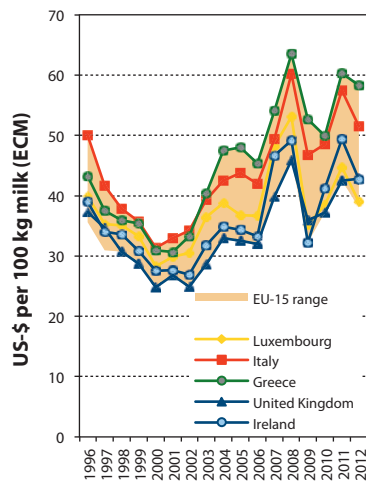
Change of milk price in US-\$ 2012 vs 2011



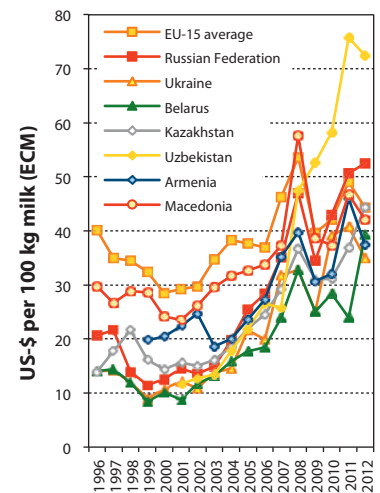
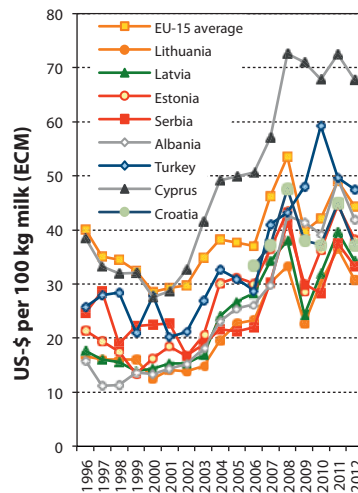
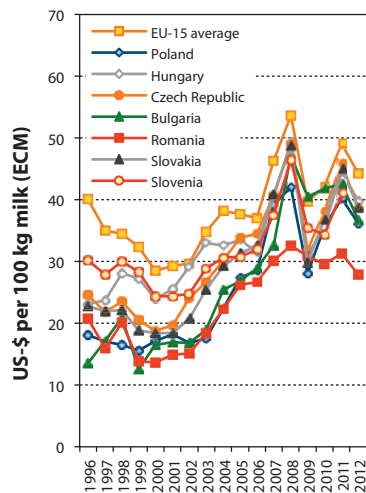
Source: National statistics/surveys, in some cases estimations.

## 2.4 Monitoring milk prices 1996-2012

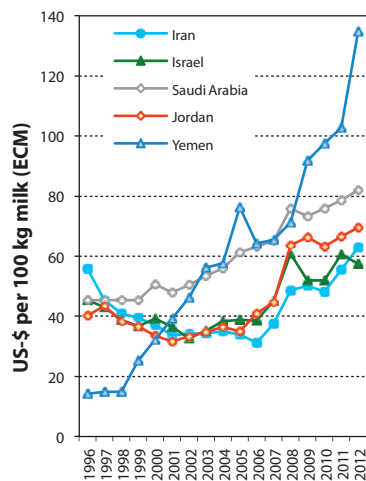
### EU-15



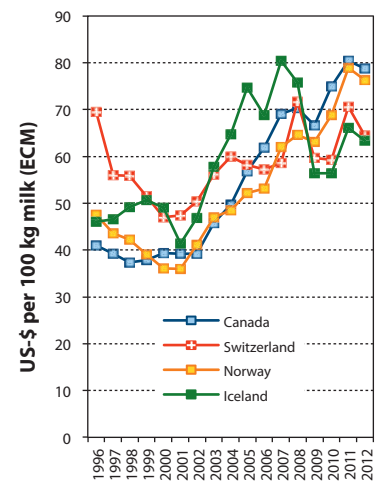
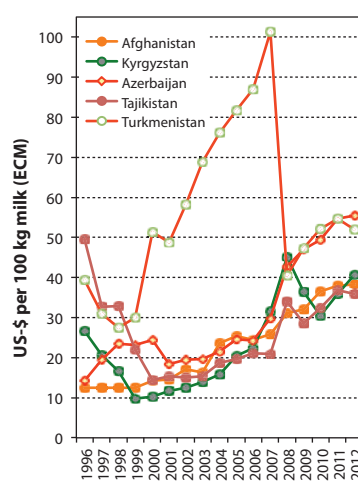
### EU-new member states, Eastern Europe and CIS countries



### Middle East



### Other countries

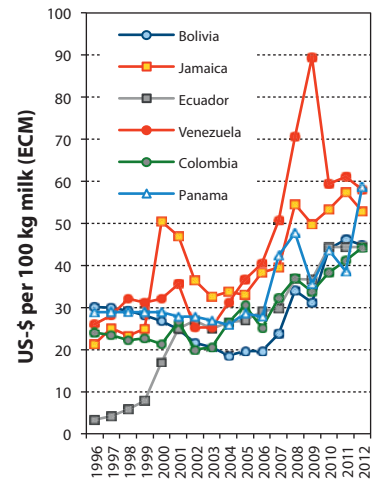
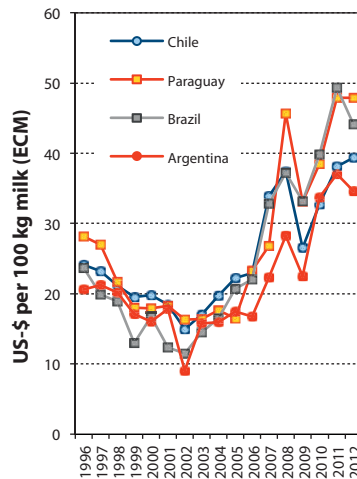
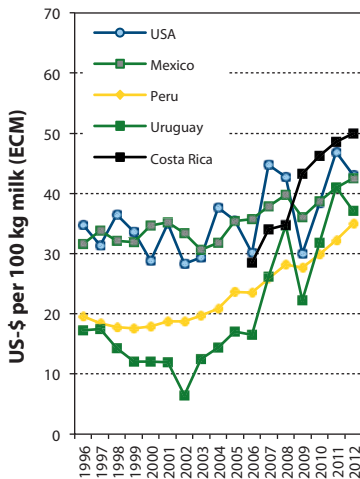


**Explanation:** Source: National statistics/surveys, in some cases estimations. Data in ECM: Energy corrected milk, standardised to 3.3% protein and 4% fat (see Annex A.7 for details).

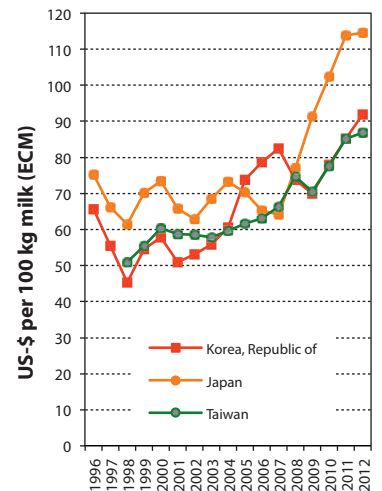
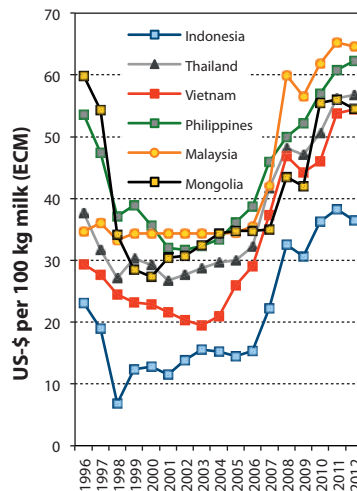
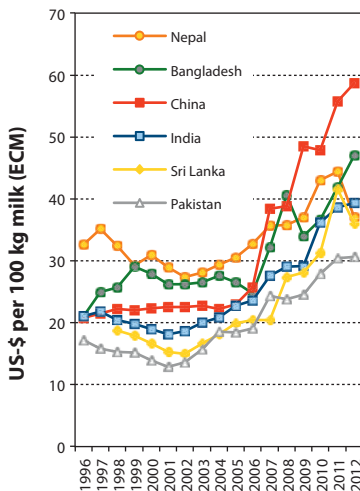
World market: Combined IFCN world milk price indicator: Based on the weighted average of 3 IFCN world milk price indicators: 1. SMP & butter (35%), 2. Cheese & whey (45%), 3. WMP (20%), based on shares of the related commodities traded on the world market. For more details, see: [www.ifcndairy.org/en/output/prices/milk\\_indicator2013.php](http://www.ifcndairy.org/en/output/prices/milk_indicator2013.php)



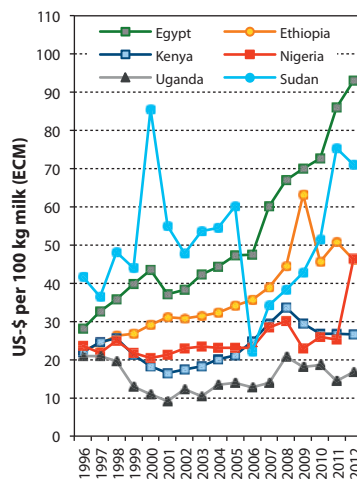
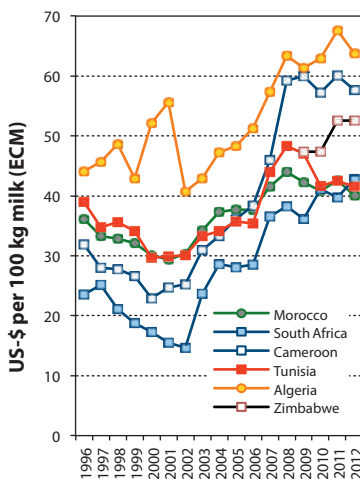
### USA, Central & South America



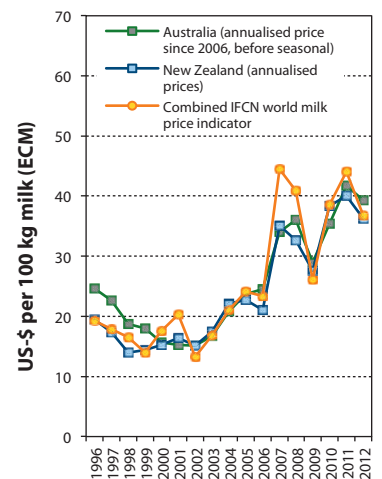
### Asia



### Africa



### Oceania



**Explanation:** Source: National statistics/surveys, in some cases estimations. Data in ECM: Energy corrected milk, standardised to 3.3% protein and 4% fat (see Annex A.7 for details). World market: Combined IFCN world milk price indicator: Based on the weighted average of 3 IFCN world milk price indicators: 1. SMP & butter (35%), 2. Cheese & whey (45%), 3. WMP (20%), based on shares of the related commodities traded on the world market. For more details, see: [www.ifcndairy.org/en/output/prices/milk\\_indicator2013.php](http://www.ifcndairy.org/en/output/prices/milk_indicator2013.php)

## 2.5 Monthly milk price transmission and key facts

### What is shown?

The first chart shows milk production or delivery growth on a monthly basis and with annual averages, including leap year adjustment (February 2008 and 2012 adjusted to 28 days). The second chart shows the national and world milk prices in US-\$/100 kg ECM, while the third chart illustrates the distance of the national from the world market price.

### Fluctuation of milk supply

A high degree of fluctuation can be observed in the monthly growth rates of milk production, with variations of +/-10% being not uncommon. These disruptions, which are observable in all countries, are triggered mainly by external causes, such as the world and national milk prices or climatic conditions. To which degree the milk supply is affected by these external causes highly depends on the production system and political environment of the country in question.

### Price transmission

The transmission of world milk prices to national prices shows different patterns which are mainly characterised by the following points: generally the

degree of connection of the two, the time lag with which national prices react to world price developments and the average distance of the national price towards the world price.

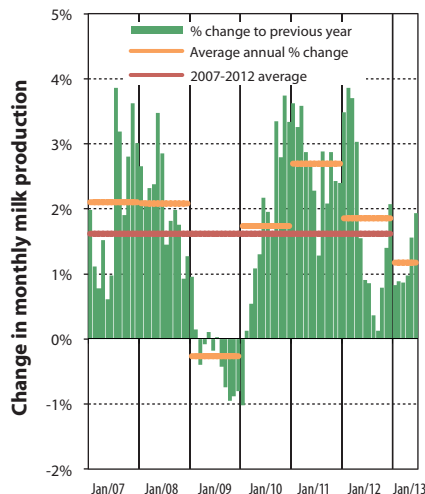
Some national prices follow the world price closely, reflecting the high price periods, but not fully mirroring the lows. The USA and the EU-member states show such developments. They are trading on the world market, but political measures are (still) in place, triggering support in low price periods.

The opposite trend can be observed in countries like Australia, where the high price periods are not fully reflected, while the low price periods are. Being one of the main exporting countries, seasonal milk prices are closely connected to the world market trends.

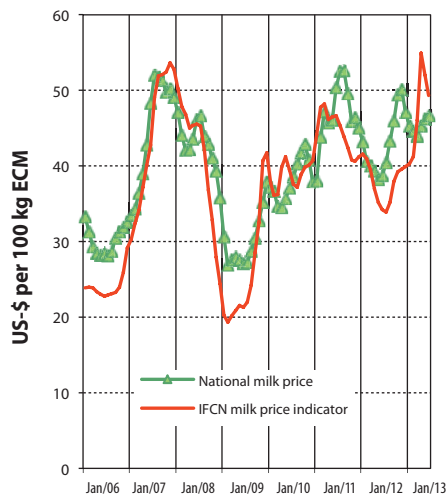
Higher deviations from world market developments can be found in countries with a more inland driven price development. Brazil follows the world market closely, but sometimes with a time lag, while at other times even anticipating the movements upfront. Japan is highly detached from the world market price with national fresh milk supplies and prices which are largely driven by costs.

### United States of America

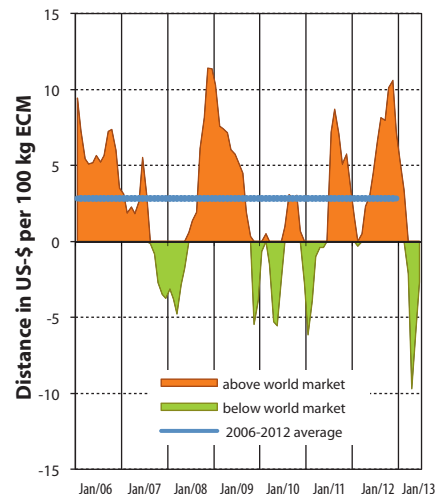
Change in milk production



Milk price

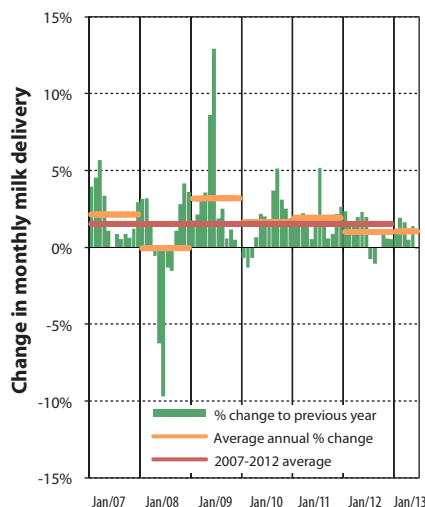


Distance to world market price

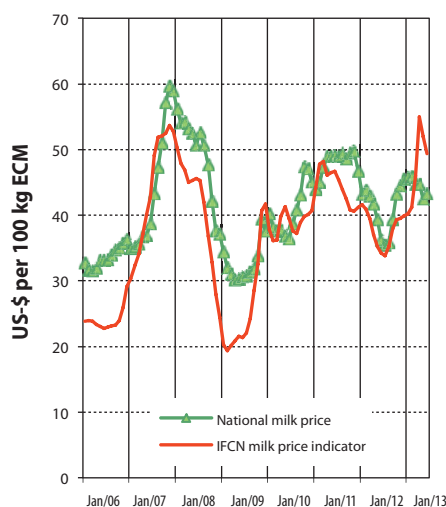


### Germany

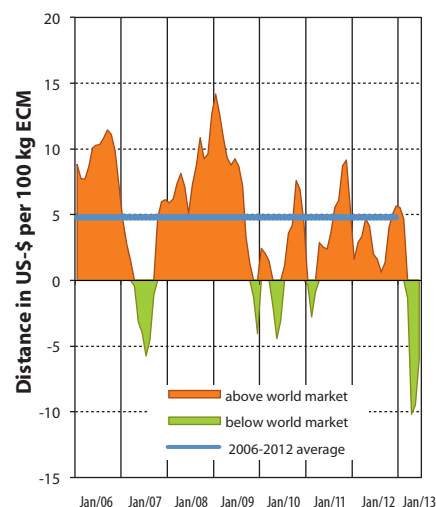
Change in milk delivery



Milk price



Distance to world market price

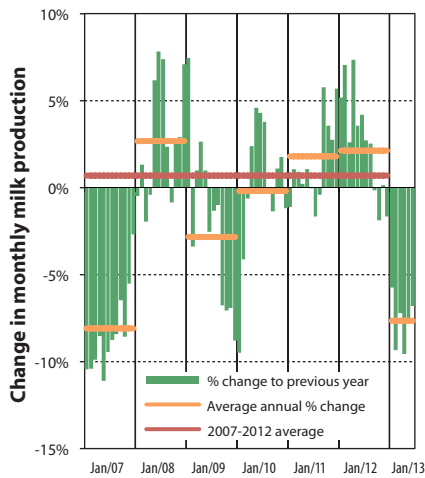


**Explanations:** Source: National statistics/surveys, in some cases estimations. USA: Monthly milk production. Germany: Monthly milk production. Data in ECM: Energy corrected milk, standardised to 3.3% protein and 4% fat (see Annex A.7 for details). World market: Combined IFCN world milk price indicator: Based on the weighted average of 3 IFCN world milk price indicators: 1. SMP & butter (35%), 2. Cheese & whey (45%), 3. WMP (20%), based on shares of the related commodities traded on the world market. For more details, see: [www.ifcndairy.org/en/output/prices/milk\\_indicator2013.php](http://www.ifcndairy.org/en/output/prices/milk_indicator2013.php)

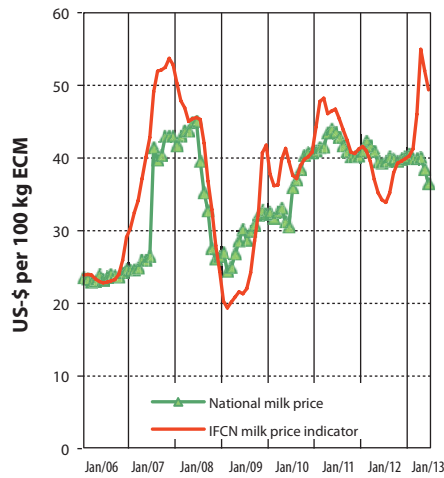
## 2.5 Monthly milk price transmission and key facts

### Australia

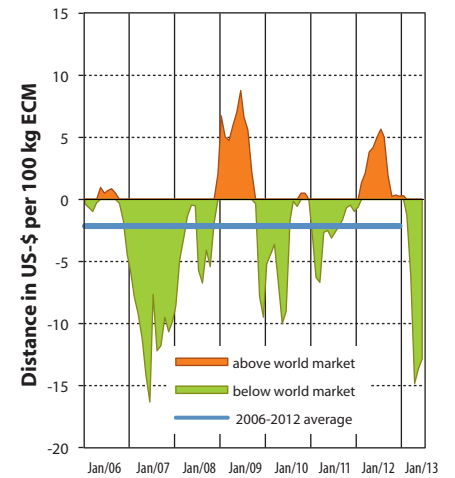
Change in milk production



Milk price

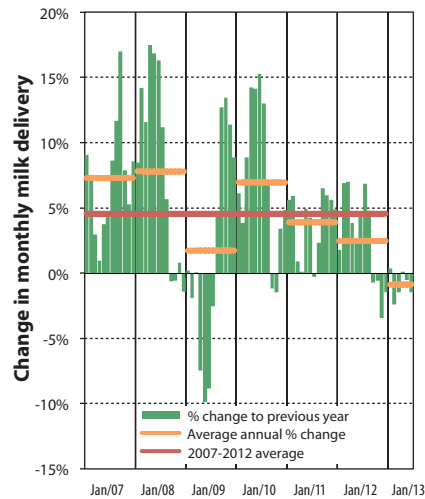


Distance to world market price

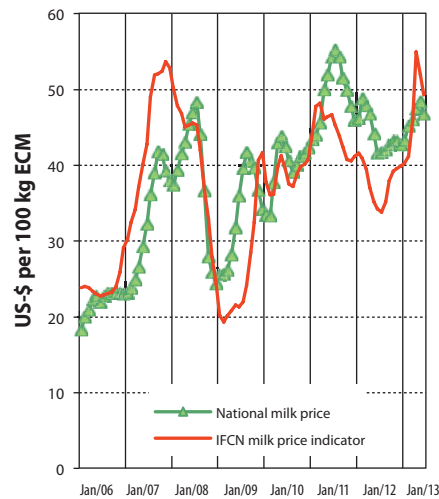


### Brazil

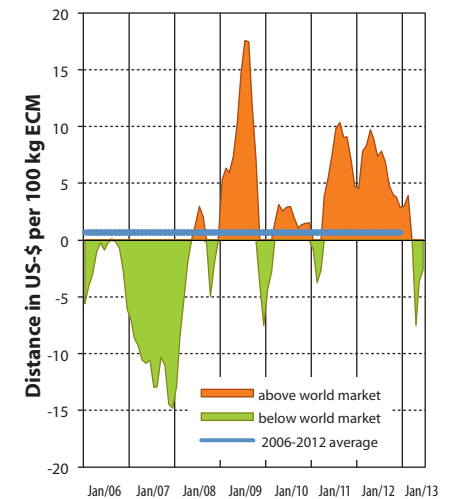
Change in milk delivery



Milk price

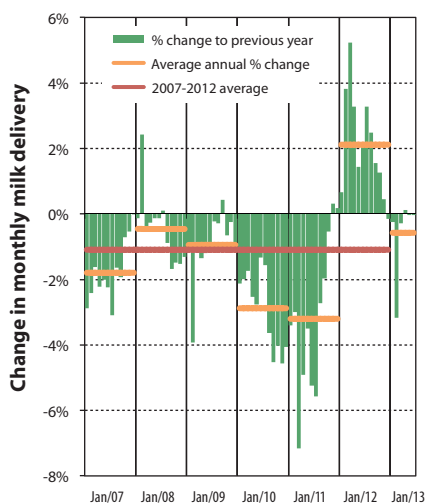


Distance to world market price

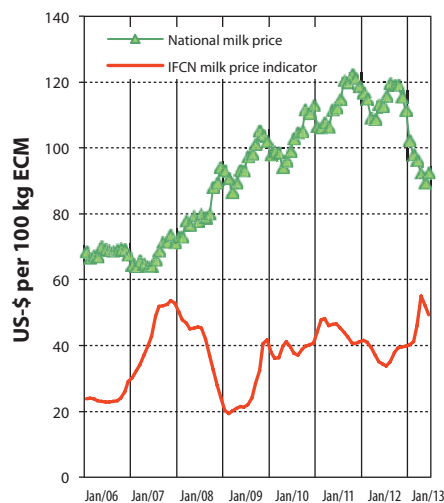


### Japan

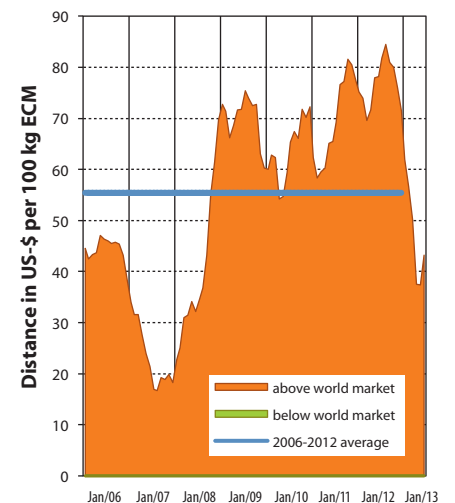
Change in milk delivery



Milk price



Distance to world market price



**Explanations:** Source: National statistics/surveys, in some cases estimations. Australia: Monthly milk production. Brazil: Monthly milk deliveries, June deliveries estimated. Japan: Monthly milk production, June price and production estimated. Data in ECM: Energy corrected milk, standardised to 3.3% protein and 4% fat (see Annex A.7 for details). World market: Combined IFCN world milk price indicator: Based on the weighted average of 3 IFCN world milk price indicators: 1. SMP & butter (35%), 2. Cheese & whey (45%), 3. WMP (20%), based on shares of the related commodities traded on the world market. For more details, see: [www.ifcndairy.org/en/output/prices/milk\\_indicator2013.php](http://www.ifcndairy.org/en/output/prices/milk_indicator2013.php)



## 2.6 Monitoring Feed Prices 1996-2012

### General remarks

In over 87% of the countries the feed price increased in 2012, the majority thus closely following the world market as in the previous years. Feed is the main driver for production costs on farms. The aim of this chapter is to compare the feed price situation in 2012 in 95 countries and to illustrate price trends of selected countries.

### Method

The comparison of concentrate feed prices is extremely difficult as it is impossible to compare the contents (e.g. energy, protein). The analysis therefore is based on comparable feed which, in this case, is soybean meal and corn or barley. The calculation equals that of the IFCN feed price indicator (0.3 kg soybean meal price + 0.7 kg corn or barley price). Advantages: This indicator gives a preliminary idea of regions with high/low feed prices and trends. Limitations: In a number of countries dairy compound feed is based on other commodities. In that case feed prices are probably overestimated.

### Data

The data is based on national statistics. In selected countries the prices are based on IFCN estimates (national versus world market price trends in the past). In countries where no national data was available, the world market price was used. Need for validation: The uncertainties in the data collection require an on-going validation and improvement procedure. Therefore feedback and comments to the IFCN are very welcome.

### Feed prices in 2012 on US-\$

In 2012 the world market price of feed, based on corn and soybean meal, was 35.1 US-\$/100 kg, which represents an increase of 10% compared to 2011. The price ranged between 6.63 US-\$/100 kg and 78.2 US-\$/100 kg in all the countries, which can be grouped into five categories:

- < 20: Belarus
- > = 20 < 30: Argentina, Australia, Bangladesh, Brazil, Kazakhstan, Kenya, Macedonia, Mongolia, Nigeria, Paraguay, Russian Federation, Slovakia, Ukraine
- > = 30 < 40: Algeria, Armenia, Austria, Azerbaijan, Bolivia, Canada, Chile, Costa Rica, Croatia, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Germany, Hungary, India, Indonesia, Jamaica, Kyrgyzstan, Latvia, Lithuania, Luxembourg, Malaysia, Mexico, Nepal, Pakistan, Panama, Poland, Portugal, Republic of Korea, Romania, Saudi Arabia, Serbia, South Africa, Spain, Sudan, Tajikistan, Thailand, The Netherlands, Turkmenistan, Uganda, United Kingdom, Uruguay, USA, Uzbekistan, Venezuela
- > = 40 < 50: Afghanistan, Albania, Belgium, Bulgaria, China, Ecuador, Egypt, Ethiopia, Greece, Iran, Ireland, Israel, Italy, Jordan, Morocco, New Zealand, Peru, Slovenia, Sri Lanka, Sweden, Taiwan, The Philippines, Tunisia, Turkey, Zimbabwe
- > = 50: Cameroon, Colombia, Iceland, Japan, Norway, Switzerland, Vietnam, Yemen

### Explanation of variables

**IFCN world feed price indicator (World market):** Calculation: 0.3 kg soybean meal price + 0.7 kg corn price. The annual price is calculated as the arithmetic mean from monthly data. Data source: International Monetary Fund. Specification: Soybean meal: CME futures first contract forward, Corn: FOB US Gulf.

**National feed prices:** National statistics. Based on the soybean meal price in combination with barley or corn price, country specific. Calculation: 0.3 kg soybean meal price + 0.7 kg corn or barley price.

**Exchange rates:** Oanda.

**Note:** The IFCN feed price indicator is an indicator for the cost of compound feed. It does not reflect the degree to which local farmers, e.g. in extensive feeding systems, are affected.

### Feed price developments 1996-2012 in US-\$

The world market price of feed in 2012 was 35.1 US-\$/100 kg, +10% higher than the 31.8 US-\$/100 kg price in 2011.

**Germany:** The German feed price, always reflecting the world price developments, showed an increase in 2012 staying slightly below the world price.

**Poland:** The feed price was always above the world price level, but in the period of 2010-2012 it stayed on average 3.1 % below the world market price.

**Ukraine:** With the exception of 2007 the national feed price remained on average about 20% below the world market price level (2007: +13%). In 2012 the price rose 15% to 26.0 US-\$/100 kg.

**USA:** US feed prices are on average 10% below the world market price level, which was also the case in 2012 when the price was 31.5 US-\$/100 kg. This was an increase of 14% compared to 2011.

**Argentina:** The Argentinean feed price is on average 20 % lower than the world market price of feed, (1996-2012). The price of feed continues to increase. Between 2010/2011 it increased about 18%, in the period 2011/2012 about 25.5% to finish at 24.5 US-\$/100 kg in 2012.

**Brazil:** In 2012 the price was 28.9 US-\$/100 kg, an increase of 2.7%. It generally follows the trend of the world price on a 9% lower level.

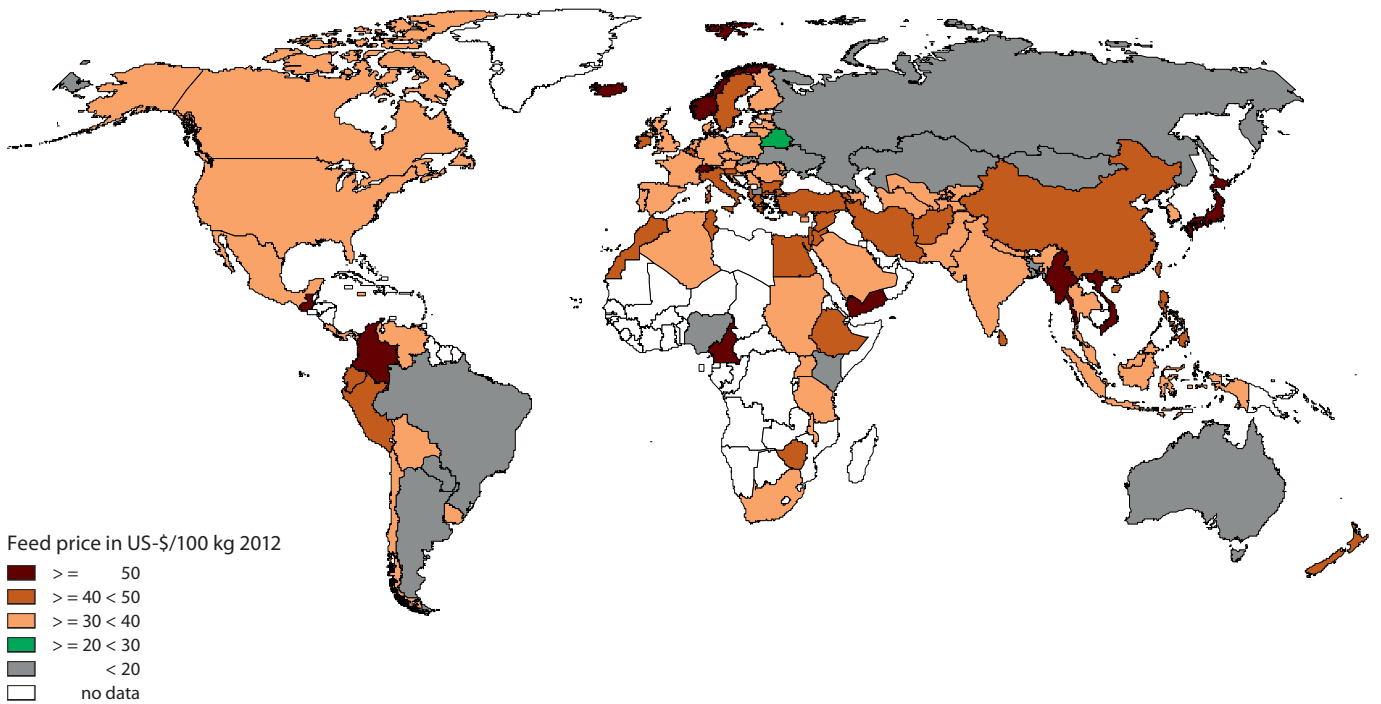
**New Zealand:** The price follows the world market trend, but remained on average 22.6% above the world market in the period 1996-2012. In 2011 the price was 25.3% above the world market price (31.8 US-\$/100 kg) and in 2012 about 23.5% above the world market price (43.3 US-\$/100 kg).

**China:** The Chinese feed price is only roughly connected to the world market price, lying on average 39% above it (range: 3.1-10.6 US-\$/100 kg). Especially in the years 2009/2010 and 2011/2012, national feed price developments deviated from the world market trends. In 2012 the price increased 10% in US-\$ terms to 45.7 US-\$/100 kg. In comparison to the years 2006 and 2012, the Chinese feed price has increased more than 100%.

**India:** In 2012 the feed price was 36.3 US-\$/100 kg, an increase of 12% from 2011. The Indian feed price is on average very close to the world market level (+2.5%). The lowest price was noticed in 2002 at 12.1 US-\$/100 kg and the highest in 2012. Since 2010 the national price has been nearly on the same level as the world market price for feed (average +0.9%).

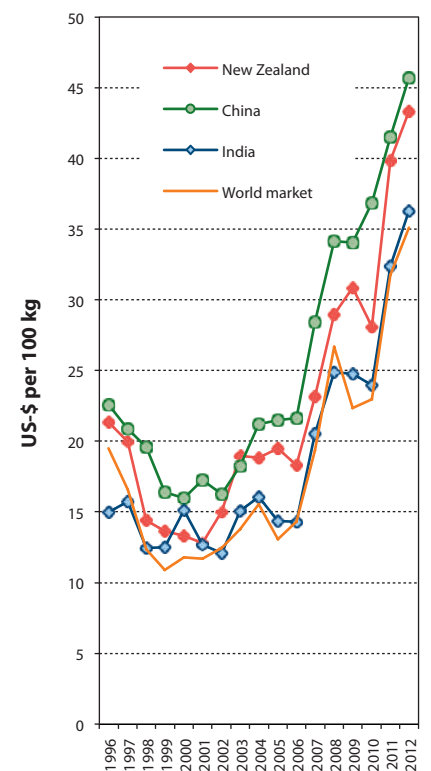
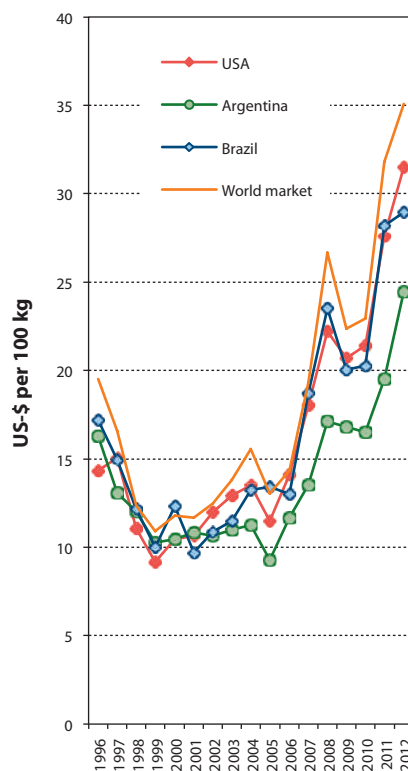
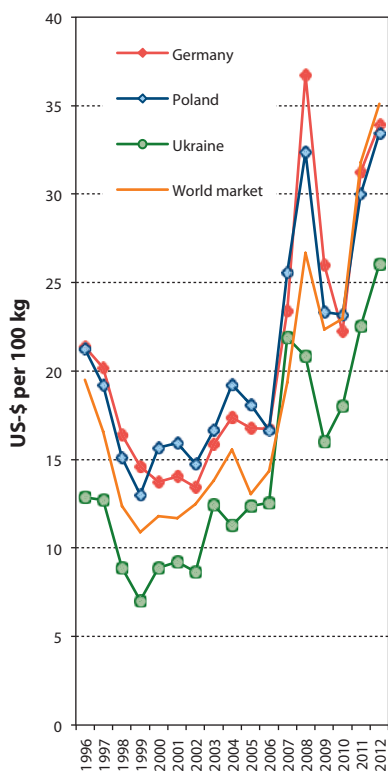


Feed prices in US-\$ 2012



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

Feed price developments 1996-2012 in selected countries



## 2.7 Monitoring milk : feed price ratio 1996-2012

### Introduction

This chapter shows the milk : feed price ratio, which is an indicator for the price developments of milk as the main output and feed as the most important input. The aims of this chapter are to compare the milk : feed price ratio world-wide and to illustrate the milk : feed price ratio trends in selected countries.

### Milk : feed price ratio – A definition

The milk : feed price ratio is defined as milk price divided by the price of purchased feed. In a simplified form it shows how much feed (kg concentrates) a farmer can buy after selling one kg of milk.

The milk : feed price ratio has been defined as favourable if it is higher than 1.5. If this is the case, high yield (high input) systems can be used or the higher the ratio is, the more economical it is to use concentrates. In extensive feeding systems, it represents a theoretical figure which indicates how advantageous the input of compound feed would be, if it were used.

### Milk : feed price ratio – A world-wide comparison

From 2011 to 2012 over 84% of the countries showed a decrease in the milk : feed price ratio. This indicates that while over 90% of the countries had both increasing milk and increasing feed prices, the increasing feed prices were often overcompensating the upward trend in milk prices. In 2012, there was an increase in the share of countries with an »unfavourable« ratio of <1.5.

#### High milk : feed price ratio > 2.0

The milk : feed ratio was very favourable in: Belarus, Canada, Cyprus, Egypt, Republic of Korea, Saudi Arabia, Sudan, Uzbekistan, Yemen

#### Moderate milk : feed price ratio 1.5 to 2.0

Australia, Algeria, Azerbaijan, Bangladesh, Brazil, Finland, Kazakhstan, Jamaica, Jordan, Macedonia, Malaysia, Mongolia, Nigeria, Panama, Paraguay, Russian Federation, Taiwan, Turkmenistan, Venezuela

#### Low milk : feed price ratio <1.5

The milk : feed price ratio was between 1-1.5 in many countries: Argentina, Austria, Bolivia, Cameroon, Chile, China, Costa Rica, Croatia, Czech Republic, Denmark, Ecuador, Estonia, France, Germany, Greece, Hungary, India, Indonesia, Iran, Israel, Italy, Japan, Kenya, Kyrgyzstan, Luxembourg, Mexico, Nepal, Norway, The Philippines, Poland, Portugal, Slovakia, South Africa, Spain, Sweden, Switzerland, Tajikistan, Thailand, The Netherlands, Turkey, Ukraine, United Kingdom, Uruguay, USA, Zimbabwe

#### A very unfavourable milk : feed price ratio (<1)

This was found in: Afghanistan, Albania, Armenia, Belgium, Bulgaria, Colombia, Ethiopia, Iceland, Ireland, Latvia, Lithuania, Morocco, New Zealand, Pakistan, Peru, Romania, Serbia, Slovenia, Sri Lanka, Tunisia, Uganda, Vietnam

### Milk : feed price ratio trends in 1996-2012

**World market:** The world milk : feed price ratio decreased by -24.4% from 2011 to 2012, going down to 1.05 after being 1.39 the year before.

**Germany:** From 1998 to 2007, the ratio was stable at a favourable level of 2.0-2.2. Since 2009, the German milk : feed price ratio has been nearly identical to that of the world market, decreasing -23% to 1.19 in 2012.

#### Explanation of variables

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

**National milk : feed price ratio:** Data source: Milk and feed prices from national statistics. Feed: Based on the soybean meal price in combination with barley or corn price, country specific. Calculation: 0.3 kg soybean meal price + 0.7 kg corn or barley price.

**World market:** Calculation: Combined IFCN world milk price indicator divided by IFCN world feed price indicator. IFCN feed price indicator: Data source: International Monetary Fund. Specification: Soybean meal: CME futures first contract forward, Corn: FOB US Gulf. Calculation: 0.3 kg soybean meal price + 0.7 kg corn price. The annual price is calculated as the arithmetic mean from monthly data. **Combined IFCN world milk price indicator:** Based on the weighted average of 3 IFCN world milk price indicators: 1. SMP & butter (35%), 2. Cheese & whey (45%), 3. WMP (20%), based on shares of the related commodities traded on the world market. For more details, see: [www.ifcndairy.org/en/output/prices/milk\\_indicator2013.php](http://www.ifcndairy.org/en/output/prices/milk_indicator2013.php)

**Poland:** The Polish milk : feed price ratio is generally close to, or below, the world market level. After being on average 41% below the German level from 1996 to 2007, the average distance was only -12% from 2008 to 2011. The ratio decreased in 2012 -19.2% to 1.08.

**Ukraine:** The ratio ranged between 1.1 and 1.3 until 2004. From 2005 to 2009 the ratio was on average at a favourable level of 1.7. In 2009 the ratio increased about 40% to a level of 2.17, but during the next two years it showed a significant decrease to a level of 1.34.

**USA:** The US milk : feed price ratio is characterised by a strongly volatile development on a high level. Since 2006 it seems to have been more closely connected to the world market developments. In 2012 it decreased about 19% to a level of 1.37.

**Argentina:** Except for the year of the Argentine crisis, the ratio ranged between 1.3 and 2.0 (1996-2010). In 2011 the ratio was still favourable at 1.9 and in 2012 it decreased to 1.4 (-25%).

**Brazil:** Following the world market trend on a generally lower level, the ratio was on average 1.5 during the 15-year frame observed. In 2011 it was 1.8, but in 2012 it decreased once more to 1.5 (about 13 %).

**New Zealand:** The ratio, during the timeline observed, was on average at 1.1 and in 2012 it moved even below 1 to a level of 0.8 (Due to their use of pastoral systems this level stays lower than other systems).

**China:** On average the Chinese ratio is marginally better than that of New Zealand (1.2 versus 1.1). In the last 3 years, it has been oscillating between 1.28 and 1.43.

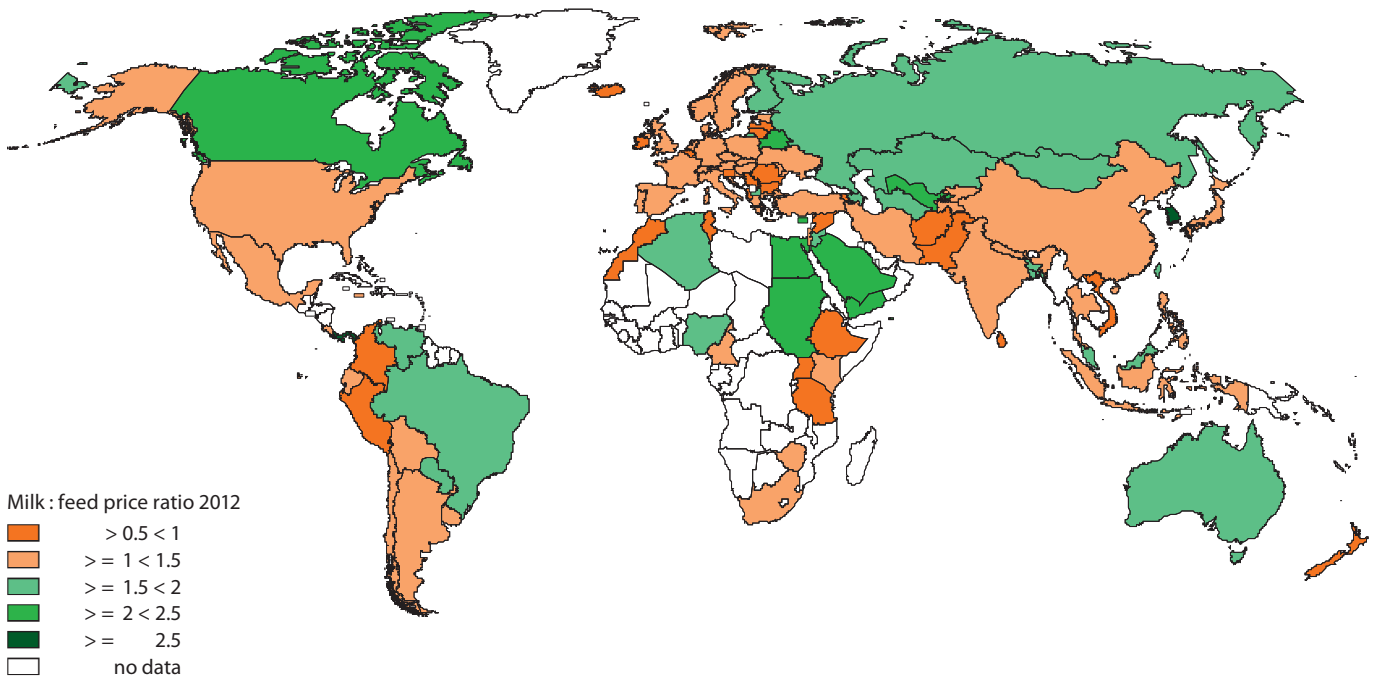
**India:** The Indian milk : feed price ratio fluctuates around the 1.5 level, usually remaining below it (average: 1.4). In 2012 it was 1.08 and in 2012 it was almost the same as the world ratio.

**Conclusions:** Many countries reflected the trend of the world market developments by decreasing milk : feed price ratios. Intensive feeding systems became increasingly unfavourable, after a favourable development in 2010. As feed is the major cost component in milk production and there being a high degree of volatility on the markets, the farmers' ability to adapt quickly to changing circumstances will be a key driver for future success.





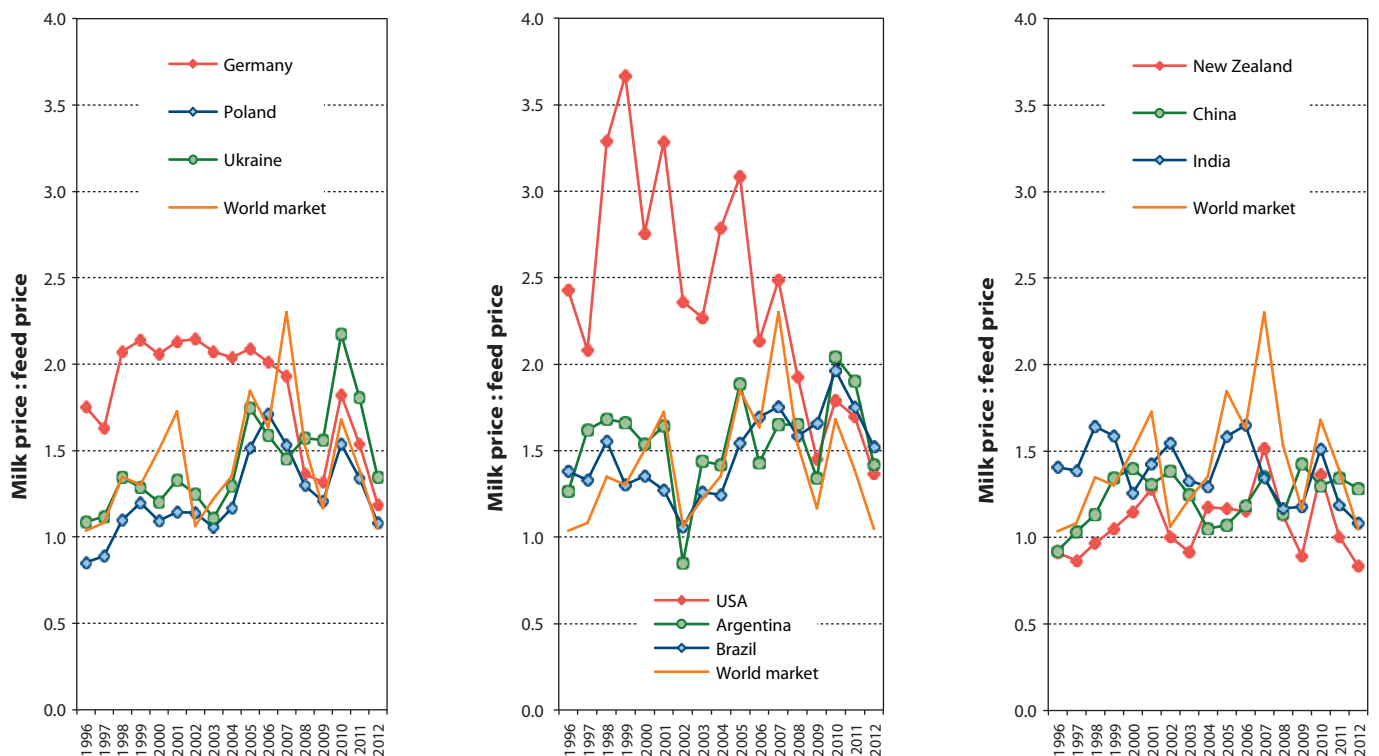
### Milk : feed price ratio 2012



**Comment:** IFCN calculation, see text Chapter 2.7

**Source:** National statistics/surveys, in some cases based on estimations.

### Milk : feed price ratio developments 1996-2012 in selected countries







Uganda













This and previous page: Milk production in Uganda and Germany

## Chapter 3 – Status and development of milk production

Authors: Massoumeh Nasrollahzadeh, Karin Wesseling, Helga Weber, Eva Schröer-Merker, Judit Köhl, Lukasz Wyrzykowski with the contribution from researchers mentioned on page 2-3 of this report

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## 3.1 Summary – Status and trends in the dairy sector

### Introduction

This chapter summarises the key findings of the charts and maps shown in Chapters 3.2-3.9. Milk production and farm structure figures are the focus of the Country Page Analysis this year. It is now possible to show world maps with comparable farm structure information via the IFCN Standard size classes as well as all estimated dairy farms in the world.

### Method:

Production of cow and buffalo milk in million ton ECM (energy corrected milk, standardised to 4% fat and 3.3% protein) is shown at country level, while regional milk production is shown in natural fat and protein contents. In cases where data is only available until 2011 (e.g. China, India) or where only milk deliveries are shown (Turkey), current milk production might be underestimated. For further details see the explanations below each map, chapters 3.2-3.8.

### Evaluation per region is important – World milk production with regional breakdown

The IFCN estimated world production of cow and buffalo milk at 739 mill t ECM in 2012 (+2.6% versus 2011). The **world** map clearly shows the dominance of Asia (33%) and EU-27 (21% of world milk production), while the regional breakdown for 13 countries illustrates key regions within the main dairy countries, chapter 3.2. Thus, it becomes clear that the main regions in selected countries are, in terms of volume, as important as whole other countries. For example the state of Wisconsin (USA) has about the same production volume as Poland (12 mill t each), while Uttar Pradesh in India produces as much milk as New Zealand (23 mill t each).

In continental **Europe**, milk production reached 228 mill t ECM, of which the EU-27 countries produced 67%. The most prominent areas (see milk volume map for 49 European countries) are the North Sea coastal areas of France (Nord-pas de Calais), Belgium, The Netherlands, Germany and Denmark with a total of 30.8 mill t and the north-west of France (Brittany, Lower Normandy, Pays-de-la-Loire) with a total of 11.9 mill t milk production. Also here, the importance of key regions becomes clear once put into perspective: Bretagne in France produces similar volumes to Denmark or Ireland (5.3 mill t), while Lombardy in Italy produces a similar amount to all Romania (4.5 and 4.4 mill t, respectively).

### High concentration of milk in key regions affecting the national dairy chain

In addition to the milk volume, milk density (as milk production divided by square kilometre total land) is an important indicator for assessing regional competitiveness, chapter 3.3. The concentration of milk has implications for the whole chain, e.g. benefits of concentration, such as lower costs (e.g. milk collection) but it can also signify disadvantages such as competition for land (e.g. soy bean production in Argentina or biogas in Germany). Low milk density in favourable areas may indicate space for growth but possibly higher costs due to limited infrastructure (lack of concentration).

A high milk density over 20 t milk per km<sup>2</sup> (or 0.2 t milk per hectare) total land, can be found mainly in continental Europe, New Zealand, India, Pakistan, Bangladesh, South Korea and Japan. The regional breakdown is especially important in this **world map**, as countries like Argentina may have an overall low milk density of 4.2 t milk per km<sup>2</sup> while the region of Santa Fe with 26.6 t milk per km<sup>2</sup> is a well-developed key dairy region within the country. Parts of the USA (California and Idaho in the west and around the Great Lakes in the east), key regions of Mexico, Chile and Brazil, as well as Victoria in Australia and the outskirts of Beijing and Shanghai also show a high concentration of milk.

The scale for the **European map** has been adjusted and regions with more than 100 t milk per km<sup>2</sup> (or 1 t per hectare) total land can be seen. A

high milk density can be found in the traditional grassland regions of the coasts or mountains. The main centres are the coastline of France, Belgium, the Netherlands, Germany and Denmark and the western parts of the UK and Ireland, southern Germany, Switzerland and northern Italy. Also Podlaskie in eastern Poland and the Azores (Portugal) have a high milk density.

### Development of new dairy regions

The world's cow and buffalo milk production increased on average by 2.5 % per year in the time period 2007-2012, with significant variations of **percentage growth** between countries and dairy regions, chapter 3.4. Strong upcoming dairy regions can increase milk production at a rate of 3% or more per year while weak regions decline at the same rate, unless hindered by political instruments. Milk production seems to move to areas which are less favourable for crop farming, making competition for land a possible key driver. In Argentina for instance, milk production is declining strongly in the crop regions of Entre Rios and Santiago del Estero while it is increasing strongly in La Pampa, Cordoba and Buenos Aires. On the other hand, in China the picture is shifting, as growth is stagnating or even declining in formerly strong areas. Thus Inner Mongolia as the main dairy region is stagnating for the first time, while milk production still grows in the arable plains between the highly populated areas of Shanghai and Beijing.

In **absolute volumes**, the world's milk production increased on average by 16.9 million t ECM per year, a total of 84.7 mill tons in the 2007-2012 time period (chapter 3.5). It is interesting to link the percentage growth to the absolute volumes, since high growth rates can easily lead to a doubling of milk production within 20-25 years. For example Canterbury in New Zealand is currently producing volumes similar to those of Austria and, with a five year compound annual growth rate of 12%, will double its milk production in less than 10 years. On the other hand, Texas (USA) is not (yet) considered a key dairy region in the US, but is already producing a volume like Kenya's which is the third biggest producer in Africa. With a five year average growth rate of 5.4%, milk production will be double within 20 to 25 years.

### Surplus and deficit – huge amounts get transferred within countries

**Method:** At **country level**, milk surplus and deficit is calculated as exports minus imports plus stock changes. The surplus and deficit of milk at **regional level** was calculated for 13 countries shown on the world map and many countries shown on the European map (chapter 3.6). The calculation is based on the regional milk production data minus regional consumption. The latter is based on the average per capita milk consumption 2012 calculated by the IFCN, multiplied by the population in the region. For regional population, national statistics were used and, in some cases, extrapolations based on national population development. For India, it is assumed that only delivered milk is transferred between regions and non-delivered milk is consumed in the region where it is produced, thus the estimated surplus of delivered milk is shown. This was calculated via adjusted regional milk consumption as follows. Regional milk consumption = regional non-delivered milk + milk delivered per capita in the country \* regional population. In the case of strong increases of dairy stocks, the sum of the regional surplus and deficit reflects the national surplus in milk and not the net exports in milk equivalents. Since surplus and deficit at country level are calculated from standardised milk equivalents and regional ones from non-standardised milk, i.e. milk in natural contents, the sum of regions might differ from the value calculated at country-level. Due to great deviations, regional consumption in the USA was adjusted to non-standardised milk to correspond with regional production (natural contents).



**Conclusion:** The surplus regions are, in most cases, also those with high milk production density (see Chapter 3.3), which provide the milk for those with a deficit, usually larger cities or highly populated areas. While global dairy trade is of high importance to cover national deficits, large amounts of milk are “traded” between the surplus and deficit regions of single countries, as is illustrated below. If EU-27 was considered as an aggregate, it would claim second place in the world-ranking (15.0 mill t).

World		Top surplus regions		Top deficit regions	
Rank	Country / region	mill t	Country / region	mill t	
1	New Zealand	21.4	São Paulo (Brazil)	-5.6	
2	Wisconsin	10.7	Italy	-5.4	
3	Inner Mongolia (China)	8.6	Moscow city and region (Russia)	-4.6	
4	California (USA)	8.3	Florida (USA)	-4.3	
5	Minas Gerais (Brazil)	6.2	Guangdong (China)	-3.3	

Europe		Top surplus regions		Top deficit regions	
Rank	Country / region	mill t	Country / region	mill t	
1	Bretagne (France)	4.3	Moscow city and region (Russia)	-4.6	
2	Pays de la Loire (France)	2.6	Île de France (France)	-3.8	
3	Basse-Normandie (France)	2.4	Bozen (Italy)	-2.9	
4	Weser-Ems (Germany)	2.3	London (UK)	-2.1	
5	Estonia	2.2	Istanbul (Turkey)	-1.8	

### China – milk flowing south:

The regions with milk surplus are in the North and the western part of the country. Those with milk deficit are in the southeast. They produce only a minor share of the milk they consume. This means large milk volumes may be transported up to 2,000–3,000 km within the country from surplus to deficit regions. The amount of milk transported, which is the sum of regional surplus milk, is approximately 18.5 million t in China (2011). This is a very large amount when compared to the global trade volume of dairy products (about 60 million t milk equivalents, excluding EU-intra trade).

### India – results of the white revolution:

The “White revolution” or “Operation Flood” has been the biggest dairy development program world-wide so far. It was started in the 1970’s with the aim of making India a self-sufficient milk producing country. In fact it is today the world’s largest milk producer, and in 2012 even developed a very slight surplus, but demand is strong and continuously growing. Currently, the main surplus regions are in the north and west of the country, while especially Bihar and West Bengal in the east show a deficit in milk, thus reflecting the geographical and institutional diversity in regional milk production and marketing in India.

It is important to note the additional assumption that only delivered milk is transferred between regions and non-delivered milk is consumed in the region where it is produced. Therefore only the estimated surplus of milk delivered is shown. For details on method and data see above and explanations below the map in chapter 3.6

### Scramble for land – Recovery after financial crisis

In general, a strong rise in land prices can be observed for most countries (see also Country Pages), especially after 2000. In some cases this development led to a “price bubble”, where the assets were traded at inflated prices (e.g. Denmark). The prices decreased, triggered by the global financial crisis in 2009/2010. Land prices were not affected by the financial crisis in some countries, such as Brazil and Germany, where demand and competition for land remained high, thus supporting land prices. While prices were subdued during the crisis they are now on the rise again in most countries, reflecting strong demand for agricultural land. There is a wide range in land prices of <2000 US\$/ha in Latvia to >85000 US\$/ha in

Italy, all within Europe. It is difficult to determine statistical country average land prices due to the high variations in its quality and availability, which can differ greatly even within a comparatively small region. So the prices shown in chapter 3.7 should be taken rather as an indication of the value and overall trend direction.

### Successful phasing out - Declining quota prices in Europe

Although there are still high variations within Europe, overall quota prices are declining, corresponding to the quota end in 2015. The absolute price per kilogram of quota is important, as it can be considered as an “additional cost for growth”. Also the relation to the milk price is of high importance, determining the feasibility of growth and putting the asset value into perspective. While in Israel and Taiwan this relation is about 1 to 1, it can range from 1% in UK and 4% in Portugal to 150% and 160% in The Netherlands and Luxembourg respectively and as high as 380% in Iceland and Canada (quota price in relation to milk price).

### Global importance of dairy farming – Farm number and size world-wide

The total number of dairy farms is estimated to be 123 million with an average farm size of only 3 cows (and / or buffalos) per farm and on average producing 6.1 tons milk per year. 62% of all dairy farms are located in India and another 6% in Pakistan, constituting the two largest farm numbers. In comparison to these countries, the farm numbers in the USA with 57,700 or in New Zealand with 11,800 appear relatively small. While 50% of countries had an average farm size of <10 cows, only 16 countries had an average farm size between 50 and 100 cows and another 13 countries had more than 100 cows per farm.

For the first time, the estimated global dairy farm numbers and average herd sizes are shown in the results, see chapter 3.8 left page. For the estimation of farm numbers, the available cow and buffalo numbers were taken as well as an assumed average herd size. The herd size assumption is in most countries based on expert estimations and in relation to neighbouring countries. All content feedback, especially on average herd size assumptions, is very welcome.

### Is bigger always better? Comparable farm structure world wide

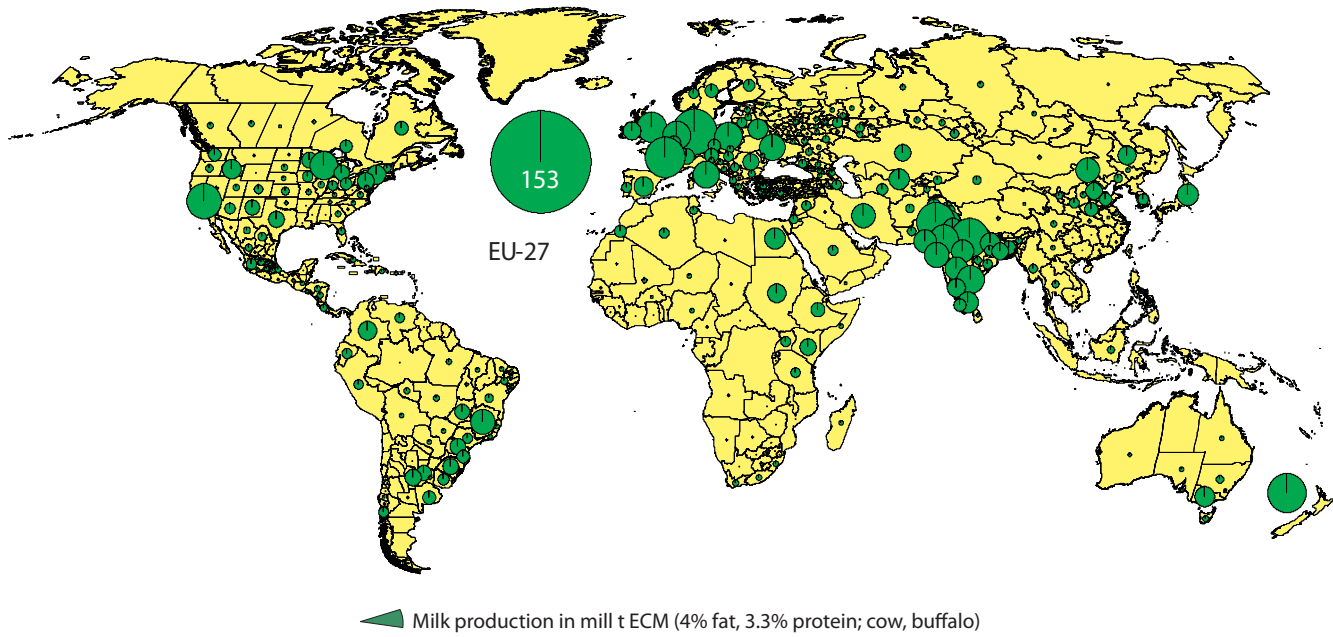
With the IFCN Standard Classes it is possible to have one set of comparable farm structure for all the countries in the world. When comparing this data, it becomes clear that even now, in over half of the countries analysed, only a small share of milk animals (<20%) is on farms of >100 cows (and / or buffalos). At world level, about 16% of cows are kept on larger farms of >100 cows, which we define as business farms, representing only 0.3% of farms. Another 26% of cows is kept on family farms of >10–100 cows, which represent 3% of farms. Household farms, which we define as having up to 10 cows, represent 96% of farms and 58% of cows. There are great differences between regions as is clear when looking at the world maps in chapter 3.8, page 69. This is partly due to the different development stages of national dairy sectors, but it also reflects the fact that the farming system will differ according to region.

### Implications for the future – Demand driven milk production

World dairy trade is expected to grow by 40 mill t or 60% in the next 10 years (according to IFCN calculations). Only a selected number of countries is likely to add supply to the growing world market. It is assumed that 90% of the milk will still be consumed in the country where it is produced, so overall, milk stays “local”. Identifying and supporting growing dairy regions will be a key to help shaping future developments.

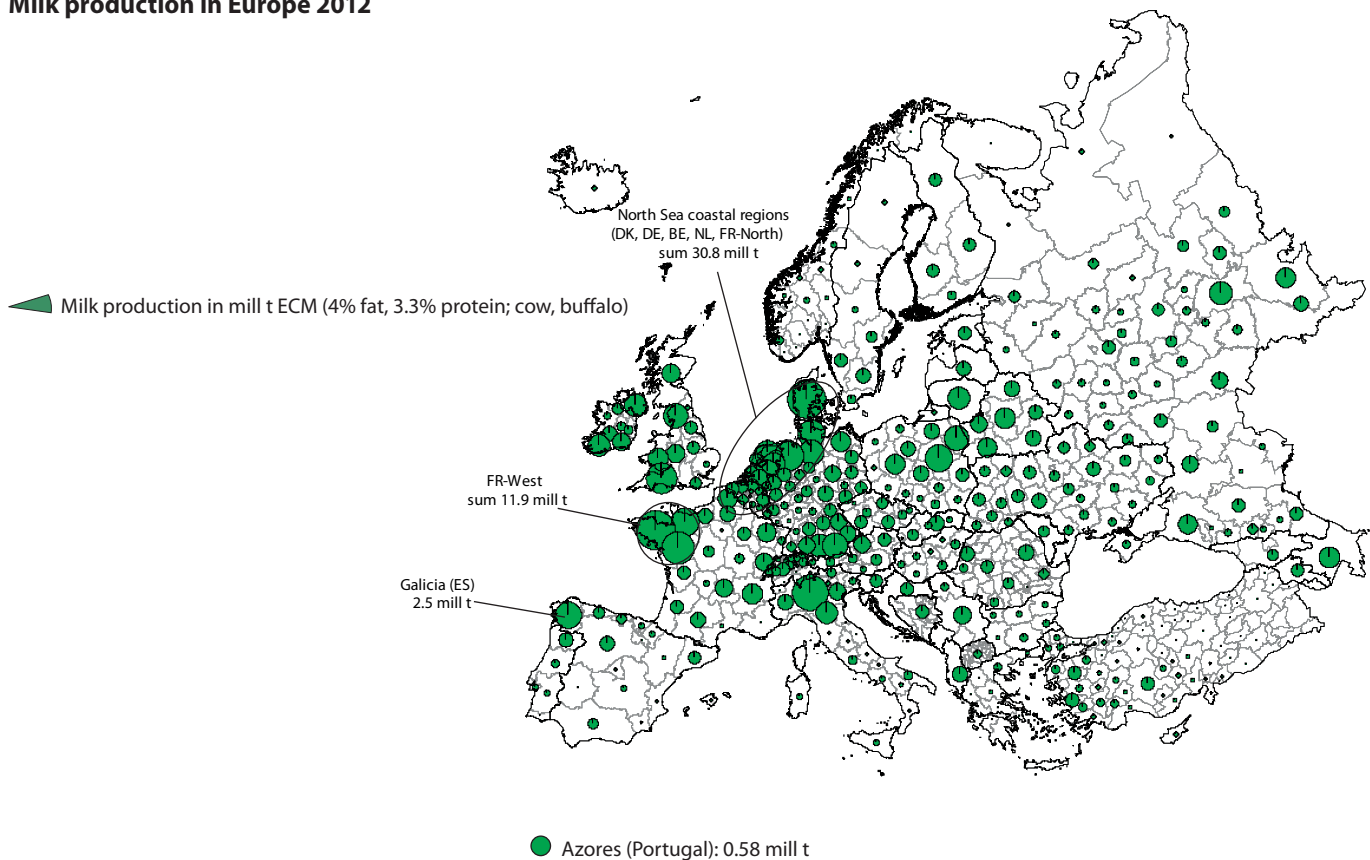
## 3.2 Milk production volumes 2012

### Milk production world-wide 2012



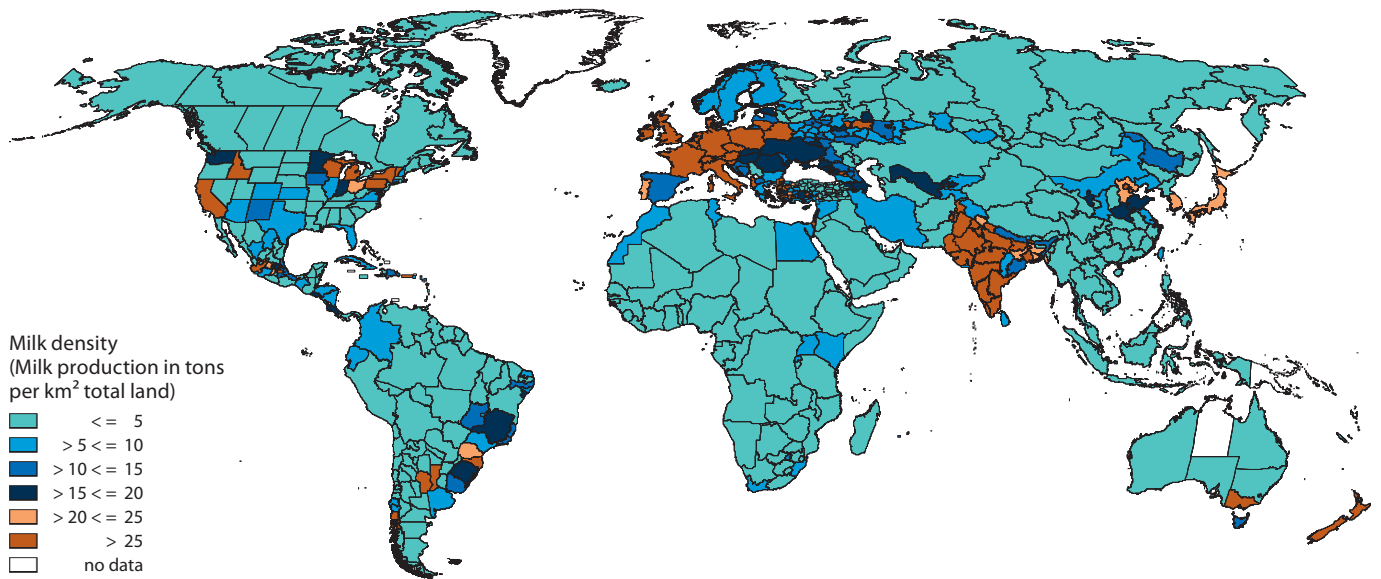
**Data:** Country data: Milk production 2012 (cow and buffalo) in ECM. Regional data: Milk production 2012 (cow and buffalo) in natural fat and protein content. If not available, 2011 data for CN, IN, AR. TR milk delivery 2012 in natural fat and protein content.  
**Source of data:** National statistics, FAO, estimations for some countries.

### Milk production in Europe 2012



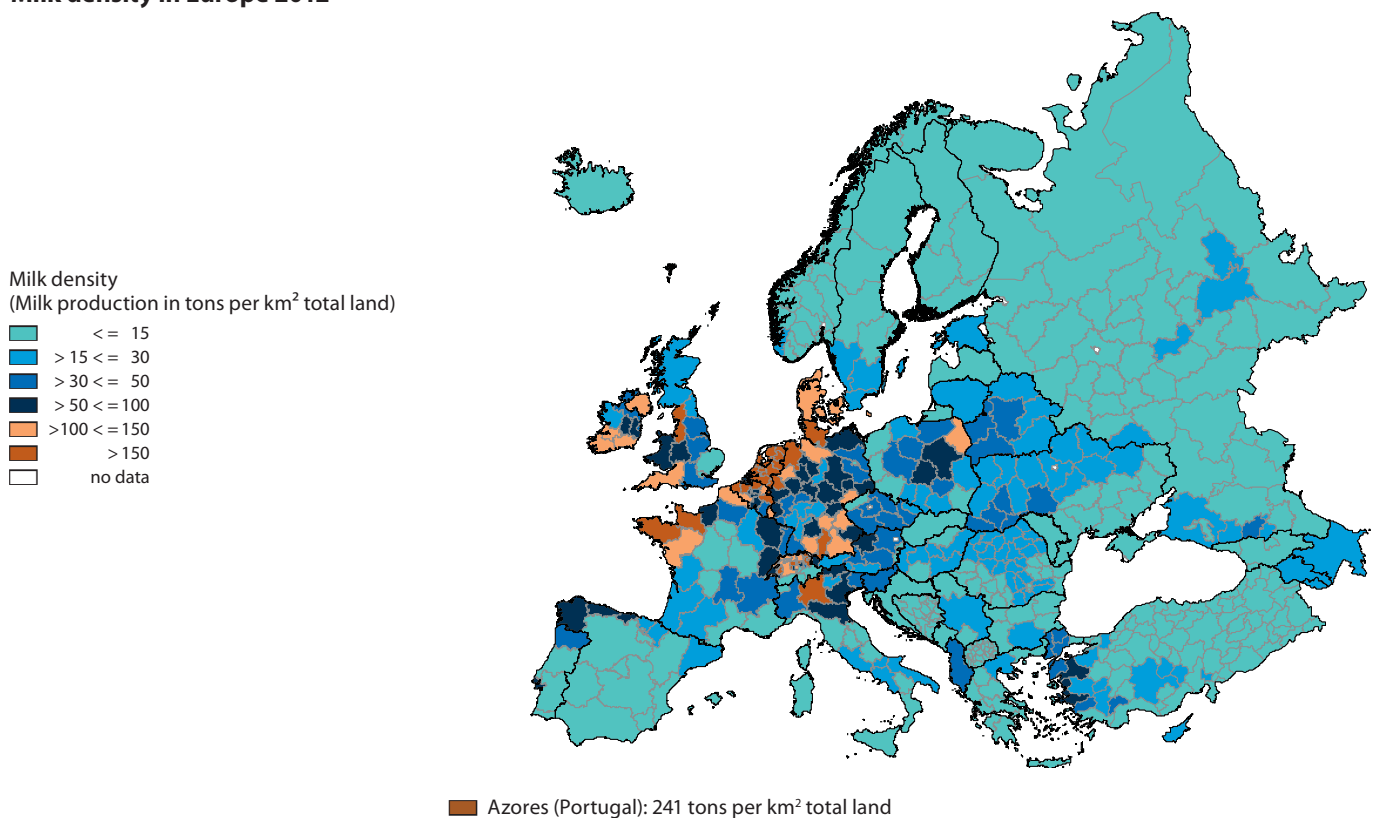
**Data:** 2012 in natural fat and protein content. If not available, 2011 data was taken (BE, CH, ES, FR, HU, NO, PL, RO, SK), 2010 data for BG, UK. TR based on milk delivery 2012.  
**Source of data:** National statistics, Eurostat and estimations.

**Milk density world-wide 2012**



**Data:** 2012 or, if not available, 2011 data was taken for CN, IN, AR. Country data in ECM, regional data in natural fat and protein content.  
 TR based on milk delivery 2012 in natural fat and protein content.  
**Source of data:** National statistics, FAO, estimations for some countries.  
**Calculation:** Milk production divided by km<sup>2</sup> total land.

**Milk density in Europe 2012**

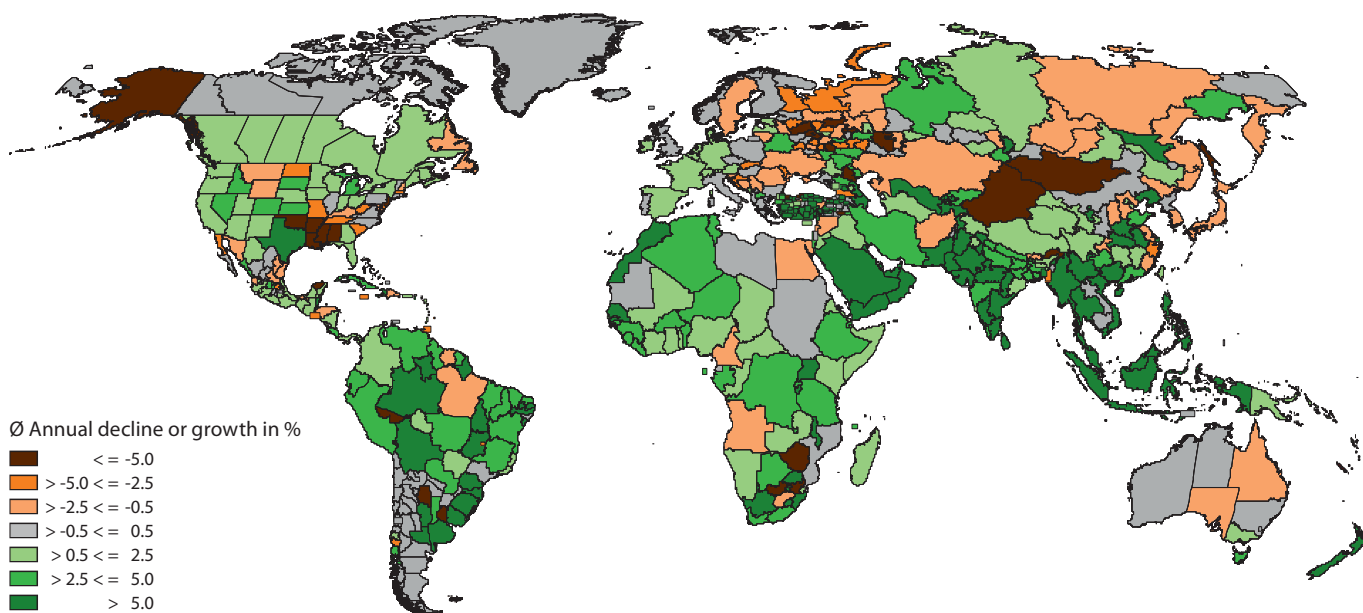


**Data:** 2012 in natural fat and protein content. If not available, 2011 data was taken (BE, CH, ES, FR, HU, NO, PL, RO, SK), 2010 data for BG, UK. TR based on milk delivery 2012.  
**Source of data:** National statistics, Eurostat and estimations.  
**Calculation:** Milk production divided by km<sup>2</sup> total land.



## 3.4 Percentage change in milk production 2007-2012

### Annual change in milk production world-wide 2007 to 2012



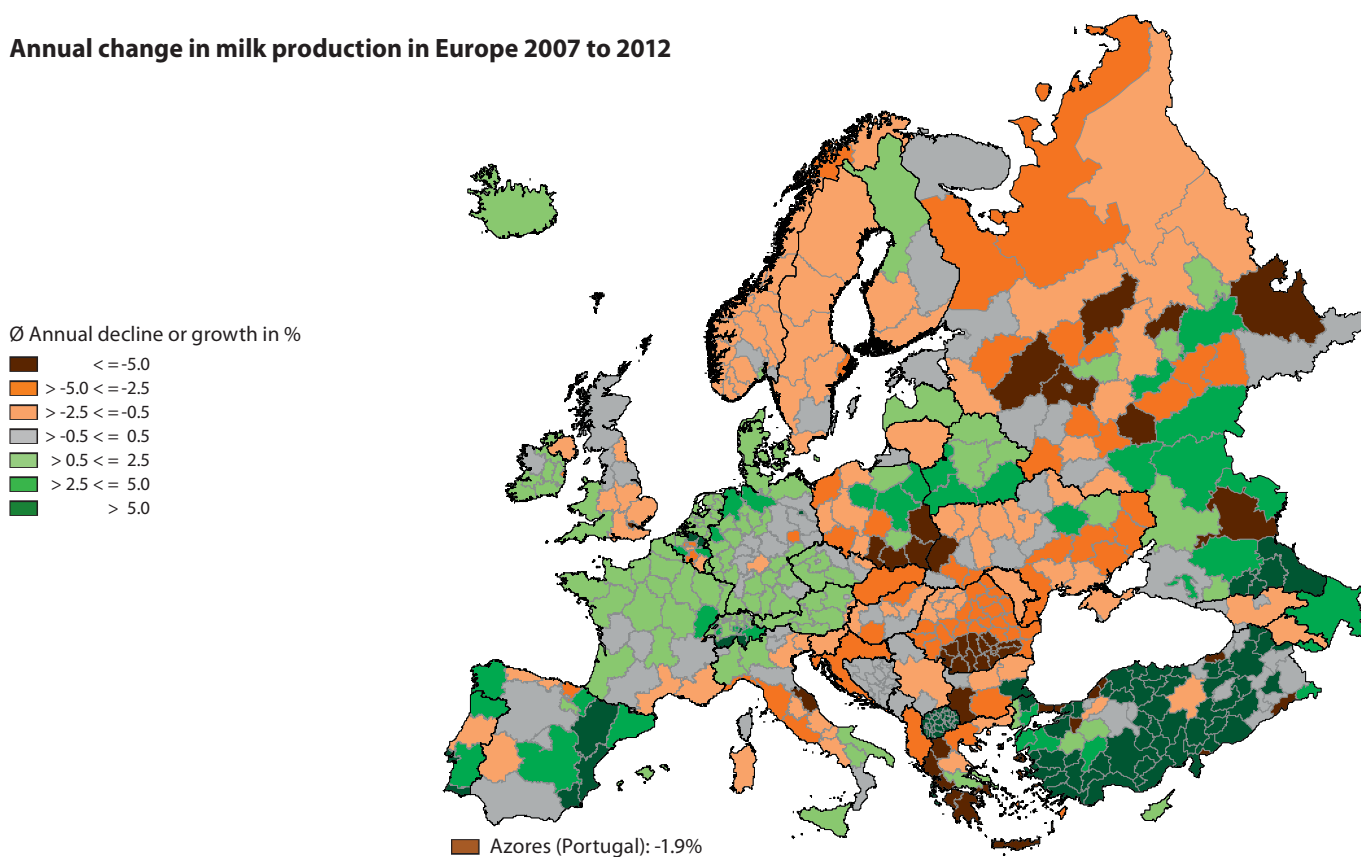
**Data:** 2012 and 2007 in ECM, regional data in natural fat and protein content.

If not available, 2011 data was taken for CN, IN, AR. TR based on milk delivery 2012 to 2010 in natural fat and protein content.

**Source of data:** National statistics, FAO, estimations for some countries.

**Calculation:**  $(\text{data 2012 divided by data 2007})^{1/5} - 1$ .

### Annual change in milk production in Europe 2007 to 2012

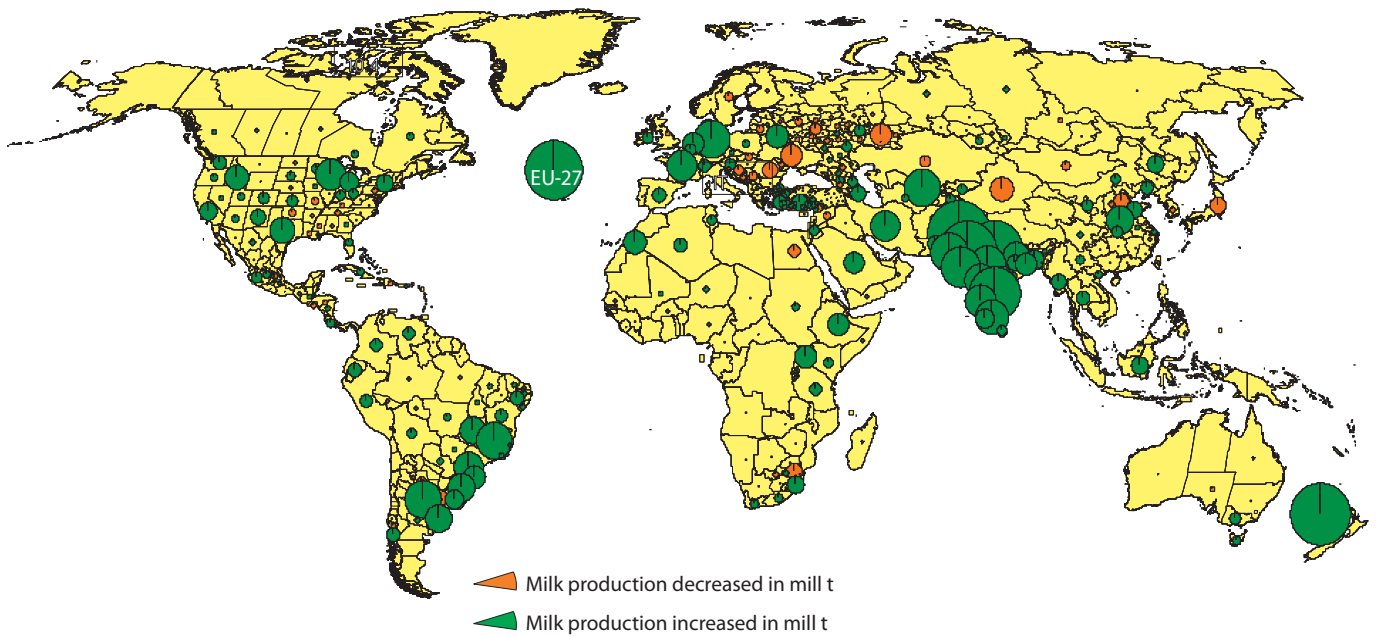


**Data:** 2012 and 2007 in natural fat and protein content. If not available, 2011 data was taken (BE, CH, ES, FR, HU, NO, PL, RO, SK), 2010 data for BG, UK. TR based on milk delivery 2010 to 2012.

**Source of data:** National statistics, Eurostat and estimations.

**Calculation:**  $(\text{data 2012 divided by data 2007})^{1/5} - 1$ .

#### Growth in annual milk production volume world-wide 2007 to 2012

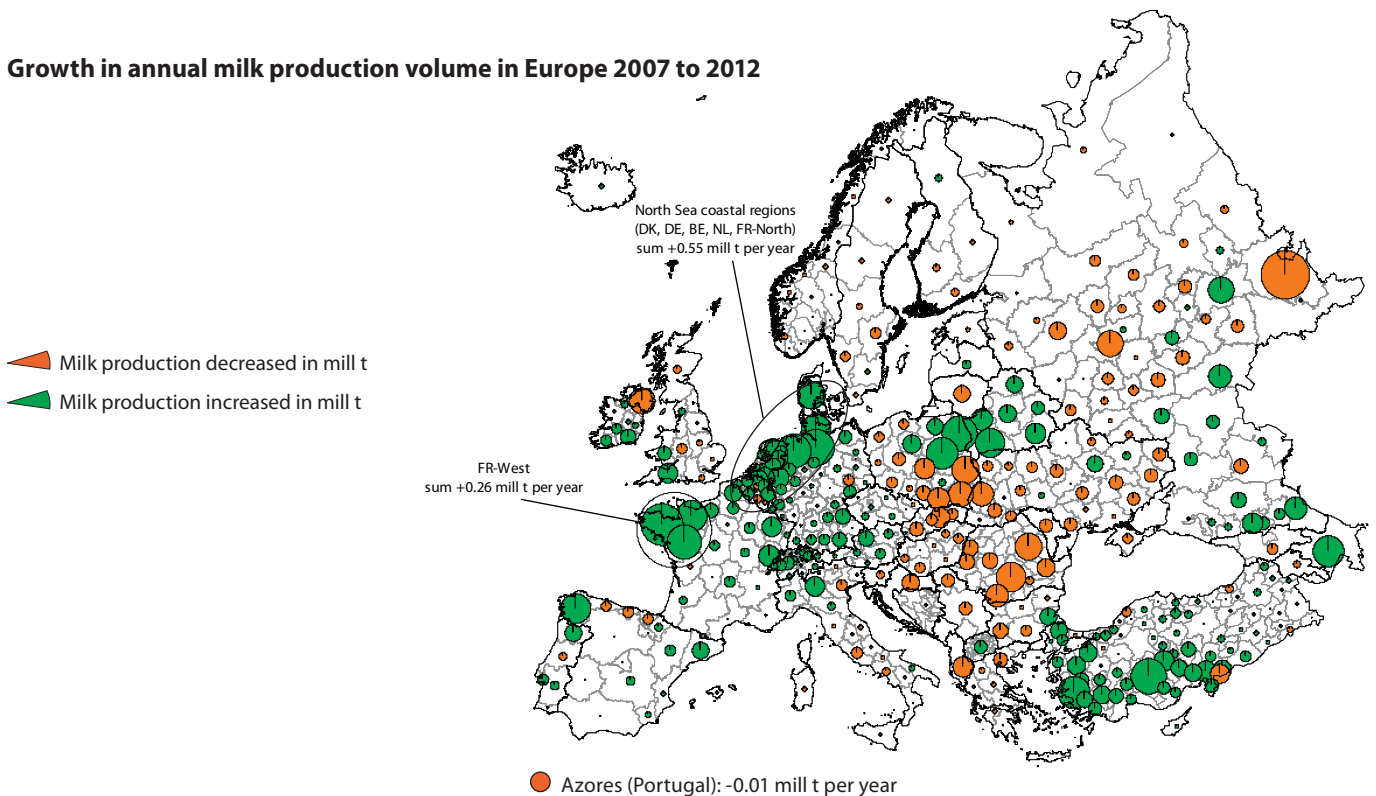


**Data:** 2012 and 2007 at country level in ECM, regional data in natural fat and protein content. If not available, 2011 data was taken for CN, IN, AR, TR based on milk delivery 2010 to 2012 in natural fat and protein content.

**Source of data:** National statistics, FAO, estimations for some countries.

**Calculation:** (Milk production 2012 minus milk production 2007) divided by 5.

#### Growth in annual milk production volume in Europe 2007 to 2012



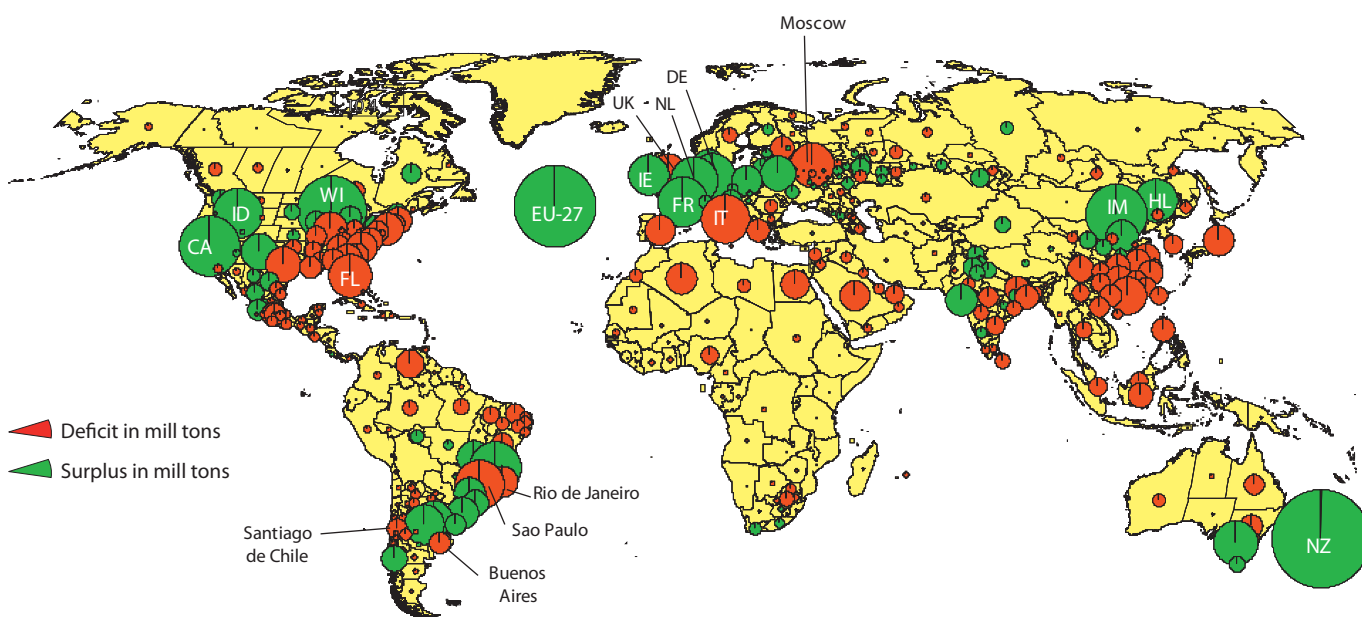
**Data:** 2012 and 2007 in natural fat and protein content. If not available, 2011 data was taken (BE, CH, ES, FR, HU, NO, PL, RO, SK), 2010 data for BG, UK. TR based on milk delivery 2010 to 2012.

**Source of data:** National statistics, Eurostat and estimations.

**Calculation:** (Milk production 2012 minus milk production 2007) divided by 5

## 3.6 Milk surplus and deficit in 2012

### Milk surplus and deficit world-wide 2012



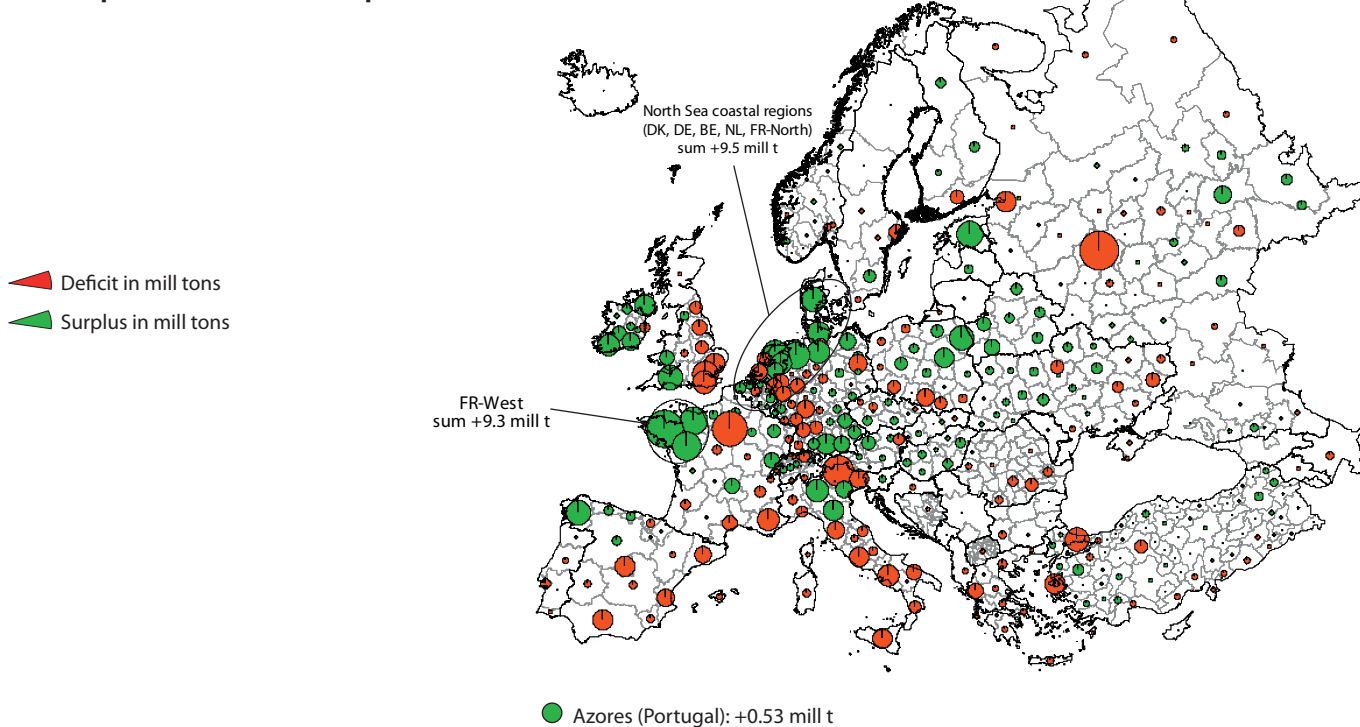
**Data:** 2012 at country level in ECM, regional data in natural fat and protein content. 2011 data was taken for CN, IN, AR.

**Source of data:** National statistics, FAO, for some countries estimations and IFCN calculations.

**Calculation of surplus or deficit per country or region:** Milk production minus milk demand. Regional demand: Regional population and country average per capita milk consumption. Additional assumption for India: Non-delivered milk is consumed in the region where it is produced.

**Remarks:** Moscow region and city shown as one, Buenos Aires region and city shown as one, Santiago de Chile = Metropolitana region. Regional abbreviations: USA: CA = California, ID = Idaho, WI = Wisconsin, FL = Florida. China: IM = Inner Mongolia, HL = Heilongjiang Sheng.

### Milk surplus and deficit in Europe 2012



**Data:** 2012 in natural fat and protein content. If not available, 2011 data was taken (BE, CH, ES, FR, HU, NO, PL, RO, SK), 2010 data for BG, UK. Turkey based on 2009 milk production and consumption data.

**Source of data:** National statistics, Eurostat, estimations and IFCN calculations.

**Calculation of surplus or deficit per region:** Milk production minus milk demand. Regional demand: Regional population and country average per capita milk consumption.

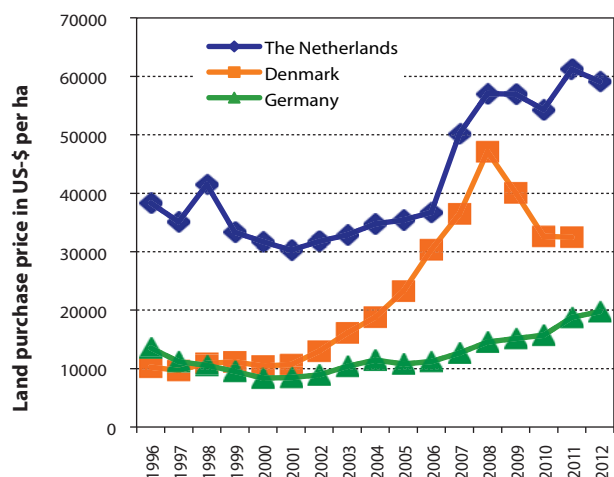
**Remarks:** Moscow region and city shown as one. Regional abbreviations: FR-West = France Brittany, Lower Normandy, Pays-de-la-Loire; FR-North = France Nord-Pas de Calais.



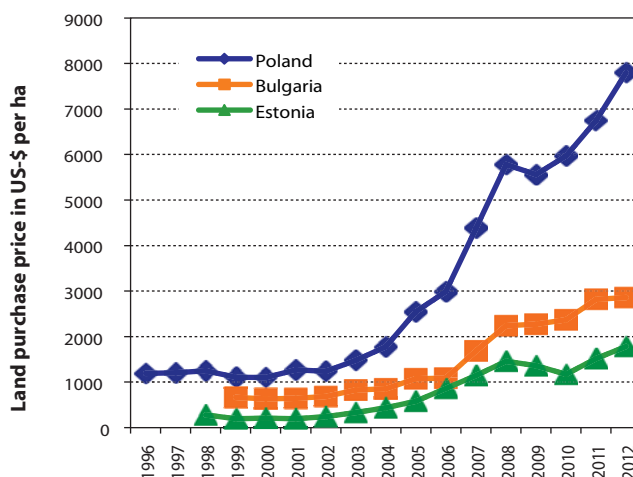


## 3.7 Land prices in selected countries

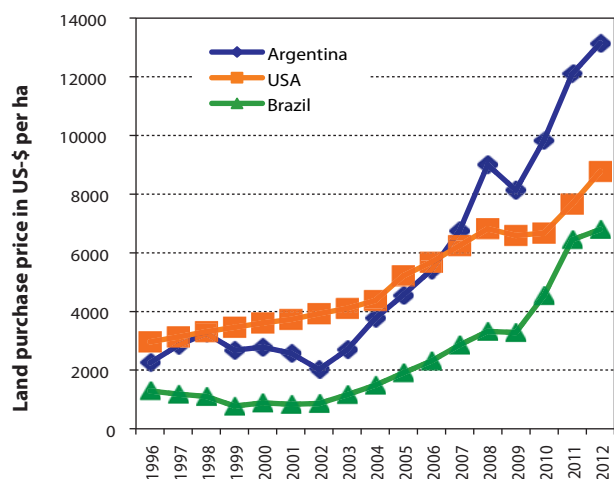
### EU-15



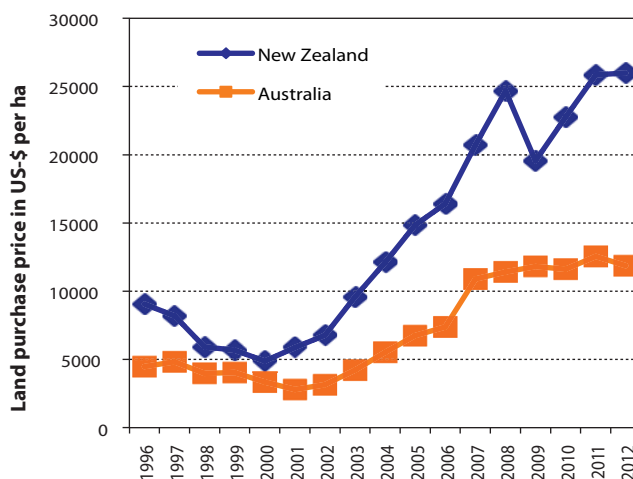
### EU-12



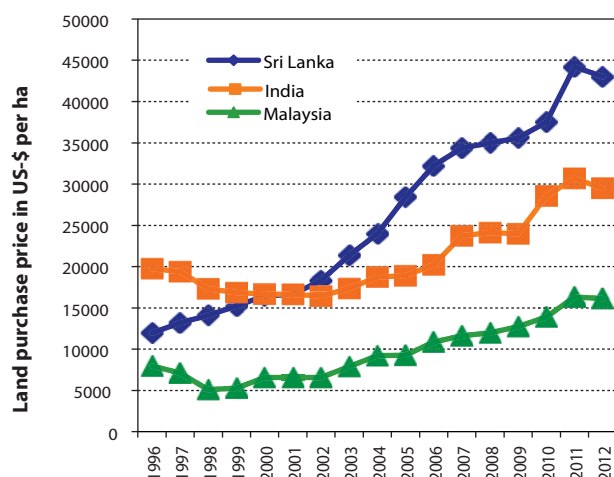
### North and South America



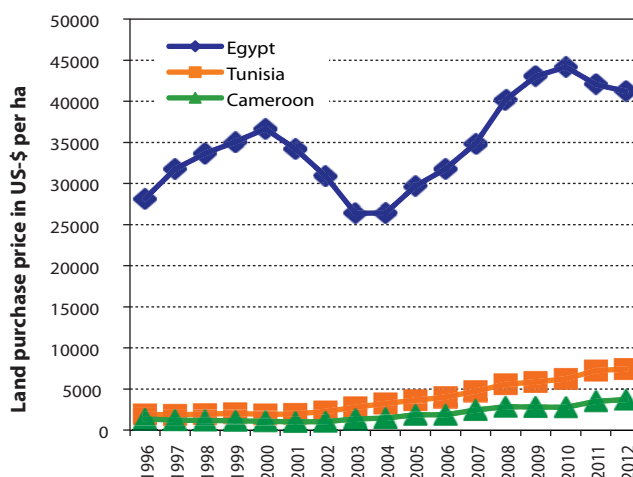
### Oceania



### Asia



### Africa

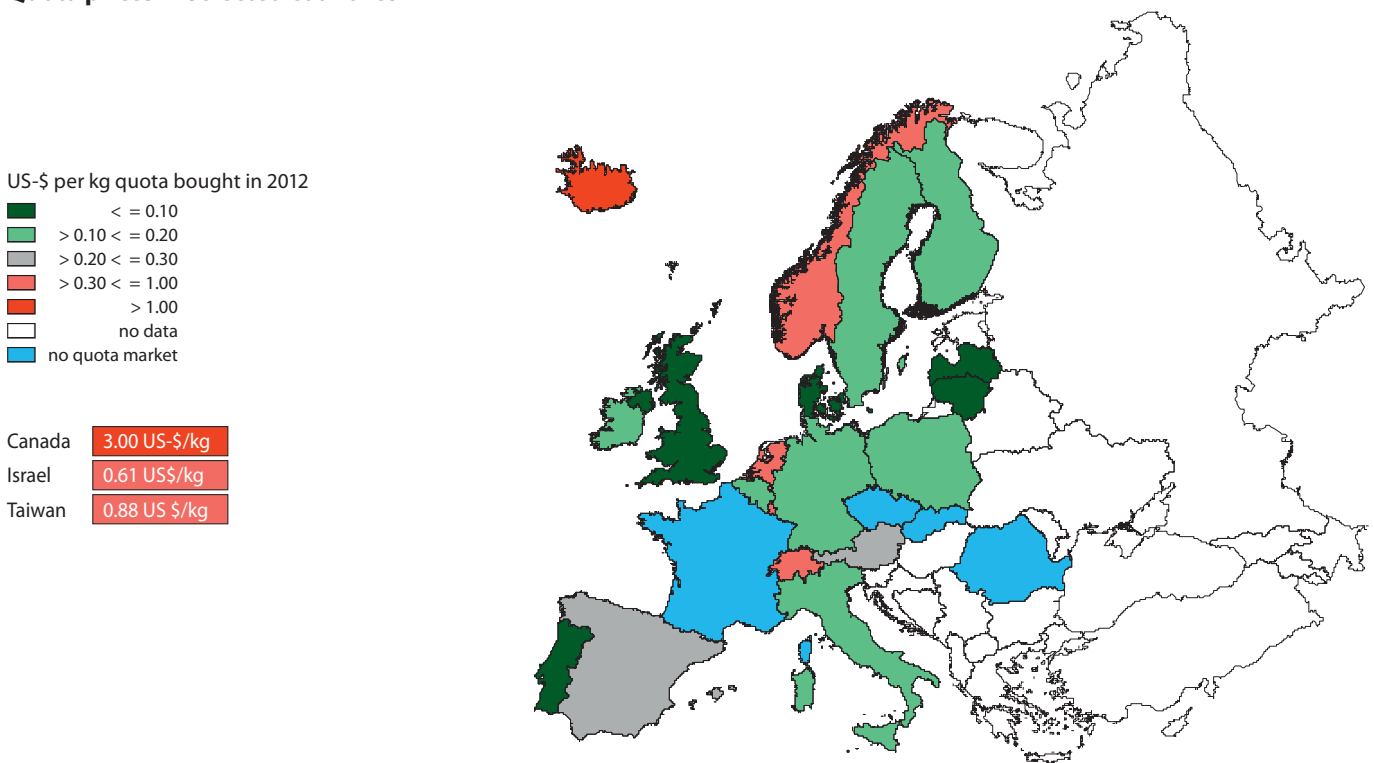


**Source of data:** National statistics and estimations.

**Explanation:** Argentina: average from crop and pasture land. Australia: high variations in land prices; depending on the region and system of farming. Bulgaria: 2011/12 estimation. Cameroon: Estimations based on 2006 price. The value for land has increased especially in the last three years. Many local, but also foreign investors are buying land for agriculture and recreational activities. The number of middlemen in the land business has also increased which further raises its price. Germany: average for agricultural land. India: average price and rent of the irrigated land in the selected states viz. Punjab, Maharashtra, West Bengal, Karnataka. 2007-10: calculated with inflation rate. 2012: average of agricultural land prices in various cities. Sri Lanka: estimated based on publications of valuation in the department of Sri Lanka. Tunisia: the great disparities between northern and southern regions in Tunisia (limited water resources, limited arable land resources, climatic conditions, demographic pressure in the coastal and northern regions,...) induce high price inflation of agricultural lands in the northern and coastal regions (+25 % per year) and a relative stability of the agricultural land prices in the southern regions. There was an average price inflation of 8% in agricultural lands between 1991 and 2000 and an average of 12% between 2001 and 2012. USA: average value of crop land.



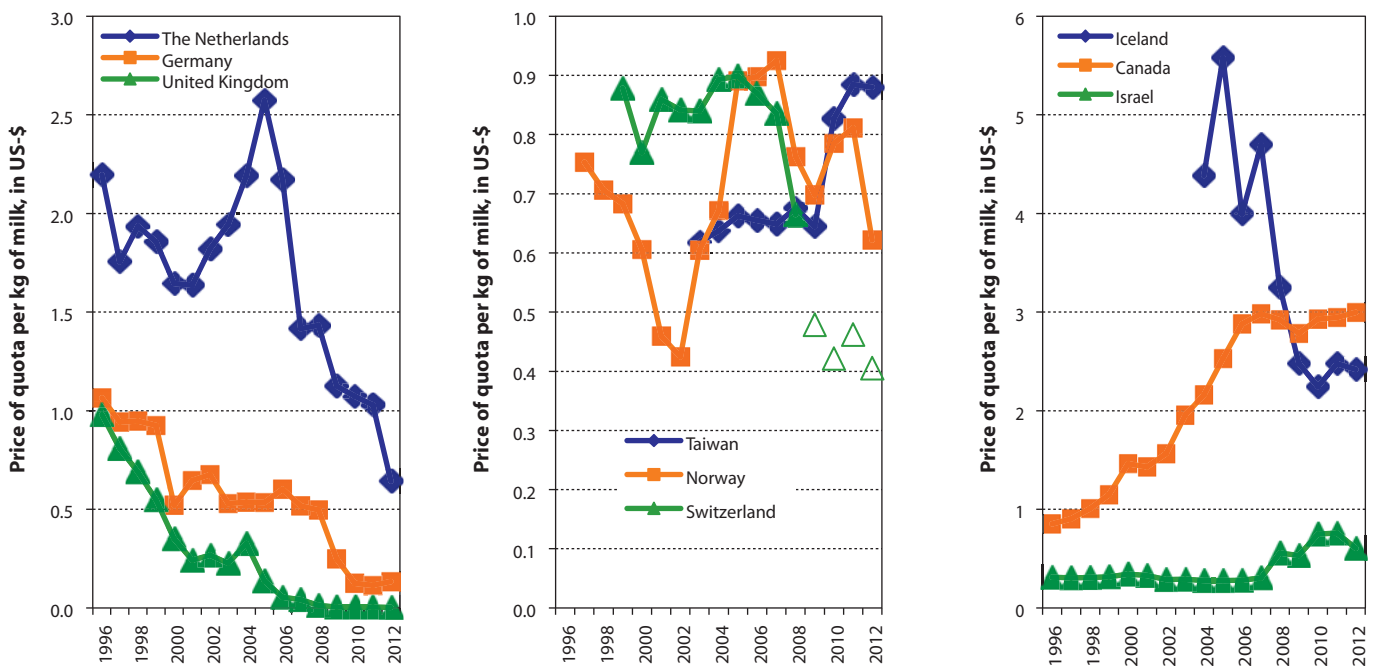
#### Quota prices in selected countries



Source of data: National statistics and estimations.

**Explanation:** No quota market: Countries with a quota system, where quota is not, or not officially, traded (CZ, FR, RO, SK). Canada: Quota costs are per kg butterfat in Canada but expressed in \$/100 kg milk for IFCN. Thus when milk composition increases as it did in 2012, the price of quota increases because it is a cost per 100 kg milk. Romania: Quota market does not really exist, but if there are transactions, the price should be somewhere between 0.02 and 0.09 US-\$/kg. Spain: Data taken from typical farms. Switzerland: On 1st May 2009 the official quota system ended and was replaced by delivery contracts between farmers and milk trading associations, which can be producer organisations as well as processors. The resulting average value is much lower than the previous quota price, because there is no uniform pricing system for delivery-contracts at present. The contractual obligation ends on 1st May 2015. Israel: No quota market for the cooperative sector (larger farms), since no sales are taking place. Taiwan: The quota price is published by the government. It is a reference price and actual prices depend on volume of milk traded and its demand

#### Quota price developments in selected countries

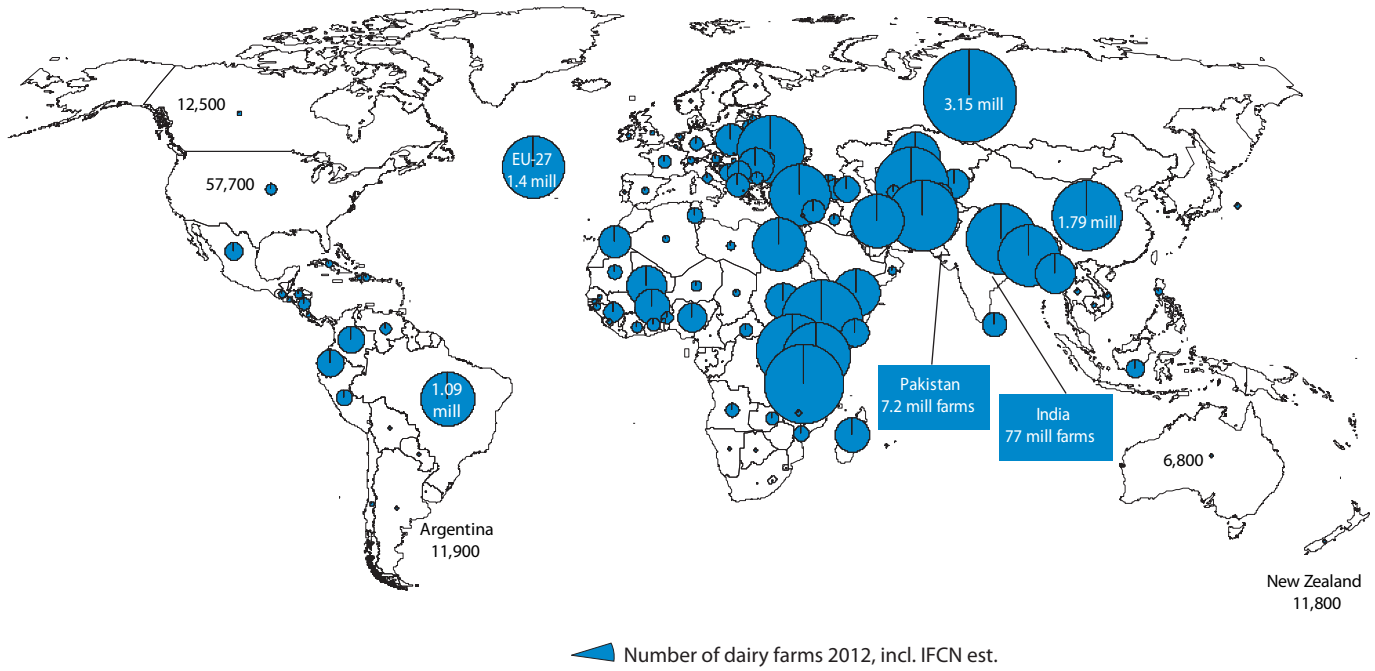


Explanation: For further details on Canada and Switzerland, see explanation above



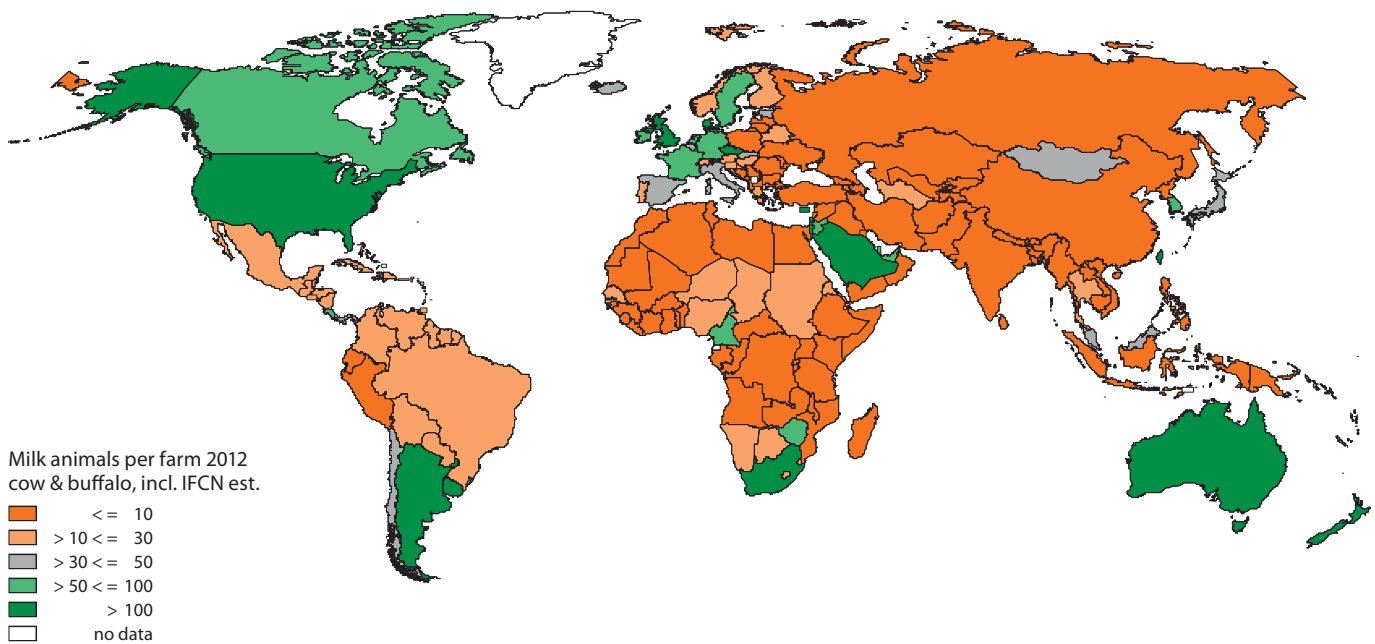
### 3.8 Farm structure – Dairy farm numbers and average farm size

#### Number of dairy farms world-wide in 2012



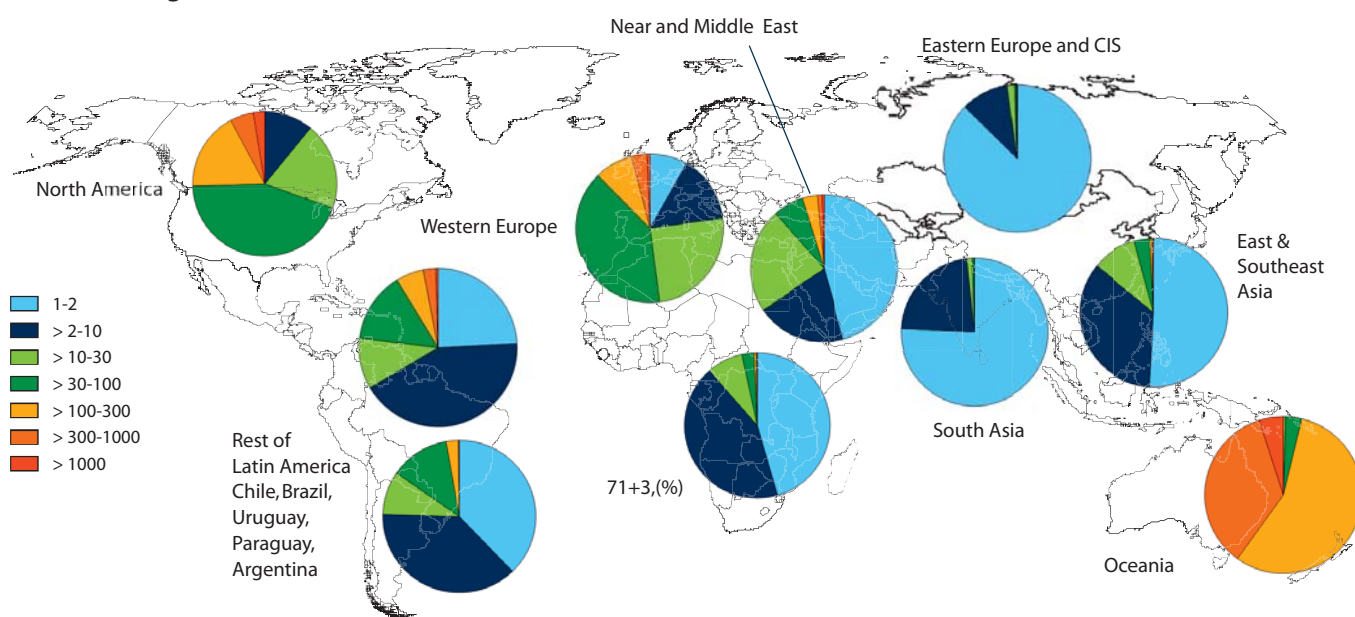
**Data:** Dairy farm numbers (cow, buffalo).  
**Source of data:** National statistics and estimations.

#### Dairy farm structure – average farm size in 2012



**Source of data:** National statistics and estimations.  
**Calculation:** Number of milk animals (cow, buffalo) divided by dairy farm number.

#### IFCN Standard Classes – Farms in % per size class in 10 world regions 2012



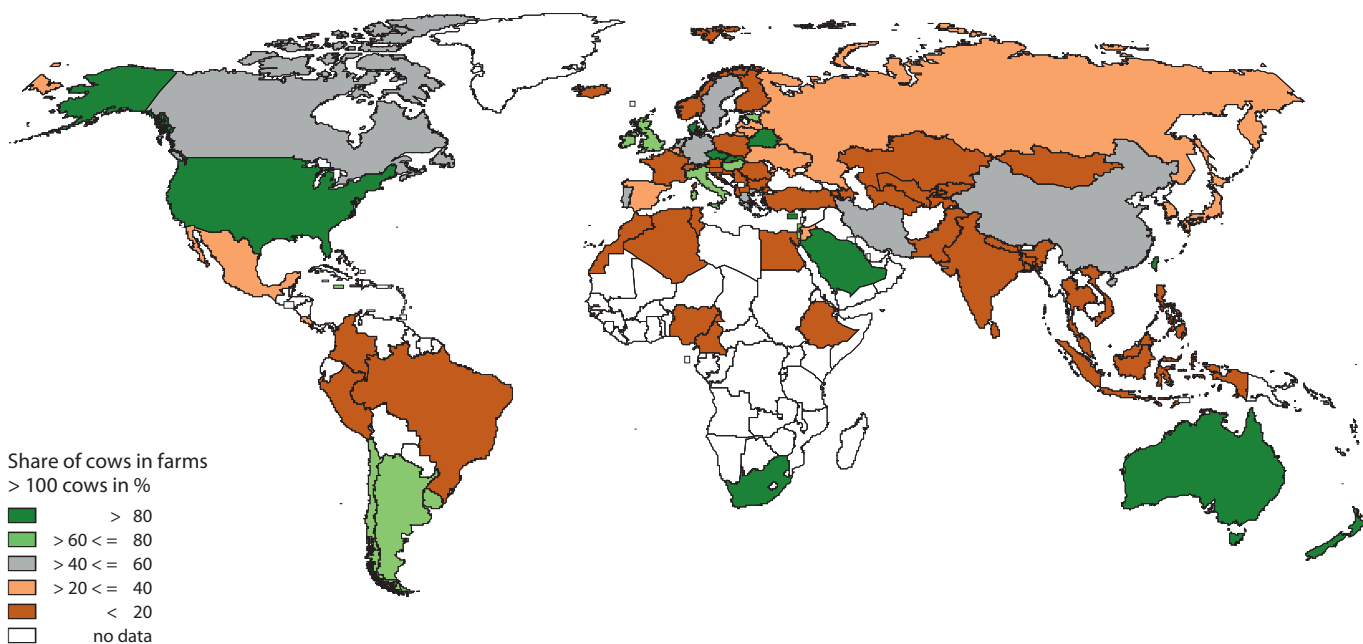
**Data:** Dairy Farm numbers (cow, buffalo) in % per size class.

**Source of data:** IFCN Standard Classes based on national statistics and trend estimations if 2012 data was not available.

**Method:** Analysis based on 91 countries. 7 IFCN Standard Classes, defined equal for all countries and distribution of statistical farm and cow numbers within them. For further details see this Dairy Report: Special Study 4.5, page 186, and Dairy Report 2011: Special Study 4.7, page 184.

**Remarks:** Mexico's data from 2009 was taken. Country coverage in regions: Western Europe (18), Eastern Europe and CIS (25), Near and Middle East (5), Africa (10), North America (2), CL, BR, UY, PY, AR (5), Rest of Latin America (8), South Asia (5), East & Southeast Asia (11), Oceania (2).

#### IFCN Standard Classes – Share of cows in farms of >100 cows 2012



**Data:** Number of dairy animals (cow, buffalo) in % in farms of >100 cows.

**Source of data:** IFCN Standard Classes based on national statistics and trend estimations if 2012 data was not available.

**Method:** Analysis based on 83 countries. 7 IFCN Standard Classes, defined equal for all countries and distribution of statistical farm and cow numbers within them. For further details see this Dairy Report: Special Study 4.5, page 186, and Dairy Report 2011: Special Study 4.7, page 184.

**Remarks:** Estimations of cow numbers (other than trend) were made for: Turkmenistan, Macedonia, Argentina, Mexico, Jamaica, Saudi Arabia, Indonesia, Malaysia, Mongolia, The Philippines, Vietnam, and Morocco.

## 3.9 Method explanation of the Country Page 2013

### Introduction

The focus of this year's Country Page is on milk production and farm structure developments (Chapters 3.10-3.104). The main aim is the creation of a profile that is comparable among the countries. In this chapter a method description is given of the different analyses made (for more details, see Annex 5).

### Status and key developments (see text box)

**Goal:** To illustrate the development of the milk production sector at a glance.

**Method:** Status 2012: The milk production and number of dairy farm figures are taken from the table below. The relation of the national milk and feed price to world market prices for milk and feed is calculated from average annual prices in national currency.

**Key developments over the past five years:** Milk production growth is represented by the average annual compound growth rate 2007 to 2012, with 2007 as base year. The number is taken from the table below, although 2007 is not visible since until 2010 only every second year was shown. The number of years the milk price was above (or below) the world market level is calculated from the number of years the average national price was above the world market price from 2007 to 2012 (if available). The percentage of the national milk and feed price, above or below the respective world market prices, was calculated as the arithmetic mean of the annual deviations 2007 to 2012.

**Results for Afghanistan:** With 1.4 mill t cow milk production, Afghanistan is on place 55 in the global ranking of milk producing countries and it is estimated that about 1.8 million families have dairy cows. The national milk price is low compared to the world market and the feed price is high.

### Regional milk density (see map)

**Goal:** To point out regions with a high concentration of milk production within each country.

**Method:** The map relies on regional statistics of milk production divided by the area of total land. In some countries the national milk production statistics and the regional statistics are not complementary. The scale was adjusted to each country specifically to show regions of higher milk density (brown) compared to regions with lower milk density (blue). For eleven countries where milk production was not available at regional level, the map shows an average milk density for the whole country. In these cases, the colouring was adjusted to correspond with the world milk density map in Chapter 3.3.

**Results for Afghanistan:** Since no regional information was available, the map shows the country average of 2.19 t milk per km<sup>2</sup> total land. The light blue colour indicates that this is a low milk density.

### Key variables

#### Milk production (see table)

**Goal:** To illustrate milk production trends and its drivers: milk yield and cow numbers.

**Method:** The figures in the table are based on cow's milk and, in selected countries, also on buffalo's milk. The quantities have been converted to million metric tons ECM (energy corrected milk with 4.0% fat and 3.3% protein). The cow number shown includes the lactating and dry adult dairy cows and, if mentioned, buffalos. The milk yield is calculated based on both parameters described above and therefore also shown in ECM.

**Results for Afghanistan:** Milk production decreased by 1.8% per year in the period 2007-2012. It is interesting to note that this development was driven only by increasing cow numbers (+6.9% per year), while the milk yield decreased 8.2% per year in this period.

### Farm structure (see table + graphs)

**Goal:** To show the development of farm number and size as well as the trends in farm structure.

**Method:** The figures in the table and charts are based on national farm structure statistics or, in some cases, estimation. In the left chart all typical farms presented in Chapter 1.13 and Annex 5 are plotted in the respective size class. This helps to visually range the typical farms into the statistics.

**Results for Afghanistan:** It is estimated that Afghanistan has about 1.8 million dairy farms, with the assumption of 3 cows per farm. No detailed farm structure information is available for Afghanistan.

### Prices in national currency (see table)

**Goal:** To illustrate the development of key prices relevant to dairy farmers.

**Method:** The data is taken from national statistics or, in some cases, is estimated. The milk : feed price ratio is calculated as milk price divided by feed price (see Chapter 2.7).

**Results for Afghanistan:** In the period 2007-2012 the cull cow prices increased on average by 3.1%. The milk : feed price ratio decreased in this period by -4.1% per year.

### Milk and feed prices (see graphs)

**Goal:** To put the development of prices for milk and feed into perspective.

**Method:** The milk price is based on national statistics and has been converted into ECM. The feed price is calculated from the raw materials soybean meal (30%) and corn or barley (70%) (see Chapter 2.6). Even though these specific feedstuffs are not fed to cows in a number of countries, this calculation represents a comparable indicator among the countries. The annual world feed price (represented by the IFCN feed price indicator) is shown in the annual chart, to put the national feed price into perspective in relation to the world. This is important since feed costs represent the major part of production costs. For the same reason the monthly chart shows the national milk price as well as the world milk price (represented by the Combined IFCN milk price indicator); 2013 milk price data is preliminary and partly estimated.

**Results for Afghanistan:** The monthly milk price in Afghanistan has a staircase-like pattern which is distinct from the pattern observed on the world market. The national price is not as volatile as that observed on the world market, instead it is continuously increasing.







Freelancer

Shakir Ullah Akhtar

## STATUS AND KEY DEVELOPMENTS

### Status 2012

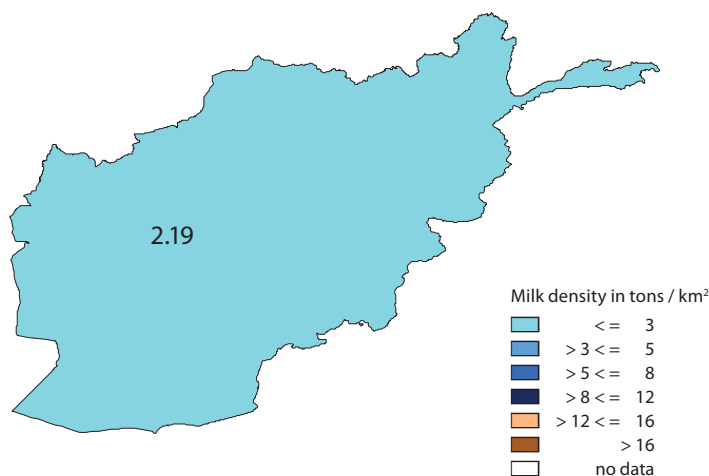
- Milk production (cow's): 1.4 mill t ECM (number 55 in the world)
- No. of dairy farms: 1,841,333
- Milk price: +4% to world market
- Feed price: +21% to world market

### Key developments over the past five years

- Milk production growth: -1.8% per year
- Number of years the milk price was above world market level: 2
- Milk price was on average -10% to world market
- Feed price was on average +18% to world market

## Milk density 2012

in tons / km<sup>2</sup>



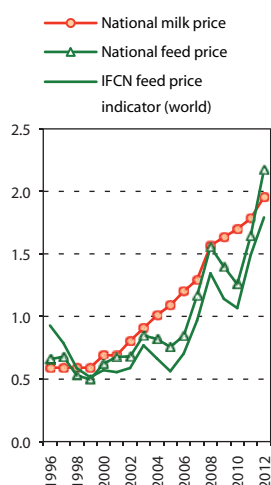
## Key variables

	1996	1998	2000	2002	2004	2006	2008	2010	2011	2012	Annual growth rates	
											'02-'07	'07-'12
<b>Milk production (cow's)</b>												
Production (mill t ECM)	1.41	1.85	1.30	1.41	1.50	1.50	1.61	1.43	1.42	1.42	1.9%	-1.8%
Cows (in 1,000's)	2,641	3,008	2,249	3,715	3,494	3,835	4,068	4,407	4,774	5,524	1.2%	6.9%
Milk yield (t / cow / year)	0.5	0.6	0.6	0.4	0.4	0.4	0.4	0.3	0.3	0.3	0.7%	-8.2%
<b>Farm structure</b>												
No. of dairy farms (in 1,000's)	880	1,003	750	1,238	1,165	1,278	1,356	1,469	1,591	1,841	1.2%	6.9%
Average farm size (cows / farm)	3	3	3	3	3	3	3	3	3	3	0.0%	0.0%
<b>Prices in national currency</b>												
Milk : feed price ratio	0.9	1.1	1.1	1.2	1.2	1.4	1.0	1.4	1.1	0.9	-1.3%	-4.1%
Cull cow (AFN / kg live weight)	60	75	80	90	120	160	170	195	195	198	13.6%	3.1%
Land - buy (1,000 AFN / ha)												



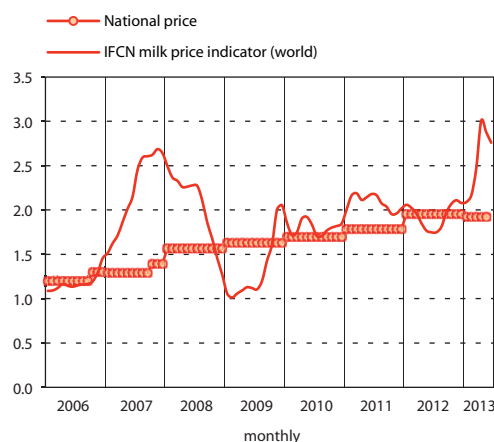
## Milk and feed price

1,000 AFN / 100 kg



## Farm gate milk prices

1,000 AFN / 100 kg milk (ECM)



## Explanations

**Sources:** National statistics, FAO, AMI, IMF. 2013 data: Preliminary and partly estimated.

**Milk map details:** Data based on the year 2012, milk production.

**Estimates done for:** Milk price 2010-2011. Corn price 2009-2010. Cull cow price 2008-2010. Monthly milk prices 2008-2010: annual average. Farm number: based on assumed average herd size of 3 cows/farm.

**Remarks:** Cows and buffalos 2009-2012. Feed price: Only 2012 statistical information on soybean meal prices are available, for remaining years the world market price is used.

## 3.11 Albania – Milk production fact sheet



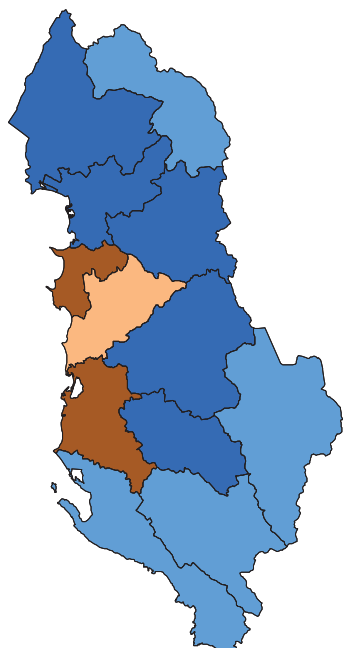
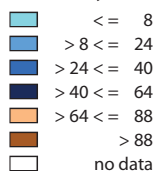
Ilir Kapaj



### Milk density 2012

in tons / km<sup>2</sup>

Milk density in tons / km<sup>2</sup>



### STATUS AND KEY DEVELOPMENTS

#### Status 2012

- Milk production (cow's): 1 mill t ECM (number 72 in the world)
- No. of dairy farms: 212,000
- Milk price: +14% to world market
- Feed price: +37% to world market

#### Key developments over the past five years

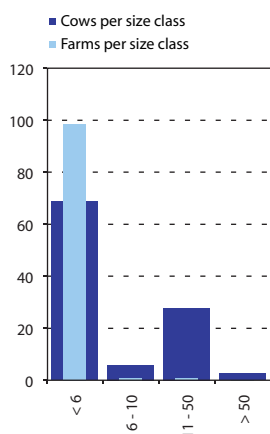
- Milk production growth: -0.2% per year
- Number of years the milk price was above world market level: 5
- Milk price was on average +10% to world market
- Feed price was on average +86% to world market

### Key variables

	1996	1998	2000	2002	2004	2006	2008	2010	2011	2012	Annual growth rates	
											'02-'07	'07-'12
<b>Milk production (cow's)</b>												
Production (mill t ECM)	0.87	0.71	0.80	0.86	0.89	1.09	1.02	0.92	0.93	0.99	3.1%	-0.2%
Cows (in 1,000's)	483	423	448	435	439	420	360	355	358	361	-1.9%	-1.8%
Milk yield (t / cow / year)	1.8	1.7	1.8	2.0	2.0	2.6	2.8	2.6	2.6	2.7	5.1%	1.7%
<b>Farm structure</b>												
No. of dairy farms (in 1,000's)	257	257	257	256	256	256	254	223	222	212	0.0%	-3.7%
Average farm size (cows / farm)	2	2	2	2	2	2	1	2	2	2	-1.8%	2.0%
<b>Prices in national currency</b>												
Milk : feed price ratio	0.5	0.5	0.6	0.7	0.7	0.7	0.9	0.8	1.0	0.9	0.7%	5.0%
Cull cow (ALL / kg live weight)	310	310	320	330	340	340	390	396	395	397	2.6%	1.1%
Land - buy (1,000 ALL / ha)												

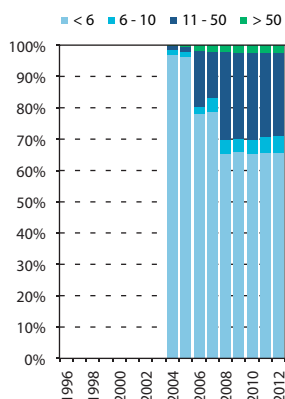
### Farm structure

% of dairy farms and cows in size classes (2012)



### Farm structure

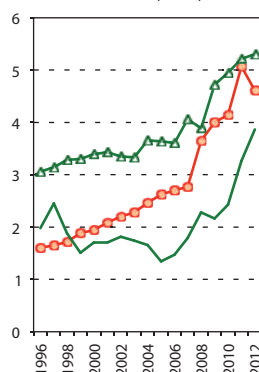
% of cows per herd size



### Milk and feed price

1,000 ALL / 100 kg

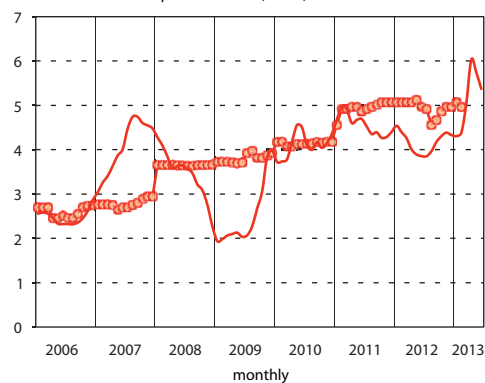
—○— National milk price  
—△— National feed price  
— National IFCN feed price indicator (world)



### Farm gate milk prices

1,000 ALL / 100 kg milk (ECM)

—○— National price  
— IFCN milk price indicator (world)



### Explanations

**Sources:** National statistics, FAO, AMI, IMF. 2013 data: Preliminary and partly estimated.

**Milk map details:** Data based on the year 2012, milk production.

**Estimates done for:** Dairy farm number 1996-2003 and 2010.

**Remarks:** Milk price 1996-2007: Price is based on a dairy processor's price given to farmers.



## STATUS AND KEY DEVELOPMENTS

### Status 2012

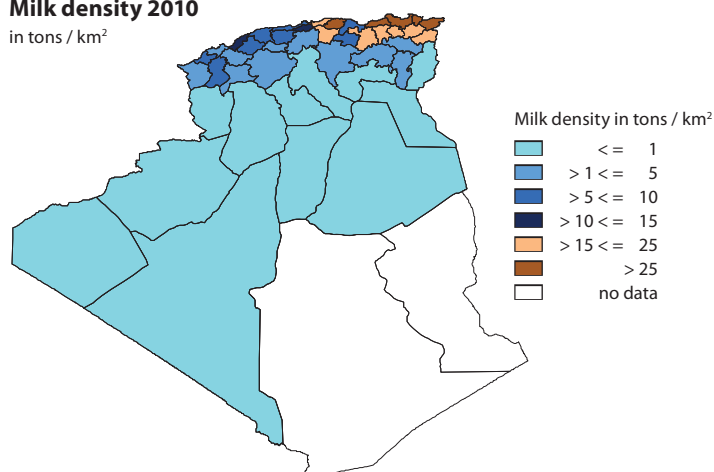
- Milk production (cow's): 1.8 mill t ECM (number 45 in the world)
- No. of dairy farms: 32,000
- Milk price: +74% to world market
- Feed price: 0% to world market

### Key developments over the past five years

- Milk production growth: +3.9% per year
- Number of years the milk price was above world market level: 5
- Milk price was on average +68% to world market
- Feed price was on average +0% to world market

### Milk density 2010

in tons / km<sup>2</sup>

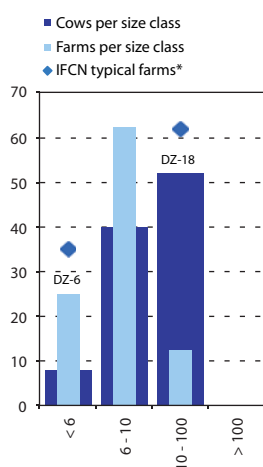


## Key variables

	1996	1998	2000	2002	2004	2006	2008	2010	2011	2012	Annual growth rates		
											'02-'07	'07-'12	
<b>Milk production (cow's)</b>													
Production (mill t ECM)	0.87	0.95	1.13	1.10	1.26	1.50	1.45	1.55	1.64	1.84		6.7%	3.9%
Cows (in 1,000's)	212	212	214	230	234	234	246	269	280	300		0.0%	5.5%
Milk yield (t / cow / year)	4.1	4.5	5.3	4.8	5.4	6.4	5.9	5.8	5.9	6.1		6.7%	-1.5%
<b>Farm structure</b>													
No. of dairy farms (in 1,000's)	23	24	26	25	23	22	21	20	26	32		-2.9%	8.4%
Average farm size (cows / farm)	9	9	8	9	10	11	12	13	11	9		2.9%	-2.8%
<b>Prices in national currency</b>													
Milk : feed price ratio	2.26	3.94	4.42	3.26	3.04	3.58	2.38	2.74	2.13	1.82		-1.9%	-9.3%
Cull cow (DZD / kg live weight)								540					
Land - buy (1,000 DZD / ha)								7,000	7,500	6,500			

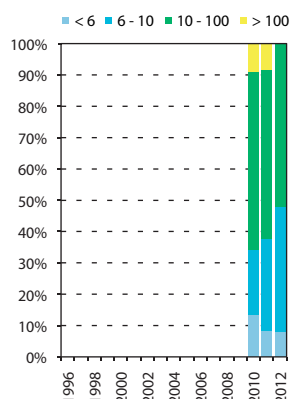
### Farm structure

% of dairy farms and cows in size classes (2012)



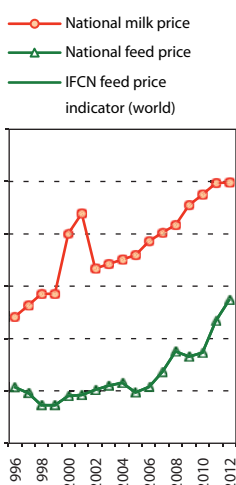
### Farm structure

% of cows per herd size



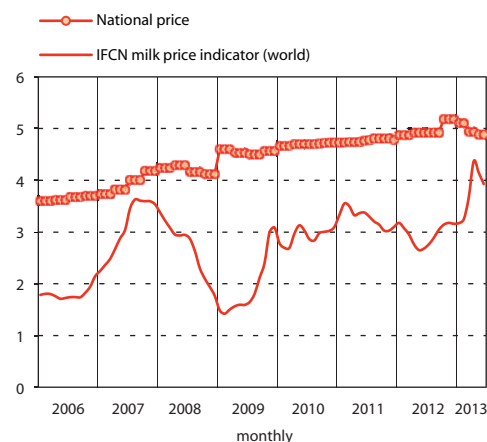
### Milk and feed price

1,000 DZD / 100 kg



### Farm gate milk prices

1,000 DZD / 100 kg milk (ECM)



\* size class where IFCN typical farms are

### Explanations

Sources: National statistics, FAO, AMI, IMF. 2013 data: Preliminary and partly estimated.

Milk map details: Data based on the year 2010, milk production based on cow numbers.

Estimates done for: Farm structure: Cow number based on average farm size per size class.

Remarks: Since no statistical information on soybean meal and corn prices are available the world market price are used.



# 3.13 Argentina – Milk production fact sheet



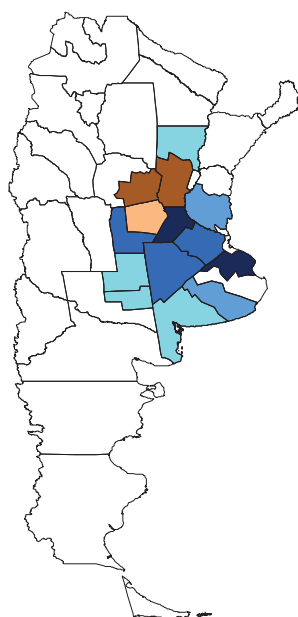
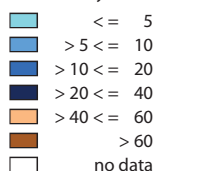
Hugo Quattrochi



## Milk density 2011

in tons / km<sup>2</sup>

Milk density in tons / km<sup>2</sup>



## STATUS AND KEY DEVELOPMENTS

### Status 2012

- Milk production (cow's): 11.6 mill t ECM (number 15 in the world)
- No. of dairy farms: 11,878
- Milk price: -6% to world market
- Feed price: -30% to world market

### Key developments over the past five years

- Milk production growth: +4.4% per year
- Number of years the milk price was above world market level: 0
- Milk price was on average -21% to world market
- Feed price was on average -31% to world market

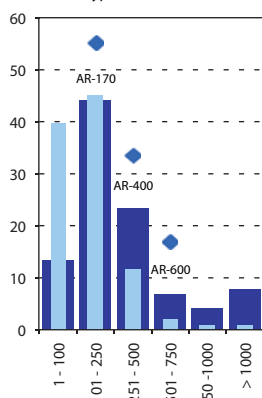
## Key variables

	1996	1998	2000	2002	2004	2006	2008	2010	2011	2012	Annual growth rates	
											'02-'07	'07-'12
<b>Milk production (cow's)</b>												
Production (mill t ECM)	8.26	8.92	9.30	7.89	9.18	9.96	9.83	10.18	11.43	11.57	3.4%	4.4%
Cows (in 1,000's)	2,000	1,993	2,150	2,005	2,050	2,091	1,841	1,749	1,691	1,748	0.8%	-3.5%
Milk yield (t / cow / year)	4.1	4.5	4.3	3.9	4.5	4.8	5.3	5.8	6.8	6.6	2.6%	8.2%
<b>Farm structure</b>												
No. of dairy farms (in 1,000's)	20	18	17	15	14	13	12	11	12	12	-3.1%	-1.5%
Average farm size (cows / farm)	100	110	130	134	147	156	156	157	145	147	4.1%	-2.1%
<b>Prices in national currency</b>												
Milk : feed price ratio	1.3	1.7	1.5	0.9	1.4	1.4	1.6	2.0	1.9	1.4	14.2%	-3.0%
Cull cow (ARS / kg live weight)	0.35	0.50	0.39	0.80	1.60	1.70	1.64	4.07	5.14	4.95	16.0%	24.3%
Land - buy (ARS / ha)	2,255	3,254	2,786	6,299	11,152	16,728	28,513	38,580	49,990	59,908	27.3%	23.2%

## Farm structure

% of dairy farms and cows in size classes (2011)

- Cows per size class
- Farms per size class
- ◆ IFCN typical farms\*

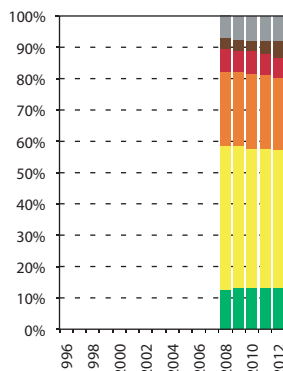


\* size class where IFCN typical farms are

## Farm structure

% of cows per herd size

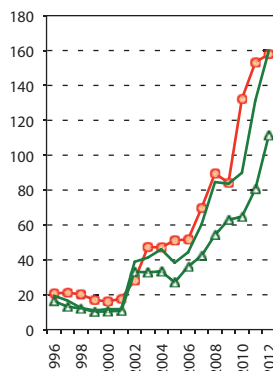
- 1 - 100
- 101 - 250
- 251 - 500
- 501 - 750
- 750 - 1000
- > 1000



## Milk and feed price

ARS / 100 kg

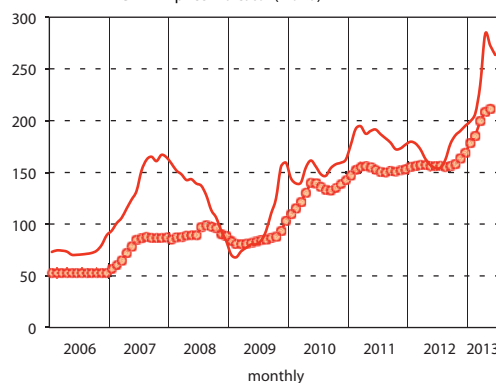
- National milk price
- △ National feed price
- IFCN feed price indicator (world)



## Farm gate milk prices

ARS / 100 kg milk (ECM)

- National price
- IFCN milk price indicator (world)



## Explanations

Sources: National statistics, FAO, AMI, IMF. 2013 data: Preliminary and partly estimated.

Milk map details: Data based on the year 2011, milk production.

Estimates done for: Regional milk production 2011. Farm structure: Cow number 2012 following the trend.





## STATUS AND KEY DEVELOPMENTS

### Status 2012

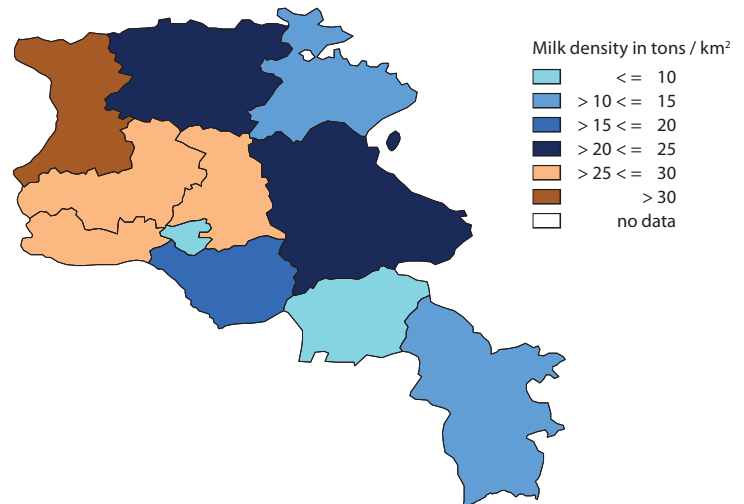
- Milk production (cow's): 0.6 mill t ECM (number 84 in the world)
- No. of dairy farms: 200,000
- Milk price: +2% to world market
- Feed price: +19% to world market

### Key developments over the past five years

- Milk production growth: -0.4% per year
- Number of years the milk price was above world market level: 3
- Milk price was on average -3% to world market
- Feed price was on average +33% to world market

### Milk density 2012

(in tons / km<sup>2</sup>)

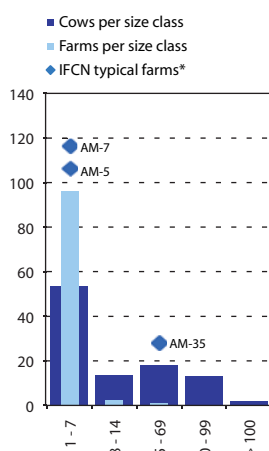


## Key variables

	1996	1998	2000	2002	2004	2006	2008	2010	2011	2012	Annual growth rates	
											'02-'07	'07-'12
<b>Milk production (cow's)</b>												
Production (mill t ECM)	0.40	0.42	0.42	0.44	0.52	0.57	0.63	0.57	0.57	0.59	6.3%	-0.4%
Cows (in 1,000's)	277	256	262	281	290	307	283	273	283	303	2.0%	-0.5%
Milk yield (t / cow / year)	1.4	1.7	1.6	1.6	1.8	1.9	2.2	2.1	2.0	1.9	4.2%	0.1%
<b>Farm structure</b>												
No. of dairy farms (in 1,000's)	192	195	197	193	202	203	174	173	173	180	0.6%	0.1%
Average farm size (cows / farm)	1	1	1	1	1	2	2	2	2	2	1.4%	-0.6%
<b>Prices in national currency</b>												
Milk : feed price ratio		1.4	1.1	1.4	0.9	1.1	1.1	1.0	1.2	0.9	-3.1%	-5.9%
Cull cow (AMD / kg live weight)							600	800	750	950		
Land - buy (1,000 AMD / ha)						333	306	561	600	615		12.5%

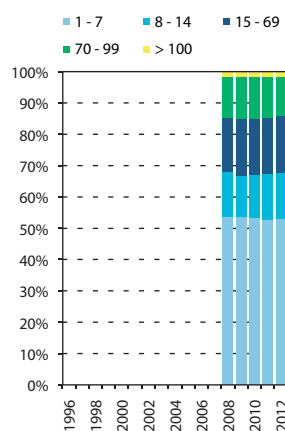
### Farm structure

% of dairy farms and cows  
in size classes (2010)



### Farm structure

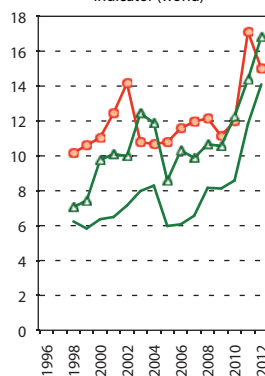
% of cows per herd size



### Milk and feed price

1,000 AMD / 100 kg

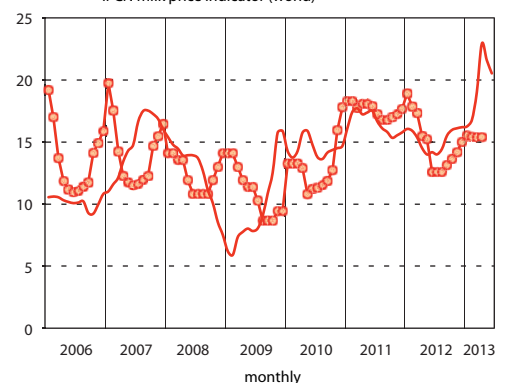
—○— National milk price  
—△— National feed price  
—■— IFCN feed price indicator (world)



### Farm gate milk prices

1,000 AMD / 100 kg milk (ECM)

—○— National price  
—■— IFCN milk price indicator (world)



\* size class where IFCN typical farms are

### Explanations

**Sources:** National statistics, FAO, AMI, IMF. 2013 data: Preliminary and partly estimated.

**Milk map details:** Data based on the year 2012, milk production.

**Estimates done for:** Farm structure: Cow number 2008-2012. Farm number 2010. Since no statistical information on soybean meal prices are available the world market price is used. Number of dairy farms 2012.

**Remarks:** The land price mentioned is showing the price in the region Shirak Marz. Land price: Non-irrigated arable land.

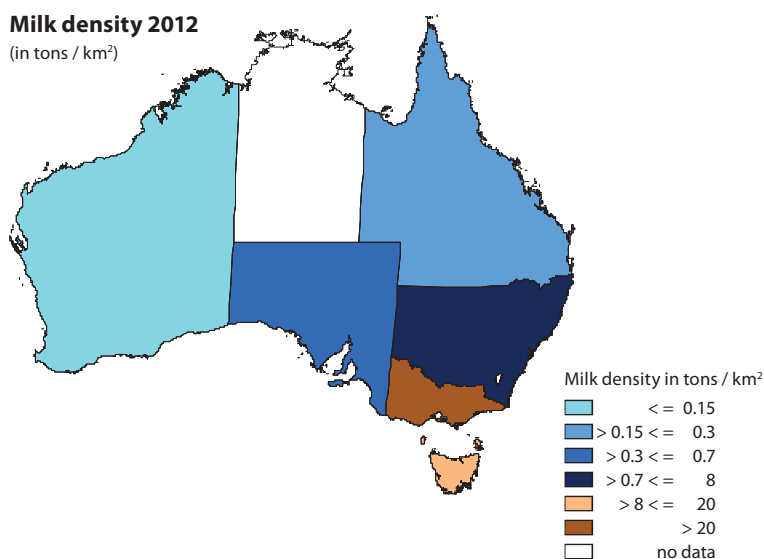


Andrew Weinert,  
Jon Hauser



## Milk density 2012

(in tons / km<sup>2</sup>)



## STATUS AND KEY DEVELOPMENTS

### Status 2012

- Milk production (cow's): 9.9 mill t ECM (number 19 in the world)
- No. of dairy farms: 6,770
- Milk price: +7% to world market
- Feed price: -41% to world market

### Key developments over the past five years

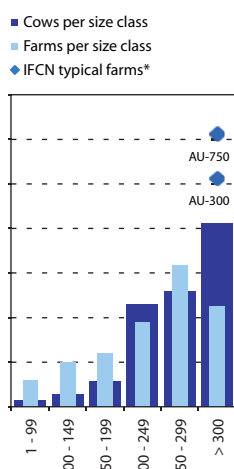
- Milk production growth: +0.7% per year
- Number of years the milk price was above world market level: 2
- Milk price was on average -5% to world market
- Feed price was on average -10% to world market

## Key variables

	1996	1998	2000	2002	2004	2006	2008	2010	2011	2012	Annual growth rates '02-'07 '07-'12	
<b>Milk production (cow's)</b>												
Production (mill t ECM)	9.28	10.29	11.23	11.54	10.47	10.43	9.84	9.54	9.71	9.92	-3.6%	0.7%
Cows (in 1,000's)	1,884	2,060	2,171	2,123	2,038	1,880	1,641	1,596	1,589	1,630	-3.4%	-1.8%
Milk yield (t / cow / year)	4.9	5.0	5.2	5.4	5.1	5.5	6.0	6.0	6.1	6.1	-0.3%	2.5%
<b>Farm structure</b>												
No. of dairy farms (in 1,000's)	14	13	13	11	10	9	8	8	7	7	-6.1%	-3.4%
Average farm size (cows / farm)	136	153	168	192	212	214	206	212	231	241	2.9%	1.6%
<b>Prices in national currency</b>												
Milk : feed price ratio	1.6	1.9	1.5	1.2	1.5	1.6	1.3	1.8	1.8	1.9	2.1%	8.0%
Cull cow (AUD / kg live weight)	1.05	1.15	1.20	1.35	1.50	1.26	1.23	1.32	1.30	1.25	-2.8%	1.3%
Land - buy (AUD / ha)	5,715	6,333	5,765	5,807	7,512	9,812	13,616	12,670	12,167	11,473	17.4%	-2.4%

## Farm structure

% of dairy farms and cows in size classes (2008)



\* size class where IFCN typical farms are

### Explanations

Sources: National statistics, FAO, AMI, IMF. 2013 data: Preliminary and partly estimated.

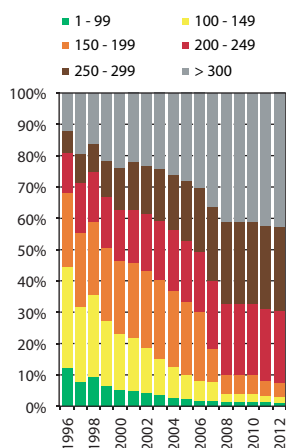
Milk map details: Data based on the year 2012, milk production.

Estimates done for: Farm structure: Cow number 2009-2012 following the trend.

Remarks: There is large variation in farm systems in Australia that has a high impact on land price. Farmers operate with highly seasonal, pasture based New Zealand style farms all the way through to USA style lot fed dairies. Whereas the farms with low grazed pasture % tend to have a low capital investment, this increases as farmers move towards high grazed pasture systems. 1996-2012: Lupin price, Western Australia does not use soybean meal for dairy cows feed.

## Farm structure

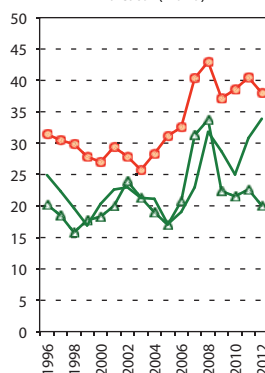
% of cows per herd size



## Milk and feed price

AUD / 100 kg

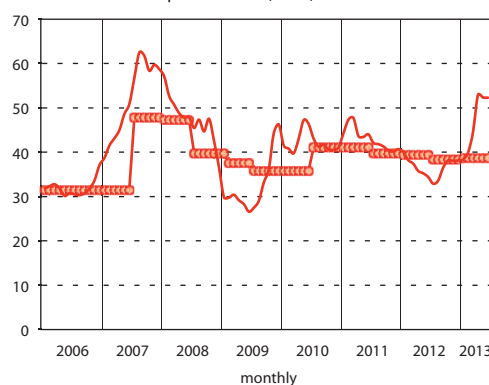
- National milk price
- △ National feed price
- IFCN feed price indicator (world)



## Farm gate milk prices

AUD / 100 kg milk (ECM)

- National price
- IFCN milk price indicator (world)











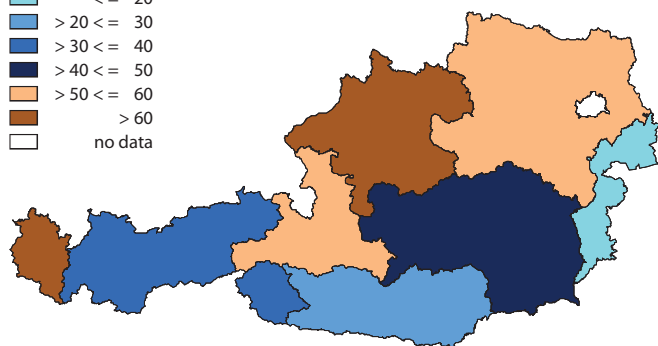
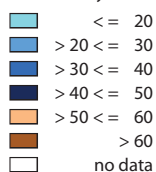
Leopold Kirner



## Milk density 2012

in tons / km<sup>2</sup>

Milk density in tons / km<sup>2</sup>



## STATUS AND KEY DEVELOPMENTS

### Status 2012

- Milk production (cow's): 3.5 mill t ECM (number 36 in the world)
- No. of dairy farms: 36,000
- Milk price: +15% to world market
- Feed price: -12% to world market

### Key developments over the past five years

- Milk production growth: +1.4% per year
- Number of years the milk price was above world market level: 5
- Milk price was on average +19% to world market
- Feed price was on average +18% to world market

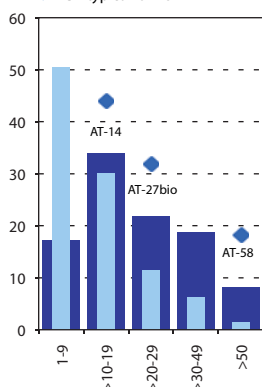
## Key variables

	1996	1998	2000	2002	2004	2006	2008	2010	2011	2012	Annual growth rates	
											'02-'07	'07-'12
<b>Milk production (cow's)</b>												
Production (mill t ECM)	3.00	3.10	3.31	3.39	3.24	3.25	3.30	3.36	3.40	3.49	-0.8%	1.4%
Cows (in 1,000's)	698	729	621	589	538	527	530	530	531	527	-2.3%	0.1%
Milk yield (t / cow / year)	4.3	4.3	5.3	5.8	6.0	6.2	6.2	6.3	6.4	6.6	1.5%	1.3%
<b>Farm structure</b>												
No. of dairy farms (in 1,000's)	90	87	67	60	55	48	44	40	38	36	-5.2%	-4.8%
Average farm size (cows / farm)	8	8	9	10	10	11	12	13	14	15	3.1%	5.1%
<b>Prices in national currency</b>												
Milk : feed price ratio	1.5	2.0	1.8	2.1	2.5	2.0	1.5	1.5	1.6	1.4	-6.3%	-2.1%
Cull cow (EUR / kg live weight)	0.98	0.93	0.94	0.79	0.87	1.10	1.30	1.10	1.21	1.41	8.7%	3.2%
Land - buy (EUR / ha)			14,915	14,938	16,351	18,000	20,000	25,000	27,500	30,000	6.0%	8.4%
Quota (EUR / kg milk)			0.88	0.80	0.90	0.80	0.40	0.20	0.16	0.22	-5.6%	-18.2%

## Farm structure

% of dairy farms and cows in size classes (2011)

- Cows per size class
- Farms per size class
- ◆ IFCN typical farms\*

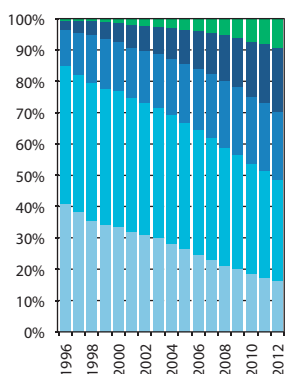


\* size class where IFCN typical farms are

## Farm structure

% of cows per herd size

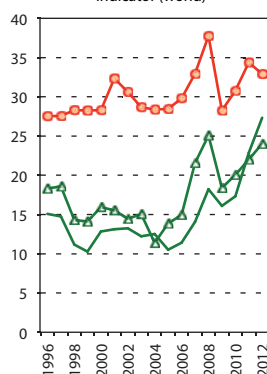
- 1 - 9
- >10 - 19
- >20 - 29
- >30 - 49
- >50



## Milk and feed price

EUR / 100 kg

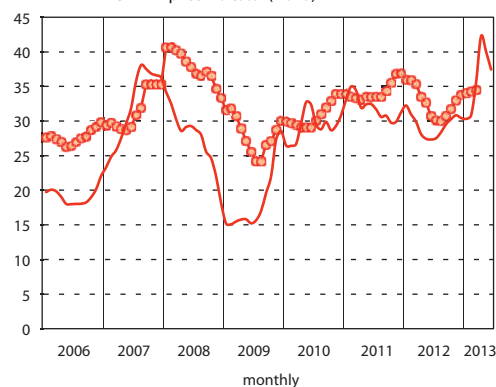
- National milk price
- △ National feed price
- IFCN feed price indicator (world)



## Farm gate milk prices

EUR / 100 kg milk (ECM)

- National price
- IFCN milk price indicator (world)



## Explanations

Sources: National statistics, FAO, AMI, IMF. 2013 data: Preliminary and partly estimated.

Milk map details: Data based on the year 2012, milk production.

Estimates done for: Farm structure: Cow number 2012 following the trend.

Remarks: Land and quota prices are taken from typical farms (Mühlviertel). Farm structure: Slight change of the segments compared to previous DR.

## STATUS AND KEY DEVELOPMENTS

### Status 2012

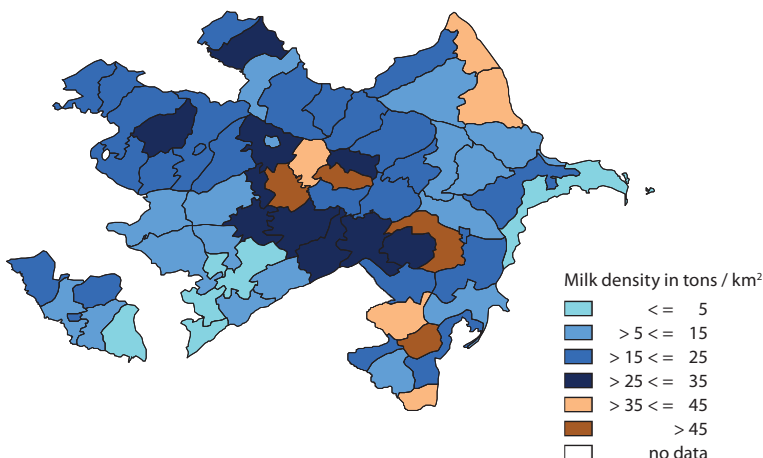
- Milk production (cow's): 1.7 mill t ECM (number 58 in the world)
- No. of dairy farms: 261,384
- Milk price: +51% to world market
- Feed price: -12% to world market

### Key developments over the past five years

- Milk production growth: +5.1% per year
- Number of years the milk price was above world market level: 5
- Milk price was on average +26% to world market
- Feed price was on average -9% to world market

### Milk density 2012

in tons / km<sup>2</sup>

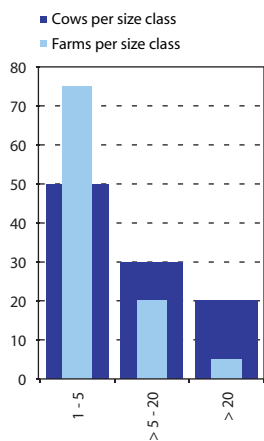


## Key variables

	1996	1998	2000	2002	2004	2006	2008	2010	2011	2012	Annual growth rates	
											'02-'07	'07-'12
<b>Milk production (cow's)</b>												
Production (mill t ECM)	0.84	0.95	1.03	1.12	1.21	1.30	1.38	1.54	1.62	1.72	3.7%	5.1%
Cows and buffalos (in 1,000's)	773	863	926	1,002	1,076	1,151	1,242	1,277	1,292	1,307	4.0%	1.4%
Milk yield (t / cow / year)	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.2	1.3	1.3	-0.3%	3.6%
<b>Farm structure</b>												
No. of dairy farms (in 1,000's)	155	173	185	200	215	230	248	255	258	261	4.0%	1.4%
Average farm size (cows / farm)	5	5	5	5	5	5	5	5	5	5	0.0%	0.0%
<b>Prices in national currency</b>												
Milk : feed price ratio	0.9	2.1	2.2	1.5	1.5	1.7	1.7	2.4	2.1	1.8	0.1%	3.7%
Cull cow (AZN / kg live weight)												
Land - buy (AZN / ha)												

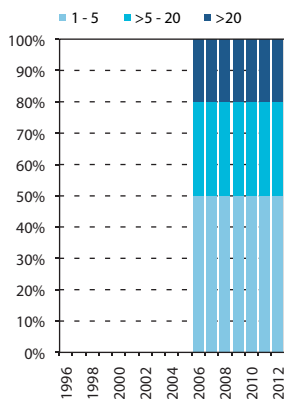
### Farm structure

% of dairy farms and cows in size classes (2012)



### Farm structure

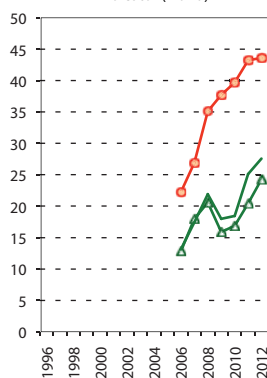
% of cows per herd size



### Milk and feed price

AZN / 100 kg

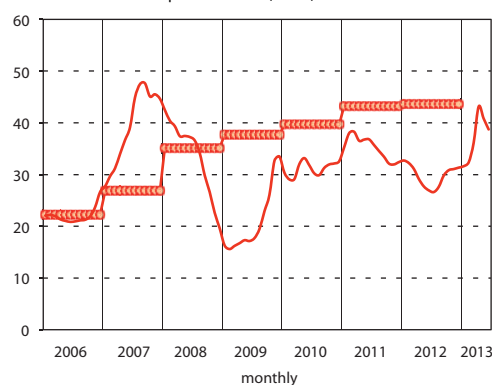
—○— National milk price  
—△— National feed price  
—■— IFCN feed price indicator (world)



### Farm gate milk prices

AZN / 100 kg milk (ECM)

—○— National price  
—■— IFCN milk price indicator (world)



### Explanations

**Sources:** National statistics, FAO, AMI, IMF. 2013 data: Preliminary and partly estimated.

**Milk map details:** Data based on the year 2012, milk production.

**Estimates done for:** Regional milk production 2012. Farm structure: Cow number 2006-2012. Milk production 2010-2012. Milk price 2012. Monthly milk price: annual averages.

**Remarks:** 1996-2009: national statistics show the milk productions are including cows and buffalos. Since no statistical information on soybean meal and corn prices are available the world market price is used.





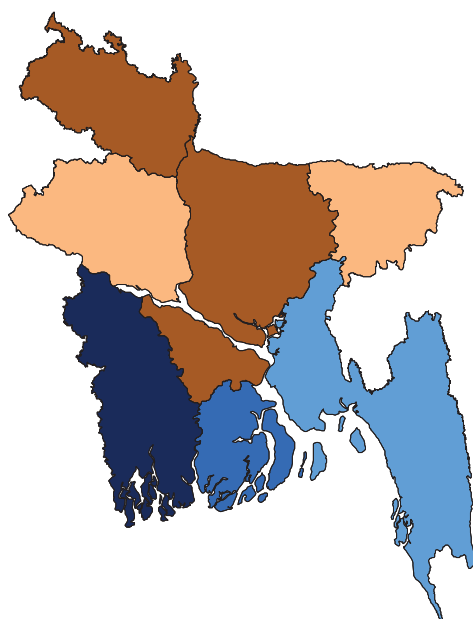
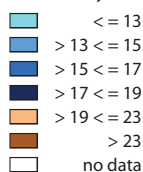
Mohammad Uddin



## Milk density 2012

in tons / km<sup>2</sup>

Milk density in tons / km<sup>2</sup>



## STATUS AND KEY DEVELOPMENTS

### Status 2012

- Milk production (cow's and buffalo's): 3.2 mill t ECM (number 27 in the world)
- No. of dairy farms: 1,391,000
- Milk price: +28% to world market
- Feed price: -17% to world market

### Key developments over the past five years

- Milk production growth: +4.2% per year
- Number of years the milk price was above world market level: 2
- Milk price was on average +3% to world market
- Feed price was on average +3% to world market

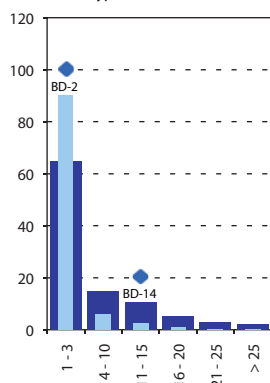
## Key variables

	1996	1998	2000	2002	2004	2006	2008	2010	2011	2012	Annual growth rates	
											'02-'07	'07-'12
<b>Milk production (cow's and buffalo's)</b>												
Production (mill t ECM)	1.91	1.87	1.94	1.97	2.20	2.59	3.03	3.06	3.19	3.21	5.8%	4.2%
Cows and buffalos (in 1,000's)	3,995	4,022	4,061	4,100	4,140	4,180	4,204	4,187	4,216	4,237	0.5%	0.2%
Milk yield (t / cow / year)	0.5	0.5	0.5	0.5	0.5	0.6	0.7	0.7	0.8	0.8	5.3%	4.0%
<b>Farm structure</b>												
No. of dairy farms (in 1,000's)	1,332	1,341	1,354	1,367	1,380	1,393	1,401	1,387	1,389	1,391	0.5%	-0.1%
Average farm size (cows / farm)	3	3	3	3	3	3	3	3	3	3	0.0%	0.3%
<b>Prices in national currency</b>												
Milk : feed price ratio	1.0	1.4	1.7	1.7	1.5	1.5	1.5	1.2	1.4	1.6	2.0%	-3.1%
Cull cow (BDT / kg live weight)	50	52	54	54	56	62	68	98	100	100	3.5%	9.3%
Land - buy (1,000 BDT / ha)	741	865	988	1,112	1,235	1,325	1,500	1,750	1,800	1,800	5.8%	4.1%

## Farm structure

% of dairy farms and cows in size classes (2012)

- Cows per size class
- Farms per size class
- ◆ IFCN typical farms\*

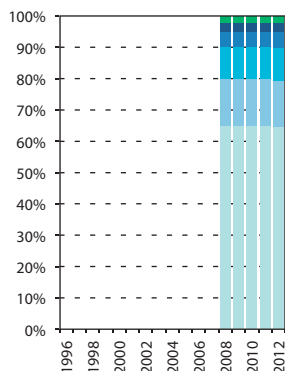


\* size class where IFCN typical farms are

## Farm structure

% of cows per herd size

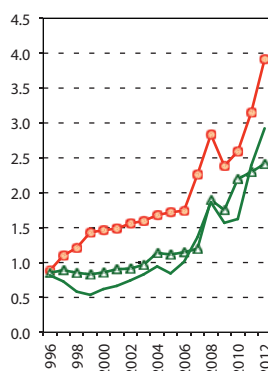
- 1 - 3
- 4 - 10
- 11 - 15
- 16 - 20
- 21 - 25
- > 25



## Milk and feed price

1,000 BDT / 100 kg

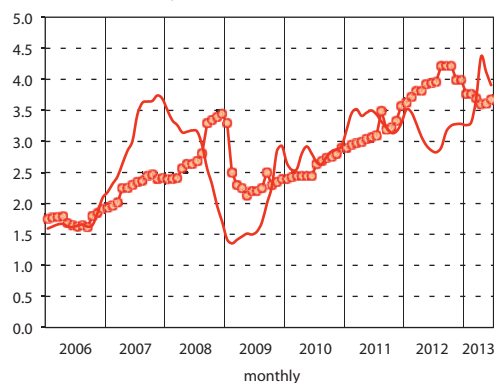
- National milk price
- △ National feed price
- IFCN feed price indicator (world)



## Farm gate milk prices

1,000 BDT / 100 kg milk (ECM)

- National price
- IFCN milk price indicator (world)



## Explanations

Sources: National statistics, FAO, AMI, IMF. 2013 data: Preliminary and partly estimated.

Milk map details: Data based on the year 2012, milk production.

Estimates done for: Farm structure: Cow numbers 2009-2012 based on 2008, farm number based on average farm size per herd size group. Milk price 2006-2011: monthly milk price.



## STATUS AND KEY DEVELOPMENTS

### Status 2012

- Milk production (cow's): 6.5 mill t ECM (number 26 in the world)
- No. of dairy farms: 107,360
- Milk price: +7% to world market
- Feed price: -47% to world market

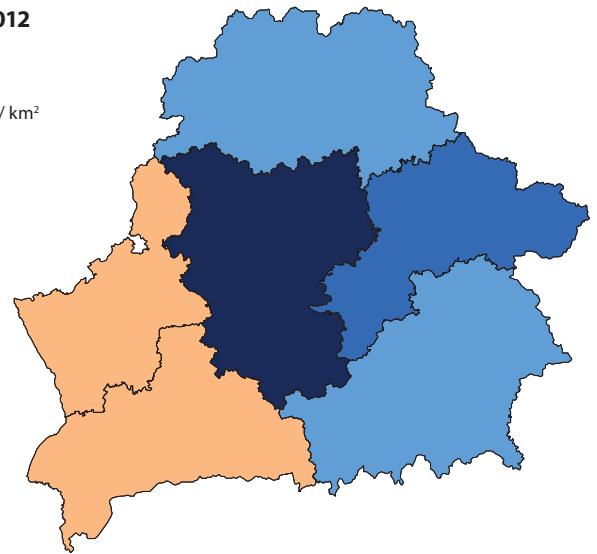
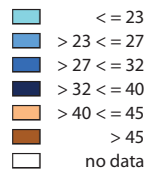
### Key developments over the past five years

- Milk production growth: +2.8% per year
- Number of years the milk price was above world market level: 1
- Milk price was on average -23% to world market
- Feed price was on average -38% to world market

### Milk density 2012

in tons / km<sup>2</sup>

Milk density in tons / km<sup>2</sup>

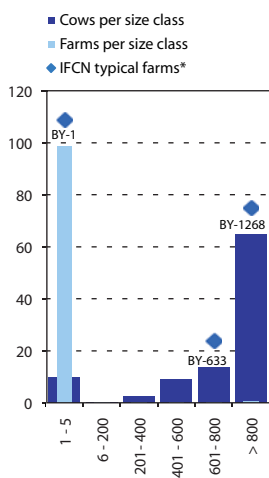


## Key variables

	1996	1998	2000	2002	2004	2006	2008	2010	2011	2012	Annual growth rates	
											'02-'07	'07-'12
<b>Milk production (cow's)</b>												
Production (mill t ECM)	4.49	4.79	4.11	4.37	4.76	5.45	5.95	6.33	6.22	6.47	5.2%	2.8%
Cows (in 1,000's)	2,043	1,946	1,845	1,716	1,613	1,506	1,452	1,478	1,477	1,521	-3.2%	0.8%
Milk yield (t / cow / year)	2.2	2.5	2.2	2.5	2.9	3.6	4.1	4.3	4.2	4.3	8.7%	2.0%
<b>Farm structure</b>												
No. of dairy farms (in 1,000's)	278	244	215	187	153	134	122	111	109	107	-7.2%	-3.5%
Average farm size (cows / farm)	7	8	9	9	11	11	12	13	14	14	4.3%	4.5%
<b>Prices in national currency</b>												
Milk : feed price ratio			0.8	1.2	1.2	1.5	2.0	2.0	1.5	2.1	5.9%	6.1%
Cull cow (BYR / kg live weight)	8,766	31,906	363	1,035	1,507	2,150	3,000	3,560	5,320	16,200	18.2%	46.6%
Land - buy (1,000 BYR / ha)												

### Farm structure

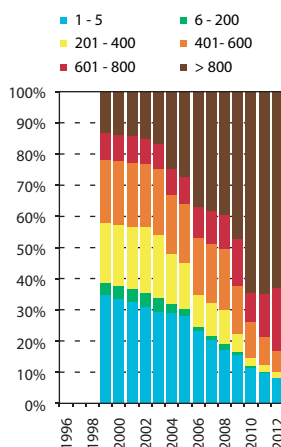
% of dairy farms and cows in size classes (2011)



\* size class where IFCN typical farms are

### Farm structure

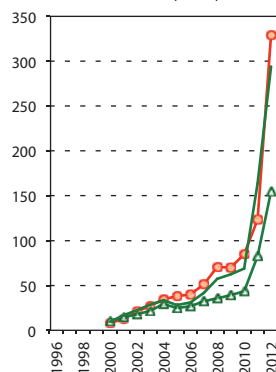
% of cows per herd size



### Milk and feed price

1,000 BYR / 100 kg

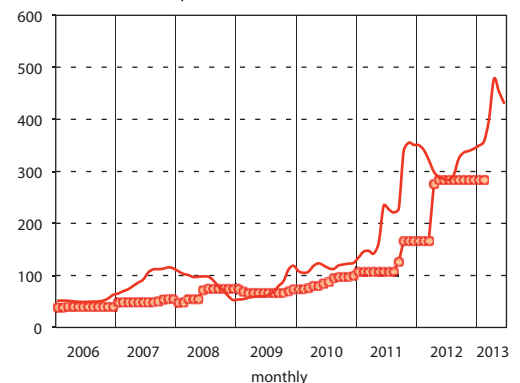
—○— National milk price  
—△— National feed price  
—■— IFCN feed price indicator (world)



### Farm gate milk prices

1,000 BYR / 100 kg milk (ECM)

—○— National price  
—■— IFCN milk price indicator (world)



## Explanations

**Sources:** National statistics, FAO, AMI, IMF. 2013 data: Preliminary and partly estimated.

**Milk map details:** Data based on the year 2012, milk production.

**Estimates done for:** Dairy farms 2012. Feed prices 2012. Trend of soybean meal price is used for the years 1996-2007.

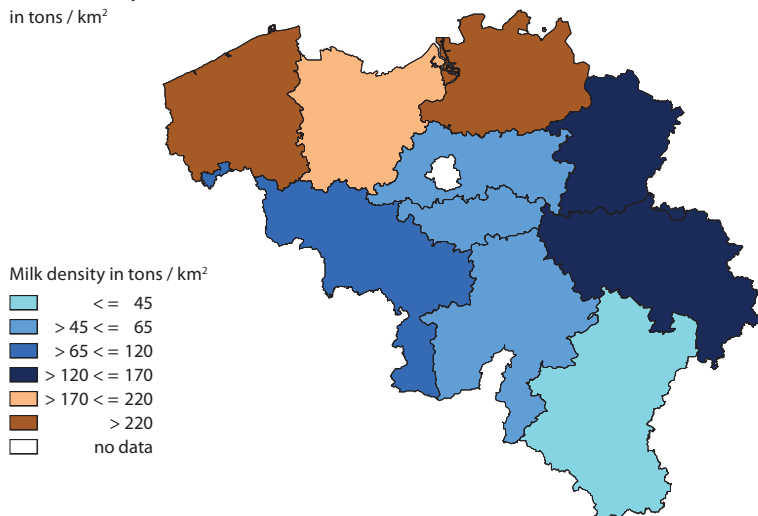


Erwin Wauters

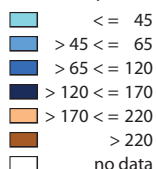


## Milk density 2011

in tons / km<sup>2</sup>



Milk density in tons / km<sup>2</sup>



## STATUS AND KEY DEVELOPMENTS

### Status 2012

- Milk production (cow's): 3.2 mill t ECM (number 38 in the world)
- No. of dairy farms: 10,341
- Milk price: +4% to world market
- Feed price: +29% to world market

### Key developments over the past five years

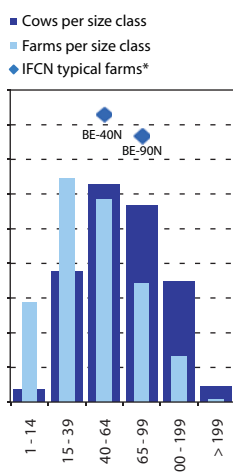
- Milk production growth: +1.4% per year
- Number of years the milk price was above world market level: 5
- Milk price was on average +8% to world market
- Feed price was on average +52% to world market

## Key variables

	1996	1998	2000	2002	2004	2006	2008	2010	2011	2012	Annual growth rates '02-'07 '07-'12	
<b>Milk production (cow's)</b>												
Production (mill t ECM)	3.48	3.45	3.48	3.19	3.16	2.96	2.94	3.17	3.20	3.21	-1.3%	1.4%
Cows (in 1,000's)	650	632	594	577	543	507	495	500	488	489	-2.8%	-0.5%
Milk yield (t / cow / year)	5.4	5.5	5.9	5.5	5.8	5.8	5.9	6.3	6.6	6.6	1.5%	1.9%
<b>Farm structure</b>												
No. of dairy farms (in 1,000's)	21	19	18	17	16	14	13	11	11	10	-4.9%	-4.9%
Average farm size (cows / farm)	31	33	33	34	34	35	39	44	45	47	2.2%	4.7%
<b>Prices in national currency</b>												
Milk : feed price ratio	1.4	1.7	1.5	1.5	1.3	1.4	1.1	1.1	1.0	0.8	-3.2%	-8.2%
Cull cow (EUR / kg live weight)	0.45	0.52	0.60	0.93	0.88	1.41	1.44	1.29	1.37	1.74	6.7%	6.4%
Land - buy (EUR / ha)	12,175	18,819	21,069	16,795	23,155	27,190	29,000	30,000	31,000	32,000	10.0%	3.5%
Quota (EUR / kg milk)	0.43	0.39	0.38	0.39	0.39	0.39	0.33	0.12	0.10	0.10	0.3%	-24.2%

## Farm structure

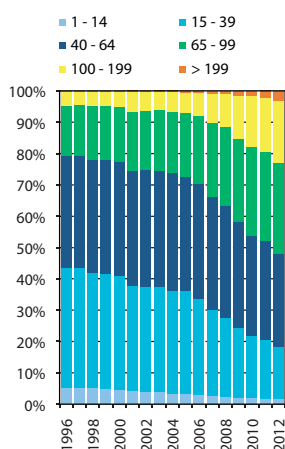
% of dairy farms and cows in size classes (2011)



\* size class where IFCN typical farms are

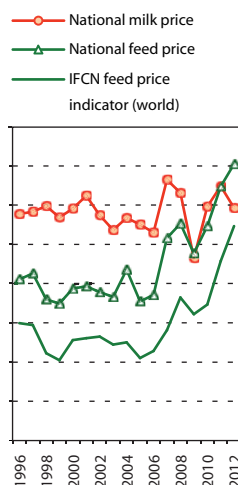
## Farm structure

% of cows per herd size



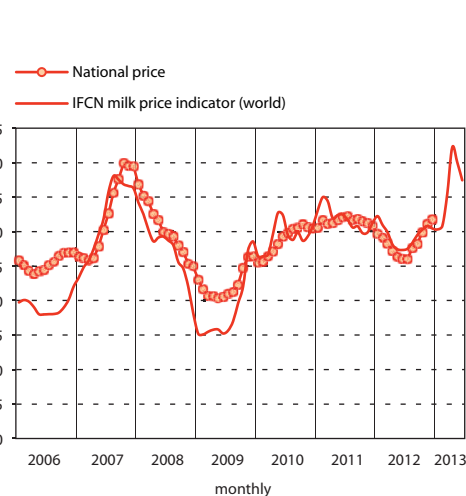
## Milk and feed price

EUR / 100 kg



## Farm gate milk prices

EUR / 100 kg milk (ECM)



## Explanations

Sources: National statistics, FAO, AMI, IMF. 2013 data: Preliminary and partly estimated.

Milk map details: Data based on the year 2011, milk production.

Estimates done for: 2012 milk delivered, dairy farm numbers, milk price, feed price. Farm structure: Cow number 2010 based on total numbers, 2012 following the trend.

Remarks: 2012 feed prices are estimated based on concentrate.





## STATUS AND KEY DEVELOPMENTS

### Status 2012

- Milk production (cow's): 0.4 mill t ECM (number 91 in the world)
- No. of dairy farms: 8,800
- Milk price: +22% to world market
- Feed price: 0% to world market

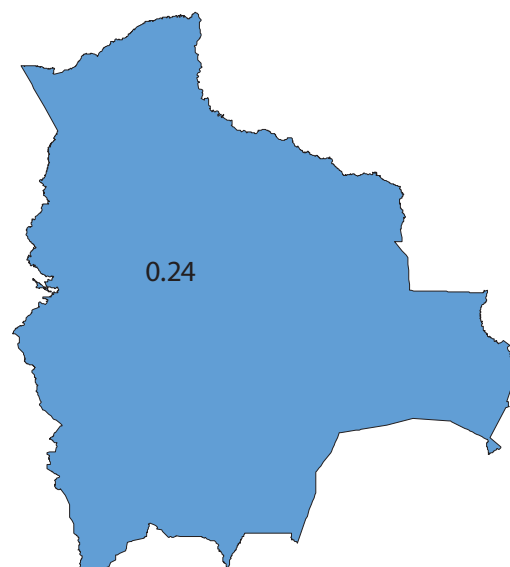
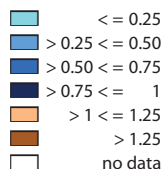
### Key developments over the past five years

- Milk production growth: +10.7% per year
- Number of years the milk price was above world market level: 4
- Milk price was on average 0% to world market
- Feed price was on average 0% to world market

## Milk density 2012

in tons / km<sup>2</sup>

Milk density in tons / km<sup>2</sup>



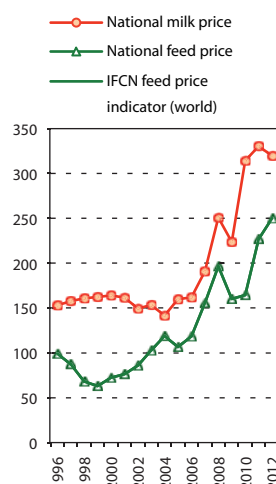
## Key variables

	1996	1998	2000	2002	2004	2006	2008	2010	2011	2012	Annual growth rates	
											'02-'07	'07-'12
<b>Milk production (cow's)</b>												
Production (mill t ECM)	0.20	0.19	0.23	0.29	0.31	0.25	0.26	0.37	0.38	0.43	-2.2%	10.7%
Cows (in 1,000's)	140	146	137	182	190	198	198	198	198	198	1.7%	0.0%
Milk yield (t / cow / year)	1.4	1.3	1.7	1.6	1.6	1.3	1.3	1.9	1.9	2.2	-3.8%	10.7%
<b>Farm structure</b>												
No. of dairy farms (in 1,000's)	9	9	9	9	9	9	9	9	9	9	0.0%	0.0%
Average farm size (cows / farm)	16	17	16	21	22	23	23	23	23	23	1.7%	0.0%
<b>Prices in national currency</b>												
Milk : feed price ratio	1.5	2.4	2.3	1.7	1.2	1.4	1.3	1.9	1.5	1.3	-6.7%	0.8%
Cull cow (BOB / kg live weight)							9.00	8.00	6.45	7.74		
Land - buy (BOB / ha)							11,000	14,324	15,700	17,500		



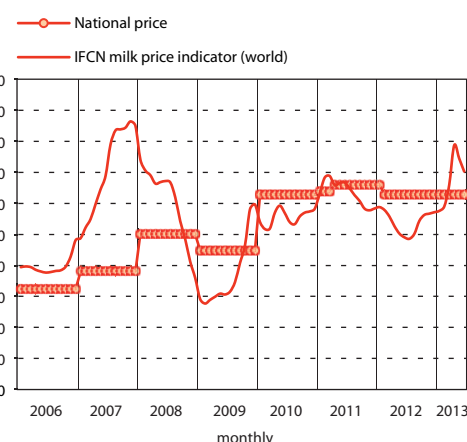
## Milk and feed price

BOB / 100 kg



## Farm gate milk prices

BOB / 100 kg milk (ECM)



## Explanations

**Sources:** National statistics, FAO, AMI, IMF. 2013 data: Preliminary and partly estimated.

**Milk map details:** Data based on the year 2012, milk production.

**Estimates done for:** Milk production 2012: Following the trend. Cow numbers 2006-2012 left constant. Dairy farm numbers estimated based on average farm size. Monthly milk prices: 2006-2010: annual averages.

**Remarks:** Since no statistical information on feed prices are available the world market price is used.



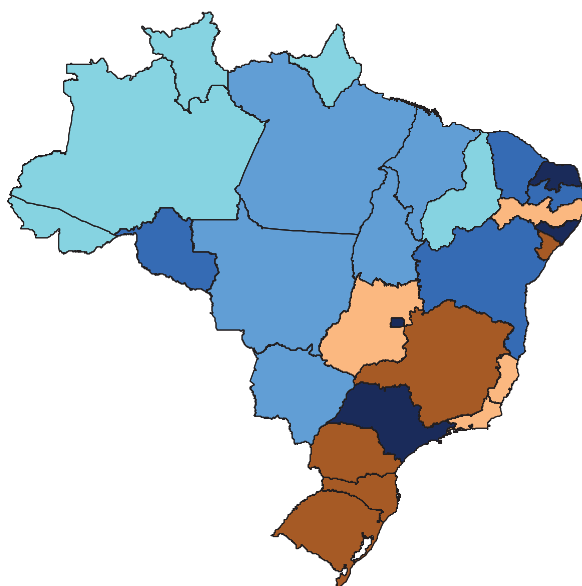
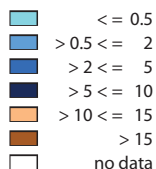
Lorildo A. Stock



## Milk density 2012

in tons / km<sup>2</sup>

Milk density in tons / km<sup>2</sup>



## STATUS AND KEY DEVELOPMENTS

### Status 2012

- Milk production (cow's): 33.4 mill t ECM (number 5 in the world)
- No. of dairy farms: 1,086,342
- Milk price: +20% to world market
- Feed price: -18% to world market

### Key developments over the past five years

- Milk production growth: +5% per year
- Number of years the milk price was above world market level: 4
- Milk price was on average +5% to world market
- Feed price was on average -11% to world market

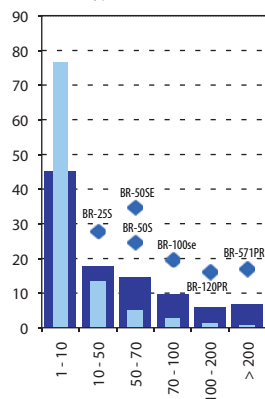
## Key variables

	1996	1998	2000	2002	2004	2006	2008	2010	2011	2012	Annual growth rates	
											'02-'07	'07-'12
<b>Milk production (cow's)</b>												
Production (mill t ECM)	18.55	18.73	19.80	21.68	23.51	25.44	27.63	30.77	32.15	33.44	3.8%	5.0%
Cows (in 1,000's)	16,274	17,281	17,885	18,793	20,023	20,943	21,585	22,925	23,229	23,744	2.4%	2.4%
Milk yield (t / cow / year)	1.1	1.1	1.1	1.2	1.2	1.2	1.3	1.3	1.4	1.4	1.4%	2.6%
<b>Farm structure</b>												
No. of dairy farms (in 1,000's)	1,810	1,716	1,622	1,529	1,435	1,341	1,252	1,167	1,126	1,086	-3.2%	-3.5%
Average farm size (cows / farm)	9	10	11	12	14	16	17	20	21	22	5.8%	6.0%
<b>Prices in national currency</b>												
Milk : feed price ratio	1.4	1.6	1.4	1.1	1.2	1.7	1.6	2.0	1.8	1.5	10.7%	-2.8%
Cull cow (BRL / kg live weight)	0.71	0.76	0.70	1.80	1.85	1.59	2.59	2.70	3.12	2.94	0.5%	9.8%
Land - buy (BRL / ha)	1,293	1,282	1,621	2,559	4,361	5,030	6,110	8,022	10,798	13,307	16.7%	19.2%

## Farm structure

% of dairy farms and cows in size classes (2012)

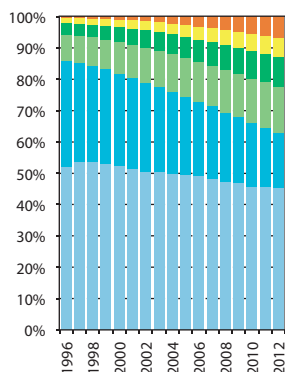
- Cows per size class
- Farms per size class
- ◆ IFCN typical farms\*



## Farm structure

% of cows per herd size

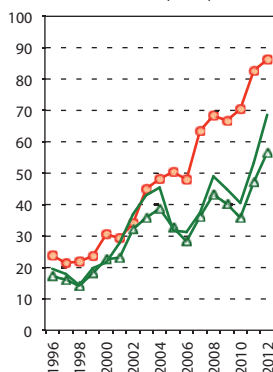
- 1 - 10
- 10 - 50
- 50 - 70
- 70 - 100
- 100 - 200
- > 200



## Milk and feed price

BRL / 100 kg

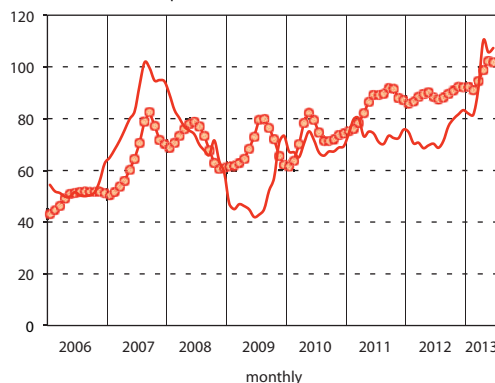
- National milk price
- △— National feed price
- IFCN feed price indicator (world)



## Farm gate milk prices

BRL / 100 kg milk (ECM)

- National price
- IFCN milk price indicator (world)



\* size class where IFCN typical farms are

## Explanations

Sources: National statistics, FAO, AMI, IMF. 2013 data: Preliminary and partly estimated.

Milk map details: Data based on the year 2012, milk production.

Estimates done for: Farm structure based on 1996 and 2006 census.

Remarks: Land price for São Paulo State.







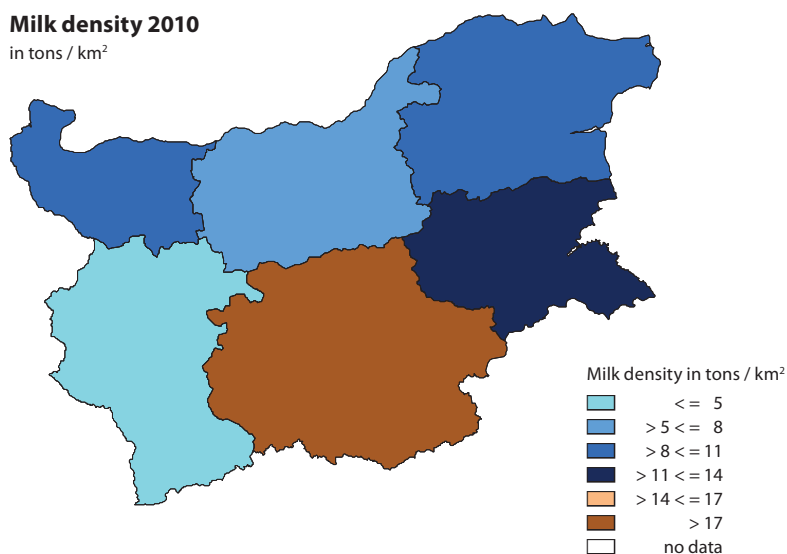


Konstantin Stankov,  
Plamen Georgiev



## Milk density 2010

in tons / km<sup>2</sup>



## STATUS AND KEY DEVELOPMENTS

### Status 2012

- Milk production (cow's and buffalo's): 1 mill t ECM (number 70 in the world)
- No. of dairy farms: 69,269
- Milk price: 0% to world market
- Feed price: +20% to world market
- 

### Key developments over the past five years

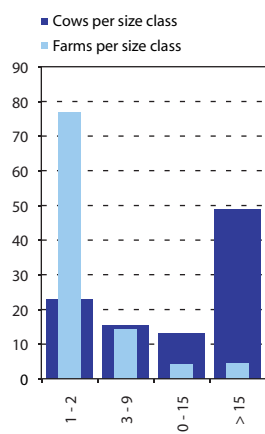
- Milk production growth: -0.4% per year
- Number of years the milk price was above world market level: 3
- Milk price was on average +8% to world market
- Feed price was on average +21% to world market

## Key variables

	1996	1998	2000	2002	2004	2006	2008	2010	2011	2012	Annual growth rates	
											'02-'07	'07-'12
<b>Milk production (cow's and buffalo's)</b>												
Production (mill t ECM)	1.09	1.27	1.31	1.21	1.24	1.20	1.06	0.93	1.04	1.04	-2.5%	-0.4%
Cows and buffalos (in 1,000's)	369	434	321	384	383	355	320	313	312	312	-2.3%	-1.8%
Milk yield (t / cow / year)	2.9	2.9	4.1	3.1	3.2	3.4	3.3	3.0	3.3	3.3	-0.1%	1.4%
<b>Farm structure</b>												
No. of dairy farms (in 1,000's)	225	212	200	195	175	123	106	75	77	69	-10.7%	-9.0%
Average farm size (cows / farm)	2	2	2	2	2	3	3	4	4	4	9.4%	7.9%
<b>Prices in national currency</b>												
Milk : feed price ratio			1.8	1.5	1.3	2.1	1.4	1.5	1.2	0.9	-2.3%	-8.3%
Cull cow (BGN / kg live weight)			1.06	1.26	1.13	1.27	1.48	1.70	1.81	1.94	2.4%	6.4%
Land - buy (BGN / ha)		1,400	1,370	1,410	1,340	1,700	3,000	3,500	3,969	4,357	11.2%	12.7%
Quota (BGN / kg milk)												

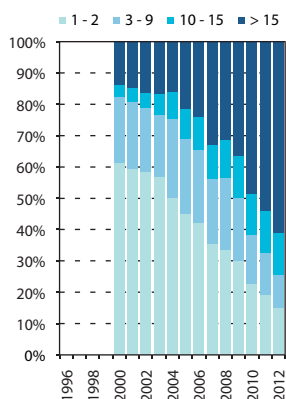
## Farm structure

% of dairy farms and cows in size classes (2010)



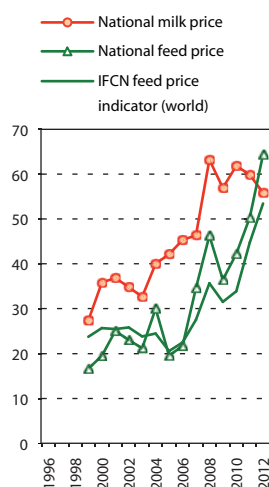
## Farm structure

% of cows per herd size



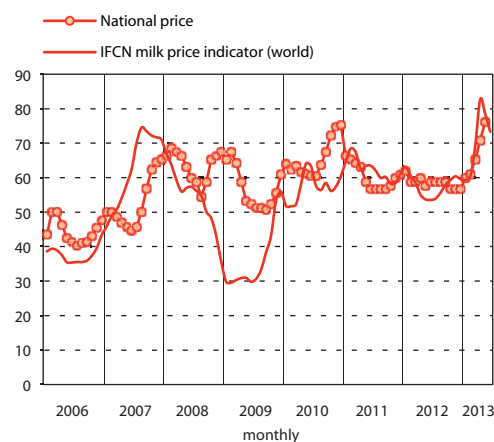
## Milk and feed price

BGN / 100 kg



## Farm gate milk prices

BGN / 100 kg milk (ECM)



## Explanations

Sources: National statistics, FAO, AMI, IMF. 2013 data: Preliminary and partly estimated.

Milk map details: Data based on the year 2010, milk production.

Estimates done for: Cow number 2012. Dairy farm numbers: 1996-1999. Barley price: 2009-2012. Land price: 2011-2012. Beef price: 2009-2012.

Remarks: Since no statistical information on feed prices are available the world market price is used 2001-2012.



### STATUS AND KEY DEVELOPMENTS

#### Status 2012

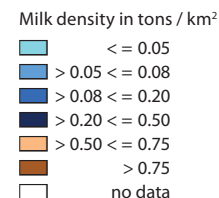
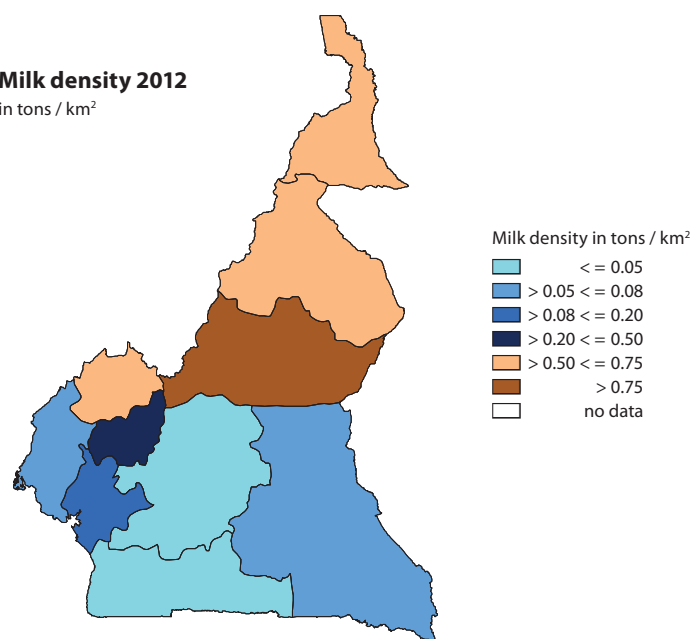
- Milk production (cow's): 0.2 mill t ECM (number 110 in the world)
- No. of dairy farms: 4,472
- Milk price: +57% to world market
- Feed price: +57% to world market

#### Key developments over the past five years

- Milk production growth: -1.6% per year
- Number of years the milk price was above world market level: 5
- Milk price was on average +53% to world market
- Feed price was on average +132% to world market

#### Milk density 2012

in tons / km<sup>2</sup>

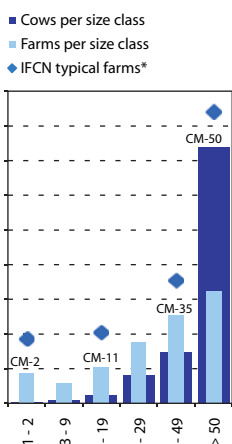


### Key variables

	1996	1998	2000	2002	2004	2006	2008	2010	2011	2012	Annual growth rates	
											'02-'07	'07-'12
<b>Milk production (cow's)</b>												
Production (mill t ECM)	0.13	0.13	0.14	0.13	0.14	0.16	0.15	0.16	0.16	0.16	5.9%	-1.6%
Cows (in 1,000's)	251	246	260	255	265	267	290	310	318	322	0.7%	4.0%
Milk yield (t / cow / year)	0.5	0.5	0.5	0.5	0.5	0.6	0.5	0.5	0.5	0.5	5.1%	-5.4%
<b>Farm structure</b>												
No. of dairy farms (in 1,000's)	4	4	4	4	4	4	4	4	4	4	1.0%	2.3%
Average farm size (cows / farm)	67	66	69	67	68	67	72	77	72	72	-0.3%	1.7%
<b>Prices in national currency</b>												
Milk : feed price ratio	1.7	1.6	1.2	1.2	1.1	0.8	0.8	1.0	1.1	1.0	-7.9%	4.9%
Cull cow (XAF / kg live weight)	300	300	300	350	350	475	550	650	715	750	7.4%	8.4%
Land - buy (1,000 XAF / ha)	700	700	750	750	800	1,000	1,300	1,400	1,680	1,932	9.9%	10.0%

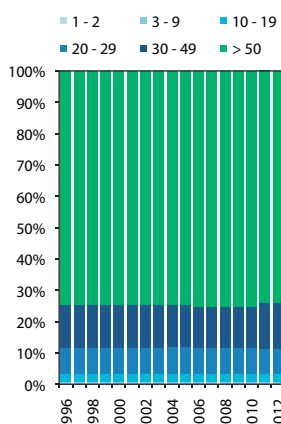
### Farm structure

% of dairy farms and cows in size classes (2012)



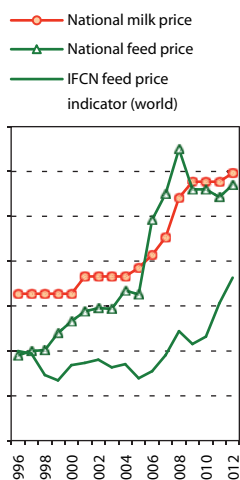
### Farm structure

% of cows per herd size



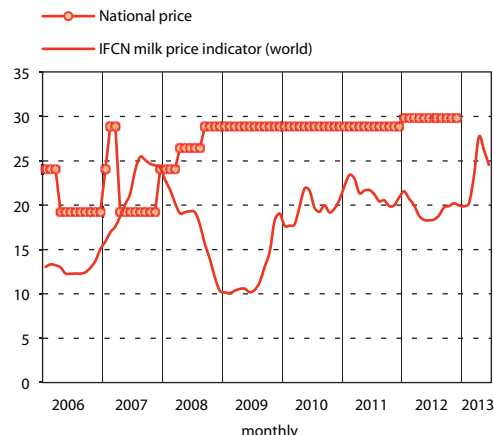
### Milk and feed price

1,000 XAF / 100 kg



### Farm gate milk prices

1,000 XAF / 100 kg milk (ECM)



\* size class where IFCN typical farms are

### Explanations

Sources: National statistics, FAO, AMI, IMF. 2013 data: Preliminary and partly estimated.

Milk map details: Data based on the year 2012, milk production.

Estimates done for: Cull cow prices, land prices exclude year 2006 and farm structure are estimated based on national surveys and expert knowledge.

Remarks: Milk prices represent a price of milk sold at farm gate in Western Highlands. Feed industries mainly import feed components before mixing and retailing to farmers.

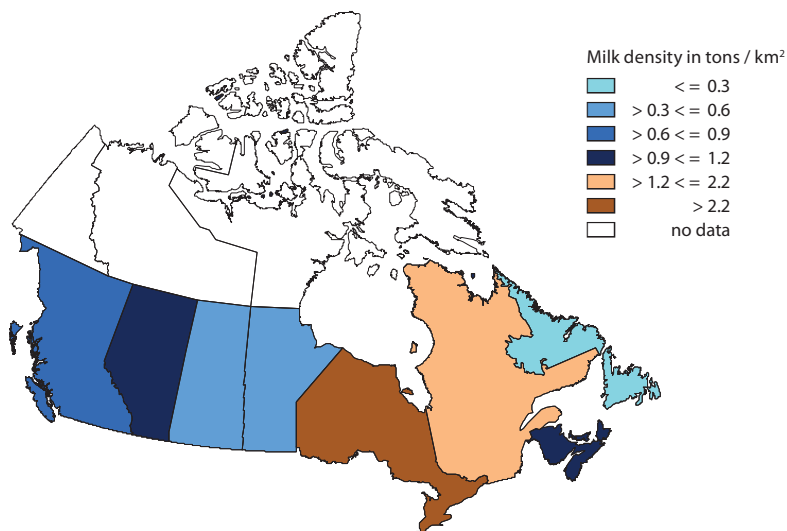


Steve Couture



## Milk density 2012

in tons / km<sup>2</sup>



## STATUS AND KEY DEVELOPMENTS

### Status 2012

- Milk production (cow's): 8.3 mill t ECM (number 20 in the world)
- No. of dairy farms: 12,529
- Milk price: +114% to world market
- Feed price: -3% to world market

### Key developments over the past five years

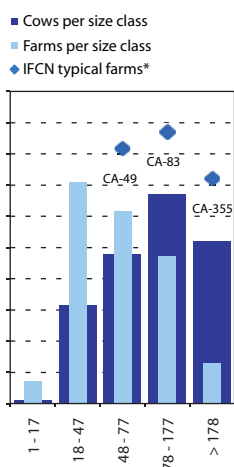
- Milk production growth: +1.2% per year
- Number of years the milk price was above world market level: 5
- Milk price was on average +96% to world market
- Feed price was on average -9% to world market

## Key variables

	1996	1998	2000	2002	2004	2006	2008	2010	2011	2012	Annual growth rates '02-'07 '07-'12	
<b>Milk production (cow's)</b>												
Production (mill t ECM)	7.39	7.65	7.70	7.75	7.87	7.66	7.88	7.94	8.11	8.33	0.2%	1.2%
Cows (in 1,000's)	1,237	1,184	1,103	1,084	1,055	1,019	985	966	966	959	-1.6%	-0.8%
Milk yield (t / cow / year)	6.0	6.5	7.0	7.2	7.5	7.5	8.0	8.2	8.4	8.7	1.9%	2.0%
<b>Farm structure</b>												
No. of dairy farms (in 1,000's)	24	22	19	18	16	15	14	13	13	13	-4.8%	-2.2%
Average farm size (cows / farm)	52	55	57	60	65	70	72	75	76	77	3.3%	1.5%
<b>Prices in national currency</b>												
Milk : feed price ratio	2.2	2.8	3.5	2.9	2.9	3.7	3.2	3.7	2.7	2.3	4.7%	-8.9%
Cull cow (CAD / kg live weight)			1.25	1.21	0.43	0.63	0.90	0.95	1.21	1.34	-11.4%	15.2%
Land - buy (CAD / ha)	4,010	5,146	5,679	6,365	7,336	8,142	9,394	10,315	11,259	14,038	5.8%	10.7%
Quota (CAD / kg milk)	1.16	1.50	2.17	2.46	2.81	3.27	3.11	3.02	2.91	3.00	5.3%	-1.2%

## Farm structure

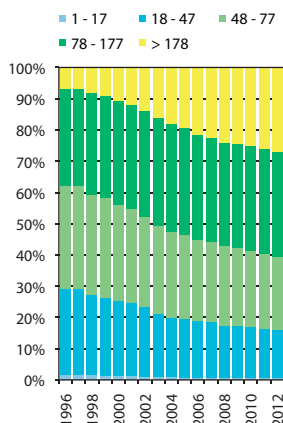
% of dairy farms and cows in size classes (2011)



\* size class where IFCN typical farms are

## Farm structure

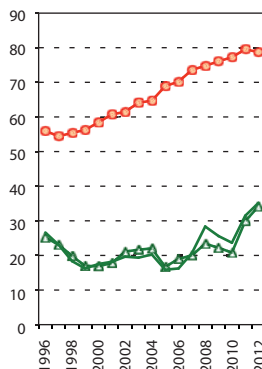
% of cows per herd size



## Milk and feed price

CAD / 100 kg

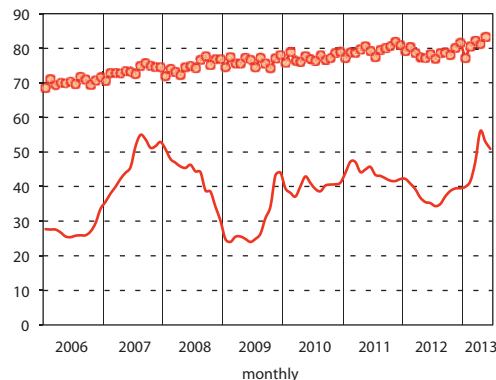
—○— National milk price  
—△— National feed price  
—■— IFCN feed price indicator (world)



## Farm gate milk prices

CAD / 100 kg milk (ECM)

—○— National price  
—■— IFCN milk price indicator (world)



## Explanations

**Sources:** National statistics, FAO, AMI, IMF. 2013 data: Preliminary and partly estimated.

**Milk map details:** Data based on the year 2012, milk production.

**Remarks:** Farm structure information: The Ontario distribution is used as trend for the whole country.





**STATUS AND KEY DEVELOPMENTS**

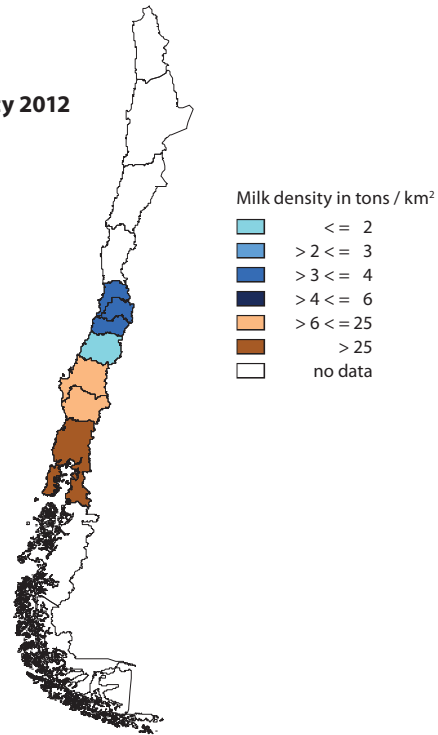
**Status 2012**

- Milk production (cow's): 2.7 mill t ECM (number 43 in the world)
- No. of dairy farms: 14,977
- Milk price: +7% to world market
- Feed price: +9% to world market

**Key developments over the past five years**

- Milk production growth: +2% per year
- Number of years the milk price was above world market level: 2
- Milk price was on average -9% to world market
- Feed price was on average +25% to world market

**Milk density 2012**  
in tons / km<sup>2</sup>

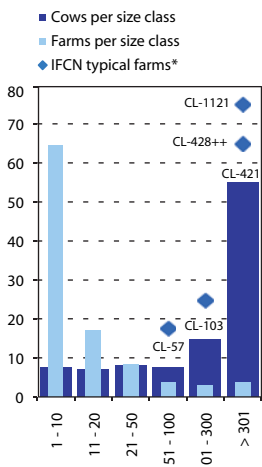


**Key variables**

	1996	1998	2000	2002	2004	2006	2008	2010	2011	2012	Annual growth rates	
											'02-'07	'07-'12
<b>Milk production (cow's)</b>												
Production (mill t ECM)	1.83	1.98	1.93	2.10	2.15	2.33	2.51	2.42	2.59	2.68	2.9%	2.0%
Cows (in 1,000's)	605	627	648	671	656	561	503	536	533	542	-5.9%	1.8%
Milk yield (t / cow / year)	3.0	3.2	3.0	3.1	3.3	4.2	5.0	4.5	4.8	4.9	9.3%	0.2%
<b>Farm structure</b>												
No. of dairy farms (in 1,000's)	49	46	40	34	29	23	19	16	15	15	-10.5%	-5.4%
Average farm size (cows / farm)	12	14	16	19	23	25	27	34	35	36	5.2%	7.6%
<b>Prices in national currency</b>												
Milk : feed price ratio	0.9	1.0	1.2	0.9	1.0	1.2	1.0	1.1	1.1	1.0	6.9%	-4.3%
Cull cow (CLP / kg live weight)	273.67	331.67	312.84	348.75	335.84	350.22	469.52	552.47	541.50	486.42	2.5%	4.2%
Land - buy (1,000 CLP / ha)	1,273	1,489	1,303	1,590	2,233	2,300	4,000	5,500	6,000	6,500	13.5%	16.7%

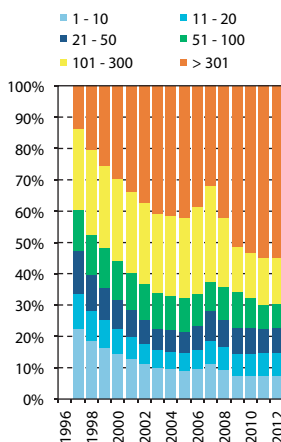
**Farm structure**

% of dairy farms and cows in size classes (2012)



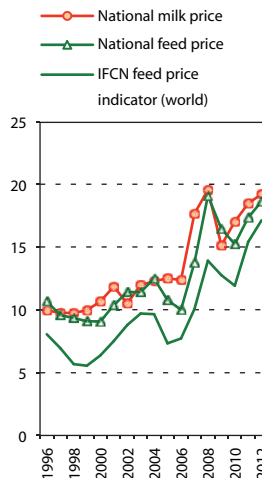
**Farm structure**

% of cows per herd size



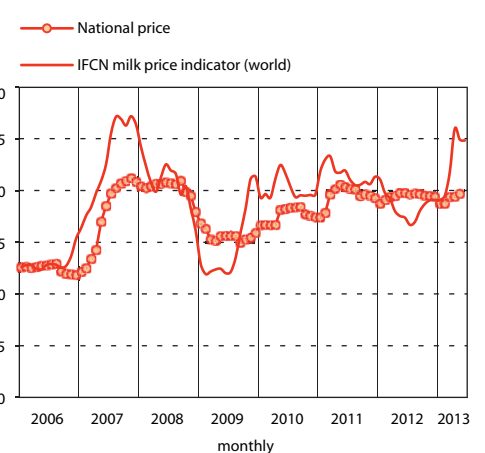
**Milk and feed price**

1,000 CLP / 100 kg



**Farm gate milk prices**

1,000 CLP / 100 kg milk (ECM)



\* size class where IFCN typical farms are

**Explanations**

**Sources:** National statistics, FAO, AMI, IMF. 2013 data: Preliminary and partly estimated.

**Milk map details:** Data based on the year 2012, milk production.

**Estimates done for:** Farm structure 1998-2006 and 2008-2012 based on 1997 and 2007 census and additional national surveys.

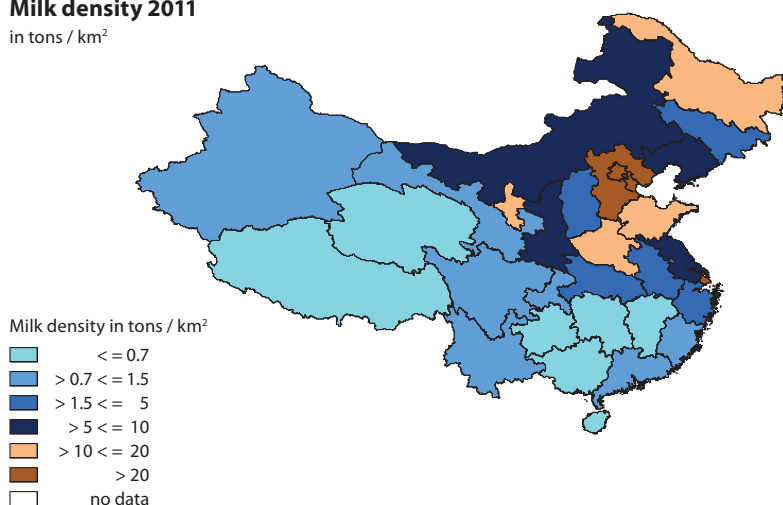


**Douming,  
Sam Shi**

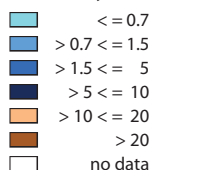


## Milk density 2011

in tons / km<sup>2</sup>



Milk density in tons / km<sup>2</sup>



## STATUS AND KEY DEVELOPMENTS

### Status 2012

- Milk production (cow's): 33.3 mill t ECM (number 4 in the world)
- No. of dairy farms: 1,788,095
- Milk price: +60% to world market
- Feed price: +30% to world market

### Key developments over the past five years

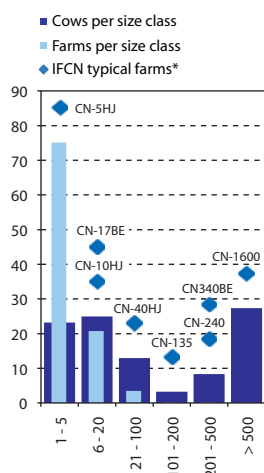
- Milk production growth: +1.2% per year
- Number of years the milk price was above world market level: 4
- Milk price was on average +30% to world market
- Feed price was on average +41% to world market

## Key variables

	1996	1998	2000	2002	2004	2006	2008	2010	2011	2012	Annual growth rates	
											'02-'07	'07-'12
<b>Milk production (cow's)</b>												
Production (mill t ECM)	5.61	5.90	7.37	11.58	20.13	28.44	31.67	31.79	32.56	33.31	22.1%	1.2%
Cows and buffalos (in 1,000's)	2,414	2,303	2,639	3,713	5,983	5,772	6,661	6,750	6,695	7,488	12.1%	2.6%
Milk yield (t / cow / year)	2.3	2.6	2.8	3.1	3.4	4.9	4.8	4.7	4.9	4.4	8.9%	-1.4%
<b>Farm structure</b>												
No. of dairy farms (in 1,000's)	370	373	404	1,369	2,068	2,406	2,522	2,233	2,104	1,788	14.3%	-7.7%
Average farm size (cows / farm)	7	6	7	3	3	2	3	3	3	4	-1.9%	11.2%
<b>Prices in national currency</b>												
Milk : feed price ratio	0.9	1.1	1.4	1.4	1.1	1.2	1.1	1.3	1.3	1.3	-0.5%	-1.0%
Cull cow (CNY / kg live weight)			5.80	6.49	7.57	8.34	14.29	15.76	16.50	18.00	9.3%	12.2%
Land - buy (CNY / ha)			359,280	427,600	470,967	510,876	566,552	612,192	646,475		4.6%	

## Farm structure

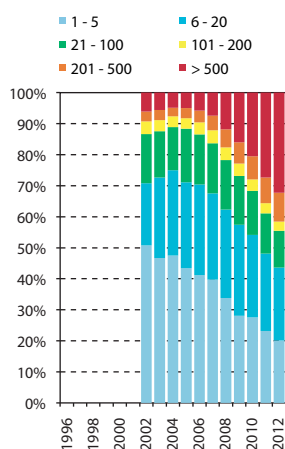
% of dairy farms and cows in size classes (2011)



\* size class where IFCN typical farms are

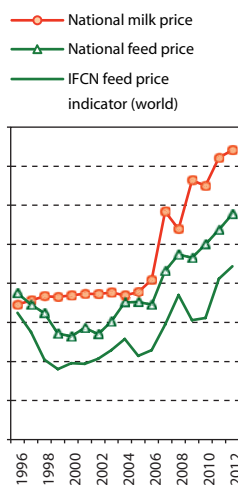
## Farm structure

% of cows per herd size



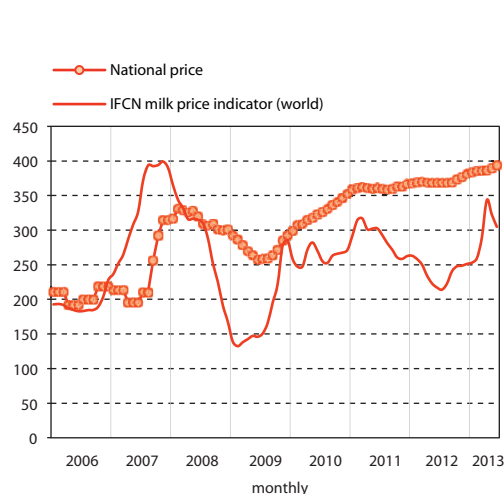
## Milk and feed price

CNY / 100 kg



## Farm gate milk prices

CNY / 100 kg milk (ECM)



## Explanations

**Sources:** National statistics, FAO, AMI, IMF. 2013 data: Preliminary and partly estimated.

**Milk map details:** Data based on the year 2011, milk production.

**Estimates done for:** Land prices 2007-2008.

**Remarks:** The table shows cow's milk only. China has about 31 mill t buffalo milk (ECM) and about 5.70 mill buffalos (Source: FAO, 2011)







## 3.28 Colombia – Milk production fact sheet



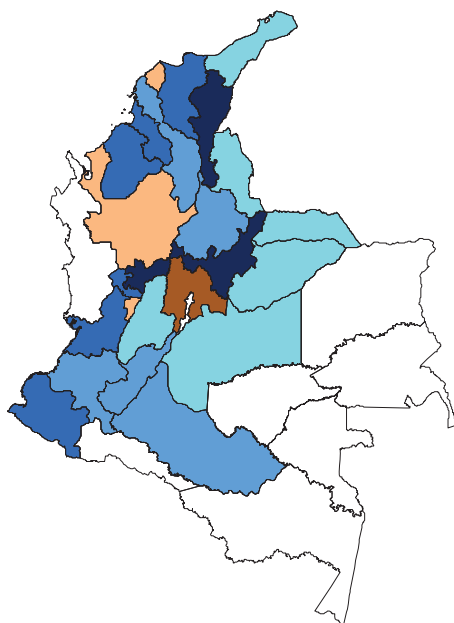
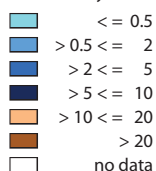
René A. Pérez R.,  
Enrique Ortega,  
Carolina Vargas



### Milk density 2012

in tons / km<sup>2</sup>

Milk density in tons / km<sup>2</sup>



### STATUS AND KEY DEVELOPMENTS

#### Status 2012

- Milk production (cow's): 5.7 mill t ECM (number 28 in the world)
- No. of dairy farms: 283,000
- Milk price: +20% to world market
- Feed price: +43% to world market

#### Key developments over the past five years

- Milk production growth: +0.9% per year
- Number of years the milk price was above world market level: 2
- Milk price was on average +1% to world market
- Feed price was on average +61% to world market

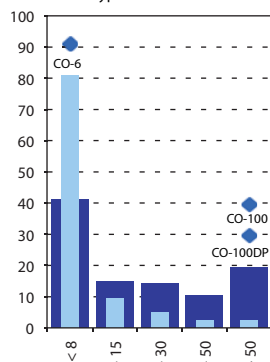
### Key variables

	1996	1998	2000	2002	2004	2006	2008	2010	2011	2012	Annual growth rates '02-'07 '07-'12	
<b>Milk production (cow's)</b>												
Production (mill t ECM)	4.91	5.08	5.42	5.54	5.68	5.85	5.81	5.42	5.64	5.73	-0.2%	0.9%
Cows (in 1,000's)	3,861	3,939	4,018	4,099	4,181	4,265	4,338	3,337	3,370	3,352	1.1%	-5.0%
Milk yield (t / cow / year)	1.3	1.3	1.3	1.4	1.4	1.4	1.3	1.6	1.7	1.7	-1.3%	6.3%
<b>Farm structure</b>												
No. of dairy farms (in 1,000's)	196	206	217	229	241	254	274	274	274	283	2.7%	1.6%
Average farm size (cows / farm)	20	19	19	18	17	17	16	12	12	12	-1.5%	-6.5%
<b>Prices in national currency</b>												
Milk : feed price ratio	0.7	0.8	0.9	0.8	1.2	0.9	0.9	1.0	1.0	0.9	1.8%	-0.6%
Cull cow (COP / kg live weight)						2,150	2,200	1,900	1,900	2,300		0.9%
Land - buy (1,000 COP / ha)						7,500	8,000	8,000	7,600	8,213		0.5%

### Farm structure

% of dairy farms and cows  
in size classes (2012)

- Cows per size class
- Farms per size class
- ◆ IFCN typical farms\*

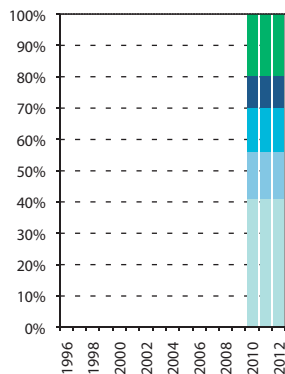


\* size class where IFCN typical farms are

### Farm structure

% of cows per herd size

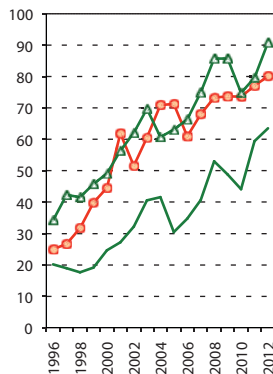
- <8
- 8 - 15
- 15 - 30
- 30 - 50
- >50



### Milk and feed price

1,000 COP / 100 kg

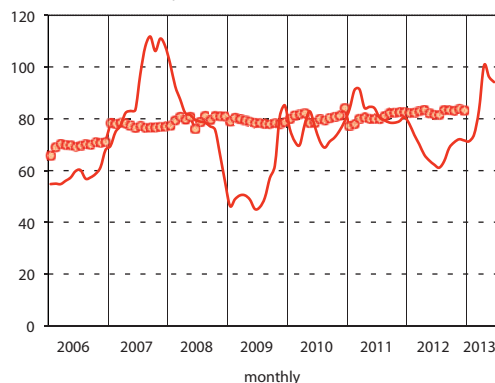
- National milk price
- △ National feed price
- IFCN feed price indicator (world)



### Farm gate milk prices

1,000 COP / 100 kg milk (ECM)

- National price
- IFCN milk price indicator (world)



### Explanations

Sources: National statistics, FAO, AMI, IMF. 2013 data: Preliminary and partly estimated.

Milk map details: Data based on the year 2012, milk production.

Estimates done for: Dairy farms: 1996-2005. Soybean meal price 1996-2000: IFCN estimate based on average differential between world and national feed price.

Remarks: Farm structure: Data represent dairy cows and double purpose cows.



**STATUS AND KEY DEVELOPMENTS**

**Status 2012**

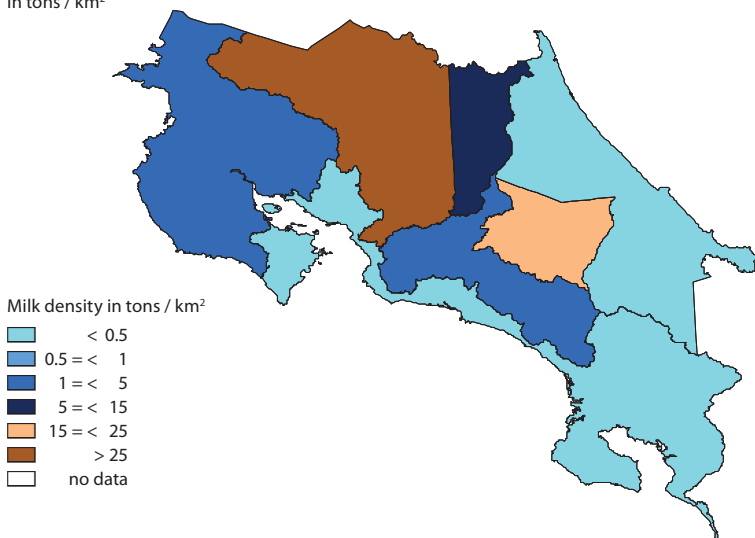
- Milk production (cow's): 1 mill t ECM (number 75 in the world)
- No. of dairy farms: 14,355
- Milk price: +36% to world market
- Feed price: 0% to world market

**Key developments over the past five years**

- Milk production growth: +3.2% per year
- Number of years the milk price was above world market level: 4
- Milk price was on average +16% to world market
- Feed price was on average 0% to world market

**Milk density 2012**

in tons / km<sup>2</sup>



Milk density in tons / km<sup>2</sup>

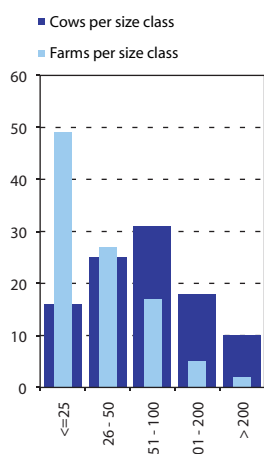
- < 0.5
- 0.5 <= 1
- 1 <= 5
- 5 <= 15
- 15 <= 25
- > 25
- no data

**Key variables**

	1996	1998	2000	2002	2004	2006	2008	2010	2011	2012	Annual growth rates		
											'02-'07	'07-'12	
<b>Milk production (cow's)</b>													
Production (mill t ECM)	0.53	0.58	0.72	0.76	0.75	0.82	0.89	0.95	0.97	1.01		2.6%	3.2%
Cows (in 1,000's)	410	490	525	557	572	600	643	702	736	736		3.1%	2.5%
Milk yield (t / cow / year)	1.3	1.2	1.4	1.4	1.3	1.4	1.4	1.4	1.3	1.4		-0.6%	0.7%
<b>Farm structure</b>													
No. of dairy farms (in 1,000's)	14	14	14	14	14	14	14	14	14	14		0.0%	0.0%
Average farm size (cows / farm)	29	34	37	39	40	42	45	49	51	51		3.1%	2.5%
<b>Prices in national currency</b>													
Milk : feed price ratio						2.0	1.3	2.0	1.5	1.4			-4.2%
Cull cow (CRC / kg live weight)													
Land - buy (1,000 CRC / ha)													

**Farm structure**

% of dairy farms and cows in size classes (2012)

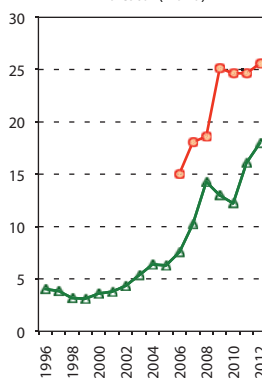


The chart shows the farm structure of the dairy farms delivering milk to the dairy plant Dos Pinos representing approx. 2/3 of the processed milk in the country. The assumption is a milk yield of 6 t / cow / year.

**Milk and feed price**

1,000 CRC / 100 kg

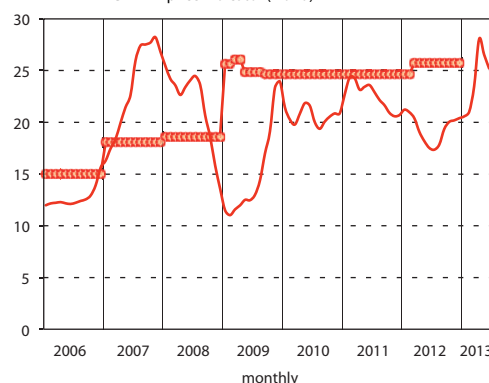
- National milk price
- △ National feed price
- IFCN feed price indicator (world)



**Farm gate milk prices**

1,000 CRC / 100 kg milk (ECM)

- National price
- IFCN milk price indicator (world)



**Explanations**

Sources: National statistics, FAO, AMI, IMF. 2013 data: Preliminary and partly estimated.

Milk map details: Data based on the year 2012, milk delivered to Dos Pinos, share of approx. 2/3 of nationally processed milk.

Estimates done for: Monthly milk prices: 2006-2008: annual averages.

Remarks: Key variables: Milk yield shows the milk yield of farms producing informal milk (40 % of the national milk production). Feed price is equal to the world feed price.

## 3.30 Croatia – Milk production fact sheet

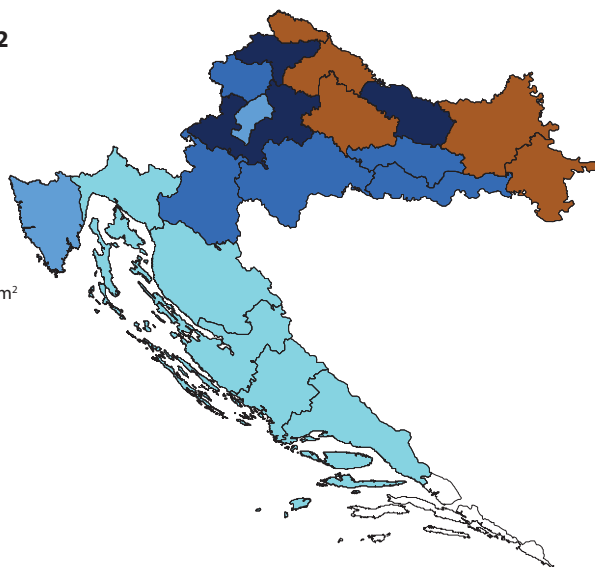


Jasmina Havranek

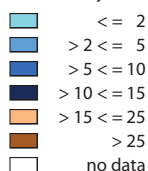


### Milk density 2012

in tons / km<sup>2</sup>



Milk density in tons / km<sup>2</sup>



### STATUS AND KEY DEVELOPMENTS

#### Status 2012

- Milk production (cow's): 0.7 mill t ECM (number 82 in the world)
- No. of dairy farms: 14,874
- Milk price: +1% to world market
- Feed price: -11% to world market

#### Key developments over the past five years

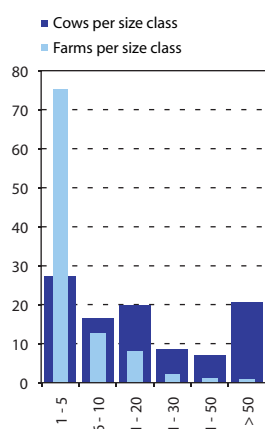
- Milk production growth: -4.3% per year
- Number of years the milk price was above world market level: 4
- Milk price was on average +8% to world market
- Feed price was on average +4% to world market

### Key variables

	1996	1998	2000	2002	2004	2006	2008	2010	2011	2012	Annual growth rates '02-'07 '07-'12	
<b>Milk production (cow's)</b>												
Production (mill t ECM)	0.60	0.64	0.61	0.70	0.69	0.83	0.81	0.78	0.71	0.68	3.9%	-4.3%
Cows (in 1,000's)	233	231	215	224	229	241	226	219	195	174	0.9%	-5.8%
Milk yield (t / cow / year)	2.6	2.8	2.8	3.1	3.0	3.4	3.6	3.5	3.7	3.9	3.0%	1.6%
<b>Farm structure</b>												
No. of dairy farms (in 1,000's)	69	68	66	65	51	38	27	20	18	15	-13.2%	-14.2%
Average farm size (cows / farm)	3	3	3	3	5	6	8	11	11	12	16.3%	9.7%
<b>Prices in national currency</b>												
Milk : feed price ratio						2.0	1.9	1.8	1.6	1.2		0.9%
Cull cow (HRK / kg live weight)												
Land - buy (HRK / ha)												

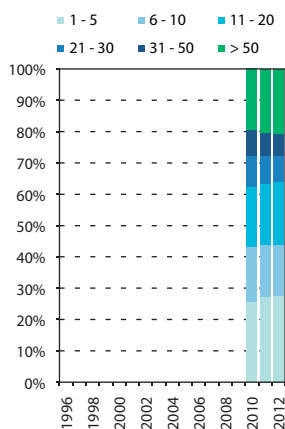
### Farm structure

% of dairy farms and cows in size classes (2012)



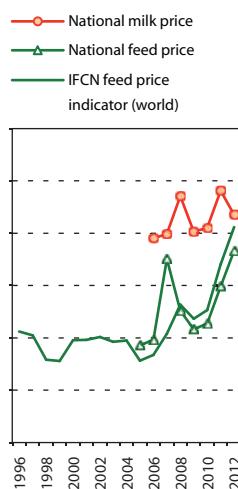
### Farm structure

% of cows per herd size



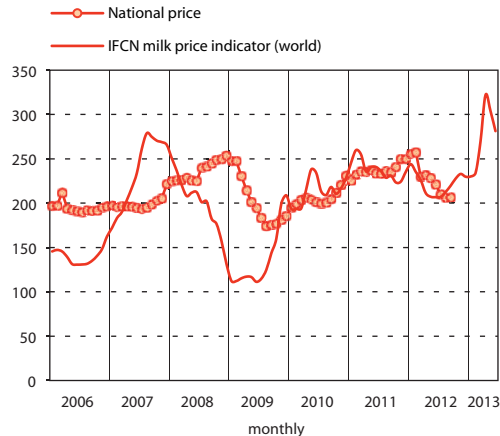
### Milk and feed price

HRK / 100 kg



### Farm gate milk prices

HRK / 100 kg milk (ECM)



### Explanations

Sources: National statistics, FAO, AMI, IMF. 2013 data: Preliminary and partly estimated.

Milk map details: Data based on the year 2012, milk production.

Estimates done for: Cow number 2012. Feed prices 2010-12.

Remarks: Dairy farms: The data shows the numbers of milk suppliers not total dairy farm numbers.





## STATUS AND KEY DEVELOPMENTS

### Status 2012

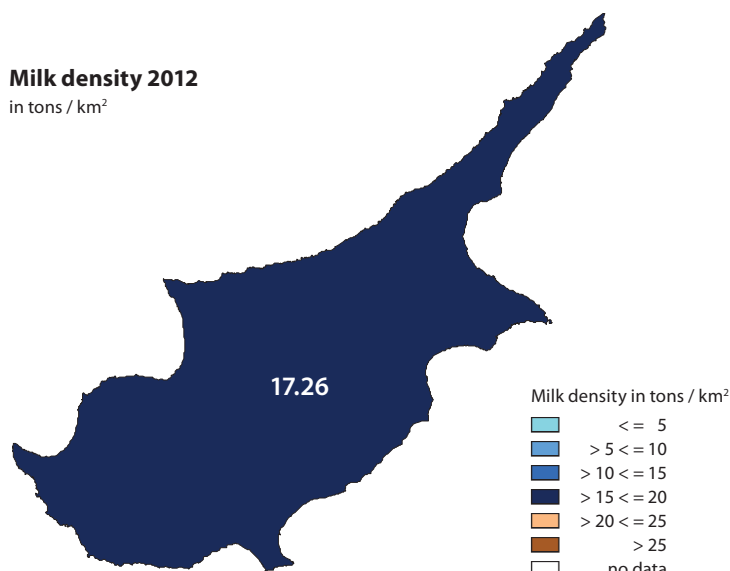
- Milk production (cow's): 0.2 mill t ECM (number 114 in the world)
- No. of dairy farms: 225
- Milk price: +84% to world market
- Feed price: -12% to world market

### Key developments over the past five years

- Milk production growth: +2% per year
- Number of years the milk price was above world market level: 5
- Milk price was on average +84% to world market
- Feed price was on average -9% to world market

### Milk density 2012

in tons / km<sup>2</sup>

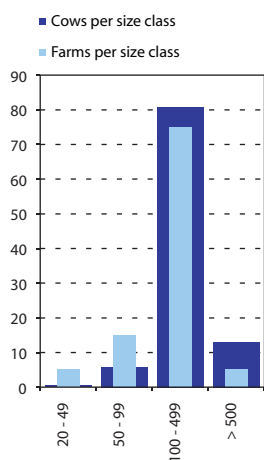


## Key variables

	1996	1998	2000	2002	2004	2006	2008	2010	2011	2012	Annual growth rates	
											'02-'07	'07-'12
<b>Milk production (cow's)</b>												
Production (mill t ECM)	0.14	0.13	0.14	0.14	0.15	0.14	0.14	0.15	0.15	0.15	0.0%	2.0%
Cows (in 1,000's)	25	25	24	26	26	24	23	24	24	24	-2.0%	0.3%
Milk yield (t / cow / year)	5.5	5.2	6.0	5.3	5.6	6.0	6.2	6.1	6.3	6.4	2.0%	1.8%
<b>Farm structure</b>												
No. of dairy farms (in 1,000's)	0.33	0.28	0.27	0.26	0.26	0.25	0.24	0.23	0.23	0.22	-1.3%	-1.7%
Average farm size (cows / farm)	77	89	87	100	101	97	96	103	105	107	-0.7%	2.0%
<b>Prices in national currency</b>												
Milk : feed price ratio	2.3	2.8	2.5	2.5	3.4	3.6	2.9	3.2	2.8	2.2	2.8%	-5.1%
Cull cow (EUR / kg live weight)												
Land - buy (EUR / ha)												
Quota (EUR / kg milk)												

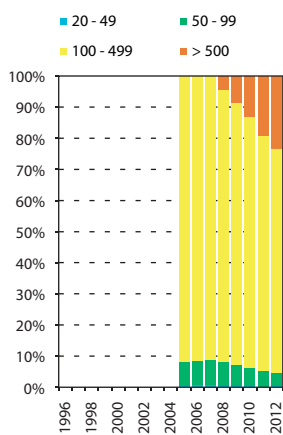
### Farm structure

% of dairy farms and cows in size classes (2010)



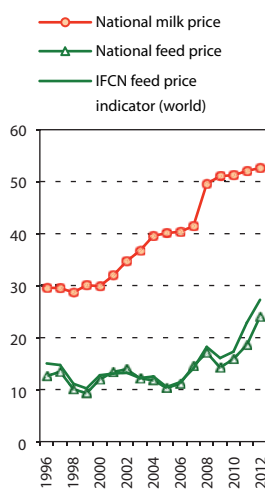
### Farm structure

% of cows per herd size



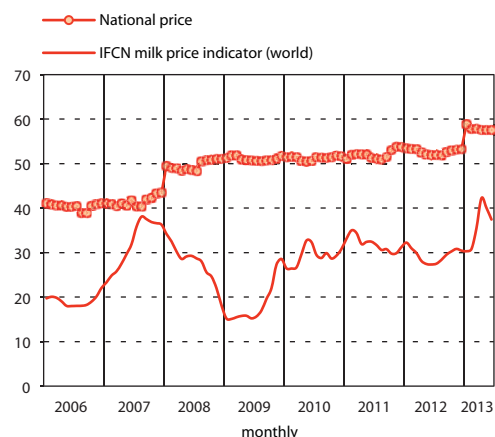
### Milk and feed price

EUR / 100 kg



### Farm gate milk prices

EUR / 100 kg milk (ECM)



### Explanations

**Sources:** National statistics, FAO, AMI, IMF. 2013 data: Preliminary and partly estimated.

**Milk map details:** Data based on the year 2012, milk production.

**Estimates done for:** Milk delivered 2012. Farm structure: Cow number 2011-2012 following the trend.

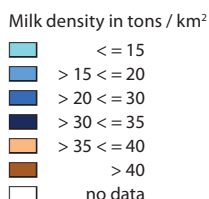
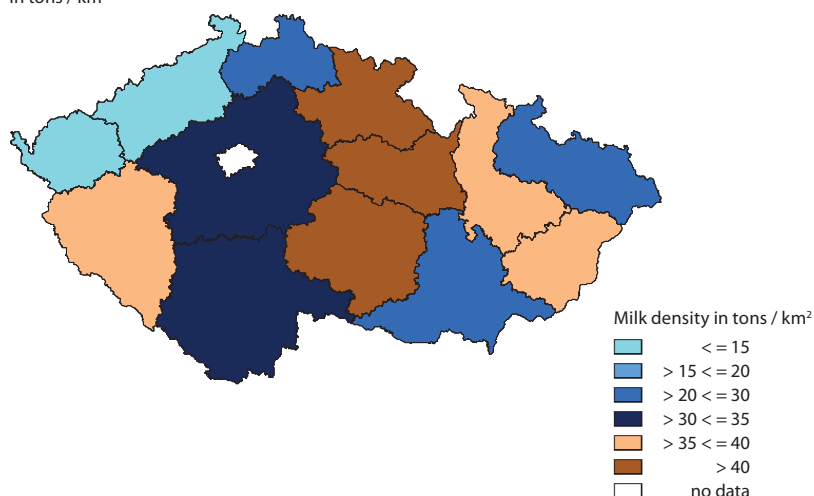


Iveta Bošková



## Milk density 2012

in tons / km<sup>2</sup>



## STATUS AND KEY DEVELOPMENTS

### Status 2012

- Milk production (cow's): 2.8 mill t ECM (number 41 in the world)
- No. of dairy farms: 2,105
- Milk price: +5% to world market
- Feed price: -13% to world market

### Key developments over the past five years

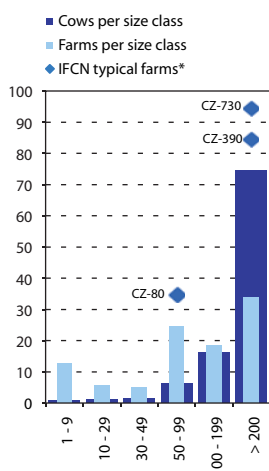
- Milk production growth: +0.4% per year
- Number of years the milk price was above world market level: 4
- Milk price was on average +7% to world market
- Feed price was on average +1% to world market

## Key variables

	1996	1998	2000	2002	2004	2006	2008	2010	2011	2012	Annual growth rates	
											'02-'07	'07-'12
<b>Milk production (cow's)</b>												
Production (mill t ECM)	2.92	2.82	2.80	2.80	2.70	2.75	2.76	2.65	2.71	2.78	-0.5%	0.4%
Cows (in 1,000's)	722	598	515	477	433	423	403	378	374	369	-3.0%	-2.1%
Milk yield (t / cow / year)	4.0	4.7	5.4	5.9	6.2	6.5	6.9	7.0	7.3	7.5	2.5%	2.5%
<b>Farm structure</b>												
No. of dairy farms (in 1,000's)	2	2	2	4	3	3	2	2	2	2	-6.6%	-3.8%
Average farm size (cows / farm)	319	297	226	133	147	158	164	161	171	175	3.9%	1.8%
<b>Prices in national currency</b>												
Milk : feed price ratio	1.5	1.8	1.7	1.9	1.8	2.3	1.6	1.7	1.5	1.3	-0.5%	-7.6%
Cull cow (CZK / kg live weight)	25.11	26.49	27.05	21.05	22.96	29.34	26.97	25.90	27.56	31.73	5.1%	3.3%
Land - buy (1,000 CZK / ha)	37	41	50	35	38	40	64	81	86		3.4%	

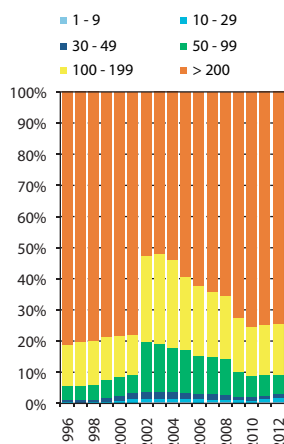
## Farm structure

% of dairy farms and cows in size classes (2012)



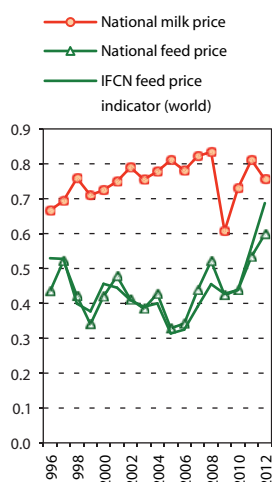
## Farm structure

% of cows per herd size



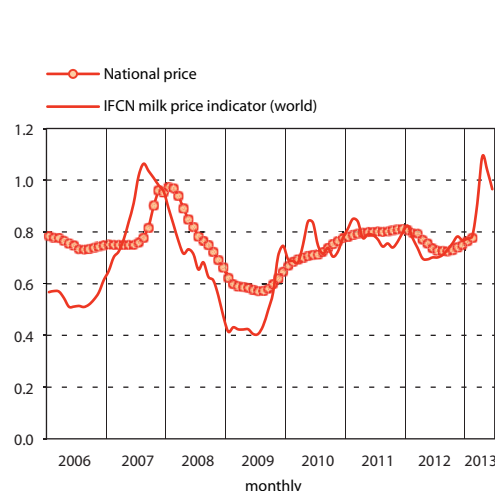
## Milk and feed price

1,000 CZK / 100 kg



## Farm gate milk prices

1,000 CZK / 100 kg milk (ECM)



\* size class where IFCN typical farms are

## Explanations

Sources: National statistics, FAO, AMI, IMF. 2013 data: Preliminary and partly estimated.

Milk map details: Data based on the year 2012, milk production.

Estimates done for: Farm structure: Farm structure 2002-2009, 2012 based on national surveys and statistics, 2010-11 interpolation.



**STATUS AND KEY DEVELOPMENTS**

**Status 2012**

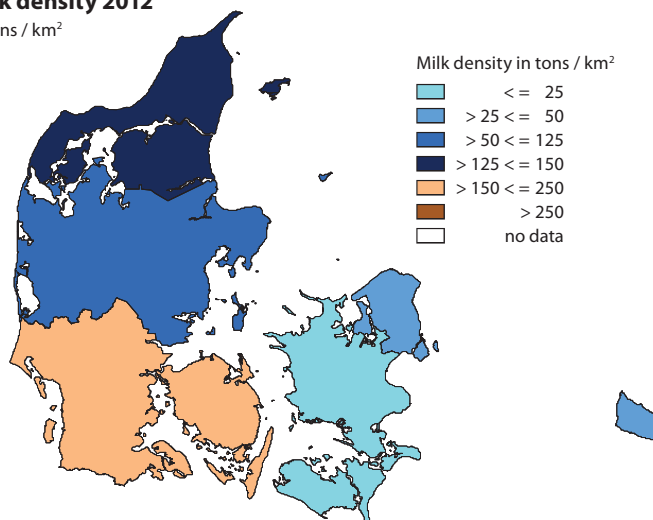
- Milk production (cow's): 5.3 mill t ECM (number 31 in the world)
- No. of dairy farms: 3,887
- Milk price: +15% to world market
- Feed price: -1% to world market

**Key developments over the past five years**

- Milk production growth: +1.6% per year
- Number of years the milk price was above world market level: 5
- Milk price was on average +17% to world market
- Feed price was on average +14% to world market

**Milk density 2012**

in tons / km<sup>2</sup>

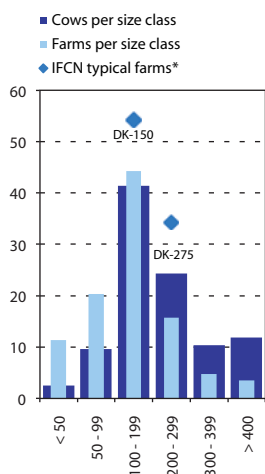


**Key variables**

	1996	1998	2000	2002	2004	2006	2008	2010	2011	2012	Annual growth rates '02-'07 '07-'12	
<b>Milk production (cow's)</b>												
Production (mill t ECM)	4.95	4.93	4.95	4.82	4.77	4.84	4.94	5.15	5.11	5.25	0.1%	1.6%
Cows (in 1,000's)	697	680	636	610	563	550	558	574	572	570	-2.2%	0.9%
Milk yield (t / cow / year)	7.1	7.3	7.8	7.9	8.5	8.8	8.8	9.0	8.9	9.2	2.4%	0.7%
<b>Farm structure</b>												
No. of dairy farms (in 1,000's)	15	12	11	9	7	6	5	4	4	4	-9.6%	-6.3%
Average farm size (cows / farm)	47	56	61	69	78	93	114	140	146	147	8.1%	7.7%
<b>Prices in national currency</b>												
Milk : feed price ratio	2.0	2.3	2.2	2.2	2.0	2.0	1.6	1.6	1.4	1.2	-4.4%	-7.2%
Cull cow (DKK / kg live weight)		7.36	7.09	6.01	5.82	7.69	7.60	6.55	7.77	9.16	5.3%	3.3%
Land - buy (DKK / ha)	59,250	73,000	84,268	102,182	112,567	180,403	239,642	183,566	174,028		14.1%	
Quota (DKK / kg milk)		2.92	3.59	2.85	4.43	4.47	1.55	2.06	0.98	0.25	-0.3%	-38.4%

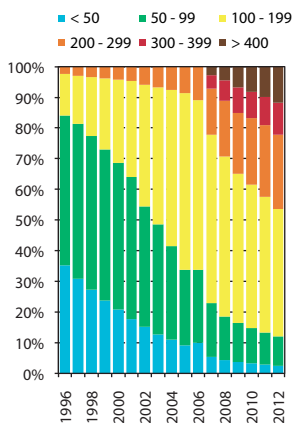
**Farm structure**

% of dairy farms and cows in size classes (2012)



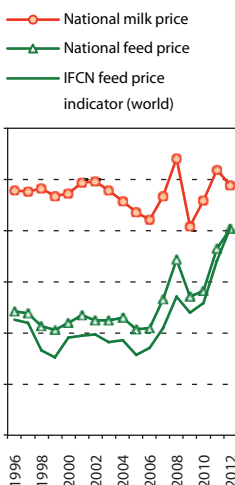
**Farm structure**

% of cows per herd size



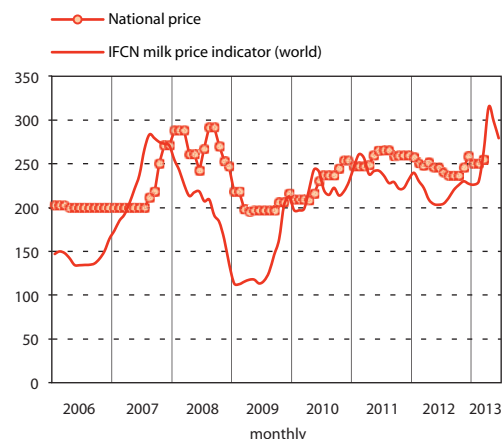
**Milk and feed price**

DKK / 100 kg



**Farm gate milk prices**

DKK / 100 kg milk (ECM)



\* size class where IFCN typical farms are

**Explanations**

**Sources:** National statistics, FAO, AMI, IMF. 2013 data: Preliminary and partly estimated.

**Milk map details:** Data based on the year 2012, milk production.

**Estimates done for:** Number of dairy farms 2011-2012.

**Remarks:** Feed prices are actual market prices, contracts not considered. Farm structure: Change in herd size classes from 2007.



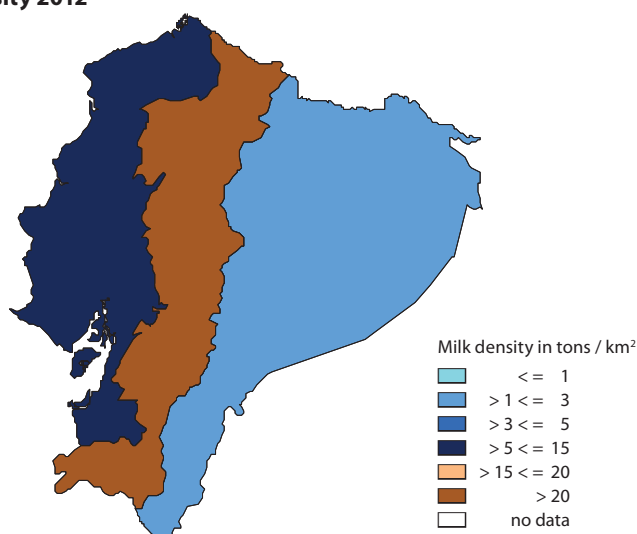


Rafael Vizcarra



## Milk density 2012

in tons / km<sup>2</sup>



## STATUS AND KEY DEVELOPMENTS

### Status 2012

- Milk production (cow's): 1.9 mill t ECM (number 54 in the world)
- No. of dairy farms: 299,000
- Milk price: +21% to world market
- Feed price: +16% to world market

### Key developments over the past five years

- Milk production growth: +4.2% per year
- Number of years the milk price was above world market level: 4
- Milk price was on average +6% to world market
- Feed price was on average +38% to world market

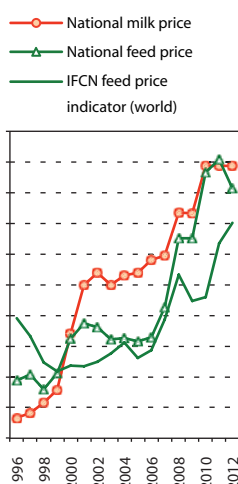
## Key variables

	1996	1998	2000	2002	2004	2006	2008	2010	2011	2012	Annual growth rates	
											'02-'07	'07-'12
<b>Milk production (cow's)</b>												
Production (mill t ECM)	1.63	1.59	1.21	1.30	1.47	1.52	1.57	1.64	1.95	1.91	3.6%	4.2%
Cows (in 1,000's)	825	988	1,117	1,179	1,260	1,371	1,467	1,484	1,590	1,513	4.2%	0.9%
Milk yield (t / cow / year)	2.0	1.6	1.1	1.1	1.2	1.1	1.1	1.1	1.2	1.3	-0.6%	3.3%
<b>Farm structure</b>												
No. of dairy farms (in 1,000's)	194	210	228	248	268	289	299	299	299	299	3.8%	0.0%
Average farm size (cows / farm)	4	5	5	5	5	5	5	5	5	5	0.3%	0.9%
<b>Prices in national currency</b>												
Milk : feed price ratio	0.4	0.7	1.0	1.5	1.6	1.8	1.1	1.0	1.0	1.1	-1.3%	-4.8%
Cull cow (USD / kg live weight)			0.80	1.23	1.05	1.05	1.13	1.21	0.85	0.80	-1.7%	-6.7%
Land - buy (USD / ha)							5,200	5,200	5,200	5,200		2.9%



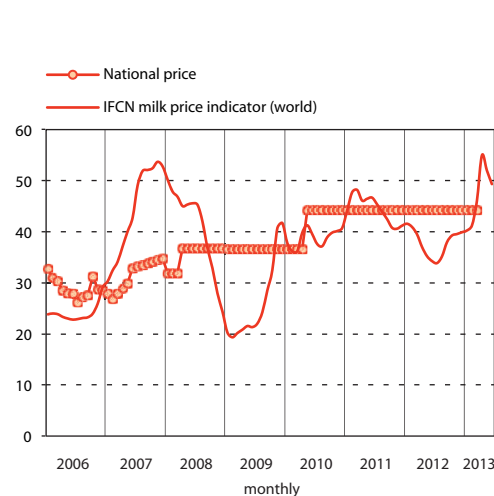
## Milk and feed price

USD / 100 kg



## Farm gate milk prices

USD / 100 kg milk (ECM)



## Explanations

**Sources:** National statistics, FAO, AMI, IMF. 2013 data: Preliminary and partly estimated.

**Milk map details:** Data based on the year 2012, milk production.

**Estimates done for:** Dairy farms: 2002-2006 interpolated. Soybean meal price 1996-2007: World market prices used since no statistical information is available.



Adel Khattab



**STATUS AND KEY DEVELOPMENTS**

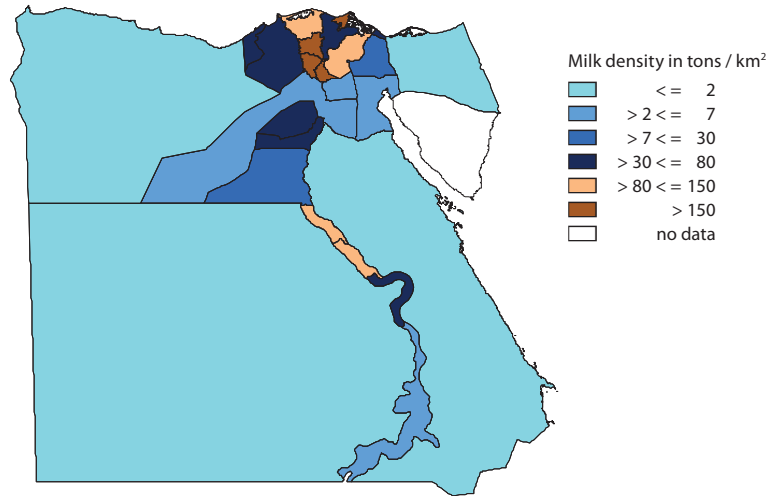
**Status 2012**

- Milk production (cow's and buffalo's): 7 mill t ECM (number 24 in the world)
- No. of dairy farms: 1,050,000
- Milk price: +153% to world market
- Feed price: +25% to world market

**Key developments over the past five years**

- Milk production growth: -0.8% per year
- Number of years the milk price was above world market level: 5
- Milk price was on average +101% to world market
- Feed price was on average +42% to world market

**Milk density 2012**  
in tons / km<sup>2</sup>

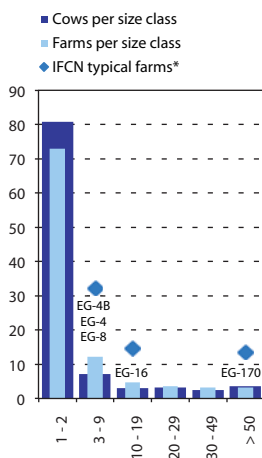


**Key variables**

	1996	1998	2000	2002	2004	2006	2008	2010	2011	2012	Annual growth rates	
											'02-'07	'07-'12
<b>Milk production (cow's and buffalo's)</b>												
Production (mill t ECM)	4.07	4.39	4.59	5.02	5.14	6.80	7.54	6.30	7.05	7.01	7.7%	-0.8%
Cows and buffalos (in 1,000's)	2,513	2,756	2,887	3,094	3,254	3,366	3,554	3,600	4,036	4,130	2.0%	3.8%
Milk yield (t / cow / year)	1.6	1.6	1.6	1.6	1.6	2.0	2.1	1.7	1.7	1.7	5.6%	-4.4%
<b>Farm structure</b>												
No. of dairy farms (in 1,000's)	535	612	725	866	945	981	994	975	1,050	1,050	2.8%	1.1%
Average farm size (cows / farm)	5	5	4	4	3	3	4	4	4	4	-0.8%	2.7%
<b>Prices in national currency</b>												
Milk : feed price ratio	1.5	2.1	2.5	2.6	2.7	3.4	2.0	1.9	2.1	2.1	-3.2%	-0.4%
Cull cow (EGP / kg live weight)	6.55	7.19	8.11	8.79	11.04	17	21	24	25	25	17.9%	4.6%
Land - buy (EGP / ha)	96,000	115,000	130,000	144,000	165,000	185,000	221,000	251,000	251,000	251,500	6.7%	4.8%

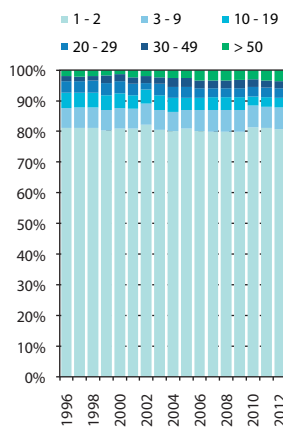
**Farm structure**

% of dairy farms and cows in size classes (2012)



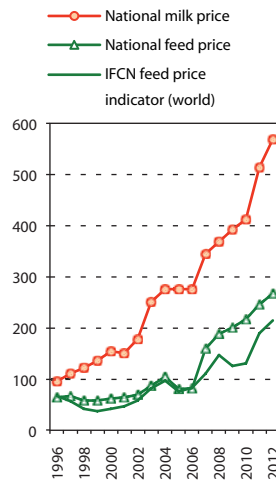
**Farm structure**

% of cows per herd size



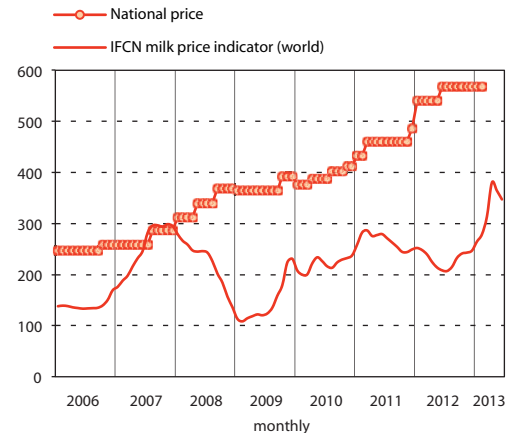
**Milk and feed price**

EGP / 100 kg



**Farm gate milk prices**

EGP / 100 kg milk (ECM)



\* size class where IFCN typical farms are

**Explanations**

**Sources:** National statistics, FAO, AMI, IMF. 2013 data: Preliminary and partly estimated.

**Milk map details:** Data based on the year 2012, milk production.

**Estimates done for:** Soybean meal price 1996-2006 lined to world market price.

**Remarks:** Farm structure: Cow number shows the total dairy herd.

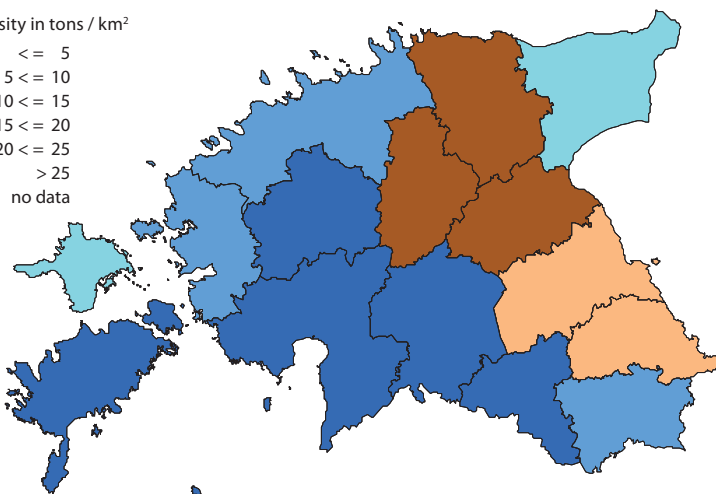
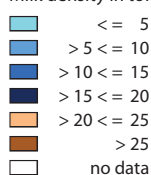
### 3.36 Estonia – Milk production fact sheet

Katri Kall

#### Milk density 2011

in tons / km<sup>2</sup>

Milk density in tons / km<sup>2</sup>

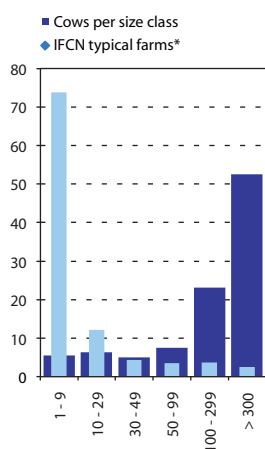


#### Key variables

	1996	1998	2000	2002	2004	2006	2008	2010	2011	2012	Annual growth rates '02-'07 '07-'12	
<b>Milk production (cow's)</b>												
Production (mill t ECM)	0.67	0.72	0.62	0.61	0.67	0.71	0.71	0.69	0.70	0.73	3.1%	0.5%
Cows (in 1,000's)	172	159	131	116	117	108	100	97	96	97	-2.3%	-1.2%
Milk yield (t / cow / year)	3.9	4.6	4.8	5.2	5.8	6.5	7.0	7.1	7.3	7.5	5.6%	1.8%
<b>Farm structure</b>												
No. of dairy farms (in 1,000's)	39	28	21	15	11	8	5	4	3	3	-16.4%	-13.3%
Average farm size (cows / farm)	4	6	6	8	11	14	20	27	29	32	16.8%	13.9%
<b>Prices in national currency</b>												
Milk : feed price ratio	1.3	1.6	1.5	1.6	1.8	2.1	1.8	1.8	1.6	1.2	0.0%	-5.4%
Cull cow (EUR / kg live weight)					0.66	0.84	0.89	0.94	1.05	1.27		10.5%
Land - buy (EUR / ha)		250	229	258	351	684	998	884	1,091	1,388	26.4%	10.8%
Quota (EUR / kg milk)												

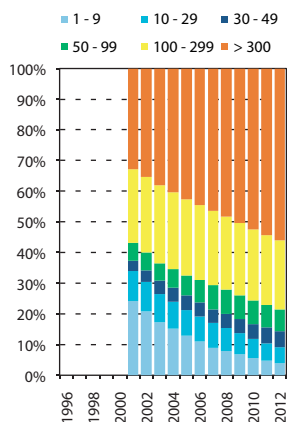
#### Farm structure

% of dairy farms and cows in size classes (2010)



#### Farm structure

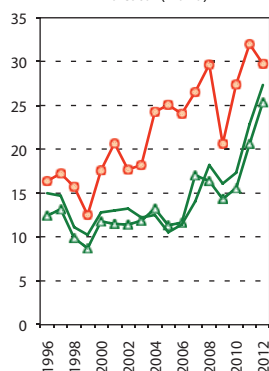
% of cows per herd size



#### Milk and feed price

EUR / 100 kg

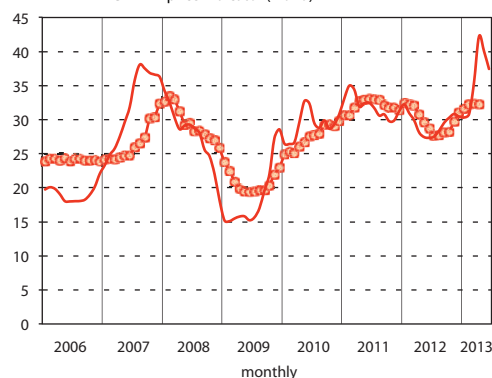
—○— National milk price  
—△— National feed price  
—□— IFCN feed price indicator (world)



#### Farm gate milk prices

EUR / 100 kg milk (ECM)

—○— National price  
—□— IFCN milk price indicator (world)



#### Explanations

Sources: National statistics, FAO, AMI, IMF. 2013 data: Preliminary and partly estimated.

Milk map details: Data based on the year 2011, milk production.

Estimates done for: Farm structure: Cow number 2011-2012 following the trend.

Remarks: Since no statistical information on soybean meal prices are available the world market price is used.





## STATUS AND KEY DEVELOPMENTS

### Status 2012

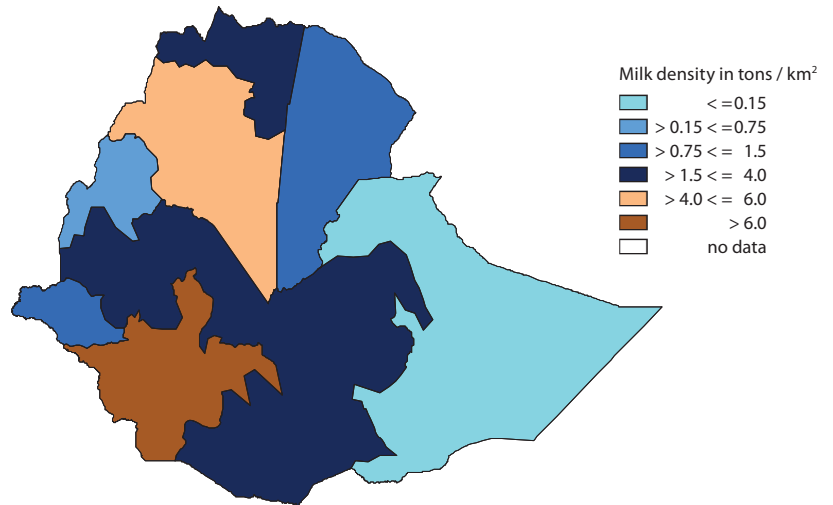
- Milk production (cow's): 3.4 mill t ECM (number 35 in the world)
- No. of dairy farms: 2,384,000
- Milk price: +26% to world market
- Feed price: +36% to world market

### Key developments over the past five years

- Milk production growth: +4.8% per year
- Number of years the milk price was above world market level: 5
- Milk price was on average +33% to world market
- Feed price was on average +69% to world market

## Milk density 2012

in tons / km<sup>2</sup>

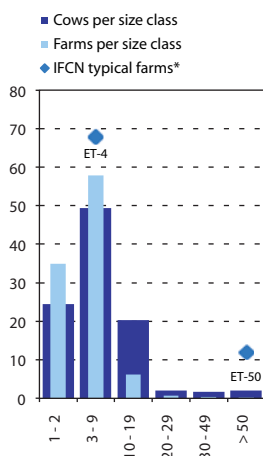


## Key variables

	1996	1998	2000	2002	2004	2006	2008	2010	2011	2012	Annual growth rates '02-'07 '07-'12	
<b>Milk production (cow's)</b>												
Production (mill t ECM)	0.96	0.98	1.34	1.66	2.52	2.40	3.33	3.04	4.19	3.44	10.4%	4.8%
Cows (in 1,000's)	8,809	10,894	10,360	9,307	8,713	8,194	9,923	9,628	10,677	10,578	-0.4%	3.0%
Milk yield (t / cow / year)	0.1	0.1	0.1	0.2	0.3	0.3	0.3	0.3	0.4	0.3	10.9%	1.8%
<b>Farm structure</b>												
No. of dairy farms (in 1,000's)	1,424	1,508	1,597	1,692	1,792	1,842	2,106	2,246	2,135	2,384	2.9%	4.1%
Average farm size (cows / farm)	6	7	6	6	5	4	5	4	5	4	-3.2%	-1.0%
<b>Prices in national currency</b>												
Milk : feed price ratio	1.4	1.8	2.1	3.1	2.0	2.7	1.1	1.2	1.0	1.0	-18.0%	-3.2%
Cull cow (ETB / kg live weight)				2.83	4.13	5.00	7.43	9.53	9.94	10.45	17.0%	11.0%
Land - buy (ETB / ha)												

## Farm structure

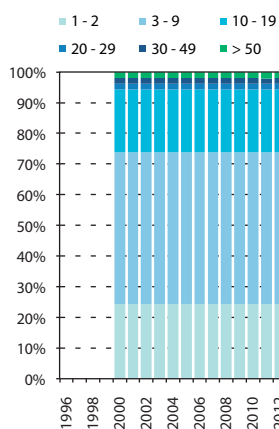
% of dairy farms and cows in size classes (2012)



\* size class where IFCN typical farms are

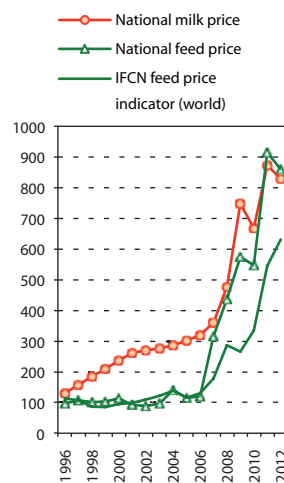
## Farm structure

% of cows per herd size



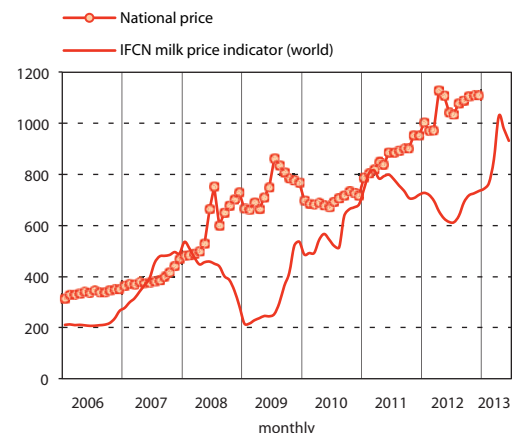
## Milk and feed price

ETB / 100 kg



## Farm gate milk prices

ETB / 100 kg milk (ECM)



## Explanations

**Sources:** National statistics, FAO, AMI, IMF. 2013 data: Preliminary and partly estimated.

**Milk map details:** Data based on the year 2012, milk production.

**Remarks:** Farm structure: Data based on the assumption that 20% of the cattle holding farms are dairy farms.

### 3.38 Finland – Milk production fact sheet



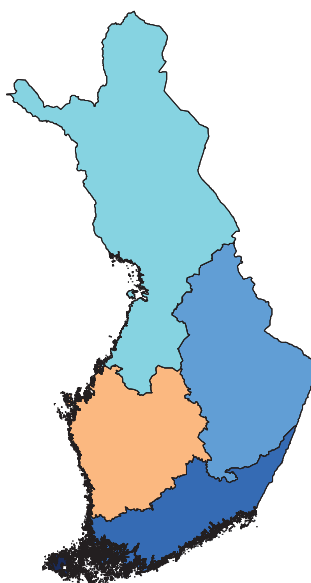
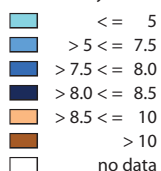
Sami Ovaska,  
Jukka Tauriainen,  
Anna-Maija Heikkilä,  
Matti Ryhänen



#### Milk density 2012

in tons / km<sup>2</sup>

Milk density in tons / km<sup>2</sup>



#### STATUS AND KEY DEVELOPMENTS

##### Status 2012

- Milk production (cow's): 2.4 mill t ECM (number 46 in the world)
- No. of dairy farms: 9,781
- Milk price: +50% to world market
- Feed price: -14% to world market

##### Key developments over the past five years

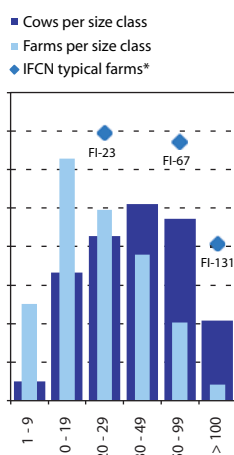
- Milk production growth: -0.3% per year
- Number of years the milk price was above world market level: 5
- Milk price was on average +43% to world market
- Feed price was on average +19% to world market

#### Key variables

	1996	1998	2000	2002	2004	2006	2008	2010	2011	2012	Annual growth rates '02-'07 '07-'12	
<b>Milk production (cow's)</b>												
Production (mill t ECM)	2.53	2.54	2.62	2.62	2.54	2.50	2.40	2.45	2.41	2.41	-1.4%	-0.3%
Cows (in 1,000's)	392	383	364	348	324	309	289	289	286	284	-3.2%	-0.9%
Milk yield (t / cow / year)	6.5	6.6	7.2	7.5	7.8	8.1	8.3	8.5	8.4	8.5	1.8%	0.6%
<b>Farm structure</b>												
No. of dairy farms (in 1,000's)	30	27	23	20	17	15	12	11	10	10	-7.2%	-6.6%
Average farm size (cows / farm)	13	14	16	17	19	20	23	26	28	29	4.4%	6.2%
<b>Prices in national currency</b>												
Milk : feed price ratio	1.7	1.7	1.7	1.9	1.8	1.9	1.6	1.9	1.6	1.8	-3.7%	2.5%
Cull cow (EUR / kg live weight)	0.75	0.71	0.62	0.48	0.51	0.59	0.68	0.66	0.69	0.82	4.6%	6.1%
Land - buy (EUR / ha)	2,663	3,141	3,933	4,301	5,200	5,971	6,648	7,743	8,000	7,356	7.8%	3.3%
Quota (EUR / kg milk)			0.13	0.25	0.26	0.19	0.10	0.04	0.08	0.09	-8.1%	-11.3%

#### Farm structure

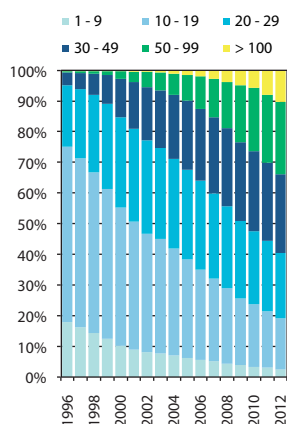
% of dairy farms and cows in size classes (2012)



\* size class where IFCN typical farms are

#### Farm structure

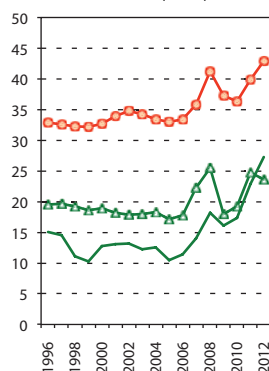
% of cows per herd size



#### Milk and feed price

EUR / 100 kg

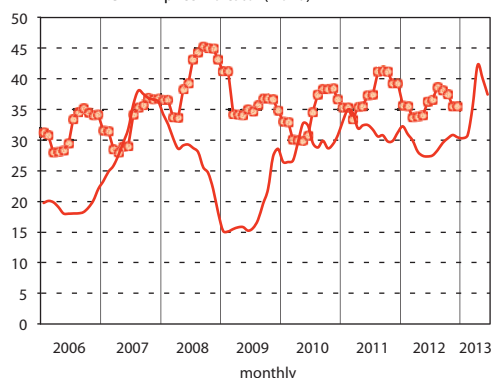
—○— National milk price  
—△— National feed price  
—■— IFCN feed price indicator (world)



#### Farm gate milk prices

EUR / 100 kg milk (ECM)

—○— National price  
—■— IFCN milk price indicator (world)



#### Explanations

Sources: National statistics, FAO, AMI, IMF. 2013 data: Preliminary and partly estimated.

Milk map details: Data based on the year 2012, milk production.

Remarks: Farm gate milk price is total producer price including supplements and deductions.



### STATUS AND KEY DEVELOPMENTS

#### Status 2012

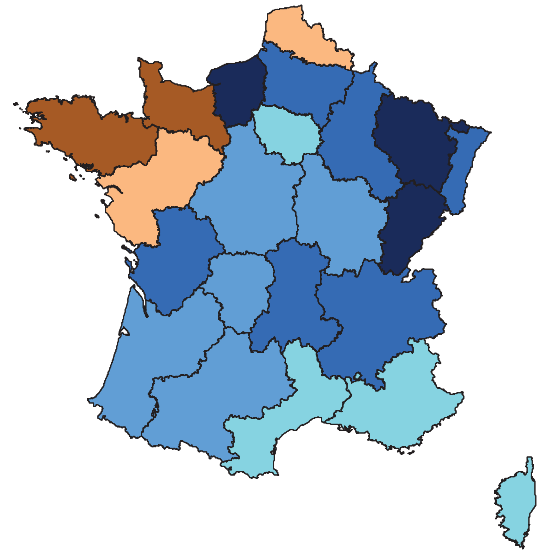
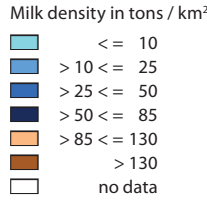
- Milk production (cow's): 24.8 mill t ECM (number 8 in the world)
- No. of dairy farms: 72,000
- Milk price: +12% to world market
- Feed price: +8% to world market

#### Key developments over the past five years

- Milk production growth: +1.2% per year
- Number of years the milk price was above world market level: 5
- Milk price was on average +19% to world market
- Feed price was on average +22% to world market

#### Milk density 2011

in tons / km<sup>2</sup>

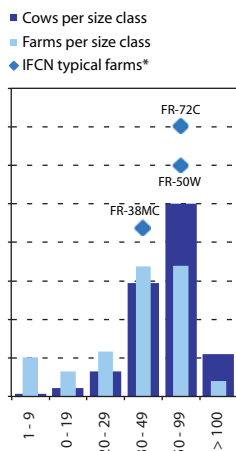


### Key variables

	1996	1998	2000	2002	2004	2006	2008	2010	2011	2012	Annual growth rates	
											'02-'07	'07-'12
<b>Milk production (cow's)</b>												
Production (mill t ECM)	25.20	25.01	24.99	25.31	24.41	24.31	24.25	24.04	25.00	24.83	-1.5%	1.2%
Cows (in 1,000's)	4,566	4,432	4,153	4,134	3,947	3,799	3,794	3,718	3,664	3,643	-1.9%	-0.6%
Milk yield (t / cow / year)	5.5	5.6	6.0	6.1	6.2	6.4	6.4	6.5	6.8	6.8	0.3%	1.8%
<b>Farm structure</b>												
No. of dairy farms (in 1,000's)	155	138	127	118	108	99	87	78	75	72	-4.5%	-5.1%
Average farm size (cows / farm)	30	32	33	35	36	38	44	48	49	51	2.8%	4.7%
<b>Prices in national currency</b>												
Milk : feed price ratio	1.4	1.7	1.9	2.0	1.9	1.9	1.6	1.4	1.3	1.1	-5.7%	-6.3%
Cull cow (EUR / kg live weight)	1.14	1.31	1.23	1.06	1.23	1.39	1.39	1.32	1.46	1.70	5.3%	4.5%
Land - buy (EUR / ha)	2,860	3,160	3,570	4,063	4,333	4,616	5,038	5,120	5,427		3.3%	
Quota (EUR / kg milk)	No open quota market											

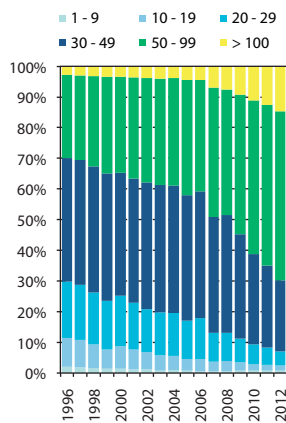
### Farm structure

% of dairy farms and cows in size classes (2010)



### Farm structure

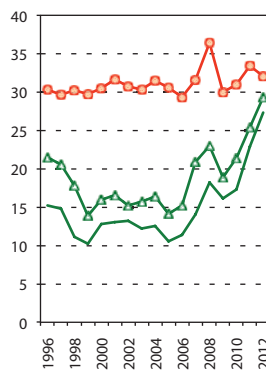
% of cows per herd size



### Milk and feed price

EUR / 100 kg

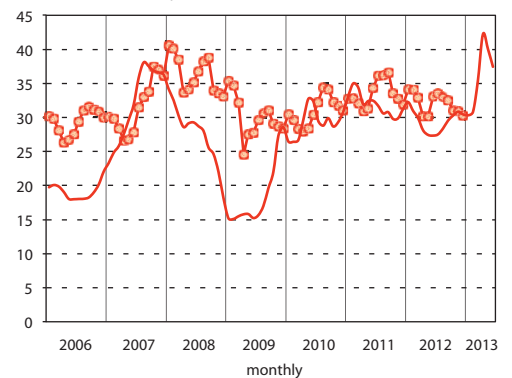
○ National milk price  
△ National feed price  
— IFCN feed price indicator (world)



### Farm gate milk prices

EUR / 100 kg milk (ECM)

○ National price  
— IFCN milk price indicator (world)



\* size class where IFCN typical farms are

### Explanations

**Sources:** National statistics, FAO, AMI, IMF. 2013 data: Preliminary and partly estimated.

**Milk map details:** Data based on the year 2011, milk production.

**Estimates done for:** Farm structure: Cow number 2011-2012 following the trend, 2009 interpolation.





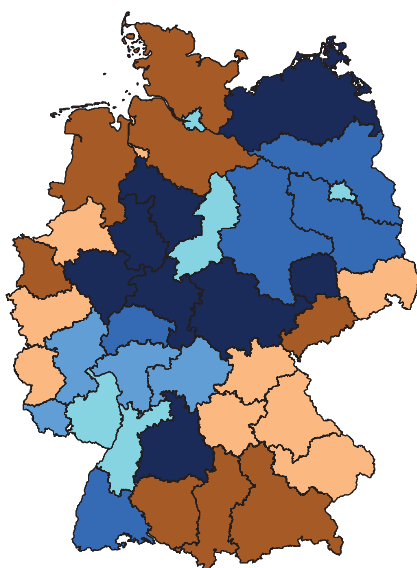
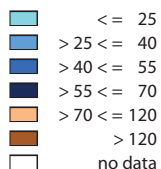
Eva Schröder-Merker



## Milk density 2012

in tons / km<sup>2</sup>

Milk density in tons / km<sup>2</sup>



## STATUS AND KEY DEVELOPMENTS

### Status 2012

- Milk production (cow's): 31.3 mill t ECM (number 6 in the world)
- No. of dairy farms: 82,865
- Milk price: +10% to world market
- Feed price: -3% to world market

### Key developments over the past five years

- Milk production growth: +1.4% per year
- Number of years the milk price was above world market level: 5
- Milk price was on average +13% to world market
- Feed price was on average +11% to world market

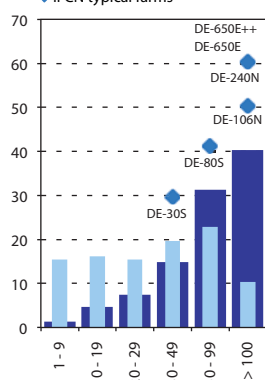
## Key variables

	1996	1998	2000	2002	2004	2006	2008	2010	2011	2012	Annual growth rates	
											'02-'07	'07-'12
<b>Milk production (cow's)</b>												
Production (mill t ECM)	30.00	29.49	29.36	28.80	29.28	28.76	29.42	30.49	31.07	31.30	0.3%	1.4%
Cows (in 1,000's)	5,195	4,833	4,564	4,373	4,287	4,054	4,229	4,182	4,190	4,190	-1.3%	0.5%
Milk yield (t / cow / year)	5.8	6.1	6.4	6.6	6.8	7.1	7.0	7.3	7.4	7.5	1.7%	0.9%
<b>Farm structure</b>												
No. of dairy farms (in 1,000's)	186	164	139	125	114	102	99	92	87	83	-4.6%	-3.5%
Average farm size (cows / farm)	28	30	33	35	38	40	43	46	48	51	3.4%	4.1%
<b>Prices in national currency</b>												
Milk : feed price ratio	1.8	2.1	2.1	2.1	2.0	2.0	1.4	1.8	1.5	1.2	-2.1%	-9.2%
Cull cow (EUR / kg live weight)	1.11	1.18	1.17	0.94	1.06	1.28	1.40	1.43	1.71	2.05	6.0%	10.2%
Land - buy (EUR / ha)	10,394	9,500	9,081	9,465	9,233	8,909	9,955	11,854	13,493	15,359	-0.6%	10.8%
Quota (EUR / kg milk)	0.82	0.85	0.57	0.72	0.43	0.48	0.34	0.09	0.08	0.10	-12.1%	-22.7%

## Farm structure

% of dairy farms and cows in size classes (2012)

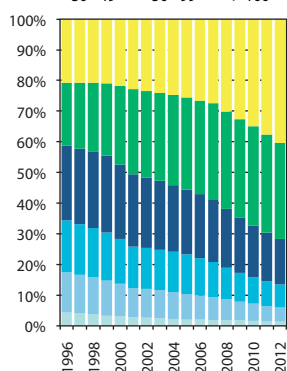
- Cows per size class
- Farms per size class
- ◆ IFCN typical farms\*



## Farm structure

% of cows per herd size

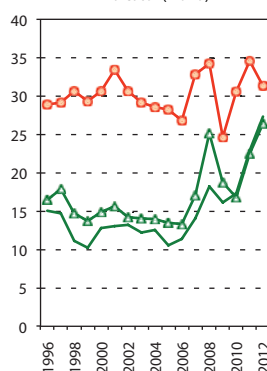
- 1 - 9
- 10 - 19
- 20 - 29
- 30 - 49
- 50 - 99
- > 100



## Milk and feed price

EUR / 100 kg

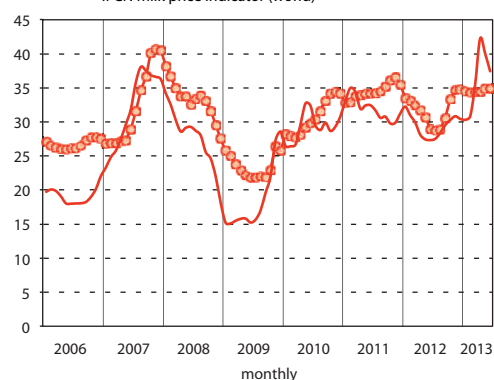
- National milk price
- △ National feed price
- IFCN feed price indicator (world)



## Farm gate milk prices

EUR / 100 kg milk (ECM)

- National price
- IFCN milk price indicator (world)



\* size class where IFCN typical farms are

## Explanations

Sources: National statistics, FAO, AMI, IMF. 2013 data: Preliminary and partly estimated.

Milk map details: Data based on the year 2012, milk production.

Estimates done for: Regional milk production 2012 based on overall trend. Land prices for 2012 based on trend.





Stathis Klonaris



**STATUS AND KEY DEVELOPMENTS**

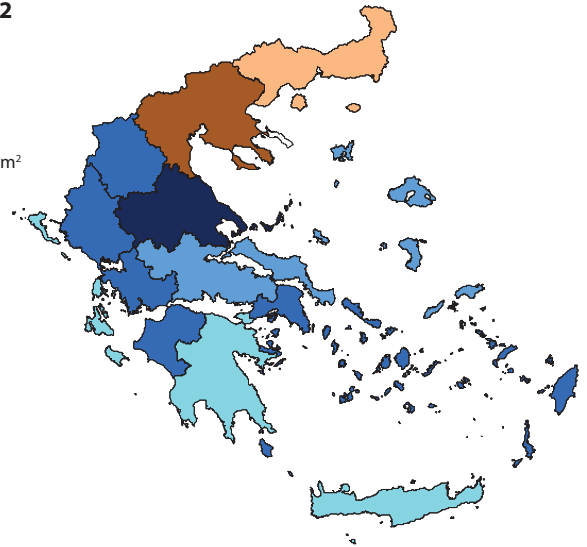
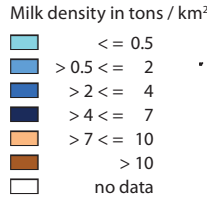
**Status 2012**

- Milk production (cow's): 0.8 mill t ECM (number 47 in the world)
- No. of dairy farms: 5,000
- Milk price: +59% to world market
- Feed price: +34% to world market

**Key developments over the past five years**

- Milk production growth: +0.4% per year
- Number of years the milk price was above world market level: 5
- Milk price was on average +51% to world market
- Feed price was on average +45% to world market

**Milk density 2012**  
in tons / km<sup>2</sup>

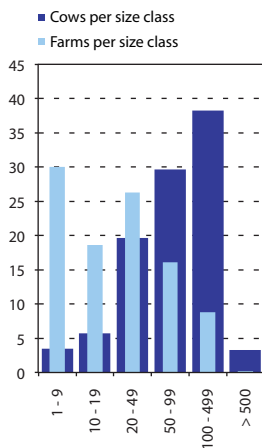


**Key variables**

	1996	1998	2000	2002	2004	2006	2008	2010	2011	2012	Annual growth rates	
											'02-'07	'07-'12
<b>Milk production (cow's)</b>												
Production (mill t ECM)	0.74	0.74	0.78	0.75	0.71	0.74	0.78	0.73	0.75	0.78	0.2%	0.4%
Cows (in 1,000's)	185	172	180	152	150	168	154	131	130	130	0.7%	-3.8%
Milk yield (t / cow / year)	4.0	4.3	4.4	4.9	4.7	4.4	5.1	5.6	5.8	6.0	-0.5%	4.4%
<b>Farm structure</b>												
No. of dairy farms (in 1,000's)	24	17	12	12	11	9	7	6	5	5	-7.3%	-9.0%
Average farm size (cows / farm)	8	10	15	13	14	19	21	23	24	26	8.6%	5.8%
<b>Prices in national currency</b>												
Milk : feed price ratio	2.0	2.0	2.1	2.2	2.1	2.2	1.5	1.6	1.5	1.2	-6.5%	-4.3%
Cull cow (EUR / kg live weight)												
Land - buy (EUR / ha)												
Quota (EUR / kg milk)												

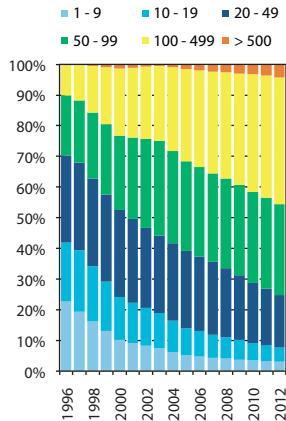
**Farm structure**

% of dairy farms and cows in size classes (2010)



**Farm structure**

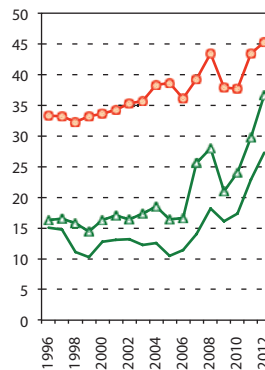
% of cows per herd size



**Milk and feed price**

EUR / 100 kg

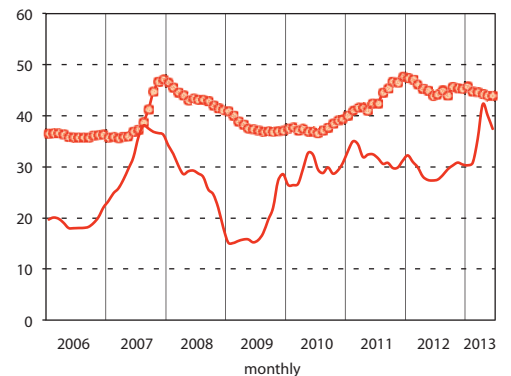
—○— National milk price  
—△— National feed price  
—■— IFCN feed price indicator (world)



**Farm gate milk prices**

EUR / 100 kg milk (ECM)

—○— National price  
—■— IFCN milk price indicator (world)



**Explanations**

**Sources:** National statistics, FAO, AMI, IMF. 2013 data: Preliminary and partly estimated.

**Milk map details:** Data based on the year 2012, milk production.

**Estimates done for:** 2012 milk production, milk delivered, regional milk production. Farm structure: Cow number 2008-2012 following the trend.

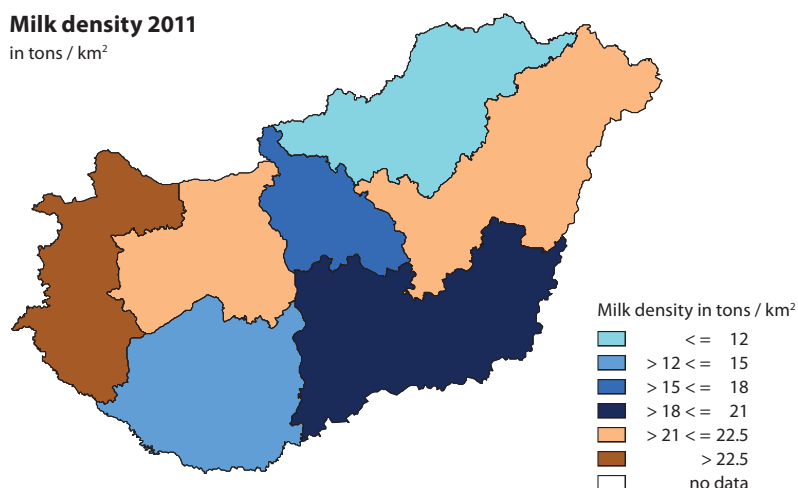


Daniel Mándi-Nagy



## Milk density 2011

in tons / km<sup>2</sup>



## STATUS AND KEY DEVELOPMENTS

### Status 2012

- Milk production (cow's): 1.7 mill t ECM (number 62 in the world)
- No. of dairy farms: 13,484
- Milk price: +8% to world market
- Feed price: -8% to world market

### Key developments over the past five years

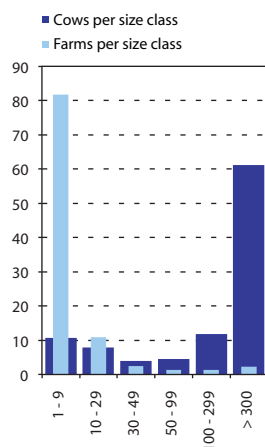
- Milk production growth: -0.1% per year
- Number of years the milk price was above world market level: 4
- Milk price was on average +5% to world market
- Feed price was on average +5% to world market

## Key variables

	1996	1998	2000	2002	2004	2006	2008	2010	2011	2012	Annual growth rates '02-'07 '07-'12	
<b>Milk production (cow's)</b>												
Production (mill t ECM)	1.92	1.99	2.02	2.01	1.81	1.75	1.77	1.64	1.65	1.75	-2.6%	-0.1%
Cows (in 1,000's)	386	384	355	338	304	268	264	240	250	253	-4.7%	-1.0%
Milk yield (t / cow / year)	5.0	5.2	5.7	5.9	5.9	6.5	6.7	6.8	6.6	6.9	2.2%	0.9%
<b>Farm structure</b>												
No. of dairy farms (in 1,000's)	44	36	35	25	18	13	13	11	14	13	-13.4%	2.1%
Average farm size (cows / farm)	9	11	10	14	16	21	21	21	18	19	10.0%	-3.0%
<b>Prices in national currency</b>												
Milk : feed price ratio	1.2	2.4	1.9	2.4	1.9	1.9	2.0	1.4	1.5	1.2	-8.9%	-4.0%
Cull cow (HUF / kg live weight)					181.54	217.37	225.44	237.49	297.73	344.12		10.1%
Land - buy (1,000 HUF / ha)					346	388	439	473	535			
Quota (HUF / kg milk)												

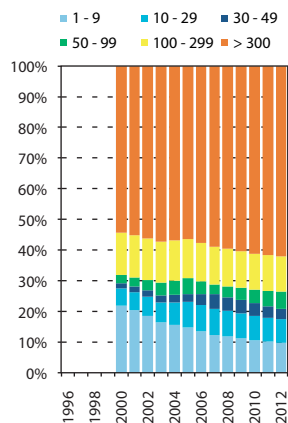
## Farm structure

% of dairy farms and cows in size classes (2010)



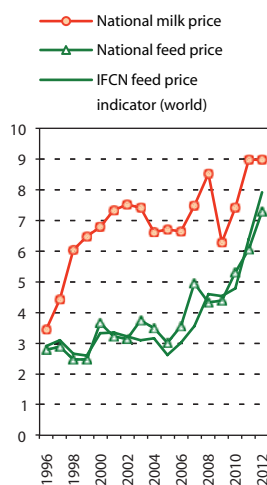
## Farm structure

% of cows per herd size



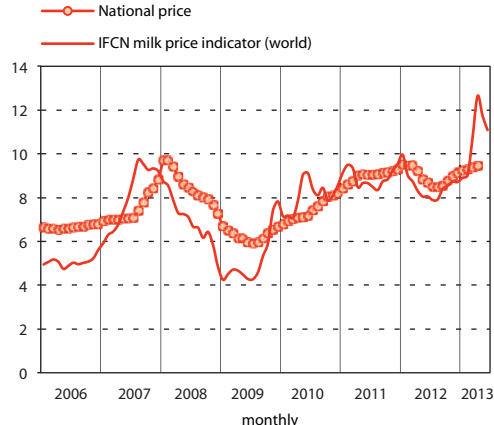
## Milk and feed price

1,000 HUF / 100 kg



## Farm gate milk prices

1,000 HUF / 100 kg milk (ECM)



## Explanations

**Sources:** National statistics, FAO, AMI, IMF. 2013 data: Preliminary and partly estimated.

**Milk map details:** Data based on the year 2011, milk production.

**Estimates done for:** Farm structure: Cow number 2011-2012 following the trend. Herd size classes >100 cows for the whole time series.





Baldur H. Benjamínsson



## 3.43 Iceland – Milk production fact sheet

### STATUS AND KEY DEVELOPMENTS

#### Status 2012

- Milk production (cow's): 0.1 mill t ECM (number 124 in the world)
- No. of dairy farms: 660
- Milk price: +73% to world market
- Feed price: +89% to world market

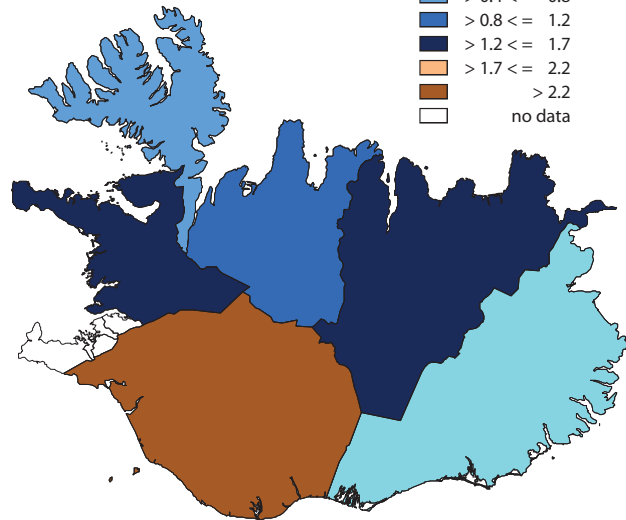
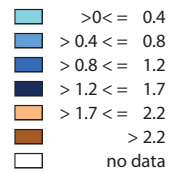
#### Key developments over the past five years

- Milk production growth: -0.4% per year
- Number of years the milk price was above world market level: 5
- Milk price was on average +75% to world market
- Feed price was on average +147% to world market

### Milk density 2012

in tons / km<sup>2</sup>

Milk density in tons / km<sup>2</sup>

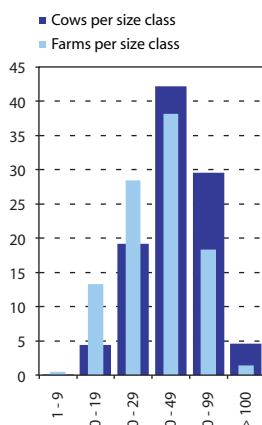


### Key variables

	1996	1998	2000	2002	2004	2006	2008	2010	2011	2012	Annual growth rates '02-'07 '07-'12	
<b>Milk production (cow's)</b>												
Production (mill t ECM)	0.10	0.11	0.11	0.12	0.12	0.12	0.14	0.14	0.13	0.13	2.5%	-0.4%
Cows (in 1,000's)	30	29	28	26	25	24	26	26	26	26	0.0%	0.0%
Milk yield (t / cow / year)	3.5	3.7	4.1	4.7	4.9	5.0	5.3	5.3	5.2	5.2	2.5%	-0.4%
<b>Farm structure</b>												
No. of dairy farms (in 1,000's)	1.29	1.18	1.03	0.92	0.85	0.74	0.70	0.69	0.68	0.66	-4.6%	-2.1%
Average farm size (cows / farm)	23	24	27	28	29	32	37	38	38	39	4.9%	2.1%
<b>Prices in national currency</b>												
Milk : feed price ratio	1.1	1.2	1.4	1.5	1.4	1.3	1.0	1.0	1.2	1.0	-5.5%	-3.0%
Cull cow (ISK / kg live weight)				123	153	213	240	260	260	260	12.5%	3.2%
Land - buy (1,000 ISK / ha)												
Quota (ISK / kg milk)					308	280	288	280	288	303		0.3%

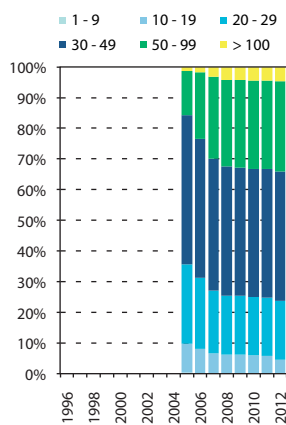
### Farm structure

% of dairy farms and cows in size classes (2012)



### Farm structure

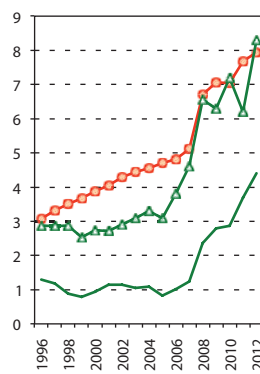
% of cows per herd size



### Milk and feed price

1,000 ISK / 100 kg

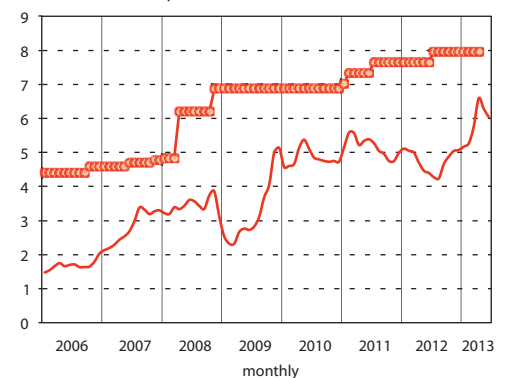
—○— National milk price  
—△— National feed price  
—■— IFCN feed price indicator (world)



### Farm gate milk prices

1,000 ISK / 100 kg milk (ECM)

—○— National price  
—■— IFCN milk price indicator (world)



### Explanations

**Sources:** National statistics, FAO, AMI, IMF. 2013 data: Preliminary and partly estimated.

**Milk map details:** Data based on the year 2012, milk production.

**Estimates done for:** Cull cow price based on carcass price.

## 3.44 India – Milk production fact sheet



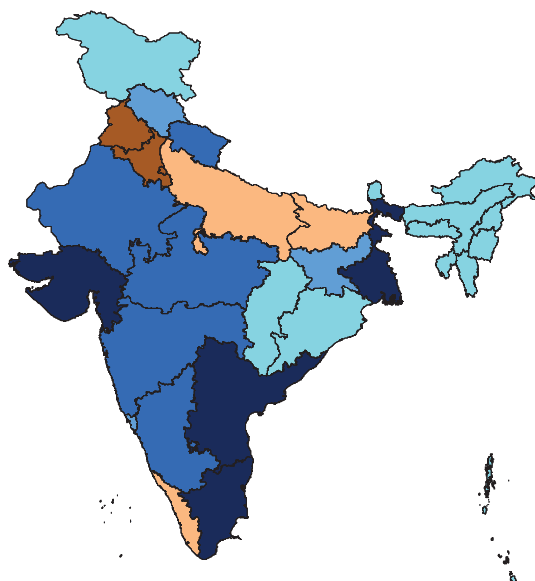
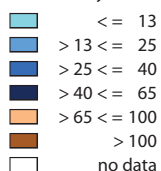
Dr. A. K. Srivastava,  
Smita Sirohi



### Milk density 2011

in tons / km<sup>2</sup>

Milk density in tons / km<sup>2</sup>



### STATUS AND KEY DEVELOPMENTS

#### Status 2012

- Milk production (cow's and buffalo's): 143.1 mill t ECM (number 1 in the world)
- No. of dairy farms: 76,9 mill
- Milk price: +7% to world market
- Feed price: +3% to world market

#### Key developments over the past five years

- Milk production growth: +4.2% per year
- Number of years the milk price was above world market level: 2
- Milk price was on average -11% to world market
- Feed price was on average +3% to world market

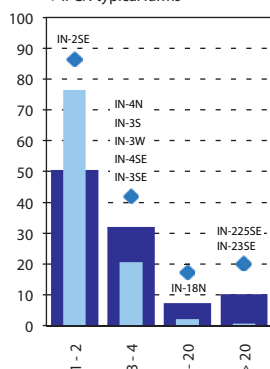
### Key variables

	1996	1998	2000	2002	2004	2006	2008	2010	2011	2012	Annual growth rates	
											'02-'07	'07-'12
<b>Milk production (cow's and buffalo's)</b>												
Production (mill t ECM)	74.62	80.61	87.34	93.01	99.45	109.58	121.38	131.59	137.54	143.10	4.6%	4.2%
Cows and buffalos (in 1,000's)	100,962	102,767	103,768	106,296	106,722	109,611	112,592	115,667	117,240	118,838	0.9%	1.4%
Milk yield (t / cow / year)	0.7	0.8	0.8	0.9	0.9	1.0	1.1	1.1	1.2	1.2	3.6%	2.8%
<b>Farm structure</b>												
No. of dairy farms (in 1,000's)	50,481	51,335	55,911	60,487	65,063	70,970	72,900	74,891	75,910	76,940	3.5%	1.4%
Average farm size (cows / farm)	2	2	2	2	2	2	2	2	2	2	-2.5%	0.0%
<b>Prices in national currency</b>												
Milk : feed price ratio	1.4	1.6	1.3	1.5	1.3	1.6	1.2	1.5	1.2	1.1	-2.8%	-4.2%
Cull cow (INR / kg live weight)	10.50	11.00	11.50	12.30	13.00	13.53	21.14	25.71	26.67	28.33	9.5%	7.9%
Land - buy (1,000 INR / ha)	700	715	750	800	850	917	1,056	1,312	1,448	1,585	4.0%	10.2%

### Farm structure

% of dairy farms and cows in size classes (2004)

- Cows per size class
- Farms per size class
- ◆ IFCN typical farms\*

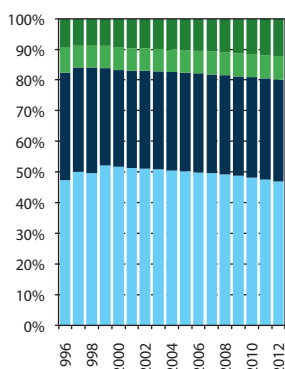


\* size class where IFCN typical farms are

### Farm structure

% of cows per herd size

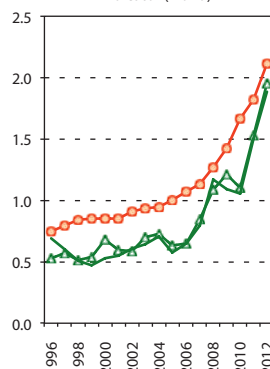
- 1 - 2
- 3 - 4
- 5 - 20
- > 20



### Milk and feed price

1,000 INR / 100 kg

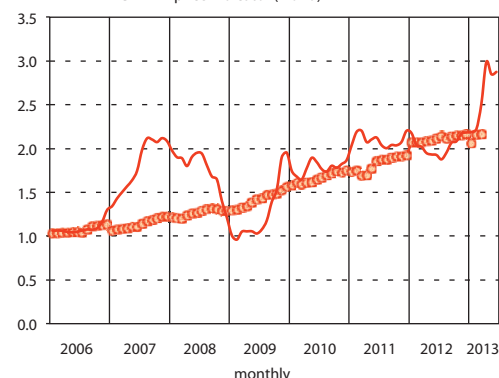
- National milk price
- △— National feed price
- IFCN feed price indicator (world)



### Farm gate milk prices

1,000 INR / 100 kg milk (ECM)

- National price
- IFCN milk price indicator (world)



### Explanations

**Sources:** National statistics, FAO, AMI, IMF. 2013 data: Preliminary and partly estimated.

**Milk map details:** Data based on the year 2011, milk production.

**Estimates done for:** Farm structure based on livestock census 1997 and projections. Milk price 2007-2011 based on index to consumer price for milk. Cow and Buffalo numbers 1996. Dairy farm numbers based on the census 1996 and 1998-2005. Land price 2007-2008.

**Remarks:** Cull cow price: average salvage value of cows and buffaloes. Land price 2011-2012: average price and rent of the irrigated land in the selected states viz. Punjab, Maharashtra, West Bengal, Karnataka.







## 3.45 Indonesia – Milk production fact sheet

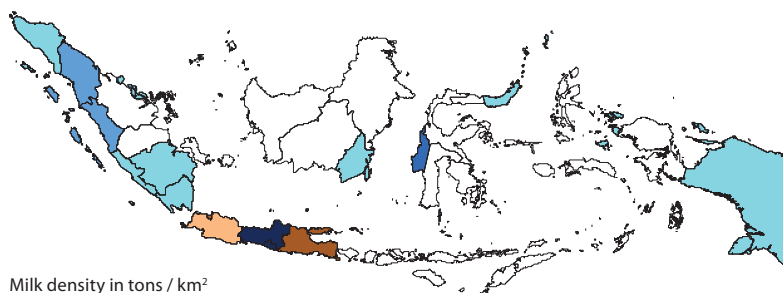


Istiqomah

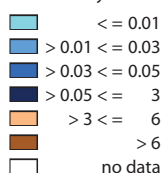


### Milk density 2009

in tons / km<sup>2</sup>



Milk density in tons / km<sup>2</sup>



### Key variables

	1996	1998	2000	2002	2004	2006	2008	2010	2011	2012	Annual growth rates	
											'02-'07	'07-'12
<b>Milk production (cow's)</b>												
Production (mill t ECM)	0.44	0.37	0.49	0.49	0.55	0.61	0.64	0.92	0.99	1.05	2.8%	13.4%
Cows (in 1,000's)	334	322	354	358	364	369	458	495	516	538	0.9%	7.5%
Milk yield (t / cow / year)	1.3	1.2	1.4	1.4	1.5	1.7	1.4	1.9	1.9	2.0	2.0%	5.4%
<b>Farm structure</b>												
No. of dairy farms (in 1,000's)	104	108	113	117	121	125	129	133	135	137	1.7%	1.6%
Average farm size (cows / farm)	3	3	3	3	3	3	4	4	4	4	-0.8%	5.8%
<b>Prices in national currency</b>												
Milk : feed price ratio	1.0	0.6	1.0	1.0	0.8	0.9	1.3	1.2	1.2	1.1	4.6%	-2.4%
Cull cow (IDR / kg live weight)			15,170	20,511	21,471	27,328	33,832				7.7%	
Land - buy (1,000 IDR / ha)							300,000					

### STATUS AND KEY DEVELOPMENTS

#### Status 2012

- Milk production (cow's): 1.1 mill t ECM (number 65 in the world)
- No. of dairy farms: 137,429
- Milk price: -1% to world market
- Feed price: -2% to world market

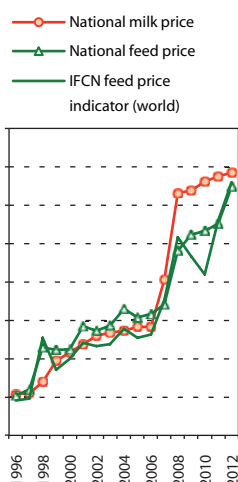
#### Key developments over the past five years

- Milk production growth: +13.4% per year
- Number of years the milk price was above world market level: 1
- Milk price was on average -12% to world market
- Feed price was on average +4% to world market



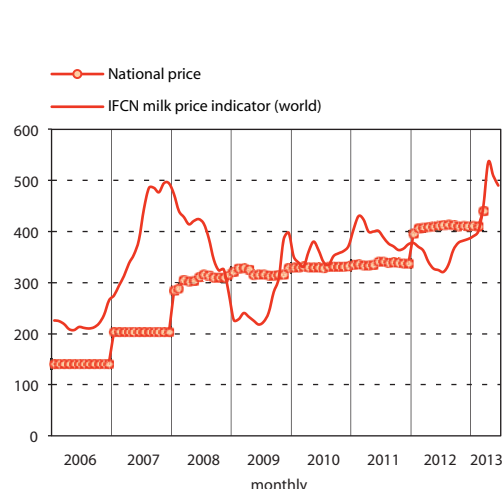
### Milk and feed price

1,000 IDR / 100 kg



### Farm gate milk prices

1,000 IDR / 100 kg milk (ECM)



### Explanations

Sources: National statistics, FAO, AMI, IMF. 2013 data: Preliminary and partly estimated.

Milk map details: Data based on the year 2009, milk production.

Estimates done for: Cow numbers 2011-12. Dairy farm numbers based on the 1993 and 2003 census. Soybean meal price 2012.

#### Country supporter:

The participation in the IFCN was supported by Nestle.





**STATUS AND KEY DEVELOPMENTS**

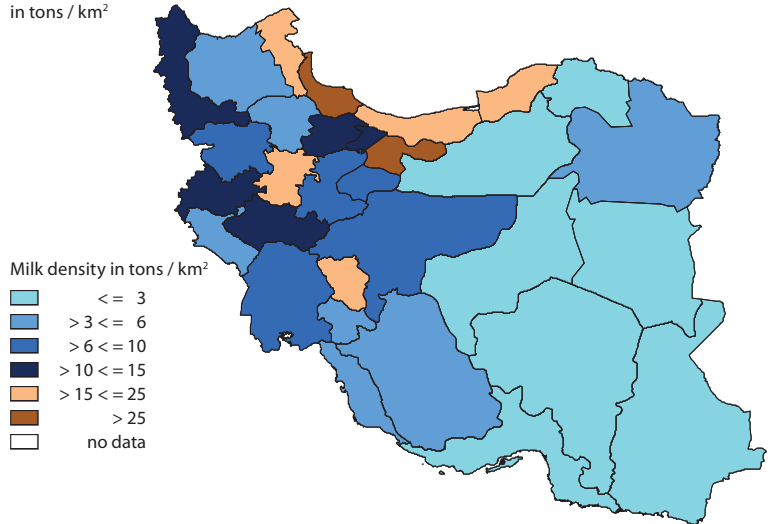
**Status 2012**

- Milk production (cow's and buffalo's): 9 mill t ECM (number 18 in the world)
- No. of dairy farms: 1,065,714
- Milk price: +71% to world market
- Feed price: +26% to world market

**Key developments over the past five years**

- Milk production growth: +3.3% per year
- Number of years the milk price was above world market level: 5
- Milk price was on average +36% to world market
- Feed price was on average +47% to world market

**Milk density 2009**  
in tons / km<sup>2</sup>

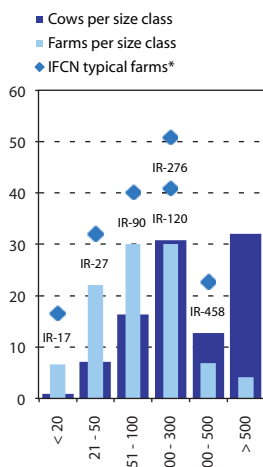


**Key variables**

	1996	1998	2000	2002	2004	2006	2008	2010	2011	2012	Annual growth rates	
											'02-'07	'07-'12
<b>Milk production (cow's and buffalo's)</b>												
Production (mill t ECM)	3.99	4.29	5.01	5.23	6.11	7.10	8.07	10.04	9.75	9.04	7.9%	3.3%
Cows and buffalos (in 1,000's)	3,366	3,547	3,830	3,650	3,707	3,830	3,730	3,730	3,730	3,730	1.0%	-0.5%
Milk yield (t / cow / year)	1.2	1.2	1.3	1.4	1.6	1.9	2.2	2.7	2.6	2.4	6.9%	3.9%
<b>Farm structure</b>												
No. of dairy farms (in 1,000's)	1,122	1,182	1,277	1,217	1,236	1,197	1,130	1,066	1,066	1,066	-0.3%	-2.3%
Average farm size (cows / farm)	3	3	3	3	3	3	3	4	4	4	1.3%	1.8%
<b>Prices in national currency</b>												
Milk : feed price ratio	0.7	1.0	1.3	1.3	1.4	1.3	1.1	1.3	1.3	1.4	-2.4%	4.0%
Cull cow (IRR / kg live weight)		6,431	8,348	12,199	15,738	19,590	26,424	38,814	43,923	75,906	14.3%	26.1%
Land - buy (1,000 IRR / ha)												

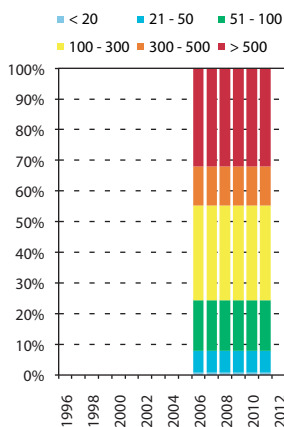
**Farm structure**

% of dairy farms and cows in size classes (2011)



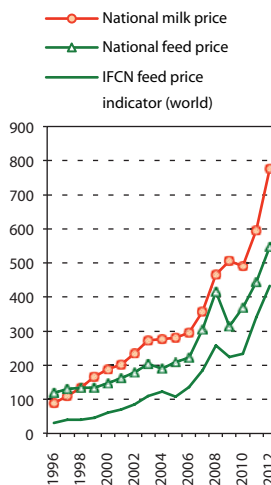
**Farm structure**

% of cows per herd size



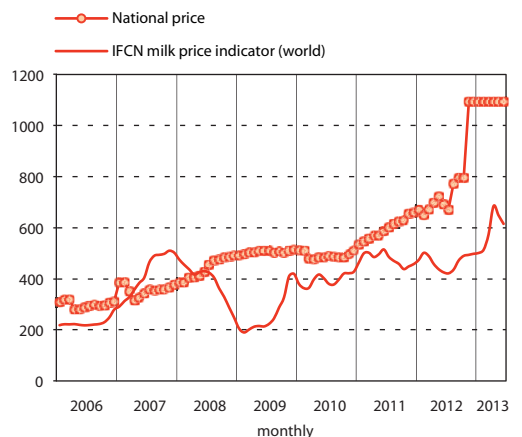
**Milk and feed price**

1,000 IRR / 100 kg



**Farm gate milk prices**

1,000 IRR / 100 kg milk (ECM)



\* size class where IFCN typical farms are

**Explanations**

**Sources:** National statistics, FAO, AMI, IMF. 2013 data: Preliminary and partly estimated.

**Milk map details:** Data based on the year 2009, milk production.

**Estimates done for:** Farm structure: Cow number 2012 following the trend. Milk cow number 2010-2012. Buffalo number 2010-2012.

**Remarks:** Farm structure: Industrial dairy farms producing 1/3 of country milk production. Since no statistical information in feed prices have been available for 1996-2003 the world market price trends are used. Increase in feed price and milk price due to high inflation rate.



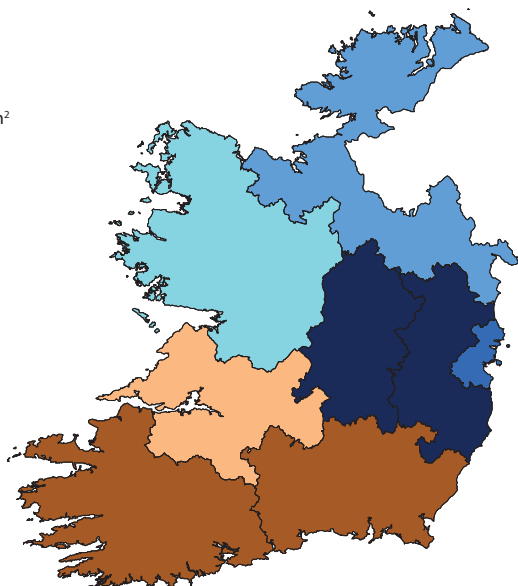
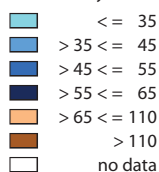
Fiona Thorne



## Milk density 2012

in tons / km<sup>2</sup>

Milk density in tons / km<sup>2</sup>



## STATUS AND KEY DEVELOPMENTS

### Status 2012

- Milk production (cow's): 5.3 mill t ECM (number 30 in the world)
- No. of dairy farms: 17,000
- Milk price: +16% to world market
- Feed price: +30% to world market

### Key developments over the past five years

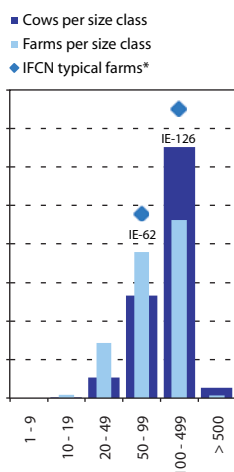
- Milk production growth: +0.9% per year
- Number of years the milk price was above world market level: 5
- Milk price was on average +14% to world market
- Feed price was on average +62% to world market

## Key variables

	1996	1998	2000	2002	2004	2006	2008	2010	2011	2012	Annual growth rates '02-'07 '07-'12	
<b>Milk production (cow's)</b>												
Production (mill t ECM)	5.01	4.88	4.97	5.01	5.12	5.08	5.01	5.27	5.51	5.34	0.4%	0.9%
Cows (in 1,000's)	1,216	1,199	1,153	1,129	1,122	1,023	1,024	1,027	1,055	1,060	-2.1%	0.8%
Milk yield (t / cow / year)	4.1	4.1	4.3	4.4	4.6	5.0	4.9	5.1	5.2	5.0	2.5%	0.1%
<b>Farm structure</b>												
No. of dairy farms (in 1,000's)	41	37	32	27	24	22	20	18	18	17	-5.2%	-4.0%
Average farm size (cows / farm)	30	32	36	41	47	46	52	56	58	62	3.3%	5.0%
<b>Prices in national currency</b>												
Milk : feed price ratio	1.3	1.4	1.4	1.3	1.2	1.2	1.1	1.1	1.1	0.9	-0.4%	-5.6%
Cull cow (EUR / kg live weight)	0.83	0.73	0.74	0.62	0.76	0.87	1.02	0.92	1.20	1.33	6.7%	9.3%
Land - buy (EUR / ha)	6,769	8,961	12,816	13,574	16,258	20,000	16,720	8,800	11,000	13,000	7.0%	-7.3%
Quota (EUR / kg milk)	0.58	0.46	0.39	0.31	0.41	0.12	0.23	0.15	0.15	0.15	-9.0%	-4.6%

## Farm structure

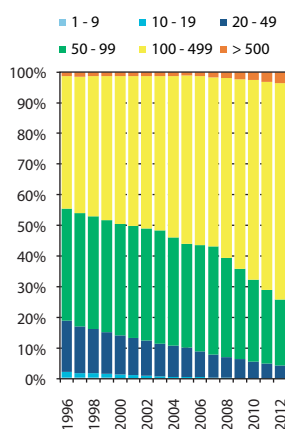
% of dairy farms and cows in size classes (2010)



\* size class where IFCN typical farms are

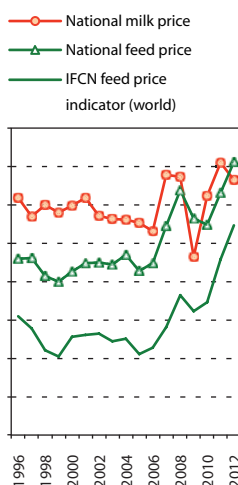
## Farm structure

% of cows per herd size



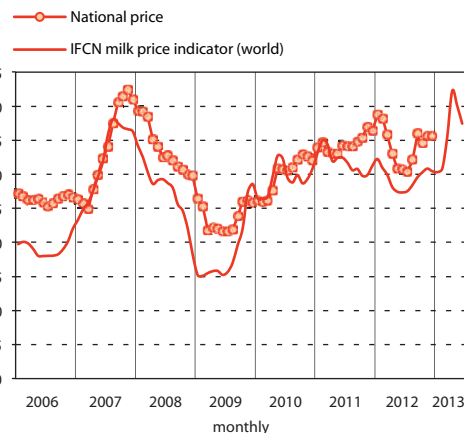
## Milk and feed price

EUR / 100 kg



## Farm gate milk prices

EUR / 100 kg milk (ECM)



## Explanations

Sources: National statistics, FAO, AMI, IMF. 2013 data: Preliminary and partly estimated.

Milk map details: Data based on the year 2012, milk production.

Estimates done for: Farm structure: Cow number 2011-2012 following the trend.





Liron Tamir



### STATUS AND KEY DEVELOPMENTS

#### Status 2012

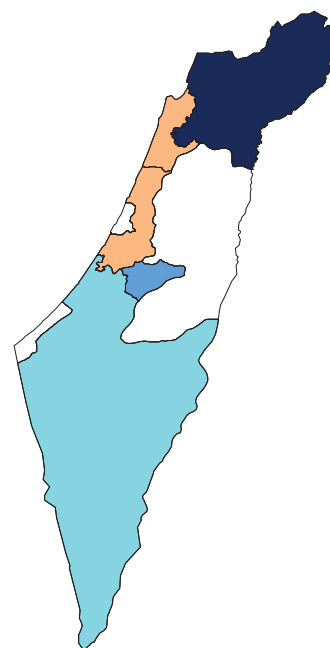
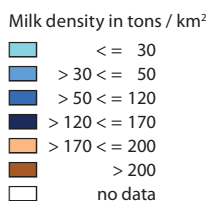
- Milk production (cow's): 1.3 mill t ECM (number 68 in the world)
- No. of dairy farms: 940
- Milk price: +56% to world market
- Feed price: +19% to world market

#### Key developments over the past five years

- Milk production growth: +2.8% per year
- Number of years the milk price was above world market level: 5
- Milk price was on average +46% to world market
- Feed price was on average +40% to world market

#### Milk density 2012

in tons / km<sup>2</sup>

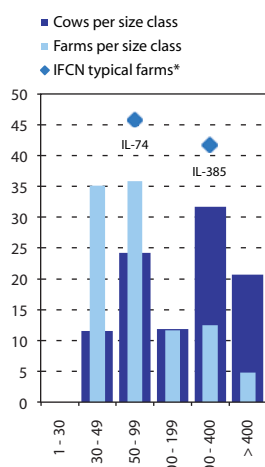


### Key variables

	1996	1998	2000	2002	2004	2006	2008	2010	2011	2012	Annual growth rates	
											'02-'07	'07-'12
<b>Milk production (cow's)</b>												
Production (mill t ECM)	0.98	1.03	1.05	1.09	1.10	1.08	1.24	1.21	1.30	1.32	1.1%	2.8%
Cows (in 1,000's)	132	122	120	115	110	106	122	118	124	126	0.0%	1.8%
Milk yield (t / cow / year)	7.4	8.4	8.7	9.5	10.0	10.2	10.1	10.3	10.5	10.5	1.1%	0.9%
<b>Farm structure</b>												
No. of dairy farms (in 1,000's)	1.48	1.44	1.32	1.17	1.08	1.02	0.99	0.95	0.95	0.94	-3.0%	-1.4%
Average farm size (cows / farm)	89	84	91	98	102	103	123	124	130	134	3.1%	3.3%
<b>Prices in national currency</b>												
Milk : feed price ratio	2.1	2.5	2.9	2.1	1.7	1.9	1.5	1.5	1.5	1.4	-6.5%	-2.3%
Cull cow (ILS / kg live weight)			4.13	3.54	4.82	6.98	7.35	8.76	9.31	8.72	12.2%	6.7%
Land - buy (ILS / ha)												
Quota (ILS / kg milk)	1.00	1.18	1.40	1.37	1.25	1.25	2.00	2.80	2.72	2.34	-1.8%	13.4%

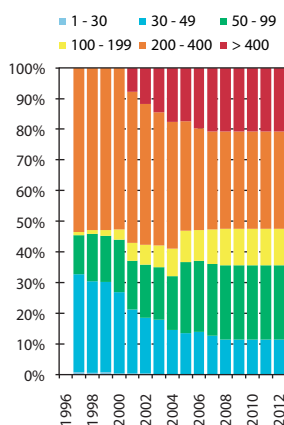
### Farm structure

% of dairy farms and cows in size classes (2010)



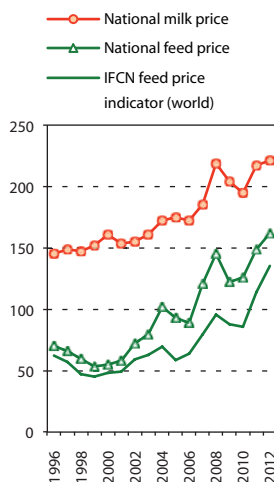
### Farm structure

% of cows per herd size



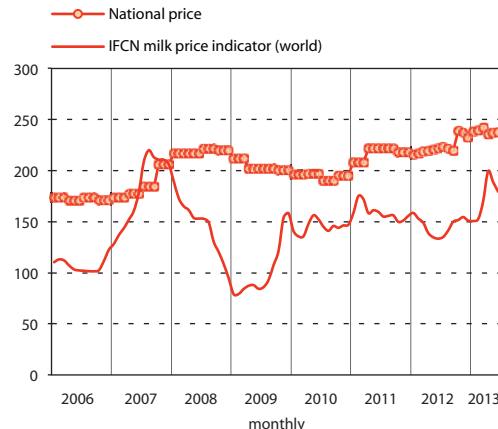
### Milk and feed price

ILS / 100 kg



### Farm gate milk prices

ILS / 100 kg milk (ECM)



\* size class where IFCN typical farms are

### Explanations

Sources: National statistics, FAO, AMI, IMF. 2013 data: Preliminary and partly estimated.

Milk map details: Data based on the year 2012, milk production.

Estimates done for: Farm structure: Cow number 2011-12 following the trend.



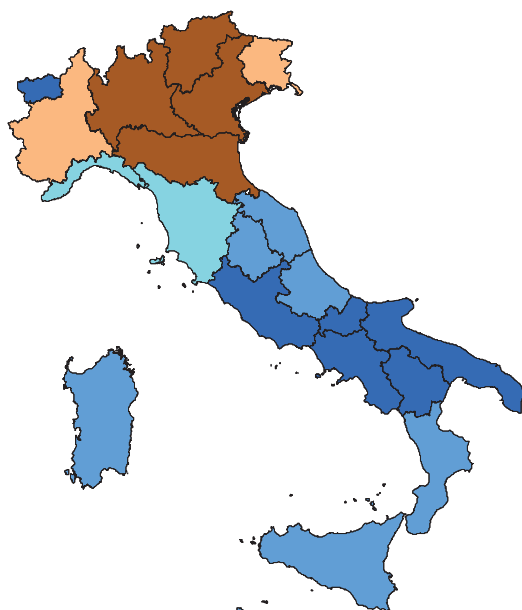
Alberto Menghi



## Milk density 2012

in tons / km<sup>2</sup>

Milk density in tons / km<sup>2</sup>



## STATUS AND KEY DEVELOPMENTS

### Status 2012

- Milk production (cow's): 11.3 mill t ECM (number 14 in the world)
- No. of dairy farms: 45,000
- Milk price: +40% to world market
- Feed price: +18% to world market

### Key developments over the past five years

- Milk production growth: 0% per year
- Number of years the milk price was above world market level: 5
- Milk price was on average +39% to world market
- Feed price was on average +38% to world market

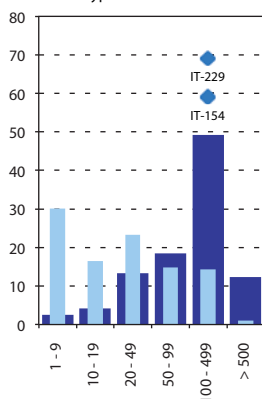
## Key variables

	1996	1998	2000	2002	2004	2006	2008	2010	2011	2012	Annual growth rates '02-'07 '07-'12	
<b>Milk production (cow's)</b>												
Production (mill t ECM)	10.28	10.67	10.82	11.37	10.96	11.24	11.04	11.09	11.27	11.25	-0.2%	0.0%
Cows (in 1,000's)	2,070	2,116	2,172	1,911	1,838	1,821	1,831	1,820	1,764	1,709	-0.8%	-1.4%
Milk yield (t / cow / year)	5.0	5.0	5.0	5.9	6.0	6.2	6.0	6.1	6.4	6.6	0.6%	1.5%
<b>Farm structure</b>												
No. of dairy farms (in 1,000's)	109	96	82	72	64	62	58	52	49	45	-2.8%	-6.4%
Average farm size (cows / farm)	19	22	27	26	29	29	32	35	36	38	2.0%	5.3%
<b>Prices in national currency</b>												
Milk : feed price ratio	2.2	2.1	2.0	2.3	1.8	2.1	1.5	1.6	1.4	1.2	-8.5%	-3.2%
Cull cow (EUR / kg live weight)	0.67	0.85	0.84	0.66	0.88	0.69	0.80	0.95	0.95	0.90	3.9%	2.4%
Land - buy (EUR / ha)	33,570	38,734	45,190	50,000	57,100	58,000	67,000	68,000	67,000	67,000	4.6%	1.4%
Quota (EUR / kg milk)		0.57	0.66	0.56	0.62	0.52	0.30	0.13	0.12	0.10	-7.3%	-23.4%

## Farm structure

% of dairy farms and cows in size classes (2010)

- Cows per size class
- Farms per size class
- ◆ IFCN typical farms\*

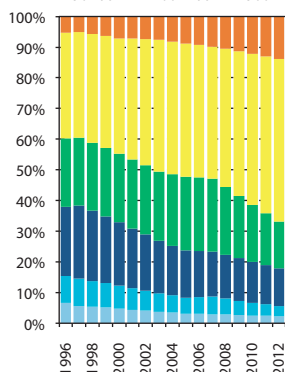


\* size class where IFCN typical farms are

## Farm structure

% of cows per herd size

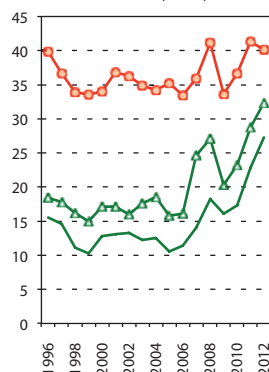
- 1 - 9
- 10 - 19
- 20 - 49
- 50 - 99
- 100 - 499
- > 500



## Milk and feed price

EUR / 100 kg

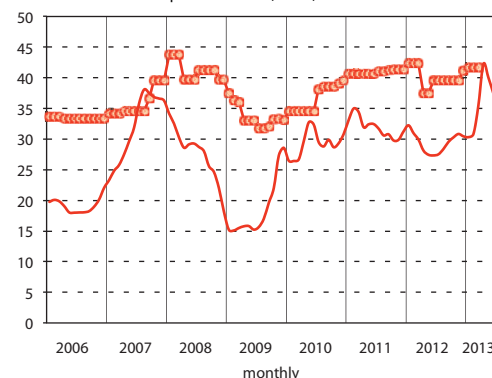
- National milk price
- △— National feed price
- IFCN feed price indicator (world)



## Farm gate milk prices

EUR / 100 kg milk (ECM)

- National price
- IFCN milk price indicator (world)



## Explanations

**Sources:** National statistics, FAO, AMI, IMF. 2013 data: Preliminary and partly estimated.

**Milk map details:** Data based on the year 2012, milk delivered.

**Estimates done for:** Farm structure: Cow number 2011-2012 following the trend.







## 3.50 Jamaica – Milk production fact sheet

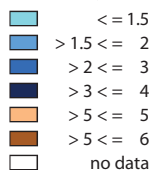


### Milk density 2012

in tons / km<sup>2</sup>



Milk density in tons / km<sup>2</sup>



### STATUS AND KEY DEVELOPMENTS

#### Status 2012

- Milk production (cow's): 0.01 mill t ECM (number 118 in the world)
- No. of dairy farms: 254
- Milk price: +44% to world market
- Feed price: 0% to world market

#### Key developments over the past five years

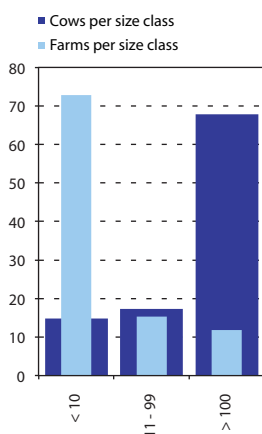
- Milk production growth: -3.2% per year
- Number of years the milk price was above world market level: 5
- Milk price was on average +38% to world market
- Feed price was on average 0% to world market

### Key variables

	1996	1998	2000	2002	2004	2006	2008	2010	2011	2012	Annual growth rates		
											'02-'07	'07-'12	
<b>Milk production (cow's)</b>													
Production (mill t ECM)	0.03	0.03	0.03	0.02	0.02	0.01	0.01	0.01	0.01	0.01		-7.2%	-3.2%
Cows (in 1,000's)	27	28	27	22	16	15	15	13	13	13		-7.6%	-2.6%
Milk yield (t / cow / year)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0		0.5%	-0.6%
<b>Farm structure</b>													
No. of dairy farms (in 1,000's)	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25		0.0%	0.0%
Average farm size (cows / farm)	106	111	104	87	63	58	59	52	52	51		-7.6%	-2.6%
<b>Prices in national currency</b>													
Milk : feed price ratio	1.1	1.9	4.3	2.9	2.2	2.7	2.0	2.3	1.8	1.5		-7.0%	-5.9%
Cull cow (JMD / kg live weight)													
Land - buy (1,000 JMD / ha)													

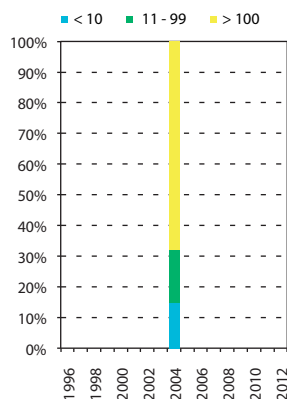
### Farm structure

% of dairy farms and cows in size classes (2004)



### Farm structure

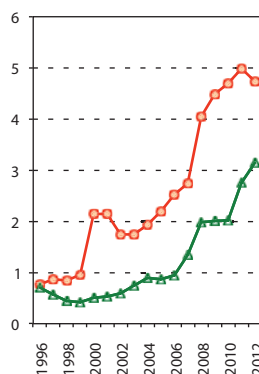
% of cows per herd size



### Milk and feed price

1,000 JMD / 100 kg

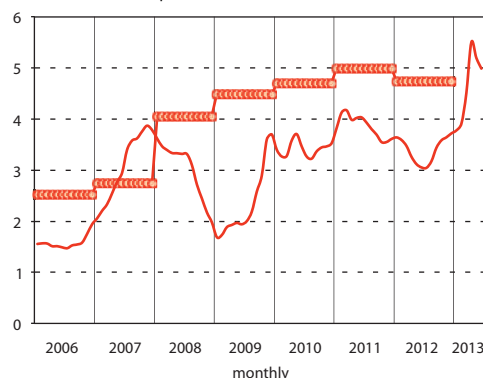
—○— National milk price  
—△— National feed price  
—■— IFCN feed price indicator (world)



### Farm gate milk prices

1,000 JMD / 100 kg milk (ECM)

—○— National price  
—■— IFCN milk price indicator (world)



### Explanations

**Sources:** National statistics, FAO, AMI, IMF. 2013 data: Preliminary and partly estimated.

**Milk map details:** Data based on the year 2012, milk production.

**Estimates done for:** Monthly milk prices: annual average prices. Farm number: Stable based on 2004 data.

**Remarks:** Since no statistical information on soybean meal and corn prices are available world market price trends is used.



Kenji Namiki

**STATUS AND KEY DEVELOPMENTS**

**Status 2012**

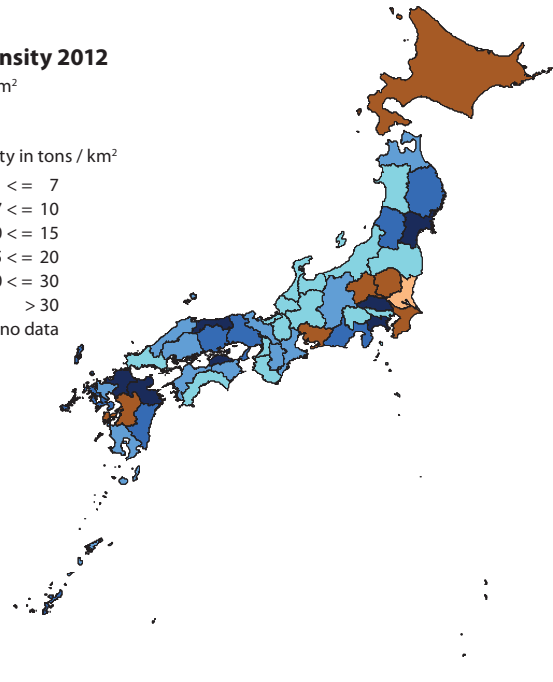
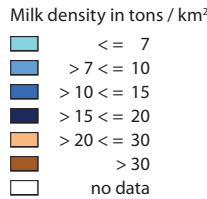
- Milk production (cow's): 7.5 mill t ECM (number 23 in the world)
- No. of dairy farms: 20,100
- Milk price: +212% to world market
- Feed price: +123% to world market

**Key developments over the past five years**

- Milk production growth: -1.1% per year
- Number of years the milk price was above world market level: 5
- Milk price was on average +153% to world market
- Feed price was on average +136% to world market

**Milk density 2012**

in tons / km<sup>2</sup>

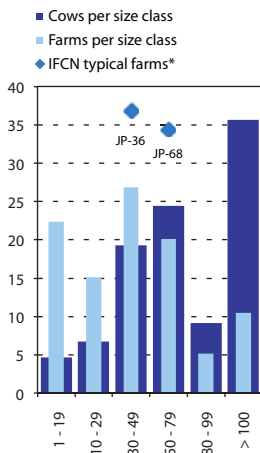


**Key variables**

	1996	1998	2000	2002	2004	2006	2008	2010	2011	2012	Annual growth rates	
											'02-'07	'07-'12
<b>Milk production (cow's)</b>												
Production (mill t ECM)	8.47	8.39	8.32	8.33	8.29	8.11	7.92	7.62	7.38	7.53	-0.9%	-1.1%
Cows (in 1,000's)	1,211	1,190	1,150	1,126	1,088	1,046	998	964	933	943	-2.1%	-1.4%
Milk yield (t / cow / year)	7.0	7.0	7.2	7.4	7.6	7.7	7.9	7.9	7.9	8.0	1.3%	0.3%
<b>Farm structure</b>												
No. of dairy farms (in 1,000's)	42	37	34	31	29	27	24	22	21	20	-3.9%	-4.6%
Average farm size (cows / farm)	29	32	34	36	38	39	41	44	44	47	1.8%	3.3%
<b>Prices in national currency</b>												
Milk : feed price ratio	1.8	1.8	2.1	1.9	1.7	1.7	1.2	1.7	1.6	1.5	-6.0%	0.6%
Cull cow (JPY / kg live weight)	153.79	145.52	142.19	72.38	185.14	189.62	192.80	155.83	164.79	138.29	21.4%	-6.3%
Land - buy (1,000 JPY / ha)	13,410	12,670	12,100	11,710	10,980	10,360	10,282	8,730	8,460		-2.8%	

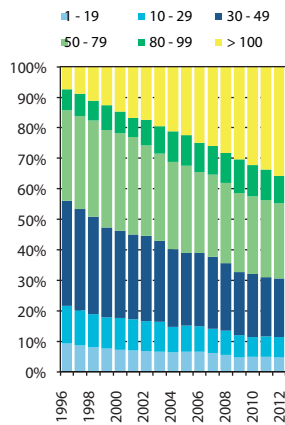
**Farm structure**

% of dairy farms and cows in size classes (2012)



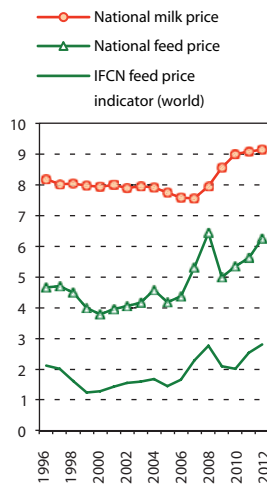
**Farm structure**

% of cows per herd size



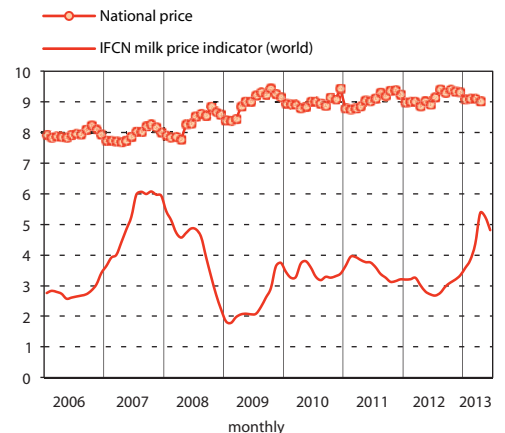
**Milk and feed price**

1,000 JPY / 100 kg



**Farm gate milk prices**

1,000 JPY / 100 kg milk (ECM)



\* size class where IFCN typical farms are

**Explanations**

**Sources:** National statistics, FAO, AMI, IMF. 2013 data: Preliminary and partly estimated.

**Milk map details:** Data based on the year 2012, milk production.

**Estimates done for:** Feed prices 2012.



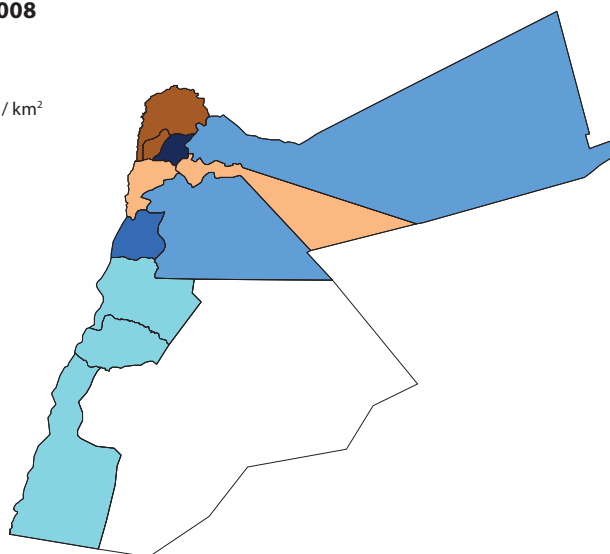
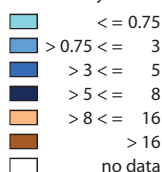
Othman Alqaisi

**Dairy Expert**

## Milk density 2008

in tons / km<sup>2</sup>

Milk density in tons / km<sup>2</sup>



## STATUS AND KEY DEVELOPMENTS

### Status 2012

- Milk production (cow's): 0.3 mill t ECM (number 101 in the world)
- No. of dairy farms: 680
- Milk price: +89% to world market
- Feed price: +29% to world market

### Key developments over the past five years

- Milk production growth: +1.4% per year
- Number of years the milk price was above world market level: 5
- Milk price was on average +69% to world market
- Feed price was on average +59% to world market

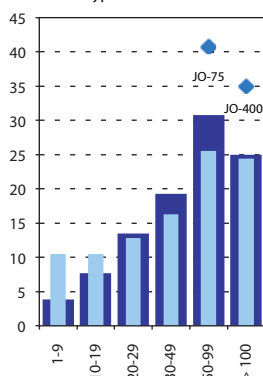
## Key variables

	1996	1998	2000	2002	2004	2006	2008	2010	2011	2012	Annual growth rates		
											'02-'07	'07-'12	
<b>Milk production (cow's)</b>													
Production (mill t ECM)	0.11	0.12	0.16	0.18	0.17	0.21	0.19	0.25	0.26	0.27	7.7%	1.4%	
Cows (in 1,000's)	36	38	47	39	43	50	43	47	48	52	4.7%	1.2%	
Milk yield (t / cow / year)	2.9	3.2	3.4	4.5	3.9	4.1	4.4	5.4	5.5	5.2	2.9%	0.2%	
<b>Farm structure</b>													
No. of dairy farms (in 1,000's)	0.82	0.85	0.85	0.85	0.71	0.67	0.60	0.64	0.65	0.68	-4.0%	-0.6%	
Average farm size (cows / farm)	44	44	55	46	60	75	72	73	74	76	9.0%	1.8%	
<b>Prices in national currency</b>													
Milk : feed price ratio	1.8	2.0	1.7	1.7	1.8	2.0	1.7	1.6	1.6	1.5	-10.1%	8.9%	
Cull cow (JOD / kg live weight)					1.60	1.70	1.90	2.30					
Land - buy (JOD / ha)				15,000	25,000	60,000	60,000	100,000	100,000	100,000		34.1%	9.0%

## Farm structure

% of dairy farms and cows in size classes (2012)

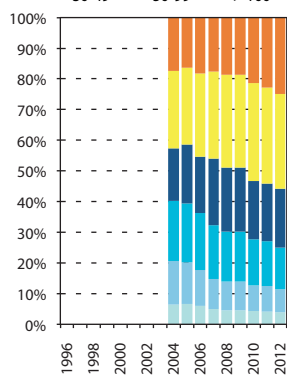
- Cows per size class
- Farms per size class
- ◆ IFCN typical farms\*



## Farm structure

% of cows per herd size

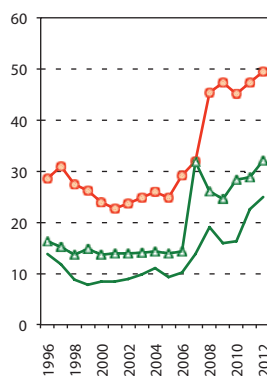
- 1-9
- 10-19
- 20-29
- 30-49
- 50-99
- > 100



## Milk and feed price

JOD / 100 kg

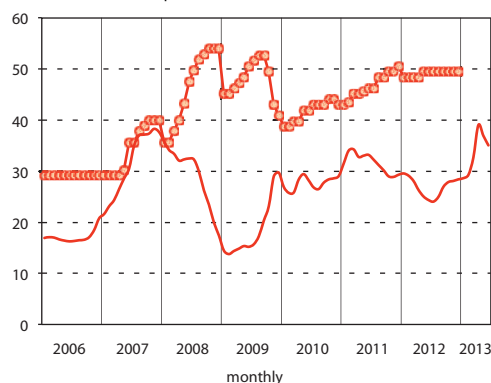
- National milk price
- △ National feed price
- IFCN feed price indicator (world)



## Farm gate milk prices

JOD / 100 kg milk (ECM)

- National price
- IFCN milk price indicator (world)



\* size class where IFCN typical farms are

## Explanations

Sources: National statistics, FAO, AMI, IMF. 2013 data: Preliminary and partly estimated.

Milk map details: Data based on the year 2008, milk production.





Galiya Akimbekova



## 3.53 Kazakhstan – Milk production fact sheet

### STATUS AND KEY DEVELOPMENTS

#### Status 2012

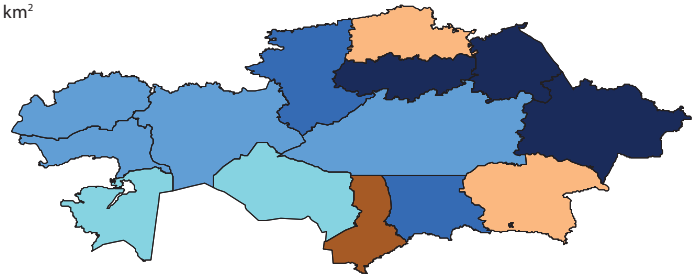
- Milk production (cow's): 4.5 mill t ECM (number 33 in the world)
- No. of dairy farms: 872,000
- Milk price: +21% to world market
- Feed price: -26% to world market

#### Key developments over the past five years

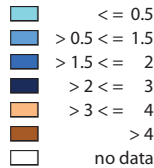
- Milk production growth: -0.9% per year
- Number of years the milk price was above world market level: 2
- Milk price was on average -7% to world market
- Feed price was on average -19% to world market

#### Milk density 2012

in tons / km<sup>2</sup>



Milk density in tons / km<sup>2</sup>

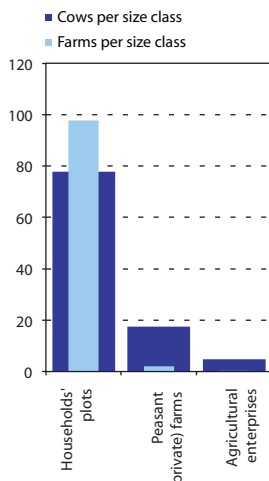


### Key variables

	1996	1998	2000	2002	2004	2006	2008	2010	2011	2012	Annual growth rates	
											'02-'07	'07-'12
<b>Milk production (cow's)</b>												
Production (mill t ECM)	3.41	2.85	3.51	3.76	4.22	4.60	4.79	4.95	4.85	4.46	4.4%	-0.9%
Cows (in 1,000's)	2,547	1,953	2,015	2,171	2,399	2,555	2,675	2,751	2,501	2,437	4.0%	-1.6%
Milk yield (t / cow / year)	1.3	1.5	1.7	1.7	1.8	1.8	1.8	1.8	1.9	1.8	0.4%	0.7%
<b>Farm structure</b>												
No. of dairy farms (in 1,000's)	774	593	618	664	718	753	878	880	872	872	4.1%	1.4%
Average farm size (cows / farm)	3	3	3	3	3	3	3	3	3	3	-0.1%	-3.0%
<b>Prices in national currency</b>												
Milk : feed price ratio	1.0	2.4	1.6	1.7	1.6	2.3	1.6	1.5	1.7	1.7	2.6%	-2.4%
Cull cow (KZT / kg live weight)												
Land - buy (1,000 KZT / ha)												

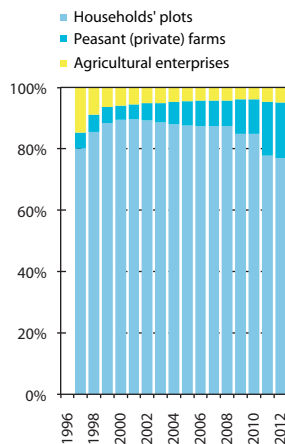
### Farm structure

% of dairy farms and cows in size classes (2011)



### Farm structure

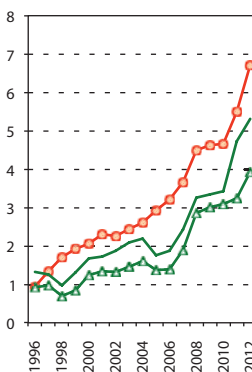
% of cows per herd size



### Milk and feed price

1,000 KZT / 100 kg

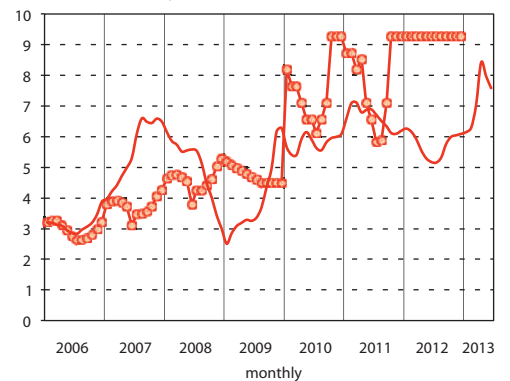
—○— National milk price  
—△— National feed price  
—■— IFCN feed price indicator (world)



### Farm gate milk prices

1,000 KZT / 100 kg milk (ECM)

—○— National price  
—■— IFCN milk price indicator (world)



#### Explanations

**Sources:** National statistics, FAO, AMI, IMF. 2013 data: Preliminary and partly estimated.

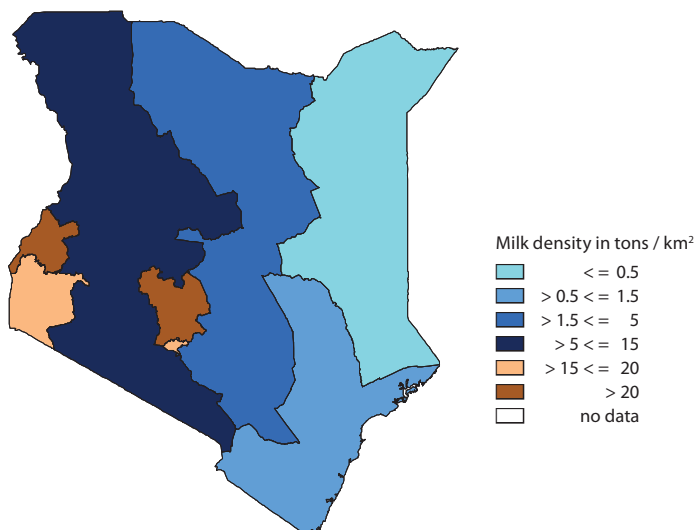
**Milk map details:** Data based on the year 2012, milk production.

**Estimates done for:** Farm structure: Cow number 2004-2006.

**Remarks:** Farm structure: Average cow number per size class: Household plots: 2 cows; Peasant farms: 24 cows; Agricultural enterprises: 120 cows. Since no statistical information on soybean meal prices are available the world market price is used.

## Milk density 2008

in tons / km<sup>2</sup>



## STATUS AND KEY DEVELOPMENTS

### Status 2012

- Milk production (cow's): 4.4 mill t ECM (number 32 in the world)
- No. of dairy farms: 1,685,239
- Milk price: -27% to world market
- Feed price: -32% to world market

### Key developments over the past five years

- Milk production growth: +0.9% per year
- Number of years the milk price was above world market level: 1
- Milk price was on average -23% to world market
- Feed price was on average -11% to world market

## Key variables

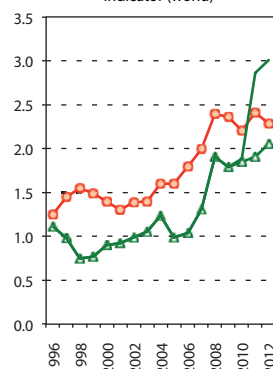
	1996	1998	2000	2002	2004	2006	2008	2010	2011	2012	Annual growth rates '02-'07 '07-'12	
<b>Milk production (cow's)</b>												
Production (mill t ECM)	1.91	2.01	2.22	2.81	2.83	3.50	3.60	3.52	4.20	4.43	8.5%	0.9%
Cows (in 1,000's)	4,550	4,420	4,690	4,000	5,500	6,200	5,147	5,808	7,200	7,200	13.4%	-0.8%
Milk yield (t / cow / year)	0.4	0.5	0.5	0.7	0.5	0.6	0.7	0.6	0.6	0.6	-4.3%	1.7%
<b>Farm structure</b>												
No. of dairy farms (in 1,000's)	627	627	627	627	1,096	1,565	1,850	1,725	1,725	1,685	23.5%	-1.3%
Average farm size (cows / farm)	7	7	7	6	5	4	3	3	4	4	-8.2%	0.5%
<b>Prices in national currency</b>												
Milk : feed price ratio	1.1	2.1	1.6	1.4	1.3	1.7	1.3	1.2	1.3	1.1	1.7%	-6.1%
Cull cow (KES / kg live weight)								150.00				
Land - buy (1,000 KES / ha)								1,750				



## Milk and feed price

1,000 KES / 100 kg

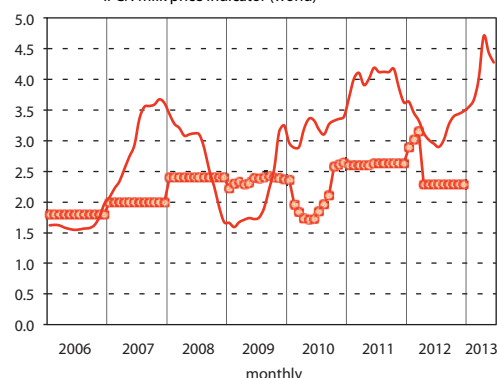
- National milk price
- △— National feed price
- IFCN feed price indicator (world)



## Farm gate milk prices

1,000 KES / 100 kg milk (ECM)

- National price
- IFCN milk price indicator (world)



## Explanations

**Sources:** National statistics, FAO, AMI, IMF. 2013 data: Preliminary and partly estimated.

**Milk map details:** Data based on the year 2008, milk production.

**Estimates done for:** Cow number 2009-2010 & 2012. Monthly milk price 2006-2008: annual averages. Dairy farm number: 1996-2001 and 2003-2006.

**Remarks:** Since no statistical information on soybean meal and corn prices 1996-2009 are available the world market prices are used.

**STATUS AND KEY DEVELOPMENTS**

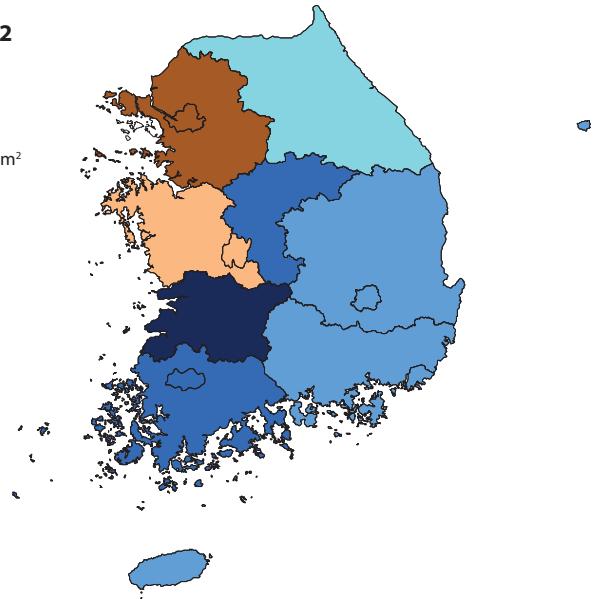
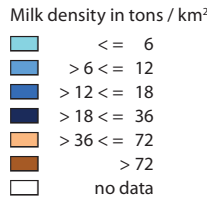
**Status 2012**

- Milk production (cow's): 2.1 mill t ECM (number 51 in the world)
- No. of dairy farms: 600,4
- Milk price: +150% to world market
- Feed price: +0% to world market

**Key developments over the past five years**

- Milk production growth: -0.7% per year
- Number of years the milk price was above world market level: 5
- Milk price was on average +113% to world market
- Feed price was on average +17% to world market

**Milk density 2012**  
in tons / km<sup>2</sup>

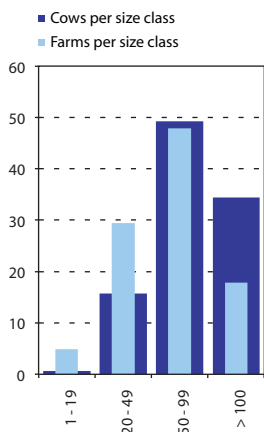


**Key variables**

	1996	1998	2000	2002	2004	2006	2008	2010	2011	2012	Annual growth rates	
											'02-'07	'07-'12
<b>Milk production (cow's)</b>												
Production (mill t ECM)	1.95	1.92	2.19	2.50	2.22	2.22	2.10	2.03	1.86	2.07	-3.0%	-0.7%
Cows (in 1,000's)	551	539	544	544	497	464	446	430	404	380	-3.6%	-3.5%
Milk yield (t / cow / year)	3.5	3.6	4.0	4.6	4.5	4.8	4.7	4.7	4.6	5.5	0.6%	2.9%
<b>Farm structure</b>												
No. of dairy farms (in 1,000's)	21	16	13	12	10	8	7	6	6	6	-8.2%	-4.7%
Average farm size (cows / farm)	26	34	41	46	52	56	64	68	66	63	5.0%	1.3%
<b>Prices in national currency</b>												
Milk : feed price ratio	3.2	3.0	4.4	4.0	2.9	4.7	2.1	2.8	2.4	2.6	-1.9%	-6.5%
Cull cow (KRW / kg live weight)	1,700	897	1,101	1,324	1,072	1,135	957	1,224	1,488	1,560	-2.7%	6.2%
Land - buy (1,000 KRW / ha)												
Quota (KRW / kg milk)							245	165				

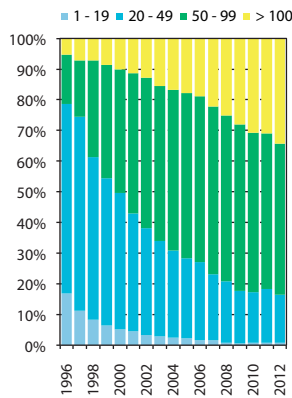
**Farm structure**

% of dairy farms and cows in size classes (2012)



**Farm structure**

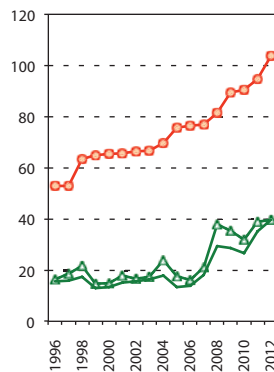
% of cows per herd size



**Milk and feed price**

1,000 KRW / 100 kg

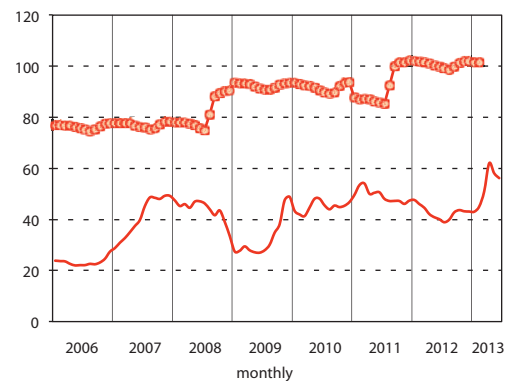
—○— National milk price  
—△— National feed price  
— National IFCN feed price indicator (world)



**Farm gate milk prices**

1,000 KRW / 100 kg milk (ECM)

—○— National price  
— National IFCN milk price indicator (world)



**Explanations**

**Sources:** National statistics, FAO, AMI, IMF. 2013 data: Preliminary and partly estimated.

**Milk map details:** Data based on the year 2012, milk production.

**Estimates done for:** Cow number 2012.



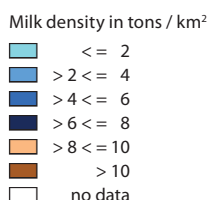
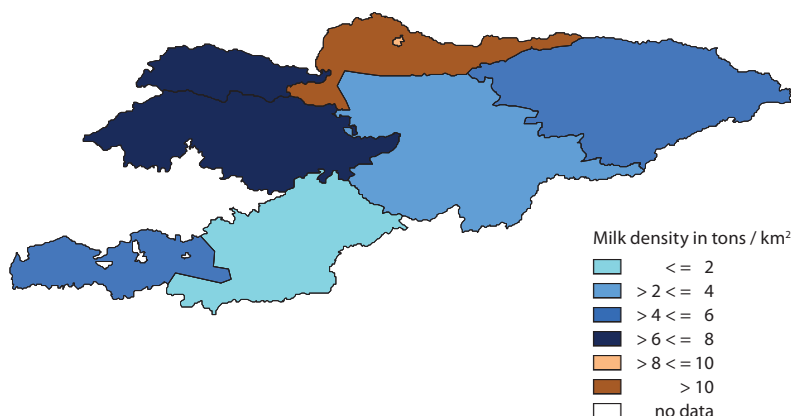


Almasbek Chonov



## Milk density 2009

in tons / km<sup>2</sup>



## STATUS AND KEY DEVELOPMENTS

### Status 2012

- Milk production (cow's): 1.3 mill t ECM (number 69 in the world)
- No. of dairy farms: 345,108
- Milk price: +11% to world market
- Feed price: -11% to world market

### Key developments over the past five years

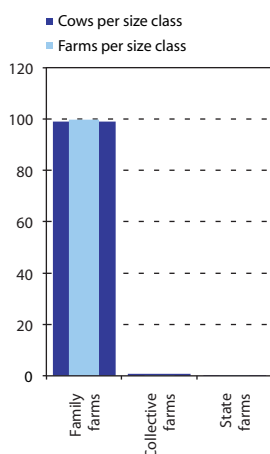
- Milk production growth: +2.9% per year
- Number of years the milk price was above world market level: 3
- Milk price was on average -1% to world market
- Feed price was on average +14% to world market

## Key variables

	1996	1998	2000	2002	2004	2006	2008	2010	2011	2012	Annual growth rates	
											'02-'07	'07-'12
<b>Milk production (cow's)</b>												
Production (mill t ECM)	0.82	0.89	1.00	1.06	1.05	1.08	1.14	1.23	1.26	1.28	1.0%	2.9%
Cows (in 1,000's)	471	474	512	536	534	565	607	664	667	669	1.8%	2.7%
Milk yield (t / cow / year)	1.7	1.9	2.0	2.0	2.0	1.9	1.9	1.8	1.9	1.9	-0.8%	0.2%
<b>Farm structure</b>												
No. of dairy farms (in 1,000's)						302	325	320	332	345		1.8%
Average farm size (cows / farm)						2	2	2	2	2		0.9%
<b>Prices in national currency</b>												
Milk : feed price ratio		1.3	0.8	1.0	1.0	1.4	1.1	1.2	1.3	1.3	4.6%	1.5%
Cull cow (KGS / kg live weight)												
Land - buy (KGS / ha)												

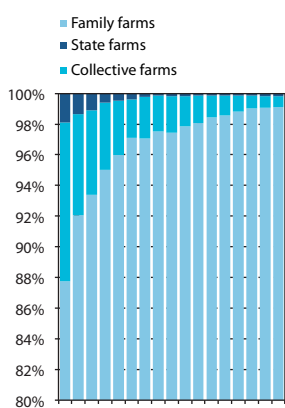
## Farm structure

% of dairy farms and cows in size classes (2012)



## Farm structure

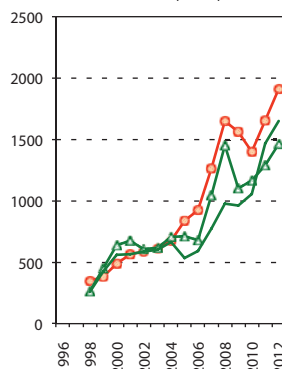
% of cows per herd size



## Milk and feed price

KGS / 100 kg

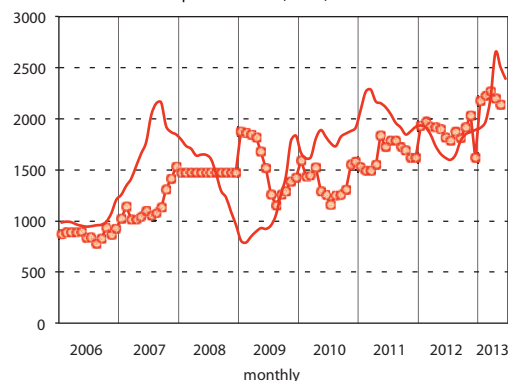
- National milk price
- △— National feed price
- IFCN feed price indicator (world)



## Farm gate milk prices

KGS / 100 kg milk (ECM)

- National price
- IFCN milk price indicator (world)



## Explanations

**Sources:** National statistics, FAO, AMI, IMF. 2013 data: Preliminary and partly estimated.

**Milk map details:** Data based on the year 2009, milk production.

**Estimates done for:** Farm structure: Cow number 2011 interpolation. Cow numbers 2012.

**Remarks:** Farm structure: Average cow number per size class: Family farms: 2 cows; Collective farms: 9 cows; State farms: 18 cows. Family farms including household plots. Since no statistical information on soybean meal prices are available the world market price is used.



Agnese Krievina



**STATUS AND KEY DEVELOPMENTS**

**Status 2012**

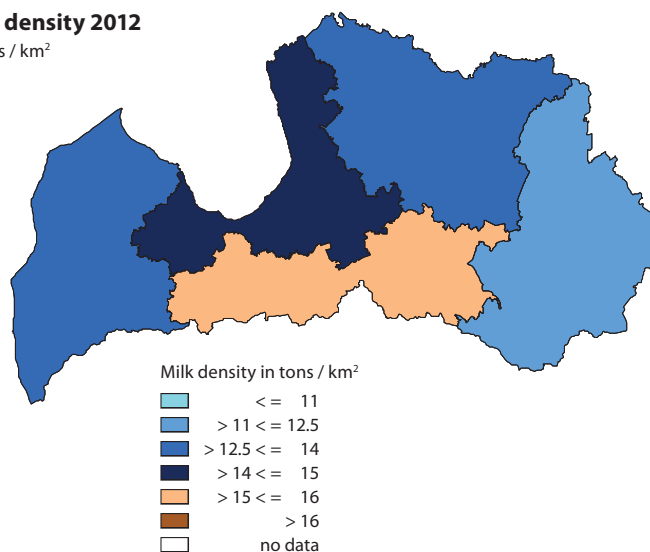
- Milk production (cow's): 0.9 mill t ECM (number 77 in the world)
- No. of dairy farms: 25,100
- Milk price: -7% to world market
- Feed price: +2% to world market

**Key developments over the past five years**

- Milk production growth: +0.7% per year
- Number of years the milk price was above world market level: 0
- Milk price was on average -12% to world market
- Feed price was on average +14% to world market

**Milk density 2012**

in tons / km<sup>2</sup>

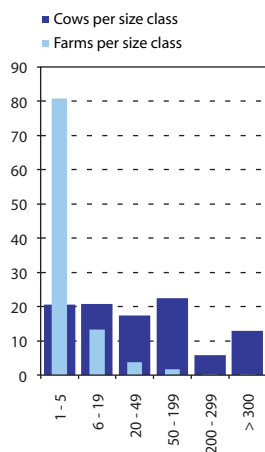


**Key variables**

	1996	1998	2000	2002	2004	2006	2008	2010	2011	2012	Annual growth rates	
											'02-'07	'07-'12
<b>Milk production (cow's)</b>												
Production (mill t ECM)	0.91	0.94	0.82	0.81	0.80	0.84	0.86	0.86	0.87	0.90	1.6%	0.7%
Cows (in 1,000's)	275	242	204	205	186	182	170	164	164	165	-2.5%	-1.8%
Milk yield (t / cow / year)	3.3	3.9	4.0	4.0	4.3	4.6	5.1	5.3	5.3	5.5	4.1%	2.6%
<b>Farm structure</b>												
No. of dairy farms (in 1,000's)	117	96	82	71	61	46	36	30	27	25	-11.4%	-8.4%
Average farm size (cows / farm)	2	3	3	3	3	4	5	5	6	7	10.1%	7.1%
<b>Prices in national currency</b>												
Milk : feed price ratio	0.9	1.0	0.8	1.0	1.3	1.5	1.2	1.4	1.2	1.0	2.7%	-3.9%
Cull cow (LVL / kg live weight)	0.42	0.40	0.33	0.42	0.35	0.51	0.60	0.54	0.69	0.80	3.4%	10.0%
Land - buy (LVL / ha)				317	666	2,636	1,363	605	611	700	51.0%	-22.4%
Quota (LVL / kg milk)						0.04	0.05	0.03	0.03	0.04		5.9%

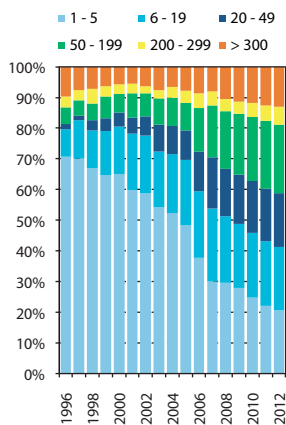
**Farm structure**

% of dairy farms and cows in size classes (2012)



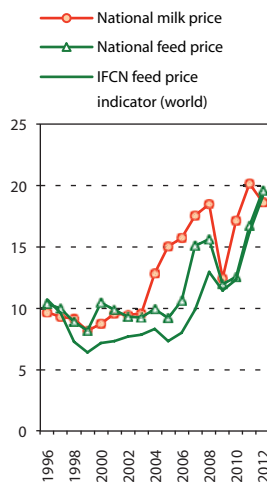
**Farm structure**

% of cows per herd size



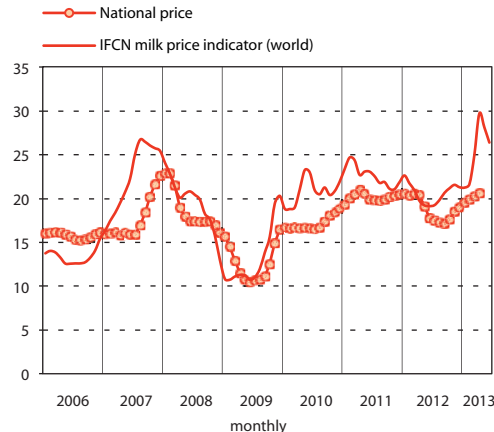
**Milk and feed price**

LVL / 100 kg



**Farm gate milk prices**

LVL / 100 kg milk (ECM)



**Explanations**

Sources: National statistics, FAO, AMI, IMF. 2013 data: Preliminary and partly estimated.

Milk map details: Data based on the year 2012, milk production.

Estimates done for: Land price: 2012.

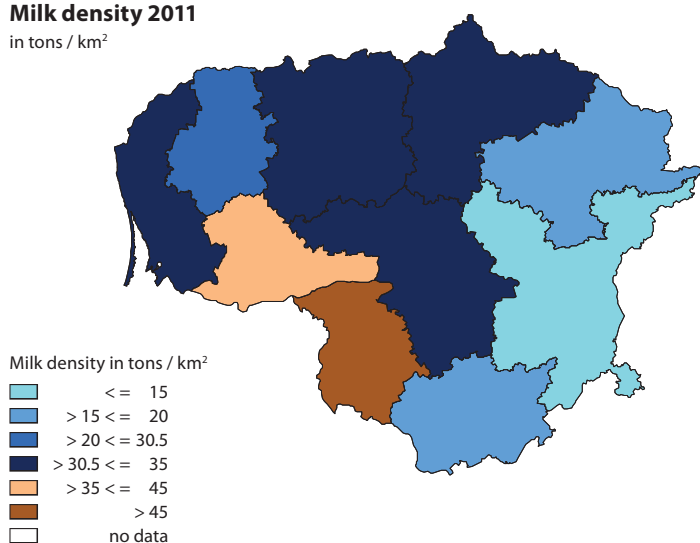


Deiva Mikelionyte



## Milk density 2011

in tons / km<sup>2</sup>



## STATUS AND KEY DEVELOPMENTS

### Status 2012

- Milk production (cow's): 1.8 mill t ECM (number 56 in the world)
- No. of dairy farms: 70,600
- Milk price: -17% to world market
- Feed price: -10% to world market

### Key developments over the past five years

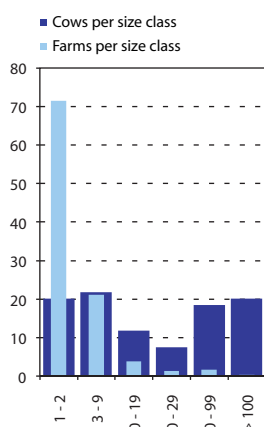
- Milk production growth: -1.3% per year
- Number of years the milk price was above world market level: 0
- Milk price was on average -20% to world market
- Feed price was on average -3% to world market

## Key variables

	1996	1998	2000	2002	2004	2006	2008	2010	2011	2012	Annual growth rates	
											'02-'07	'07-'12
<b>Milk production (cow's)</b>												
Production (mill t ECM)	1.82	1.91	1.71	1.76	1.87	1.91	1.92	1.76	1.81	1.85	2.3%	-1.3%
Cows (in 1,000's)	586	583	494	442	434	399	395	360	350	331	-1.7%	-3.9%
Milk yield (t / cow / year)	3.1	3.3	3.5	4.0	4.3	4.8	4.9	4.9	5.2	5.6	4.1%	2.8%
<b>Farm structure</b>												
No. of dairy farms (in 1,000's)	268	242	219	198	182	154	108	91	78	71	-7.8%	-11.7%
Average farm size (cows / farm)	2	2	2	2	2	3	4	4	5	5	6.6%	8.8%
<b>Prices in national currency</b>												
Milk : feed price ratio	0.9	1.5	1.0	1.1	1.2	1.6	1.3	1.4	1.3	1.0	1.4%	-4.4%
Cull cow (LTL / kg live weight)					1.60	2.31	2.79	2.69	3.26	3.64		9.9%
Land - buy (LTL / ha)				1,531	1,045	3,426	3,740	3,970	5,110	5,707	14.4%	13.7%
Quota (LTL / kg milk)							0.08	0.02	0.06	0.04		-32.2%

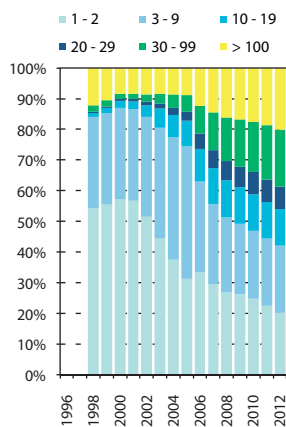
## Farm structure

% of dairy farms and cows in size classes (2012)



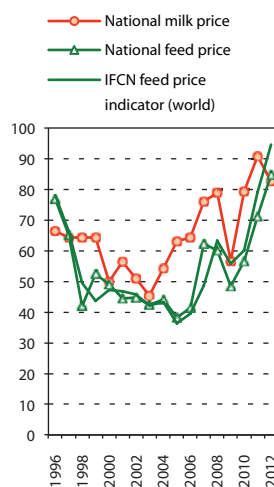
## Farm structure

% of cows per herd size



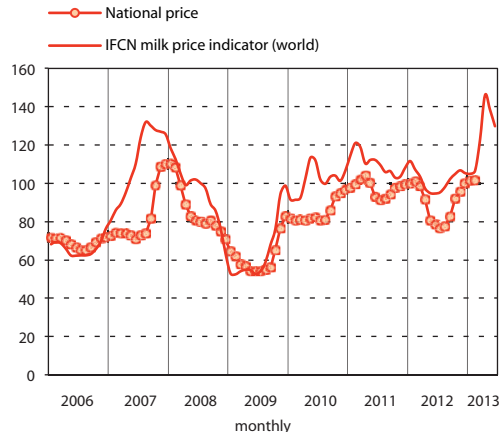
## Milk and feed price

LTL / 100 kg



## Farm gate milk prices

LTL / 100 kg milk (ECM)



## Explanations

**Sources:** National statistics, FAO, AMI, IMF. 2013 data: Preliminary and partly estimated.

**Milk map details:** Data based on the year 2011, milk production.

**Remarks:** Since no statistical information on soybean meal prices are available the world market price is used.





## STATUS AND KEY DEVELOPMENTS

### Status 2012

- Milk production (cow's): 0.3 mill t ECM (number 105 in the world)
- No. of dairy farms: 756
- Milk price: +6% to world market
- Feed price: +10% to world market

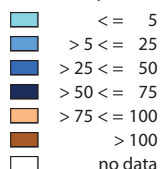
### Key developments over the past five years

- Milk production growth: +1% per year
- Number of years the milk price was above world market level: 4
- Milk price was on average +13% to world market
- Feed price was on average +20% to world market

### Milk density 2012

in tons / km<sup>2</sup>

Milk density in tons / km<sup>2</sup>

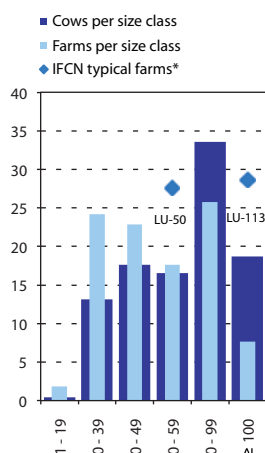


## Key variables

	1996	1998	2000	2002	2004	2006	2008	2010	2011	2012	Annual growth rates '02-'07 '07-'12	
<b>Milk production (cow's)</b>												
Production (mill t ECM)	0.28	0.27	0.27	0.28	0.28	0.28	0.29	0.30	0.30	0.30	0.3%	1.0%
Cows (in 1,000's)	48	46	43	42	40	39	40	41	40	40	-1.5%	0.4%
Milk yield (t / cow / year)	5.7	6.0	6.3	6.6	6.9	7.2	7.2	7.4	7.4	7.5	1.9%	0.5%
<b>Farm structure</b>												
No. of dairy farms (in 1,000's)	1.33	1.25	1.15	1.07	0.99	0.93	0.86	0.81	0.78	0.75	-3.6%	-3.2%
Average farm size (cows / farm)	36	37	37	39	40	41	46	51	51	53	2.2%	3.8%
<b>Prices in national currency</b>												
Milk : feed price ratio	1.9	2.2	1.9	2.1	1.7	1.9	1.5	1.5	1.3	1.0	-4.7%	-9.4%
Cull cow (EUR / kg live weight)	1.32	1.37	1.33	1.18	1.34	1.58	1.63	1.63	1.72	1.87	6.0%	3.5%
Land - buy (EUR / ha)					15,449	16,077	17,853	20,364	23,937	25,000		7.3%
Quota (EUR / kg milk)			0.68	0.89	1.11	1.24	0.81	0.46	0.44	0.50	5.1%	-15.2%

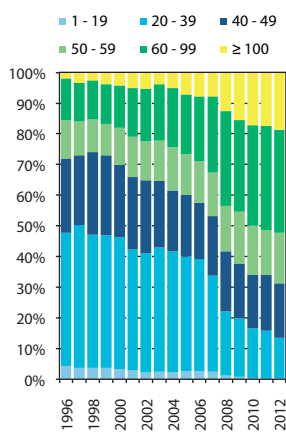
## Farm structure

% of dairy farms and cows in size classes (2012)



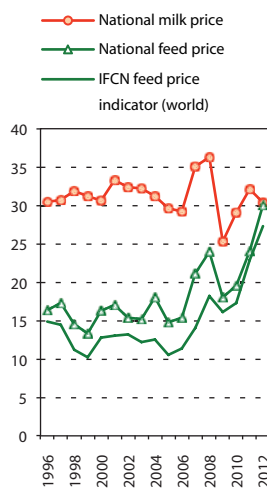
## Farm structure

% of cows per herd size



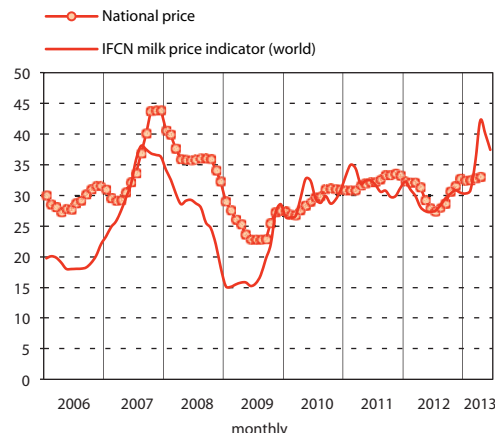
## Milk and feed price

EUR / 100 kg



## Farm gate milk prices

EUR / 100 kg milk (ECM)



\* size class where IFCN typical farms are

## Explanations

Sources: National statistics, FAO, AMI, IMF. 2013 data: Preliminary and partly estimated.

Milk map details: Data based on the year 2012, milk production.

## 3.60 Macedonia – Milk production fact sheet

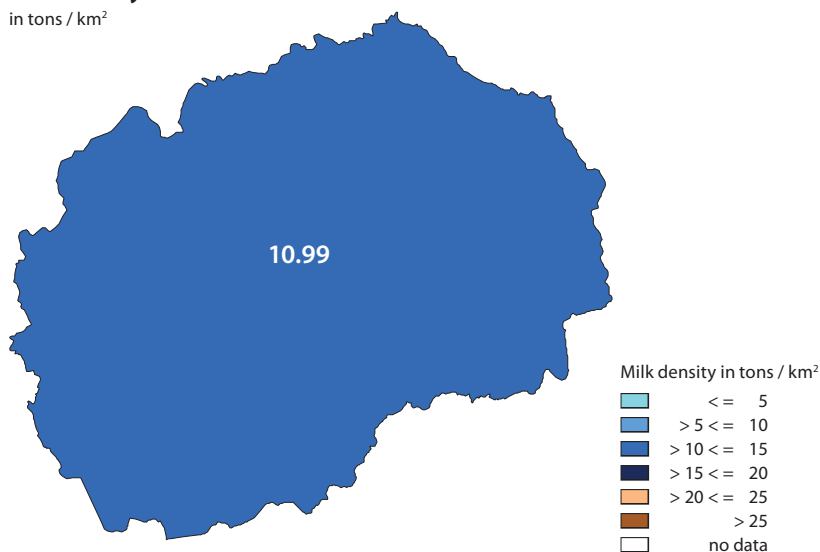


Blagica Sekovska



### Milk density 2012

in tons / km<sup>2</sup>



### STATUS AND KEY DEVELOPMENTS

#### Status 2012

- Milk production (cow's): 0.3 mill t ECM (number 104 in the world)
- No. of dairy farms: 39,000
- Milk price: +15% to world market
- Feed price: -22% to world market

#### Key developments over the past five years

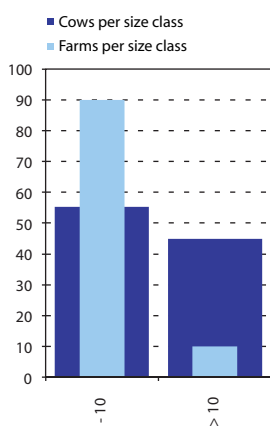
- Milk production growth: +3.1% per year
- Number of years the milk price was above world market level: 4
- Milk price was on average +15% to world market
- Feed price was on average -11% to world market

### Key variables

	1996	1998	2000	2002	2004	2006	2008	2010	2011	2012	Annual growth rates	
											'02-'07	'07-'12
<b>Milk production (cow's)</b>												
Production (mill t ECM)	0.13	0.17	0.22	0.20	0.21	0.23	0.27	0.28	0.30	0.27	3.5%	3.1%
Cows (in 1,000's)	95	91	96	95	90	94	91	98	106	99	-0.5%	1.3%
Milk yield (t / cow / year)	1.4	1.9	2.3	2.1	2.3	2.5	3.0	2.9	2.8	2.7	4.0%	1.7%
<b>Farm structure</b>												
No. of dairy farms (in 1,000's)	39	39	40	40	41	41	42	44	41	39	0.7%	-1.3%
Average farm size (cows / farm)	2	2	2	2	2	2	2	2	3	3	-1.1%	2.7%
<b>Prices in national currency</b>												
Milk : feed price ratio	2.0	2.9	2.4	2.2	2.4	2.7	2.6	1.6	1.5	1.5	-1.3%	-5.8%
Cull cow (MKD / kg live weight)							57.23	65.00	105.00	105.00		
Land - buy (1,000 MKD / ha)												

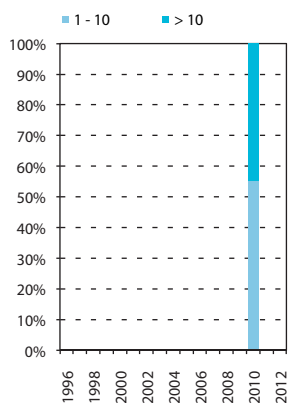
### Farm structure

% of dairy farms and cows in size classes (2010)



### Farm structure

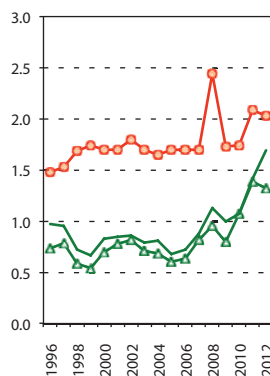
% of cows per herd size



### Milk and feed price

1,000 MKD / 100 kg

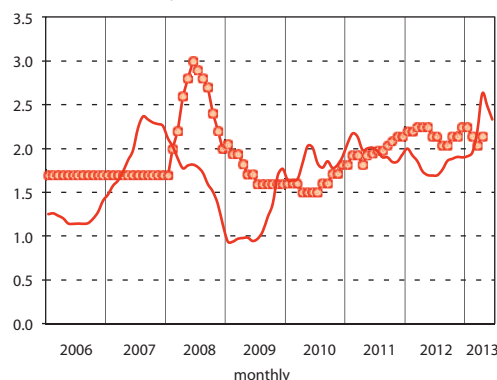
—○— National milk price  
—△— National feed price  
—■— IFCN feed price indicator (world)



### Farm gate milk prices

1,000 MKD / 100 kg milk (ECM)

—○— National price  
—■— IFCN milk price indicator (world)



### Explanations

**Sources:** National statistics, FAO, AMI, IMF. 2013 data: Preliminary and partly estimated.

**Milk map details:** Data based on the year 2012, milk production.

**Estimates done for:** Farm structure: Cow number based on average farm size per size class. Cow number 2007-08 and 2010. Monthly milk prices: 2006-2007: annual averages.

**Remarks:** Since no statistical information on soybean meal and barley prices are available 1996-2009 a differential to the world market commodity prices is used.



## STATUS AND KEY DEVELOPMENTS

### Status 2012

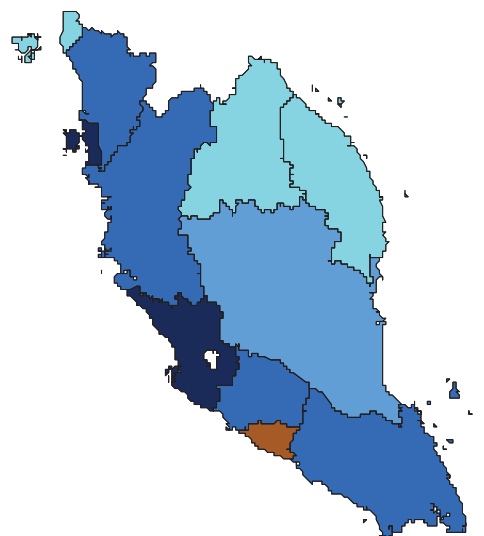
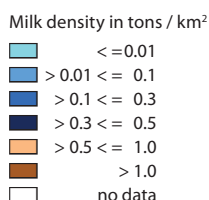
- Milk production (cow's): 0.1 mill t ECM (number 133 in the world)
- No. of dairy farms: 750
- Milk price: +76% to world market
- Feed price: +6% to world market

### Key developments over the past five years

- Milk production growth: +5.3% per year
- Number of years the milk price was above world market level: 5
- Milk price was on average +57% to world market
- Feed price was on average +11% to world market

### Milk density 2012

in tons / km<sup>2</sup>

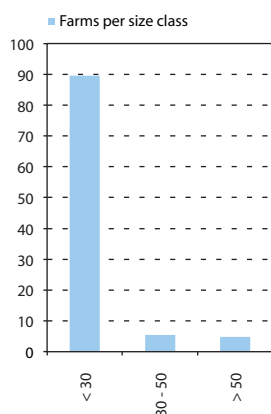


## Key variables

	1996	1998	2000	2002	2004	2006	2008	2010	2011	2012	Annual growth rates	
											'02-'07	'07-'12
<b>Milk production (cow's)</b>												
Production (mill t ECM)	0.04	0.03	0.03	0.04	0.04	0.05	0.06	0.07	0.07	0.07	6.7%	5.3%
Cows (in 1,000's)	26	28	27	28	28	28	24	35	36	31	-3.0%	5.3%
Milk yield (t / cow / year)	1.5	1.2	1.2	1.3	1.3	1.6	2.3	1.9	1.9	2.1	10.0%	0.0%
<b>Farm structure</b>												
No. of dairy farms (in 1,000's)	0.6	0.6	0.6	0.5	0.5	0.5	0.51	0.79	0.79	0.75	0.0%	8.4%
Average farm size (cows / farm)	43	47	44	56	56	56	46	44	46	41	-3.0%	-2.9%
<b>Prices in national currency</b>												
Milk : feed price ratio	1.8	2.7	2.9	2.8	2.2	2.1	1.9	2.3	1.9	1.7	-7.4%	-1.5%
Cull cow (MYR / kg live weight)	4.5	4.5	4.5	4.5	5.5	5.5	6	7.5	8	8	5.9%	5.9%
Land - buy (MYR / ha)	20,000	20,000	25,000	25,000	35,000	40,000	40,000	45,000	50,000	50,000	9.9%	4.6%

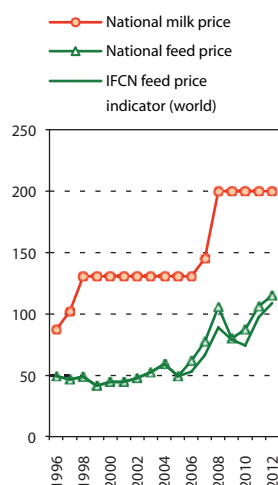
## Farm structure

% of dairy farms and cows in size classes (2008)



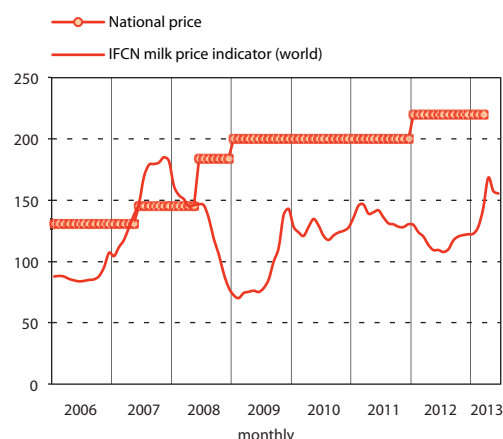
## Milk and feed price

MYR / 100 kg



## Farm gate milk prices

MYR / 100 kg milk (ECM)



### Explanations

Sources: National statistics, FAO, AMI, IMF. 2013 data: Preliminary and partly estimated.

Milk map details: Data based on the year 2012, milk production.

Remarks: Since no statistical information on corn prices are available the world market price is used. Soybean meal price 1996-2005 is linked to world market price.



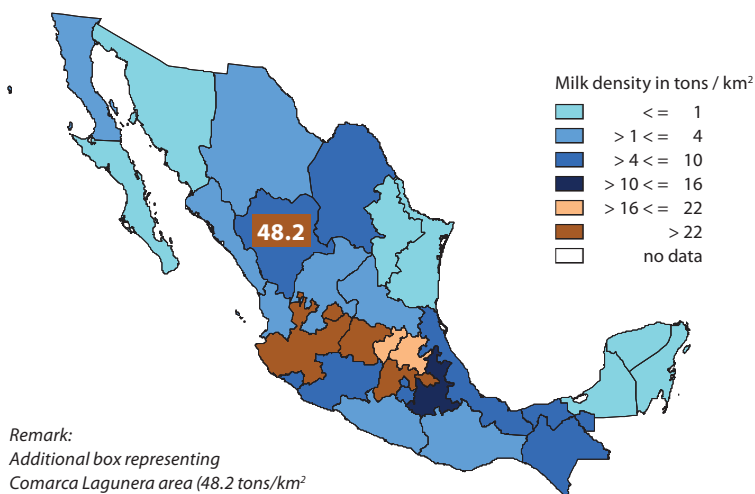


**Jaime Jurado Arredondo,  
Enrique Vázquez Selem,  
Rigoberto Becerra**



## Milk density 2012

in tons / km<sup>2</sup>



Remark:  
Additional box representing  
Comarca Lagunera area (48.2 tons/km<sup>2</sup>)

## STATUS AND KEY DEVELOPMENTS

### Status 2012

- Milk production (cow's): 11.3 mill t ECM (number 16 in the world)
- No. of dairy farms: 134,345
- Milk price: +16% to world market
- Feed price: -2% to world market

### Key developments over the past five years

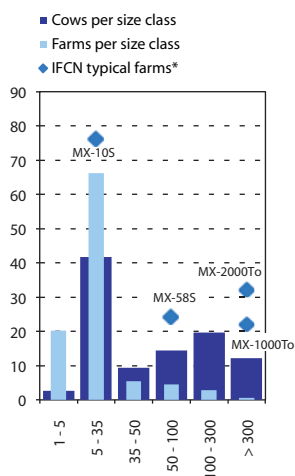
- Milk production growth: +1.2% per year
- Number of years the milk price was above world market level: 3
- Milk price was on average +5% to world market
- Feed price was on average +13% to world market

## Key variables

	1996	1998	2000	2002	2004	2006	2008	2010	2011	2012	Annual growth rates '02-'07 '07-'12	
<b>Milk production (cow's)</b>												
Production (mill t ECM)	7.84	8.59	9.62	9.98	10.19	10.42	10.85	11.21	11.10	11.31	1.3%	1.2%
Cows (in 1,000's)	1,694	1,814	2,075	2,182	2,234	2,221	2,340	2,348	2,374	2,382	1.1%	0.7%
Milk yield (t / cow / year)	4.6	4.7	4.6	4.6	4.6	4.7	4.6	4.8	4.7	4.7	0.2%	0.6%
<b>Farm structure</b>												
No. of dairy farms (in 1,000's)	119	123	126	128	130	133	133	134	134	134	0.8%	0.2%
Average farm size (cows / farm)	14	15	16	17	17	17	18	18	18	18	0.3%	0.5%
<b>Prices in national currency</b>												
Milk : feed price ratio	1.5	2.0	2.1	2.0	1.8	2.2	1.3	1.2	1.2	1.2	-2.6%	-6.6%
Cull cow (MXN / kg live weight)							11.90	12.60	12.60	15.12		4.9%
Land - buy (MXN / ha)	80,000	85,000	90,000	90,000	92,000	92,000	93,000	93,000	93,000	93,000	0.4%	0.2%

## Farm structure

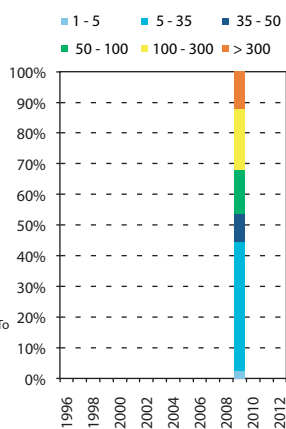
% of dairy farms and cows  
in size classes (2009)



\* size class where IFCN typical farms are

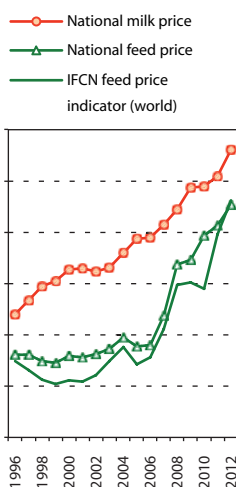
## Farm structure

% of cows per herd size



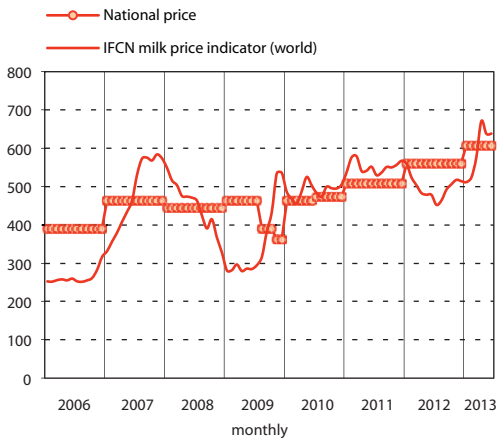
## Milk and feed price

MXN / 100 kg



## Farm gate milk prices

MXN / 100 kg milk (ECM)



## Explanations

Sources: National statistics, FAO, AMI, IMF. 2013 data: Preliminary and partly estimated.

Milk map details: Data based on the year 2012, milk production.

Estimates done for: Farm structure: % dairy on total livestock production. Dairy farm numbers: 2009-12. Since no statistical information on soybean meal is available the world market price is used. Monthly milk prices: 2006-2008: annual averages.

Remarks: Dairy cows and farms: Figures represent only pure dairy systems, tropical dual-purpose systems are not considered.



#### STATUS AND KEY DEVELOPMENTS

##### Status 2012

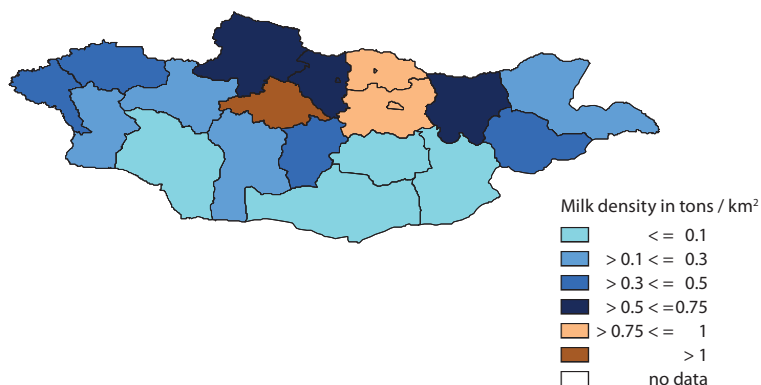
- Milk production (cow's): 0.3 mill t ECM (number 95 in the world)
- No. of dairy farms: 977
- Milk price: +49% to world market
- Feed price: -18% to world market

##### Key developments over the past five years

- Milk production growth: -7.6% per year
- Number of years the milk price was above world market level: 5
- Milk price was on average +28% to world market
- Feed price was on average -15% to world market

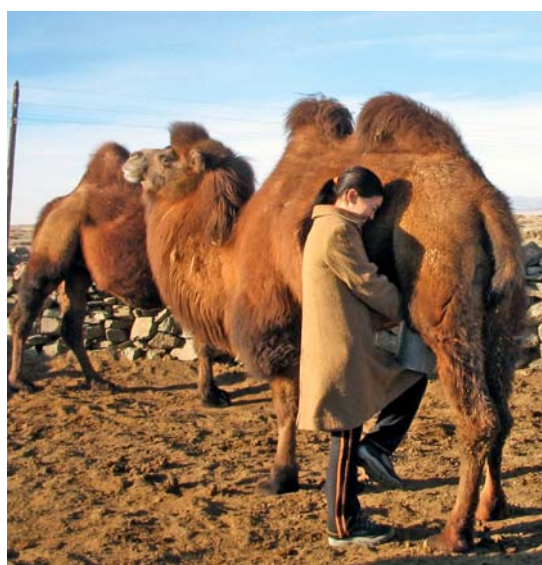
#### Milk density 2012

in tons / km<sup>2</sup>



#### Key variables

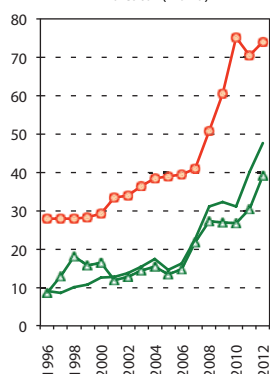
	1996	1998	2000	2002	2004	2006	2008	2010	2011	2012	Annual growth rates '02-'07 '07-'12	
<b>Milk production (cow's)</b>												
Production (mill t ECM)	0.37	0.43	0.37	0.27	0.40	0.48	0.49	0.24	0.30	0.34	12.7%	-7.6%
Cows (in 1,000's)	26	28	26	18	21	22	18	21	28	33	5.6%	6.5%
Milk yield (t / cow / year)	14.0	15.3	14.1	15.0	19.6	21.2	27.3	11.3	10.8	10.2	6.7%	-13.2%
<b>Farm structure</b>												
No. of dairy farms (in 1,000's)					0.13	0.40	0.56	0.64	0.90	0.97		9.9%
					158	57	32	33	31	34		-3.1%
<b>Prices in national currency</b>												
Milk : feed price ratio	3.2	1.6	1.8	2.6	2.5	2.7	1.9	2.8	2.3	1.9	-6.5%	0.0%
Cull cow (MNT / kg live weight)												
Land - buy (1,000 MNT / ha)												



#### Milk and feed price

1,000 MNT / 100 kg

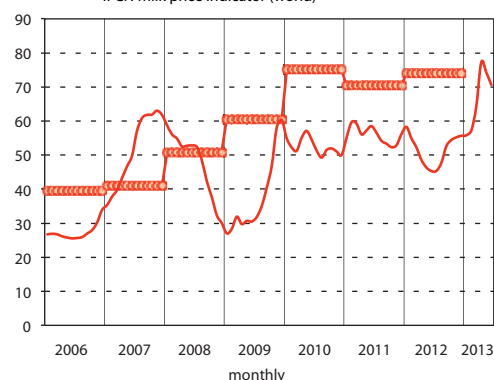
- National milk price
- △ National feed price
- IFCN feed price indicator (world)



#### Farm gate milk prices

1,000 MNT / 100 kg milk (ECM)

- National price
- IFCN milk price indicator (world)



#### Explanations

**Sources:** National statistics, FAO, AMI, IMF. 2013 data: Preliminary and partly estimated.

**Milk map details:** Data based on the year 2012, milk production.

**Estimates done for:** Since no statistical information on soybean meal prices are available the world market price is used. Monthly milk prices: 2006-2012: annual averages.

**Remarks:** Regional milk production based on cow milk. Provided data on number of dairy cows and farms is related only to dairy farms established in centrally located areas and areas close to cities and provincial centres in last 23 years.

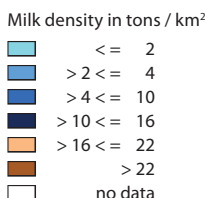
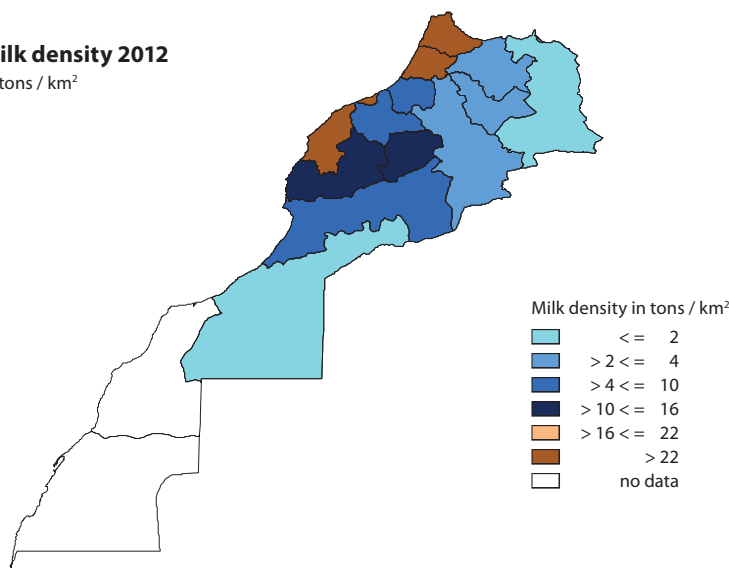


Btissam Kessab



## Milk density 2012

in tons / km<sup>2</sup>



## STATUS AND KEY DEVELOPMENTS

### Status 2012

- Milk production (cow's): 2.6 mill t ECM (number 44 in the world)
- No. of dairy farms: 400,000
- Milk price: +9% to world market
- Feed price: +29% to world market

### Key developments over the past five years

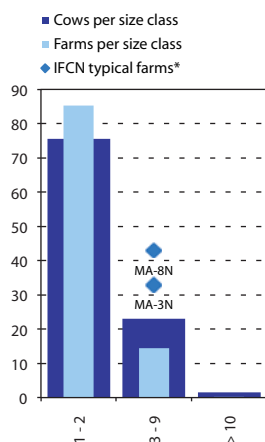
- Milk production growth: +8.5% per year
- Number of years the milk price was above world market level: 4
- Milk price was on average +12% to world market
- Feed price was on average +32% to world market

## Key variables

	1996	1998	2000	2002	2004	2006	2008	2010	2011	2012	Annual growth rates	
											'02-'07	'07-'12
<b>Milk production (cow's)</b>												
Production (mill t ECM)	0.87	1.05	1.18	1.23	1.41	1.61	1.84	2.15	2.33	2.56	6.7%	8.5%
Cows (in 1,000's)	1,205	1,324	1,308	1,331	1,350	1,497	1,561	1,592	1,608	1,655	2.6%	1.8%
Milk yield (t / cow / year)	0.7	0.8	0.9	0.9	1.0	1.1	1.2	1.4	1.4	1.5	4.0%	6.6%
<b>Farm structure</b>												
No. of dairy farms (in 1,000's)	769	700	650	550	450	400	400	400	400	400	-6.2%	0.0%
Average farm size (cows / farm)	2	2	2	2	3	4	4	4	4	4	9.3%	1.8%
<b>Prices in national currency</b>												
Milk : feed price ratio	1.8	1.8	1.5	1.5	1.6	1.6	1.2	1.3	1.1	0.9	-1.1%	-9.4%
Cull cow (MAD / kg live weight)							22	22	22	22		
Land - buy (MAD / ha)							350,000	350,000	350,000			

## Farm structure

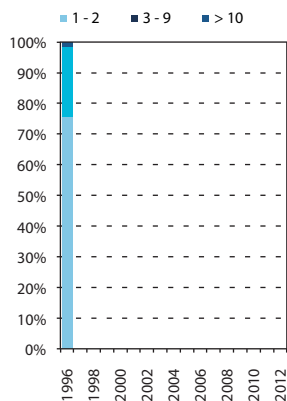
% of dairy farms and cows in size classes (1996)



\* size class where IFCN typical farms are

## Farm structure

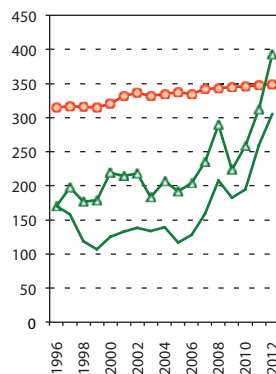
% of cows per herd size



## Milk and feed price

MAD / 100 kg

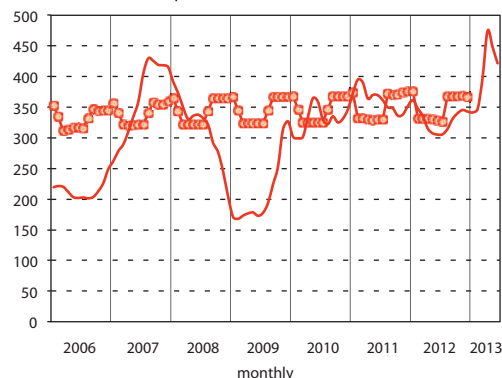
○ National milk price  
▲ National feed price  
■ IFCN feed price indicator (world)



## Farm gate milk prices

MAD / 100 kg milk (ECM)

○ National price  
■ IFCN milk price indicator (world)



## Explanations

Sources: National statistics, FAO, AMI, IMF. 2013 data: Preliminary and partly estimated.

Milk map details: Data based on the year 2012, milk production.

Estimates done for: Dairy farm numbers interpolated for years 2000-2004 and 2008-2009. Barley price 2007-2010.

Remarks: Since no statistical information on soybean meal are available world market price is used.





## STATUS AND KEY DEVELOPMENTS

### Status 2012

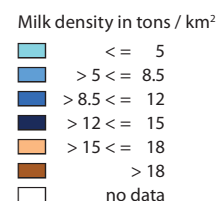
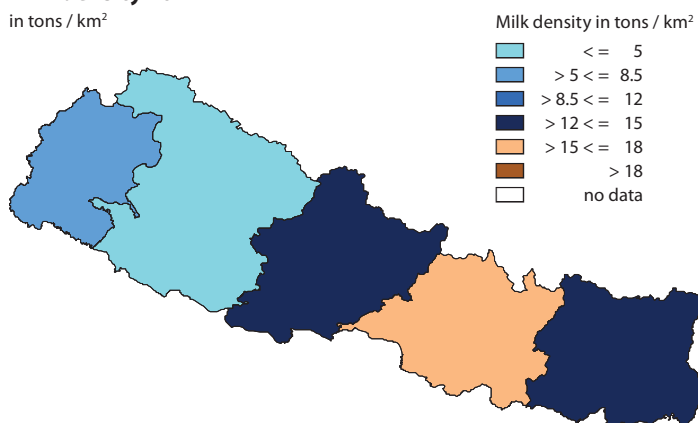
- Milk production (cow's and buffalo's): 1.8 mill t ECM (number 53 in the world)
- No. of dairy farms: 1,840,896
- Milk price: +1% to world market
- Feed price: 0% to world market

### Key developments over the past five years

- Milk production growth: +3.4% per year
- Number of years the milk price was above world market level: 4
- Milk price was on average +4% to world market
- Feed price was on average +0% to world market

## Milk density 2011

in tons / km<sup>2</sup>

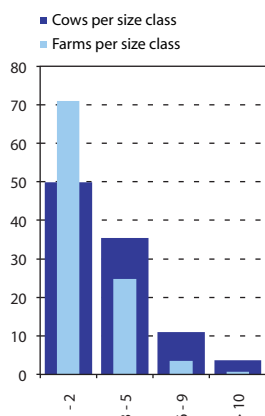


## Key variables

	1996	1998	2000	2002	2004	2006	2008	2010	2011	2012	Annual growth rates	
											'02-'07	'07-'12
<b>Milk production (cow's and buffalo's)</b>												
Production (mill t ECM)	1.14	1.20	1.26	1.34	1.43	1.52	1.63	1.75	1.80	1.84	3.1%	3.4%
Cows and buffalos (in 1,000's)	1,674	1,725	1,789	1,859	1,953	2,033	2,144	2,270	2,312	2,355	2.2%	2.6%
Milk yield (t / cow / year)	0.7	0.7	0.7	0.7	0.7	0.7	0.8	0.8	0.8	0.8	0.8%	0.8%
<b>Farm structure</b>												
No. of dairy farms (in 1,000's)	1,308	1,348	1,398	1,453	1,527	1,589	1,676	1,774	1,807	1,841	2.2%	2.6%
Average farm size (cows / farm)	1.27	1.27	1.27	1.27	1.27	1.27	1.27	1.27	1.27	1.27	0.0%	0.0%
<b>Prices in national currency</b>												
Milk : feed price ratio	1.7	2.6	2.6	2.2	1.9	2.3	1.3	1.9	1.4	1.1	-3.4%	-10.6%
Cull cow (NPR / kg live weight)												
Land - buy (1,000 NPR / ha)												

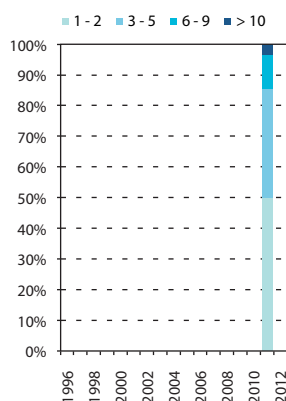
## Farm structure

% of dairy farms and cows in size classes (2011)



## Farm structure

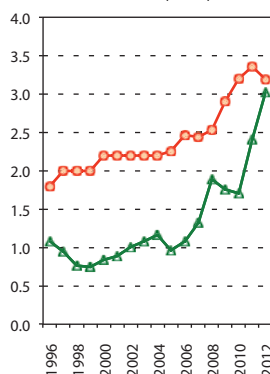
% of cows per herd size



## Milk and feed price

1,000 NPR / 100 kg

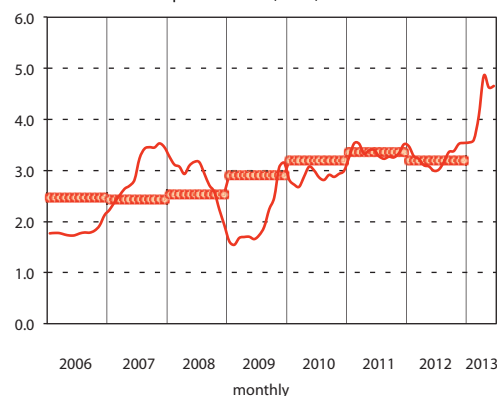
—○— National milk price  
—△— National feed price  
—■— IFCN feed price indicator (world)



## Farm gate milk prices

1,000 NPR / 100 kg milk (ECM)

—○— National price  
—■— IFCN milk price indicator (world)



## Explanations

**Sources:** National statistics, FAO, AMI, IMF. 2013 data: Preliminary and partly estimated.

**Milk map details:** Data based on the year 2011, milk production.

**Estimates done for:** Farm structure: Farm and cow number 2011 IFCN estimate based on NLSS Report. Cow and buffalo numbers 2012.

Dairy farm number based on average herd size. Monthly milk prices: 2006-2012: annual averages.

**Remarks:** Since no statistical information on feed prices are available the world market price is used.



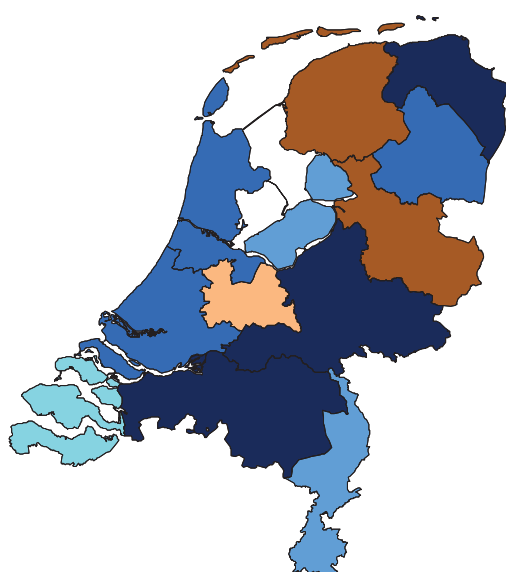
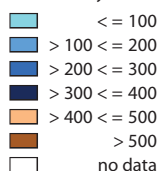
Michel de Haan



## Milk density 2012

in tons / km<sup>2</sup>

Milk density in tons / km<sup>2</sup>



## STATUS AND KEY DEVELOPMENTS

### Status 2012

- Milk production (cow's): 12.7 mill t ECM (number 12 in the world)
- No. of dairy farms: 18,680
- Milk price: +17% to world market
- Feed price: +6% to world market

### Key developments over the past five years

- Milk production growth: +1.2% per year
- Number of years the milk price was above world market level: 5
- Milk price was on average +16% to world market
- Feed price was on average +18% to world market

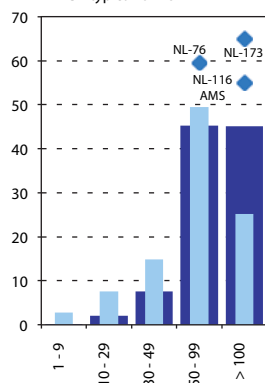
## Key variables

	1996	1998	2000	2002	2004	2006	2008	2010	2011	2012	Annual growth rates	
											'02-'07	'07-'12
<b>Milk production (cow's)</b>												
Production (mill t ECM)	11.71	11.69	11.77	11.50	11.63	11.68	12.33	12.64	12.62	12.68	0.8%	1.2%
Cows (in 1,000's)	1,646	1,600	1,532	1,546	1,502	1,420	1,466	1,479	1,470	1,484	-1.8%	1.0%
Milk yield (t / cow / year)	7.1	7.3	7.7	7.4	7.7	8.2	8.4	8.5	8.6	8.5	2.6%	0.2%
<b>Farm structure</b>												
No. of dairy farms (in 1,000's)	39	36	32	26	24	22	21	20	19	19	-4.2%	-2.6%
Average farm size (cows / farm)	43	44	49	59	62	64	71	75	76	79	2.5%	3.7%
<b>Prices in national currency</b>												
Milk : feed price ratio	1.9	2.4	1.9	2.3	2.0	2.0	1.5	1.6	1.5	1.2	-6.8%	-6.2%
Cull cow (EUR / kg live weight)	0.98	1.00	1.04	0.73	0.88	1.08	1.15	1.03	1.24	1.33	7.0%	5.2%
Land - buy (EUR / ha)	29,360	37,346	34,400	33,700	28,000	29,260	39,000	41,000	44,000	46,000	1.6%	4.7%
Quota (EUR / kg milk)	1.68	1.74	1.79	1.93	1.76	1.73	0.98	0.81	0.74	0.50	-11.8%	-13.5%

## Farm structure

% of dairy farms and cows in size classes (2012)

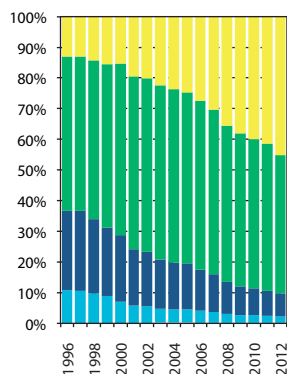
- Cows per size class
- Farms per size class
- ◆ IFCN typical farms\*



## Farm structure

% of cows per herd size

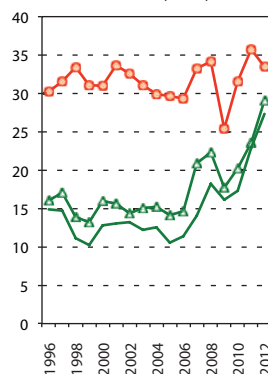
- 1 - 9
- 10 - 29
- 30 - 49
- 50 - 99
- > 100



## Milk and feed price

EUR / 100 kg

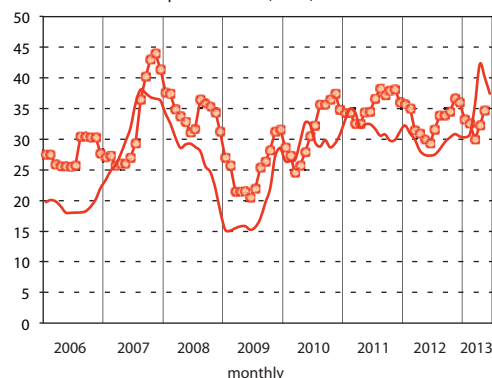
- National milk price
- △— National feed price
- IFCN feed price indicator (world)



## Farm gate milk prices

EUR / 100 kg milk (ECM)

- National price
- IFCN milk price indicator (world)



\* size class where IFCN typical farms are

## Explanations

Sources: National statistics, FAO, AMI, IMF. 2013 data: Preliminary and partly estimated.

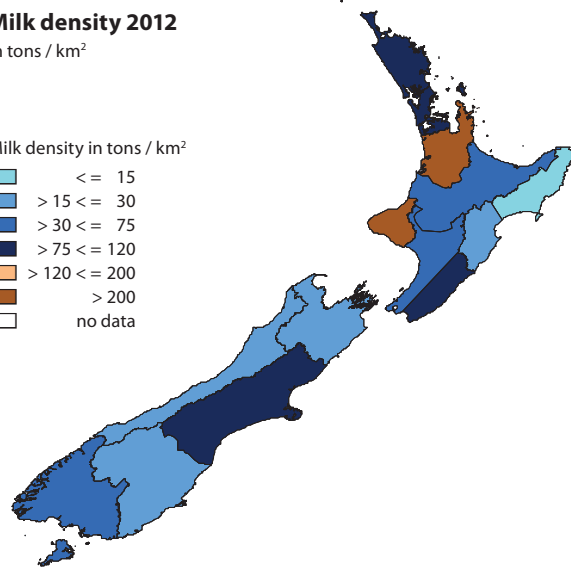
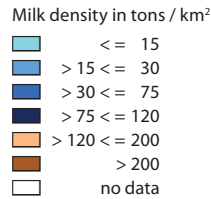
Milk map details: Data based on the year 2012, milk production.


**STATUS AND KEY DEVELOPMENTS**
**Status 2012**

- Milk production (cow's): 23.3 mill t ECM (number 9 in the world)
- No. of dairy farms: 11,798
- Milk price: -1% to world market
- Feed price: +24% to world market

**Key developments over the past five years**

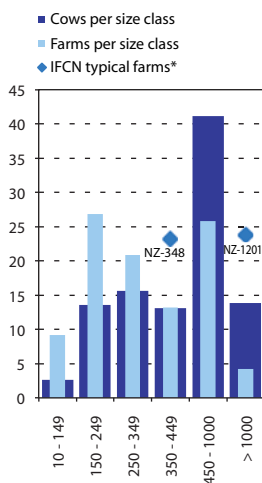
- Milk production growth: +5.4% per year
- Number of years the milk price was above world market level: 1
- Milk price was on average -8% to world market
- Feed price was on average +23% to world market

**Milk density 2012**  
in tons / km<sup>2</sup>

**Key variables**

	1996	1998	2000	2002	2004	2006	2008	2010	2011	2012	Annual growth rates	
											'02-'07	'07-'12
<b>Milk production (cow's)</b>												
Production (mill t ECM)	11.86	12.00	14.06	15.78	16.55	18.11	17.40	19.26	21.37	23.26	2.6%	5.4%
Cows (in 1,000's)	2,936	3,223	3,269	3,693	3,851	3,832	4,013	4,397	4,529	4,634	1.2%	3.4%
Milk yield (t / cow / year)	4.0	3.7	4.3	4.3	4.3	4.7	4.3	4.4	4.7	5.0	1.4%	1.9%
<b>Farm structure</b>												
No. of dairy farms (in 1,000's)	15	15	14	14	13	12	11	12	12	12	-3.2%	0.3%
Average farm size (cows / farm)	199	220	236	271	302	322	351	376	386	393	4.5%	3.1%
<b>Prices in national currency</b>												
Milk : feed price ratio	0.9	1.0	1.1	1.0	1.2	1.2	1.1	1.4	1.0	0.8	8.5%	-11.2%
Cull cow (NZD / kg live weight)	0.57	0.82	1.19	1.42	0.98	1.12	1.20	1.26	1.30	1.37	-5.6%	5.1%
Land - buy (NZD / ha)	13,187	11,076	10,740	14,658	18,287	25,308	35,143	31,618	32,726	32,123	13.8%	2.8%

**Farm structure**

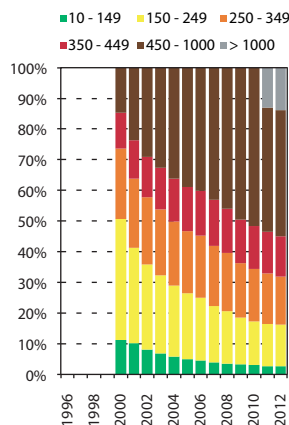
% of dairy farms and cows in size classes (2012)



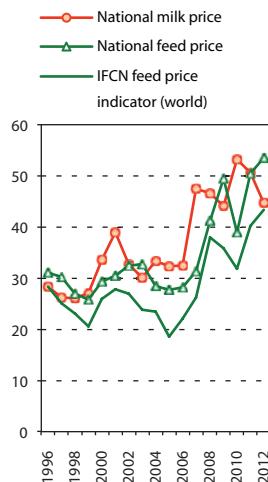
\* size class where IFCN typical farms are

**Farm structure**

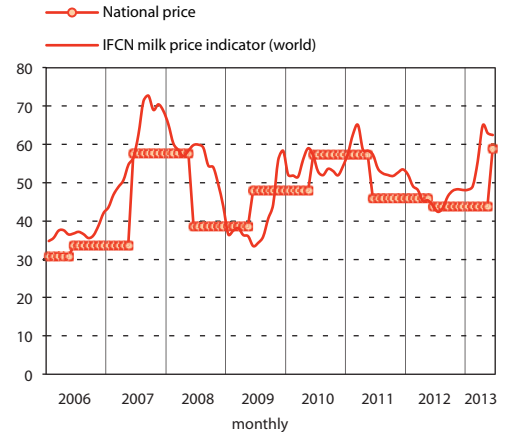
% of cows per herd size


**Milk and feed price**

NZD / 100 kg


**Farm gate milk prices**

NZD / 100 kg milk (ECM)


**Explanations**
**Sources:** National statistics (e.g. LIC), FAO, AMI, IMF. 2013 data: Preliminary and partly estimated.

**Milk map details:** Data based on the year 2012, milk production.

**Remarks:** Annualised production and price data is shown.



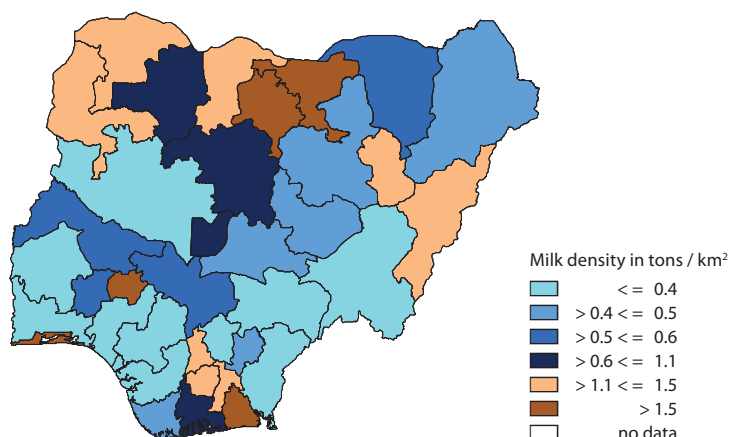


Aminu Shittu



## Milk density 2005

in tons / km<sup>2</sup>



## STATUS AND KEY DEVELOPMENTS

### Status 2012

- Milk production (cow's): 0.5 mill t ECM (number 92 in the world)
- No. of dairy farms: 327,000
- Milk price: +27% to world market
- Feed price: -21% to world market

### Key developments over the past five years

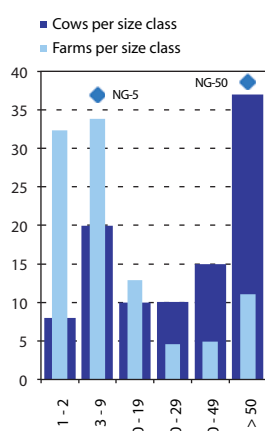
- Milk production growth: +1.3% per year
- Number of years the milk price was above world market level: 1
- Milk price was on average -21% to world market
- Feed price was on average -23% to world market

## Key variables

	1996	1998	2000	2002	2004	2006	2008	2010	2011	2012	Annual growth rates '02-'07 '07-'12	
<b>Milk production (cow's)</b>												
Production (mill t ECM)	0.39	0.38	0.40	0.42	0.44	0.48	0.48	0.51	0.51	0.51	2.8%	1.3%
Cows (in 1,000's)	3,401	3,002	3,207	3,573	3,864	4,262	4,252	4,252	4,253	4,254	3.5%	0.0%
Milk yield (t / cow / year)	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	-0.7%	1.2%
<b>Farm structure</b>												
No. of dairy farms (in 1,000's)	179	189	175	205	208	293	325	325	326	327	9.6%	0.2%
Average farm size (cows / farm)	19	16	18	17	19	15	13	13	13	13	-5.5%	-0.2%
<b>Prices in national currency</b>												
Milk : feed price ratio	2.7	3.4	3.6	4.8	3.7	4.0	2.9	0.6	0.9	1.7	-5.2%	-14.5%
Cull cow (NGN / kg live weight)	250	273	299	390	416	501	580	600	650	680	7.9%	3.6%
Land - buy (1,000 NGN / ha)	70	70	80	82	120	140	150	150	150	150	11.3%	1.4%

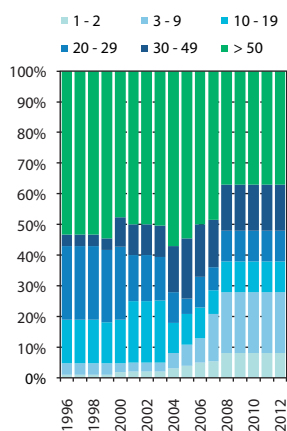
## Farm structure

% of dairy farms and cows in size classes (2010)



## Farm structure

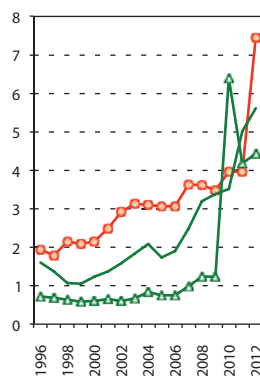
% of cows per herd size



## Milk and feed price

1,000 NGN / 100 kg

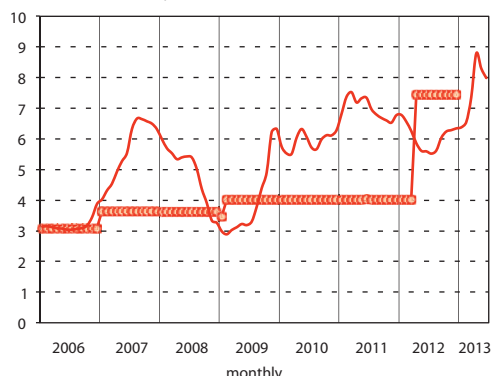
—○— National milk price  
—△— National feed price  
—■— IFCN feed price indicator (world)



## Farm gate milk prices

1,000 NGN / 100 kg milk (ECM)

—○— National price  
—■— IFCN milk price indicator (world)



## Explanations

**Sources:** National statistics, FAO, AMI, IMF. 2013 data: Preliminary and partly estimated.

**Milk map details:** Data based on the year 2005, milk production.

**Estimates done for:** Farm structure: Cow number and farm number based on national reports, 2011-12 following the trend. Milk production, milk price and feed 2012. Monthly milk prices: annual averages.

**Remarks: 2010:** The price of soya bean and corn are not company quoted price for soya bean and maize rather it is the selling price per ton. It does not follow linear trends from year to year rather it is influenced by price of farm inputs and supply-demand trend for the year.



Ola Flaten,  
Bjørn Gunnar Hansen



**STATUS AND KEY DEVELOPMENTS**

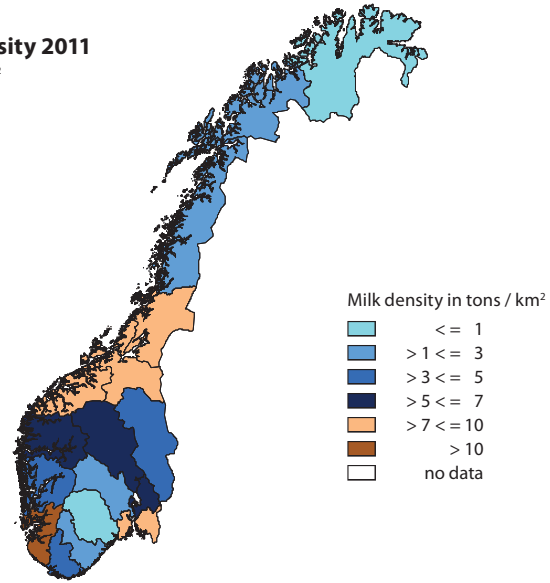
**Status 2012**

- Milk production (cow's): 1.7 mill t ECM (number 61 in the world)
- No. of dairy farms: 9,951
- Milk price: +108% to world market
- Feed price: +62% to world market

**Key developments over the past five years**

- Milk production growth: -0.2% per year
- Number of years the milk price was above world market level: 5
- Milk price was on average +84% to world market
- Feed price was on average +105% to world market

**Milk density 2011**  
in tons / km<sup>2</sup>

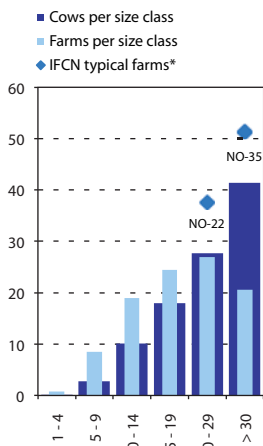


**Key variables**

	1996	1998	2000	2002	2004	2006	2008	2010	2011	2012	Annual growth rates '02-'07 '07-'12	
<b>Milk production (cow's)</b>												
Production (mill t ECM)	1.94	1.92	1.81	1.73	1.76	1.73	1.76	1.73	1.69	1.74	0.3%	-0.2%
Cows (in 1,000's)	318	314	298	282	272	259	248	238	233	233	-2.1%	-1.6%
Milk yield (t / cow / year)	6.1	6.1	6.1	6.1	6.5	6.7	7.1	7.3	7.2	7.5	2.5%	1.4%
<b>Farm structure</b>												
No. of dairy farms (in 1,000's)	25	24	21	19	17	15	13	11	11	10	-5.9%	-6.1%
Average farm size (cows / farm)	13	13	14	15	16	18	20	21	22	23	4.0%	4.8%
<b>Prices in national currency</b>												
Milk : feed price ratio	1.1	1.2	1.2	1.2	1.2	1.3	1.3	1.3	1.4	1.3	2.2%	-0.1%
Cull cow (NOK / kg live weight)	14.60	14.30	11.10	12.21	13.37	13.82	15.09	16.68	16.83	17.57	3.3%	4.2%
Land - rent (NOK / ha)	1,370	1,470	1,520	1,220	1,300	1,440	1,350	1,390	1,450	1,550	4.0%	0.9%
Quota (NOK / kg milk)		5.33	5.33	3.39	4.53	5.76	4.31	4.75	4.55	3.62	9.7%	-7.6%

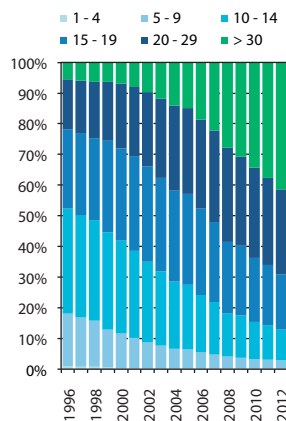
**Farm structure**

% of dairy farms and cows in size classes (2012)



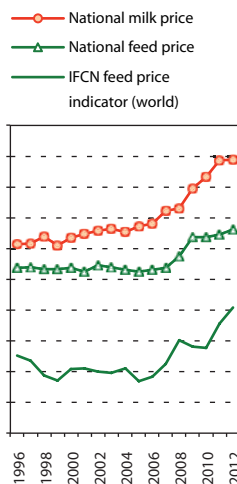
**Farm structure**

% of cows per herd size



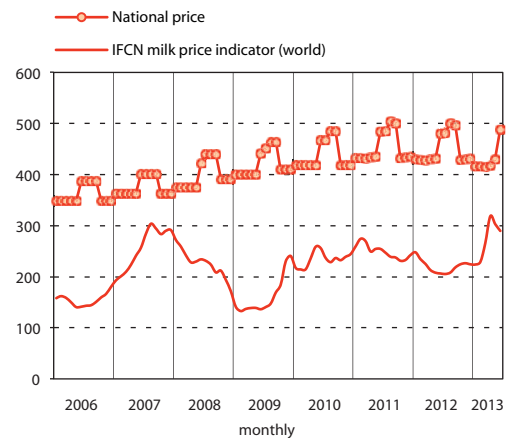
**Milk and feed price**

NOK / 100 kg



**Farm gate milk prices**

NOK / 100 kg milk (ECM)



\* size class where IFCN typical farms are

**Explanations**

**Sources:** National statistics, FAO, AMI, IMF. 2013 data: Preliminary and partly estimated.

**Milk map details:** Data based on the year 2011, milk delivered.

**Remarks:** The feed price shown is that for a complete concentrate which is a mixture of soybean meal and barley including minerals and vitamins.

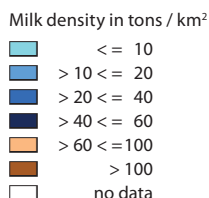
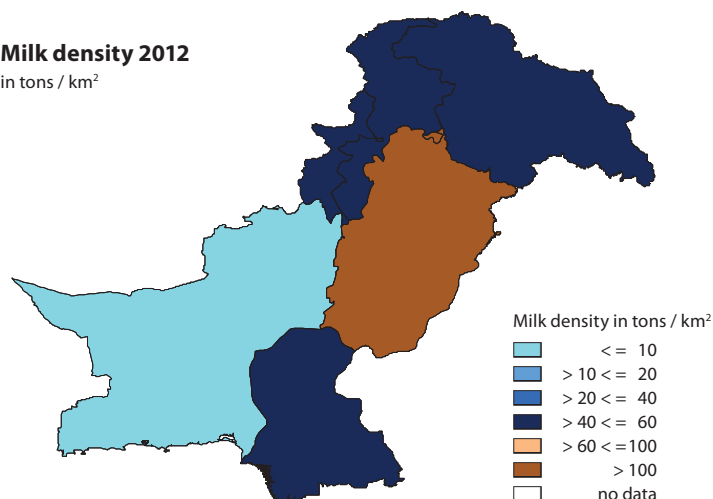


Haroon Lodhi,  
Waseem Shaukat



## Milk density 2012

in tons / km<sup>2</sup>



## STATUS AND KEY DEVELOPMENTS

### Status 2012

- Milk production (cow's and buffalo's): 42.8 mill t ECM (number 3 in the world)
- No. of dairy farms: 7,203,000
- Milk price: -17% to world market
- Feed price: +1% to world market

### Key developments over the past five years

- Milk production growth: +6.2% per year
- Number of years the milk price was above world market level: 0
- Milk price was on average -28% to world market
- Feed price was on average +22% to world market

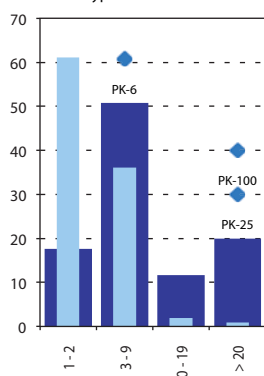
## Key variables

	1996	1998	2000	2002	2004	2006	2008	2010	2011	2012	Annual growth rates	
											'02-'07	'07-'12
<b>Milk production (cow's and buffalo's)</b>												
Production (mill t ECM)	17.74	18.74	23.38	25.00	25.72	29.06	34.58	39.27	41.59	42.84	4.9%	6.2%
Cows and buffalos (in 1,000's)	13,064	13,697	14,761	15,416	15,988	17,042	19,236	20,614	21,458	21,959	3.2%	4.0%
Milk yield (t / cow / year)	1.4	1.4	1.6	1.6	1.6	1.7	1.8	1.9	1.9	2.0	1.6%	2.1%
<b>Farm structure</b>												
No. of dairy farms (in 1,000's)	11,252	10,686	10,119	9,553	8,986	8,420	7,894	7,399	7,281	7,203	-3.1%	-2.4%
Average farm size (cows / farm)	1	1	1	2	2	2	2	3	3	3	6.5%	6.6%
<b>Prices in national currency</b>												
Milk : feed price ratio	0.8	0.7	0.7	0.7	0.9	0.8	0.8	0.9	0.9	0.9	3.7%	-0.3%
Cull cow (PKR / kg live weight)	21	23	26	28	31	45	60	95	110	120	14.3%	16.9%
Land - buy (1,000 PKR / ha)	371	448	542	656	729	778	889	956	1,977	2,471	6.0%	23.0%

## Farm structure

% of dairy farms and cows in size classes (2012)

- Cows per size class
- Farms per size class
- ◆ IFCN typical farms\*

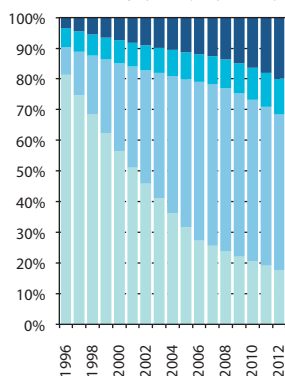


\* size class where IFCN typical farms are

## Farm structure

% of cows per herd size

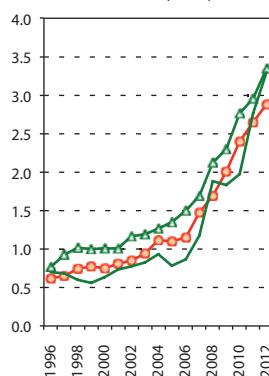
- 1 - 2
- 3 - 9
- 10 - 19
- > 20



## Milk and feed price

1,000 PKR / 100 kg

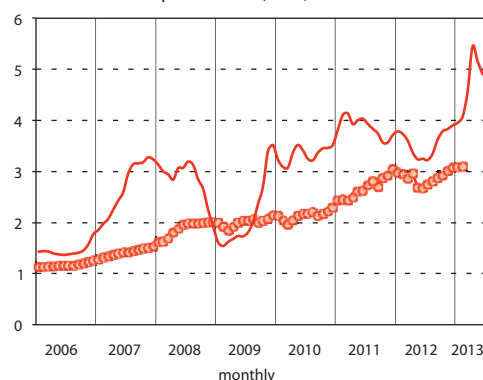
- National milk price
- △ National feed price
- IFCN feed price indicator (world)



## Farm gate milk prices

1,000 PKR / 100 kg milk (ECM)

- National price
- IFCN milk price indicator (world)



## Explanations

**Sources:** National statistics, FAO, AMI, IMF. 2013 data: Preliminary and partly estimated.

**Milk map details:** Data based on the year 2012, milk production.

**Estimates done for:** Farm structure: 1997-2005 based on livestock census 1996 and 2006, 2007-2012 by IFCN.

**Remarks:** Farm structure: 0.2% of farms >1000 cows per herd size class. Milk Price: A commercial Dairy Farms (Example PK-100 farm) and Corporate Dairy Farms (leading edge large scale dairy farms with over 1000 cows) receiving relatively higher milk price than average and small farm because of better quality and bulk quantity. Cow and buffalo milk production in natural fat and protein content is 35.46 bn litre.



## STATUS AND KEY DEVELOPMENTS

### Status 2012

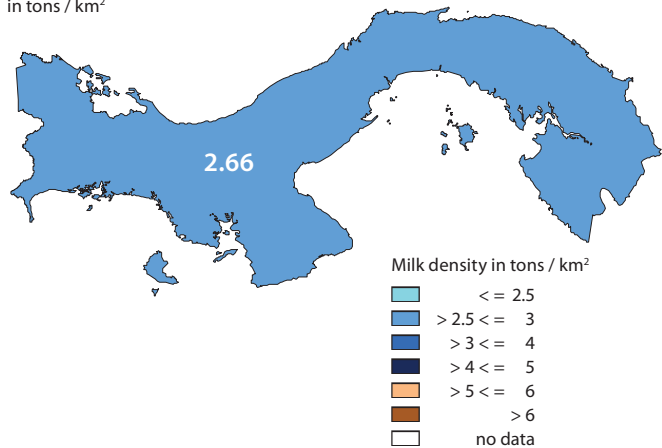
- Milk production (cow's): 0.2 mill t ECM (number 116 in the world)
- No. of dairy farms: 4,913
- Milk price: +59% to world market
- Feed price: 0% to world market

### Key developments over the past five years

- Milk production growth: +2.1% per year
- Number of years the milk price was above world market level: 4
- Milk price was on average +18% to world market
- Feed price was on average +0% to world market

## Milk density 2012

in tons / km<sup>2</sup>



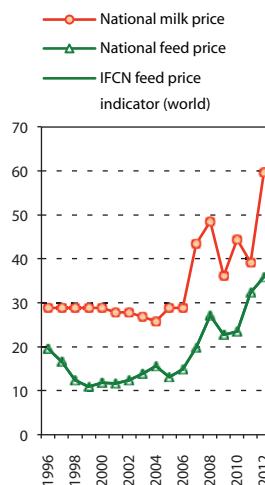
## Key variables

	1996	1998	2000	2002	2004	2006	2008	2010	2011	2012	Annual growth rates '02-'07 '07-'12	
<b>Milk production (cow's)</b>												
Production (mill t ECM)	0.16	0.17	0.17	0.18	0.18	0.18	0.19	0.20	0.20	0.20	0.4%	2.1%
Cows (in 1,000's)	126	120	140	146	147	147	171	163	163	163	2.1%	0.1%
Milk yield (t / cow / year)	1.2	1.4	1.2	1.2	1.2	1.2	1.1	1.2	1.2	1.2	-1.7%	2.0%
<b>Farm structure</b>												
No. of dairy farms (in 1,000's)	5	5	5	5	5	5	5	5	5	5	0.2%	0.0%
Average farm size (cows / farm)	24	24	28	30	29	30	35	33	33	33	1.9%	0.1%
<b>Prices in national currency</b>												
Milk : feed price ratio	1.5	2.3	2.5	2.2	1.7	1.9	1.8	1.9	1.2	1.7	-0.4%	-5.3%
Cull cow (PAB / kg live weight)												
Land - buy (PAB / ha)												



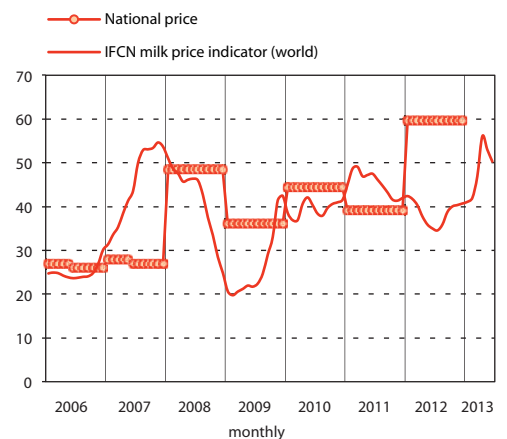
## Milk and feed price

PAB / 100 kg



## Farm gate milk prices

PAB / 100 kg milk (ECM)



## Explanations

**Sources:** National statistics, FAO, AMI, IMF. 2013 data: Preliminary and partly estimated.

**Milk map details:** Data based on the year 2012, milk production.

**Estimates done for:** Cow milk production 2012. Milk price: 2002-2003 are calculated as an average from regional data.

The world monthly milk prices 2008-2012: annual average prices. Farm number: Based on 2007 data.

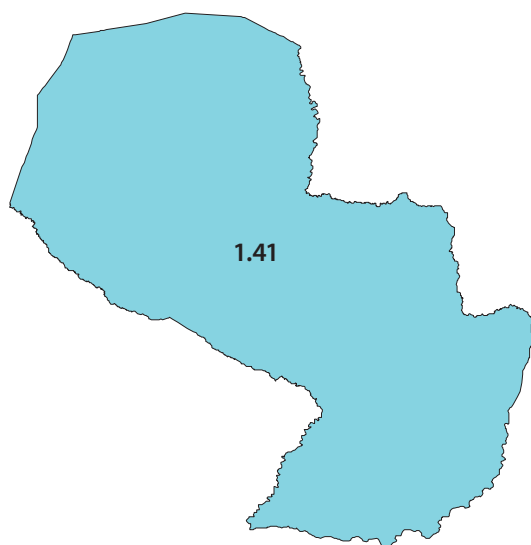
**Remarks:** Since no statistical information on soybean meal and corn prices are available the world market price is used.

## 3.72 Paraguay – Milk production fact sheet

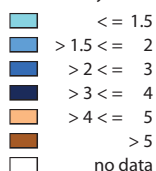


### Milk density 2012

in tons / km<sup>2</sup>



Milk density in tons / km<sup>2</sup>



### STATUS AND KEY DEVELOPMENTS

#### Status 2012

- Milk production (cow's): 0.5 mill t ECM (number 93 in the world)
- No. of dairy farms: 7,000
- Milk price: +30% to world market
- Feed price: -18% to world market

#### Key developments over the past five years

- Milk production growth: +4.4% per year
- Number of years the milk price was above world market level: 4
- Milk price was on average +6% to world market
- Feed price was on average -13% to world market

### Key variables

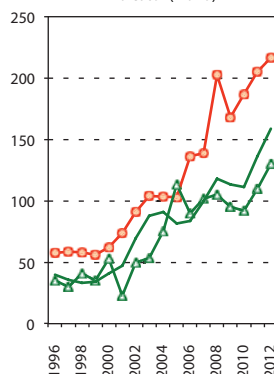
	1996	1998	2000	2002	2004	2006	2008	2010	2011	2012	Annual growth rates	
											'02-'07	'07-'12
<b>Milk production (cow's)</b>												
Production (mill t ECM)	0.34	0.37	0.43	0.36	0.36	0.40	0.40	0.42	0.47	0.49	1.7%	4.4%
Cows (in 1,000's)	174	189	138	163	157	165	188	168	168	168	1.7%	-1.1%
Milk yield (t / cow / year)	2.0	1.9	3.1	2.2	2.3	2.4	2.1	2.5	2.8	2.9	0.0%	5.6%
<b>Farm structure</b>												
No. of dairy farms (in 1,000's)	17	14	11	9	8	8	7	7	7	7	-3.1%	-0.7%
Average farm size (cows / farm)	10	13	12	19	20	22	27	24	24	24	4.9%	-0.4%
<b>Prices in national currency</b>												
Milk : feed price ratio	1.6	1.4	1.2	1.8	1.4	1.5	1.9	2.0	1.9	1.7	-5.7%	4.1%
Cull cow (PYG / kg live weight)	1,329	1,770	1,897	2,285	3,031	4,155	5,380	7,250			14.6%	
Land - buy (1,000 PYG / ha)							3,000					



### Milk and feed price

1,000 PYG / 100 kg

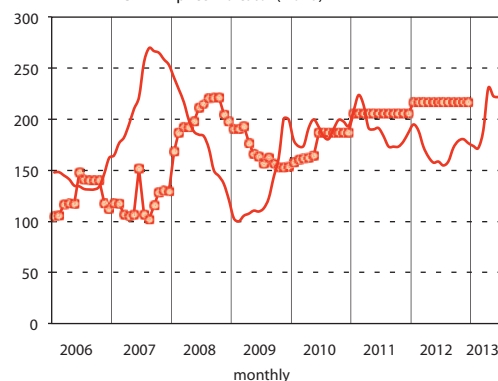
—○— National milk price  
—△— National feed price  
—■— IFCN feed price indicator (world)



### Farm gate milk prices

1,000 PYG / 100 kg milk (ECM)

—○— National price  
—■— IFCN milk price indicator (world)



### Explanations

**Sources:** National statistics, FAO, AMI, IMF. 2013 data: Preliminary and partly estimated.

**Milk map details:** Data based on the year 2012, milk production.

**Estimates done for:** Farm number based on 1996, 2002, 2008 and 2009 data. Feed prices (soybean meal and barley) 2006-2007. Monthly milk price 2010-2012: annual average prices.



Carlos A. Gomez



## 3.73 Peru – Milk production fact sheet

### STATUS AND KEY DEVELOPMENTS

#### Status 2012

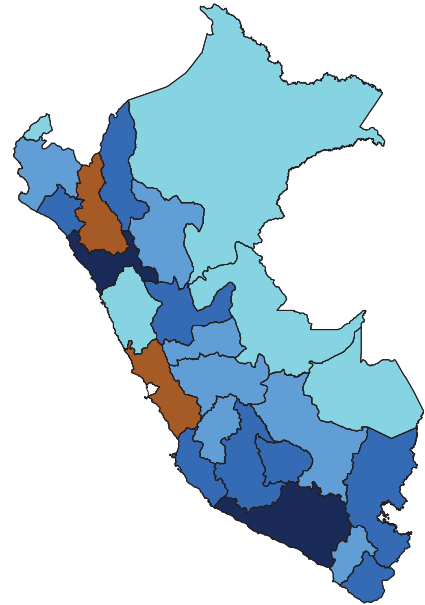
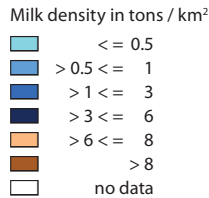
- Milk production (cow's): 1.7 mill t ECM (number 63 in the world)
- No. of dairy farms: 113,000
- Milk price: -5% to world market
- Feed price: +31% to world market

#### Key developments over the past five years

- Milk production growth: +3.6% per year
- Number of years the milk price was above world market level: 1
- Milk price was on average -20% to world market
- Feed price was on average +41% to world market

#### Milk density 2011

in tons / km<sup>2</sup>



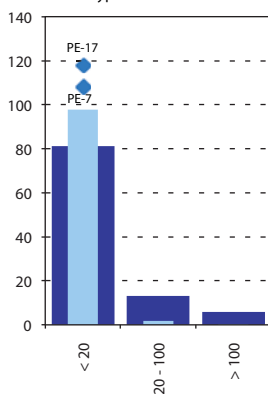
### Key variables

	1996	1998	2000	2002	2004	2006	2008	2010	2011	2012	Annual growth rates	
											'02-'07	'07-'12
<b>Milk production (cow's)</b>												
Production (mill t ECM)	0.87	0.96	1.02	1.14	1.21	1.37	1.50	1.61	1.65	1.72	4.6%	3.6%
Cows (in 1,000's)	553	520	504	628	657	732	769	788	790	815	3.6%	1.7%
Milk yield (t / cow / year)	1.6	1.8	2.0	1.8	1.8	1.9	2.0	2.0	2.1	2.1	1.0%	1.9%
<b>Farm structure</b>												
No. of dairy farms (in 1,000's)	91	86	83	104	106	111	112	112	112	113	1.5%	0.3%
Average farm size (cows / farm)	6	6	6	6	6	7	7	7	7	7	2.1%	1.4%
<b>Prices in national currency</b>												
Milk : feed price ratio	0.8	0.8	0.9	0.9	1.0	1.0	0.8	0.7	0.8	0.8	0.5%	-4.5%
Cull cow (PEN / kg live weight)	2.50	2.50	2.51	2.51	2.51	2.53	2.53	2.55	2.55	2.55	0.2%	0.2%
Land - buy (PEN / ha)	24,950	26,223	27,693	28,230	29,133	30,000	31,200	31,250	31,350	31,400	1.7%	0.4%

### Farm structure

% of dairy farms and cows in size classes (2012)

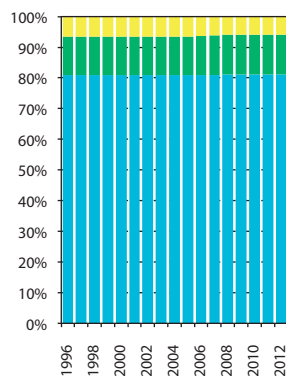
- Cows per size class
- Farms per size class
- ◆ IFCN typical farms\*



### Farm structure

% of cows per herd size

- < 20
- 20 - 100
- > 100

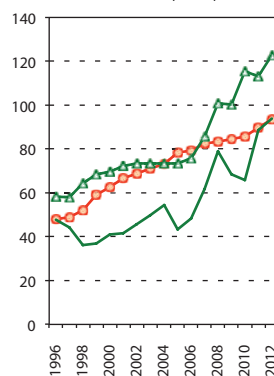


\* size class where IFCN typical farms are

### Milk and feed price

PEN / 100 kg

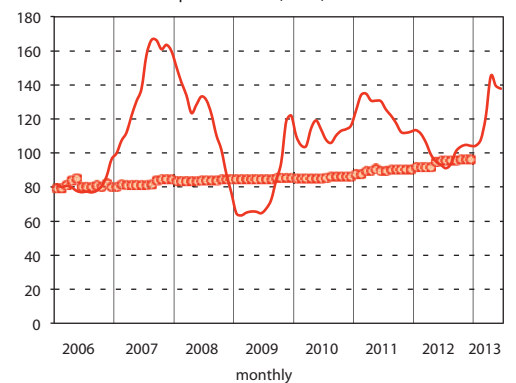
- National milk price
- △ National feed price
- IFCN feed price indicator (world)



### Farm gate milk prices

PEN / 100 kg milk (ECM)

- National price
- IFCN milk price indicator (world)



### Explanations

Sources: National statistics, FAO, AMI, IMF. 2013 data: Preliminary and partly estimated.

Milk map details: Data based on the year 2011, milk production.



# 3.74 Philippines – Milk production fact sheet



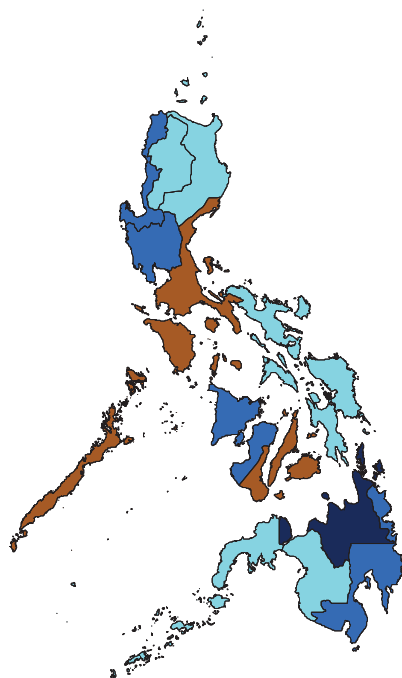
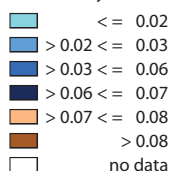
Naomi K. Torreta



## Milk density 2012

in tons / km<sup>2</sup>

Milk density in tons / km<sup>2</sup>



## STATUS AND KEY DEVELOPMENTS

### Status 2012

- Milk production (cow's and buffalo's): 0.02 mill t ECM (number 152 in the world)
- No. of dairy farms: 26,000
- Milk price: +69% to world market
- Feed price: +24% to world market

### Key developments over the past five years

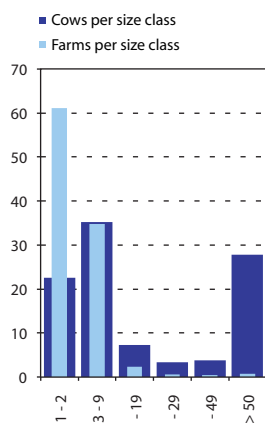
- Milk production growth: +6.5% per year
- Number of years the milk price was above world market level: 5
- Milk price was on average +47% to world market
- Feed price was on average +36% to world market

## Key variables

	1996	1998	2000	2002	2004	2006	2008	2010	2011	2012	Annual growth rates	
											'02-'07	'07-'12
<b>Milk production (cow's and buffalo's)</b>												
Production (mill t ECM)	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.02	0.02	0.02	3.0%	6.5%
Cows and buffalos (in 1,000's)	5	4	5	6	7	7	8	9	8	10	4.2%	5.1%
Milk yield (t / cow / year)	2.2	2.4	2.0	1.9	1.7	1.7	1.8	1.8	2.0	1.9	-1.2%	1.4%
<b>Farm structure</b>												
No. of dairy farms (in 1,000's)	5	5	5	5	10	15	21	26	26	26	29.7%	7.5%
Average farm size (cows / farm)	1	1	1	1	1	0.5	0.4	0.3	0.3	0.4	-19.6%	-2.3%
<b>Prices in national currency</b>												
Milk : feed price ratio	1.8	1.8	1.9	2.1	1.6	1.9	1.5	1.7	1.6	1.4	-4.0%	-3.2%
Cull cow (PHP / kg live weight)	32.61	33.04	38.34	41.12	46.15	52.01	57.80	66.81	68.31	69.93	5.1%	5.8%
Land - buy (1,000 PHP / ha)												

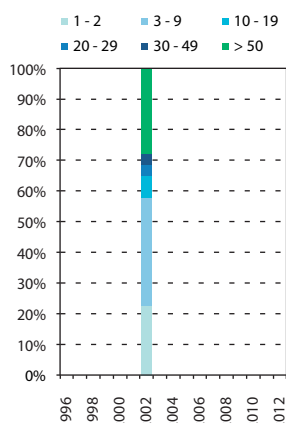
## Farm structure

% of dairy farms and cows in size classes (2002)



## Farm structure

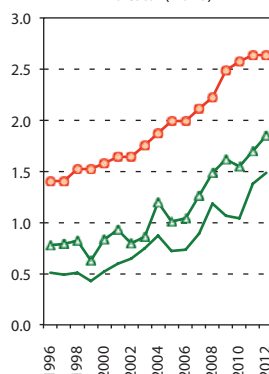
% of cows per herd size



## Milk and feed price

1,000 PHP / 100 kg

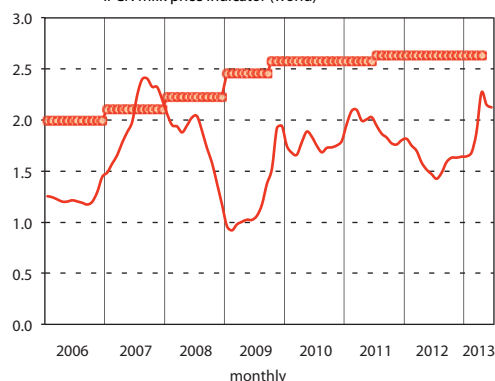
—○— National milk price  
—△— National feed price  
—■— IFCN feed price indicator (world)



## Farm gate milk prices

1,000 PHP / 100 kg milk (ECM)

—○— National price  
—■— IFCN milk price indicator (world)



## Explanations

Sources: National statistics, FAO, AMI, IMF. 2013 data: Preliminary and partly estimated.

Milk map details: Data based on the year 2012, milk production.

Estimates done for: Dairy farm numbers based on agricultural survey years 2002 and 2010, years inbetween interpolated.

Remarks: Cull cow price: Price paid for buffalos.



Michał Switlyk,  
Ewa Kołoszycz



**STATUS AND KEY DEVELOPMENTS**

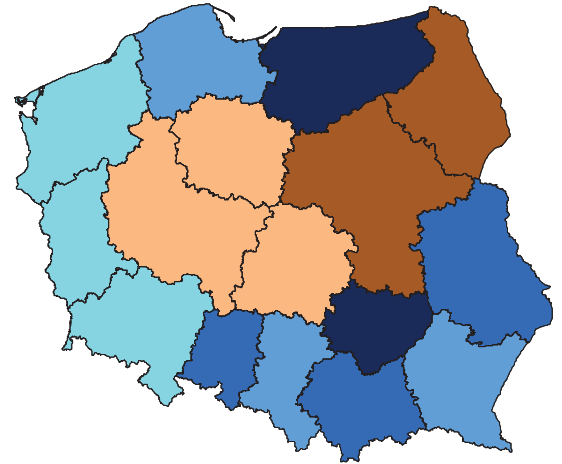
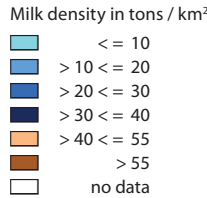
**Status 2012**

- Milk production (cow's): 12.1 mill t ECM (number 13 in the world)
- No. of dairy farms: 380,263
- Milk price: -2% to world market
- Feed price: -5% to world market

**Key developments over the past five years**

- Milk production growth: +0.2% per year
- Number of years the milk price was above world market level: 2
- Milk price was on average -3% to world market
- Feed price was on average +8% to world market

**Milk density 2011**  
in tons / km<sup>2</sup>

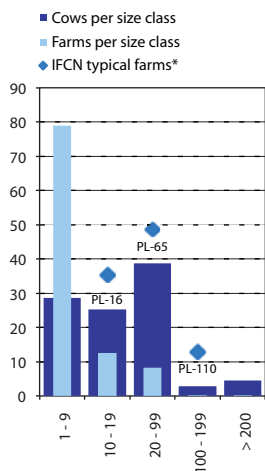


**Key variables**

	1996	1998	2000	2002	2004	2006	2008	2010	2011	2012	Annual growth rates	
											'02-'07	'07-'12
<b>Milk production (cow's)</b>												
Production (mill t ECM)	12.01	12.93	12.22	12.19	12.14	12.30	12.24	11.93	11.99	12.10	-0.4%	0.2%
Cows (in 1,000's)	3,442	3,471	3,047	2,904	2,730	2,705	2,697	2,529	2,446	2,421	-1.2%	-2.4%
Milk yield (t / cow / year)	3.5	3.7	4.0	4.2	4.4	4.5	4.5	4.7	4.9	5.0	0.9%	2.6%
<b>Farm structure</b>												
No. of dairy farms (in 1,000's)	1,756	1,397	1,281	875	910	693	575	465	428	380	-5.6%	-10.3%
Average farm size (cows / farm)	2	2	2	3	3	4	5	5	6	6	4.6%	8.9%
<b>Prices in national currency</b>												
Milk : feed price ratio	0.9	1.1	1.1	1.1	1.2	1.7	1.3	1.5	1.3	1.1	6.1%	-6.7%
Cull cow (PLN / kg live weight)	2.25	2.26	2.33	2.18	2.55	4.12	4.07	3.35	3.88	4.43	12.8%	2.1%
Land - buy (PLN / ha)	3,216	4,379	4,786	5,042	6,498	9,290	13,954	18,037	20,004	25,442	19.2%	16.0%
Quota (PLN / kg milk)						0.57	0.50	0.08	0.10	0.40		-10.6%

**Farm structure**

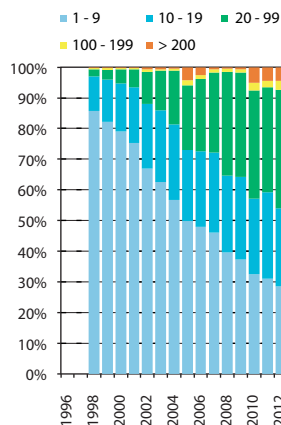
% of dairy farms and cows in size classes (2012)



\* size class where IFCN typical farms are

**Farm structure**

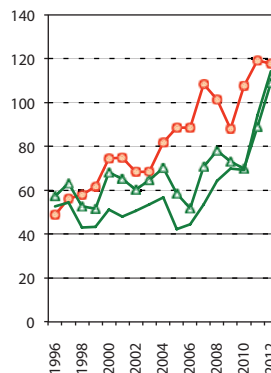
% of cows per herd size



**Milk and feed price**

PLN / 100 kg

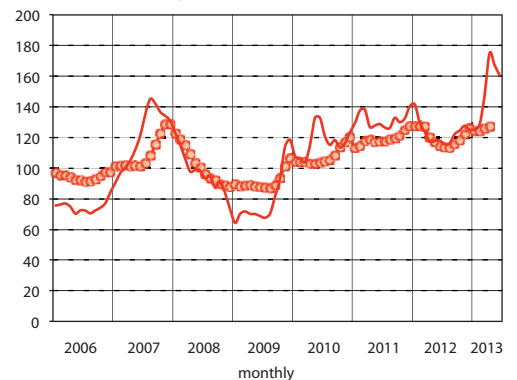
—○— National milk price  
—△— National feed price  
— National IFCN feed price indicator (world)



**Farm gate milk prices**

PLN / 100 kg milk (ECM)

—○— National price  
— National IFCN milk price indicator (world)



**Explanations**

**Sources:** National statistics, FAO, AMI, IMF. 2013 data: Preliminary and partly estimated.

**Milk map details:** Data based on the year 2011, milk production.

**Estimates done for:** Cull cow price 2011-2012.



António Moitinho Rodrigues



## Milk density 2012

in tons / km<sup>2</sup>

Milk density in tons / km<sup>2</sup>



## STATUS AND KEY DEVELOPMENTS

### Status 2012

- Milk production (cow's): 1.9 mill t ECM (number 52 in the world)
- No. of dairy farms: 8,400
- Milk price: +11% to world market
- Feed price: +9% to world market

### Key developments over the past five years

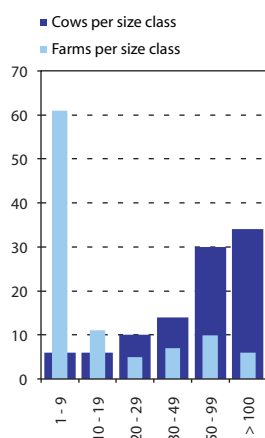
- Milk production growth: -0.2% per year
- Number of years the milk price was above world market level: 5
- Milk price was on average +18% to world market
- Feed price was on average +29% to world market

## Key variables

	1996	1998	2000	2002	2004	2006	2008	2010	2011	2012	Annual growth rates '02-'07 '07-'12	
<b>Milk production (cow's)</b>												
Production (mill t ECM)	1.73	1.79	2.00	2.04	2.00	1.94	1.98	1.90	1.90	1.91	-1.1%	-0.2%
Cows (in 1,000's)	376	372	355	341	338	307	301	243	242	241	-2.1%	-4.7%
Milk yield (t / cow / year)	4.6	4.8	5.6	6.0	5.9	6.3	6.6	7.8	7.9	7.9	1.1%	4.7%
<b>Farm structure</b>												
No. of dairy farms (in 1,000's)	48	41	24	19	16	15	11	10	9	8	-7.8%	-8.1%
Average farm size (cows / farm)	8	9	15	18	21	20	26	24	27	29	6.1%	3.7%
<b>Prices in national currency</b>												
Milk : feed price ratio	1.4	1.6	1.7	1.8	1.6	1.7	1.5	1.3	1.2	1.1	-2.9%	-7.5%
Cull cow (EUR / kg live weight)	0.63	0.70	0.73	0.77	0.71	0.92	0.81	0.79	0.59	0.60	2.5%	-7.1%
Land - buy (EUR / ha)	5,000	5,000	5,000	4,000	4,000	4,000	6,000	7,200	8,900	9,500	2.4%	16.1%
Quota (EUR / kg milk)	0.03	0.05	0.15	0.20	0.20	0.35	0.08	0.01	0.01	0.01	13.1%	-48.8%

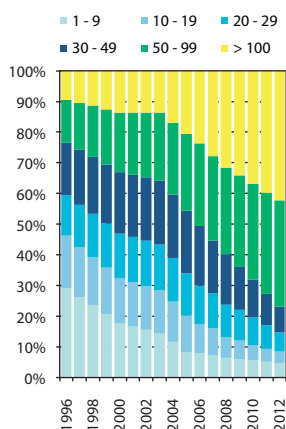
## Farm structure

% of dairy farms and cows in size classes (2009)



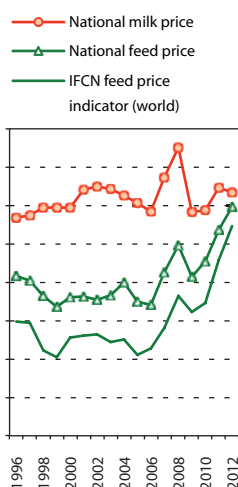
## Farm structure

% of cows per herd size



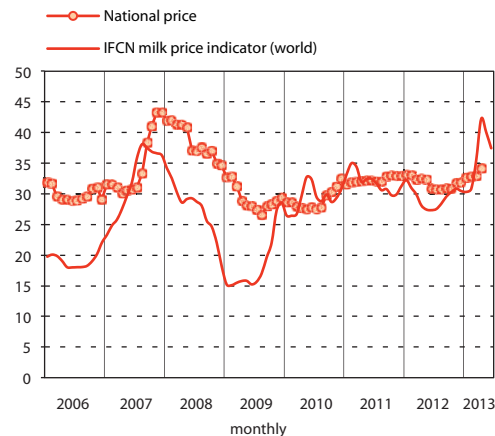
## Milk and feed price

EUR / 100 kg



## Farm gate milk prices

EUR / 100 kg milk (ECM)



## Explanations

**Sources:** National statistics, FAO, AMI, IMF. 2013 data: Preliminary and partly estimated.

**Milk map details:** Data based on the year 2012, milk production.

**Estimates done for:** Farm structure: Cow number 2010-2012 following the trend.

**Remarks:** Land prices are weighted averages. Cull cow price based on carcass price.



### STATUS AND KEY DEVELOPMENTS

#### Status 2012

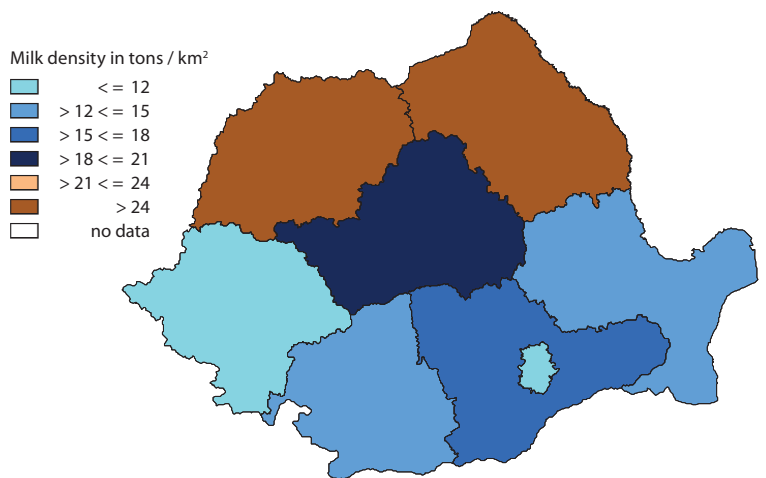
- Milk production (cow's): 4.4 mill t ECM (number 29 in the world)
- No. of dairy farms: 493,922
- Milk price: -24% to world market
- Feed price: 0% to world market

#### Key developments over the past five years

- Milk production growth: -1.8% per year
- Number of years the milk price was above world market level: 1
- Milk price was on average -18% to world market
- Feed price was on average +3% to world market

#### Milk density 2011

in tons / km<sup>2</sup>

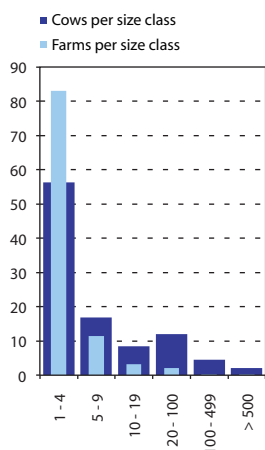


### Key variables

	1996	1998	2000	2002	2004	2006	2008	2010	2011	2012	Annual growth rates '02-'07 '07-'12	
<b>Milk production (cow's)</b>												
Production (mill t ECM)	4.66	4.49	4.28	4.61	5.02	5.08	4.70	4.48	4.43	4.41	0.9%	-1.8%
Cows (in 1,000's)	1,939	1,794	1,775	1,759	1,755	1,733	1,483	1,151	1,154	1,178	-2.2%	-5.6%
Milk yield (t / cow / year)	2.4	2.5	2.4	2.6	2.9	2.9	3.2	3.9	3.8	3.7	3.2%	4.1%
<b>Farm structure</b>												
No. of dairy farms (in 1,000's)	1,365	1,260	1,329	1,191	1,170	1,073	883	625	556	494	-3.2%	-13.4%
Average farm size (cows / farm)	1	1	1	1	2	2	2	2	2	2	1.0%	8.9%
<b>Prices in national currency</b>												
Milk : feed price ratio	0.2	0.6	1.0	1.3	1.1	1.7	1.1	1.2	1.1	0.8	1.2%	-10.3%
Cull cow (RON / kg live weight)					2.19	2.60	2.75	3.50	3.83	4.27		9.8%
Land - buy (RON / ha)						5,250	4,430	5,579	5,850	6,417		5.8%
Quota (RON / kg milk)												

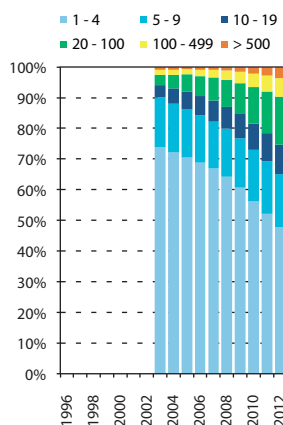
### Farm structure

% of dairy farms and cows in size classes (2010)



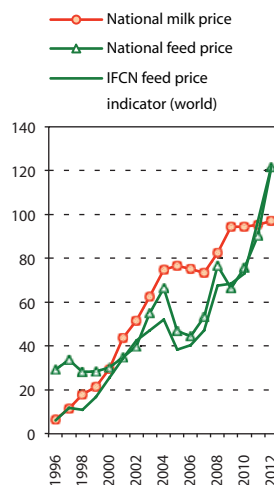
### Farm structure

% of cows per herd size



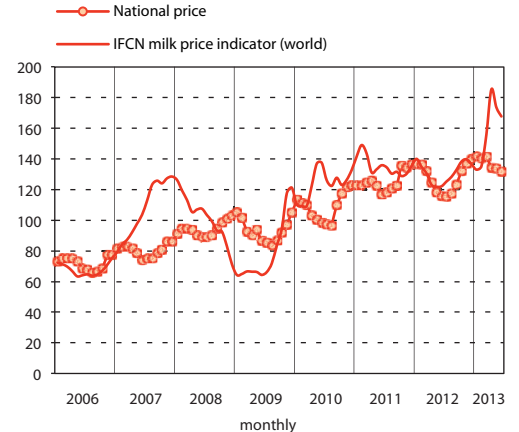
### Milk and feed price

RON / 100 kg



### Farm gate milk prices

RON / 100 kg milk (ECM)



#### Explanations

**Sources:** National statistics, FAO, AMI, IMF. 2013 data: Preliminary and partly estimated.

**Milk map details:** Data based on the year 2011, milk production.

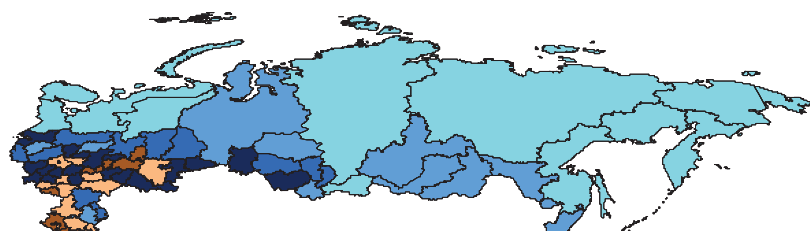
**Estimates done for:** Farm structure: Cow number 2011-2012 following the trend. Dairy farms: 2011-12 following the trend. Cow number 2012.

Feed prices: 2007-2010. Land and cull cow prices: 2011-2012.

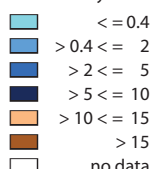
**Remarks:** A quota market is not really existing, but there are transaction costs which have to be paid.

## Milk density 2012

in tons / km<sup>2</sup>



Milk density in tons / km<sup>2</sup>



## STATUS AND KEY DEVELOPMENTS

### Status 2012

- Milk production (cow's): 30.4 mill t ECM (number 7 in the world)
- No. of dairy farms: 3,153,335
- Milk price: +43% to world market
- Feed price: -19% to world market

### Key developments over the past five years

- Milk production growth: +0.2% per year
- Number of years the milk price was above world market level: 5
- Milk price was on average +16% to world market
- Feed price was on average -10% to world market

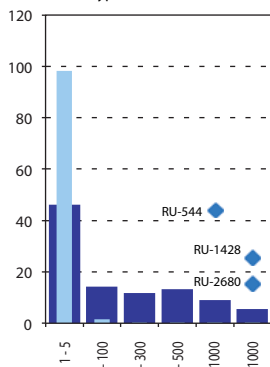
## Key variables

	1996	1998	2000	2002	2004	2006	2008	2010	2011	2012	Annual growth rates	
											'02-'07	'07-'12
<b>Milk production (cow's)</b>												
Production (mill t ECM)	31.52	29.50	29.27	30.66	29.48	29.28	30.57	30.23	30.04	30.37	-0.4%	0.2%
Cows (in 1,000's)	16,557	13,837	12,771	11,873	10,425	9,647	9,129	8,844	8,948	8,895	-4.8%	-0.9%
Milk yield (t / cow / year)	1.9	2.1	2.3	2.6	2.8	3.0	3.3	3.4	3.4	3.4	4.6%	1.1%
<b>Farm structure</b>												
No. of dairy farms (in 1,000's)	1,219	1,484	1,807	2,222	2,679	3,135	3,160	3,160	3,155	3,153	7.2%	0.0%
Average farm size (cows / farm)	14	9	7	5	4	3	3	3	3	3	-11.2%	-0.9%
<b>Prices in national currency</b>												
Milk : feed price ratio		1.4	1.2	1.5	1.4	2.0	1.6	2.3	2.0	1.9	2.0%	1.9%
Cull cow (RUB / kg live weight)								35				
Land - buy (RUB / ha)								17,540				

## Farm structure

% of dairy farms and cows in size classes (2010)

- Cows per size class
- Farms per size class
- ◆ IFCN typical farms\*

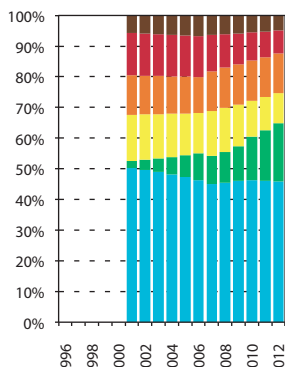


\* size class where IFCN typical farms are

## Farm structure

% of cows per herd size

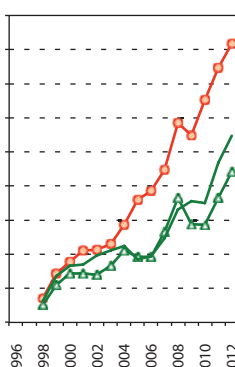
- 1 - 5
- 5 - 100
- 101 - 300
- 301 - 500
- 501 - 1000
- > 1000



## Milk and feed price

RUB / 100 kg

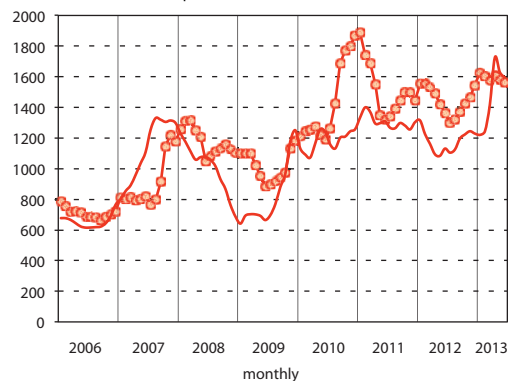
- National milk price
- △ National feed price
- IFCN feed price indicator (world)



## Farm gate milk prices

RUB / 100 kg milk (ECM)

- National price
- IFCN milk price indicator (world)



## Explanations

**Sources:** National statistics, FAO, AMI, IMF. 2013 data: Preliminary and partly estimated.

**Milk map details:** Data based on the year 2012, milk production.

**Estimates done for:** Feed price: Soybean meal price 1996 - 2003, 2012 linked to world price trend; Barley price 1996-2003 estimated to be 80% of world market price, 2012 linked to world price trend. Farm structure: Farm and cow number 2011-2012 following the trend.

**Remarks:** Milk production: Official statistics shown; they can be overestimated due to double counting of deliveries in statistic data.

#### STATUS AND KEY DEVELOPMENTS

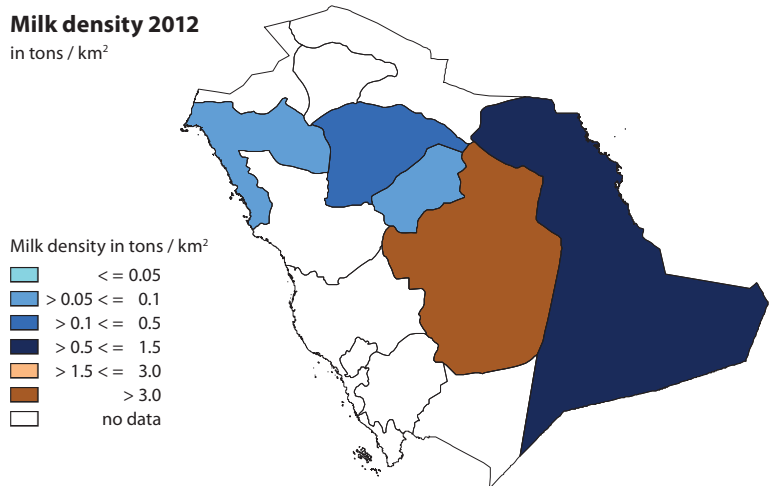
##### Status 2012

- Milk production (cow's): 1.8 mill t ECM (number 50 in the world)
- No. of dairy farms: 28
- Milk price: +123% to world market
- Feed price: -3% to world market

##### Key developments over the past five years

- Milk production growth: +9.9% per year
- Number of years the milk price was above world market level: 5
- Milk price was on average +102% to world market
- Feed price was on average +20% to world market

**Milk density 2012**  
in tons / km<sup>2</sup>



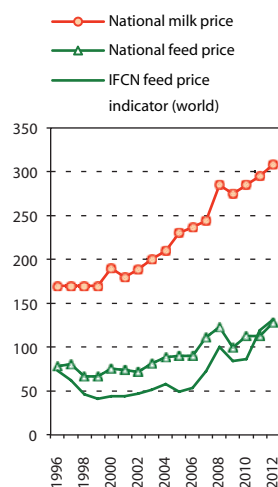
#### Key variables

	1996	1998	2000	2002	2004	2006	2008	2010	2011	2012	Annual growth rates	
											'02-'07	'07-'12
<b>Milk production (cow's)</b>												
Production (mill t ECM)	0.47	0.60	0.73	0.85	0.90	1.07	1.42	1.66	1.73	1.82	5.8%	9.9%
Cows (in 1,000's)	59	73	84	88	101	109	148	160	227	227	4.9%	15.3%
Milk yield (t / cow / year)	7.9	8.2	8.7	9.7	8.8	9.8	9.6	10.3	7.6	8.0	0.9%	-4.6%
<b>Farm structure</b>												
No. of dairy farms (in 1,000's)	0.050	0.044	0.039	0.034	0.032	0.028	0.028	0.028	0.028	0.028	-3.8%	0.0%
Average farm size (cows / farm)	1,176	1,666	2,178	2,583	3,169	3,879	5,273	5,732	8,125	8,125	9.1%	15.3%
<b>Prices in national currency</b>												
Milk : feed price ratio	2.2	2.5	2.5	2.6	2.4	2.6	2.3	2.5	2.6	2.4	-3.6%	1.9%
Cull cow (SAR / kg live weight)												
Land - buy (SAR / ha)												



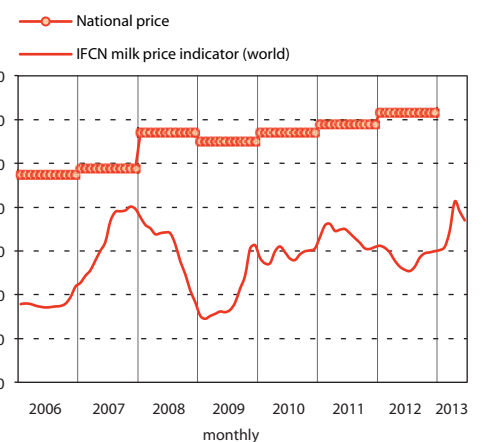
#### Milk and feed price

SAR / 100 kg



#### Farm gate milk prices

SAR / 100 kg milk (ECM)



#### Explanations

**Sources:** National statistics, FAO, AMI, IMF. 2013 data: Preliminary and partly estimated.

**Milk map details:** Data based on the year 2012, milk production.

**Estimates done for:** Soybean meal price estimated for the years 1996-2001. Barley estimated for 2006-2007. Monthly milk price: annual average prices.



## 3.80 Serbia – Milk production fact sheet



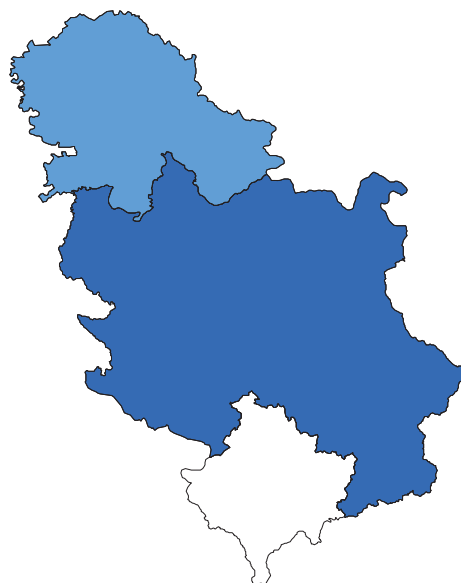
Rade Popovic



### Milk density 2012

in tons / km<sup>2</sup>

Milk density in tons / km<sup>2</sup>



### STATUS AND KEY DEVELOPMENTS

#### Status 2012

- Milk production (cow's): 1.5 mill t ECM (number 67 in the world)
- No. of dairy farms: 226,638
- Milk price: -10% to world market
- Feed price: +9% to world market
- 

#### Key developments over the past five years

- Milk production growth: -1.9% per year
- Number of years the milk price was above world market level: 2
- Milk price was on average -11% to world market
- Feed price was on average +23% to world market

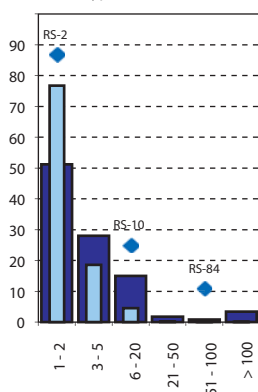
### Key variables

	1996	1998	2000	2002	2004	2006	2008	2010	2011	2012	Annual growth rates	
											'02-'07	'07-'12
<b>Milk production (cow's)</b>												
Production (mill t ECM)	1.51	1.65	1.61	1.62	1.62	1.63	1.58	1.49	1.47	1.46	-0.2%	-1.9%
Cows (in 1,000's)	828	813	817	752	742	674	624	561	542	530	-2.9%	-3.9%
Milk yield (t / cow / year)	1.8	2.0	2.0	2.2	2.2	2.4	2.5	2.7	2.7	2.7	2.8%	2.1%
<b>Farm structure</b>												
No. of dairy farms (in 1,000's)	484	445	408	375	345	315	285	255	240	227	-4.4%	-5.5%
Average farm size (cows / farm)	2	2	2	2	2	2	2	2	2	2	1.5%	1.6%
<b>Prices in national currency</b>												
Milk : feed price ratio	0.9	1.1	0.7	1.1	1.1	1.2	1.3	1.0	1.1	0.9	-0.8%	-3.3%
Cull cow (RSD / kg live weight)	7.28	14.91	33.00	68.00	72.11	88.63	91.22	101.76	112.33	131.26	2.9%	10.8%
Land - buy (1,000 RSD / ha)					250	320	430	460	510	678		14.1%

### Farm structure

% of dairy farms and cows in size classes (2009)

- Cows per size class
- Farms per size class
- ◆ IFCN typical farms\*

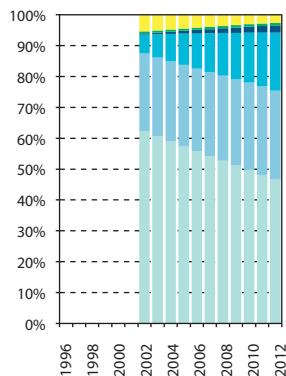


\* size class where IFCN typical farms are

### Farm structure

% of cows per herd size

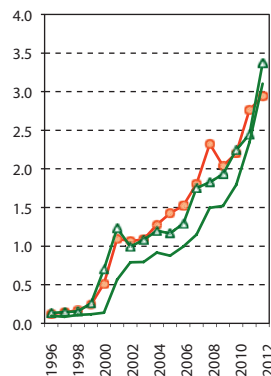
- 1 - 2
- 3 - 5
- 6 - 20
- 21 - 50
- 51 - 100
- > 100



### Milk and feed price

1,000 RSD / 100 kg

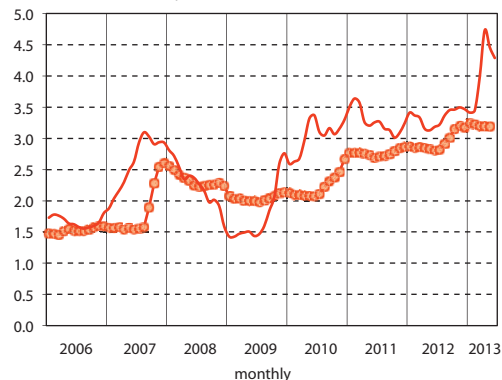
- National milk price
- △— National feed price
- IFCN feed price indicator (world)



### Farm gate milk prices

1,000 RSD / 100 kg milk (ECM)

- National price
- IFCN milk price indicator (world)



#### Country supporter:

The participation in the IFCN was supported by Imlek and Mlekara Subotica





**STATUS AND KEY DEVELOPMENTS**

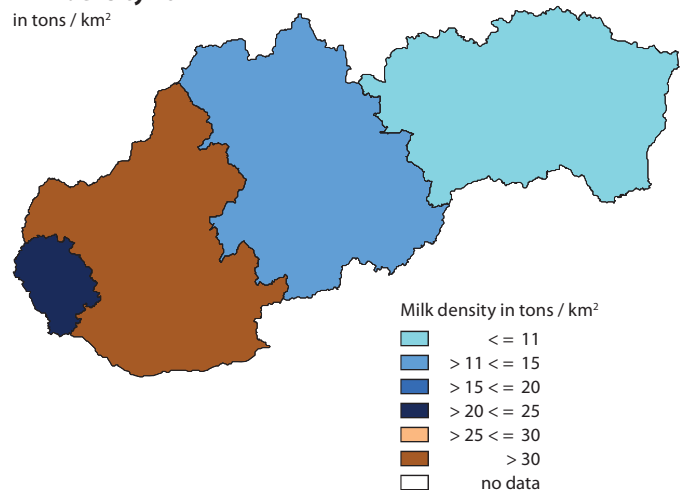
**Status 2012**

- Milk production (cow's): 0.9 mill t ECM (number 76 in the world)
- No. of dairy farms: 5,032
- Milk price: +5% to world market
- Feed price: -15% to world market

**Key developments over the past five years**

- Milk production growth: -2.6% per year
- Number of years the milk price was above world market level: 4
- Milk price was on average +5% to world market
- Feed price was on average +15% to world market

**Milk density 2011**  
in tons / km<sup>2</sup>

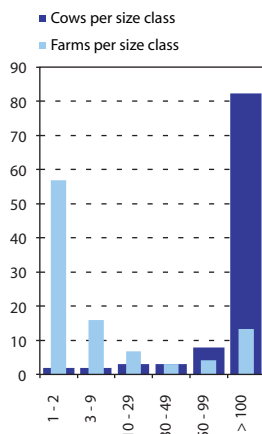


**Key variables**

	1996	1998	2000	2002	2004	2006	2008	2010	2011	2012	Annual growth rates	
											'02-'07	'07-'12
<b>Milk production (cow's)</b>												
Production (mill t ECM)	1.11	1.13	1.05	1.15	1.05	1.05	1.03	0.90	0.91	0.91	-1.9%	-2.6%
Cows (in 1,000's)	263	246	230	216	201	196	197	197	196	196	-1.7%	-0.2%
Milk yield (t / cow / year)	4.2	4.6	4.5	5.3	5.2	5.4	5.2	4.6	4.6	4.7	-0.2%	-2.5%
<b>Farm structure</b>												
No. of dairy farms (in 1,000's)	16	11	8	7	6	6	5	5	5	5	-5.3%	-1.3%
Average farm size (cows / farm)	17	22	29	31	32	35	37	37	39	39	3.8%	1.1%
<b>Prices in national currency</b>												
Milk : feed price ratio	1.2	1.3	1.5	1.6	1.7	1.5	1.5	1.3	1.5	1.3	-3.2%	-1.1%
Cull cow (EUR / kg live weight)	0.65	0.62	0.62	0.56	0.60	0.82	0.83	0.75	0.91	0.85	7.2%	1.3%
Land - buy (EUR / ha)			895	888	946	1,017	1,211				4.8%	
Quota (EUR / kg milk)												

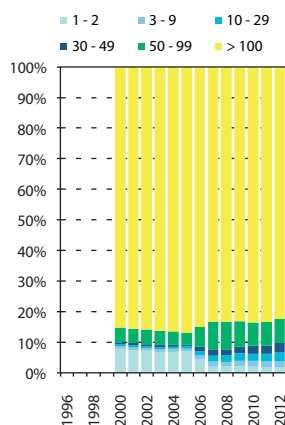
**Farm structure**

% of dairy farms and cows in size classes (2012)



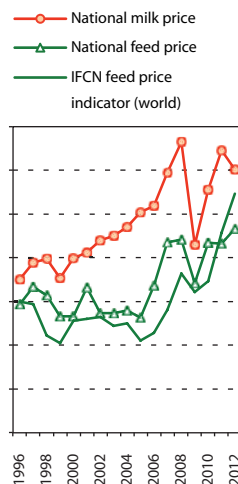
**Farm structure**

% of cows per herd size



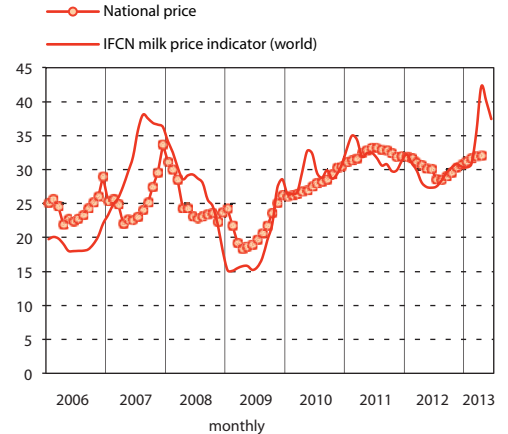
**Milk and feed price**

EUR / 100 kg



**Farm gate milk prices**

EUR / 100 kg milk (ECM)



**Explanations**

**Sources:** National statistics, FAO, AMI, IMF. 2013 data: Preliminary and partly estimated.

**Milk map details:** Data based on the year 2011, milk production.

**Estimates done for:** Cull cow price 2012.

**Remarks:** Feed prices 2012: Average of January-June prices.

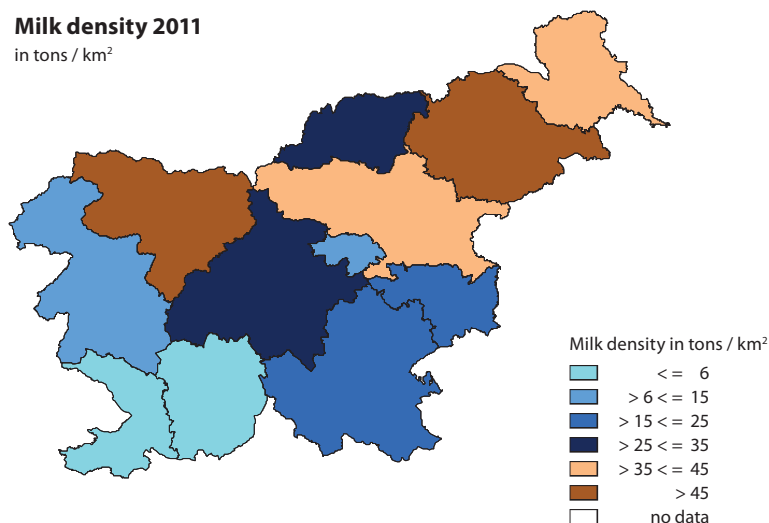


Ben Moljk



## Milk density 2011

in tons / km<sup>2</sup>



## STATUS AND KEY DEVELOPMENTS

### Status 2012

- Milk production (cow's): 0.6 mill t ECM (number 86 in the world)
- No. of dairy farms: 10,735
- Milk price: +3% to world market
- Feed price: +19% to world market

### Key developments over the past five years

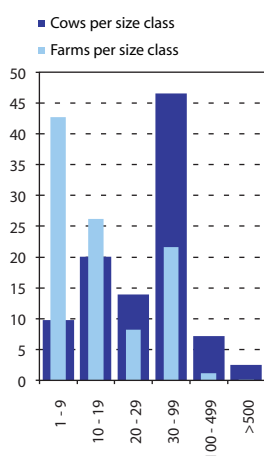
- Milk production growth: -1.5% per year
- Number of years the milk price was above world market level: 3
- Milk price was on average +3% to world market
- Feed price was on average +35% to world market

## Key variables

	1996	1998	2000	2002	2004	2006	2008	2010	2011	2012	Annual growth rates	
											'02-'07	'07-'12
<b>Milk production (cow's)</b>												
Production (mill t ECM)	0.59	0.61	0.66	0.74	0.67	0.65	0.67	0.62	0.62	0.63	-1.8%	-1.5%
Cows (in 1,000's)	155	146	140	140	134	113	113	109	109	111	-3.5%	-1.1%
Milk yield (t / cow / year)	3.8	4.1	4.7	5.3	5.0	5.8	5.9	5.6	5.7	5.7	1.8%	-0.4%
<b>Farm structure</b>												
No. of dairy farms (in 1,000's)	56	40	29	21	18	20	16	11	11	11	-1.8%	-11.0%
Average farm size (cows / farm)	3	4	5	7	7	6	7	10	10	10	-1.8%	11.1%
<b>Prices in national currency</b>												
Milk : feed price ratio	1.0	1.7	1.3	1.4	1.2	1.5	1.4	1.2	1.0	0.9	-3.7%	-4.7%
Cull cow (EUR / kg live weight)	0.85	0.84	0.75	0.65	0.51	0.78	0.89	0.83	1.01	1.19	4.6%	7.8%
Land - buy (EUR / ha)	8,792	12,809	14,172	12,984	13,775	14,069	14,694	15,800	28,900	26,010	2.1%	12.6%
Quota (EUR / kg milk)												

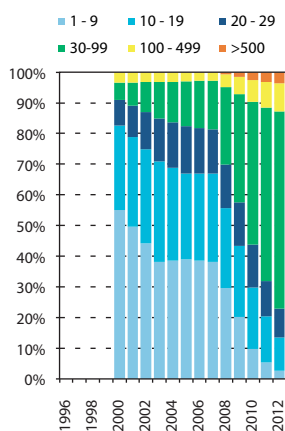
## Farm structure

% of dairy farms and cows in size classes (2010)



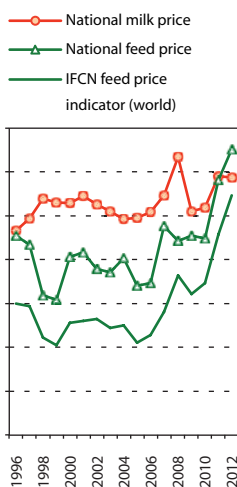
## Farm structure

% of cows per herd size



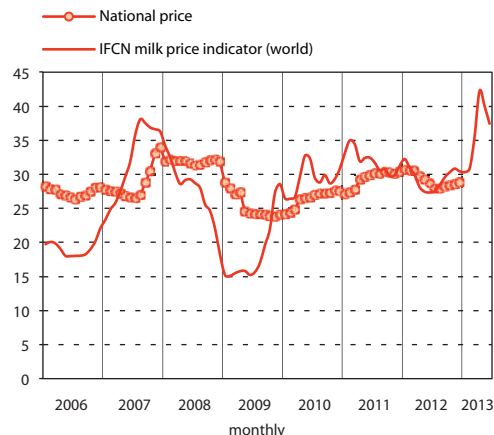
## Milk and feed price

EUR / 100 kg



## Farm gate milk prices

EUR / 100 kg milk (ECM)



## Explanations

**Sources:** National statistics, FAO, AMI, IMF. 2013 data: Preliminary and partly estimated.

**Milk map details:** Data based on the year 2011, milk production.

**Estimates done for:** Farm structure: Cow number 2011-2012 following the trend. Dairy farms 2011-12. Regional milk production 2011.

**Remarks:** Feed prices are average prices out of nine Slovenian feed plants.





**STATUS AND KEY DEVELOPMENTS**

**Status 2012**

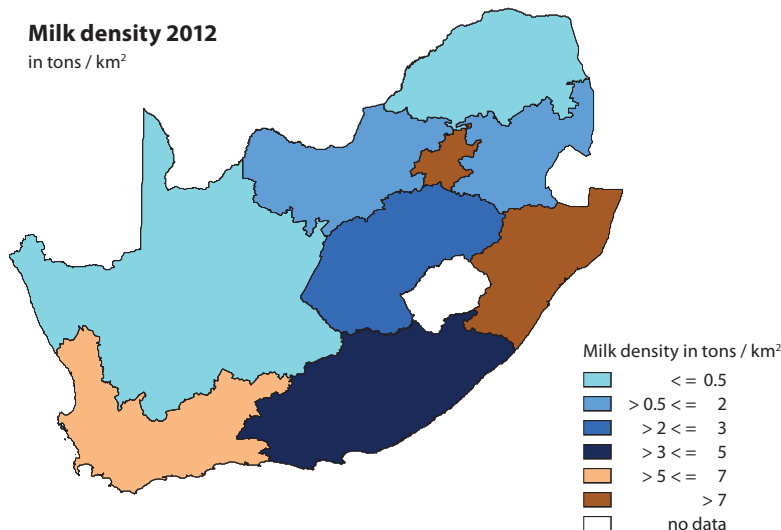
- Milk production (cow's): 3 mill t ECM (number 40 in the world)
- No. of dairy farms: 2,200
- Milk price: +16% to world market
- Feed price: +5% to world market

**Key developments over the past five years**

- Milk production growth: +2.2% per year
- Number of years the milk price was above world market level: 3
- Milk price was on average +5% to world market
- Feed price was on average +17% to world market

**Milk density 2012**

in tons / km<sup>2</sup>

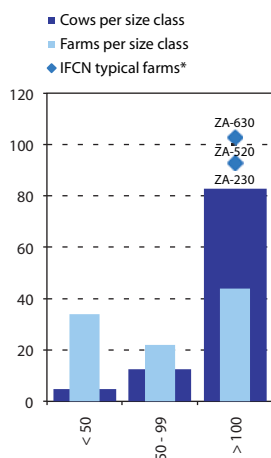


**Key variables**

	1996	1998	2000	2002	2004	2006	2008	2010	2011	2012	Annual growth rates	
											'02-'07	'07-'12
<b>Milk production (cow's)</b>												
Production (mill t ECM)	2.11	2.31	2.01	2.01	2.33	2.50	2.82	2.81	2.81	2.96	5.8%	2.2%
Cows (in 1,000's)	562	552	545	540	540	520	520	530	530	523	-0.8%	0.1%
Milk yield (t / cow / year)	3.7	4.2	3.7	3.7	4.3	4.8	5.4	5.3	5.3	5.7	6.6%	2.0%
<b>Farm structure</b>												
No. of dairy farms (in 1,000's)	8	6	4.9	4.7	4.2	3.8	3.2	2.6	2.4	2.2	-4.9%	-9.7%
Average farm size (cows / farm)	70	92	111	115	129	137	163	204	221	238	4.3%	10.9%
<b>Prices in national currency</b>												
Milk : feed price ratio	1.3	1.5	1.4	1.1	1.6	1.2	1.2	1.7	1.2	1.2	2.5%	-0.6%
Cull cow (ZAR / kg live weight)	10	9.67	10	11	12	13	14	12	14.5	13.5	4.9%	-0.7%
Land - buy (ZAR / ha)								20,000	20,000	20,000		

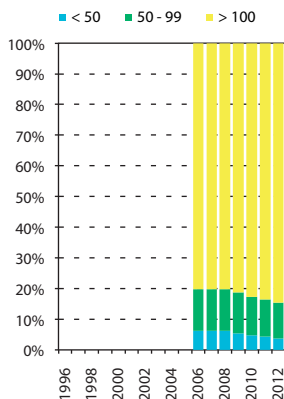
**Farm structure**

% of dairy farms and cows in size classes (2010)



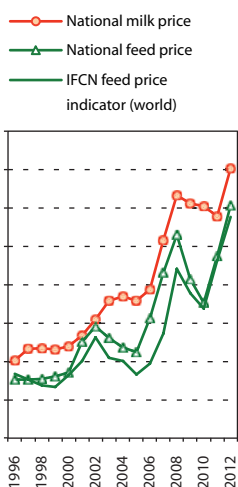
**Farm structure**

% of cows per herd size



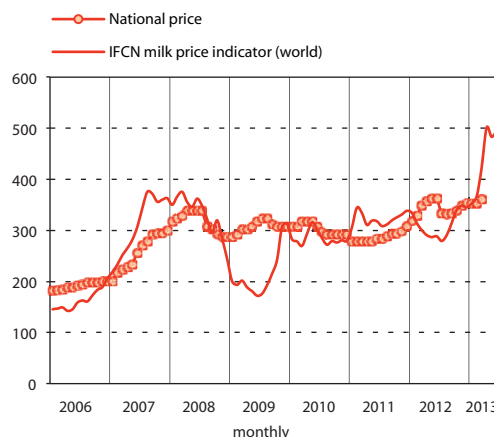
**Milk and feed price**

ZAR / 100 kg



**Farm gate milk prices**

ZAR / 100 kg milk (ECM)



\* size class where IFCN typical farms are

**Explanations**

**Sources:** National statistics, FAO, AMI, IMF. 2013 data: Preliminary and partly estimated.

**Milk map details:** Data based on the year 2012, milk production.

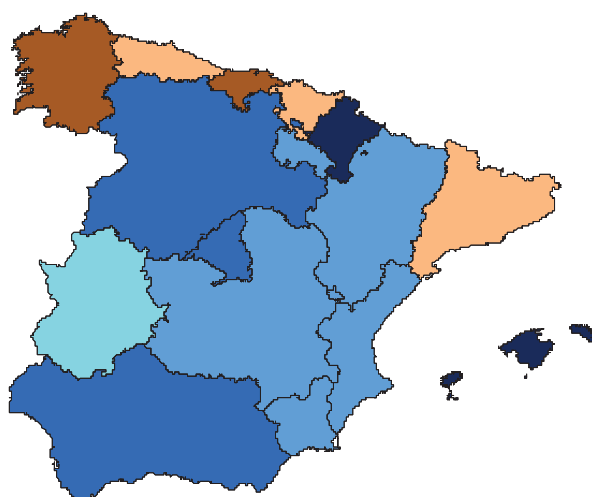
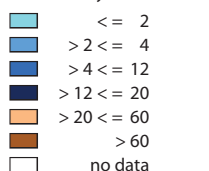
**Estimates done for:** Farm structure: Cow number 2011-12 following the trend.

**Remarks:** The farm gate milk price is taken from MPO (Milk Producer Organisation).

## Milk density 2011

in tons / km<sup>2</sup>

Milk density in tons / km<sup>2</sup>



## STATUS AND KEY DEVELOPMENTS

### Status 2012

- Milk production (cow's): 6.3 mill t ECM (number 22 in the world)
- No. of dairy farms: 22,802
- Milk price: +13% to world market
- Feed price: +0% to world market

### Key developments over the past five years

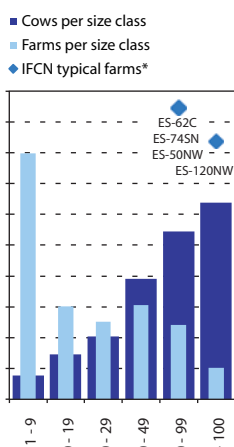
- Milk production growth: +1.2% per year
- Number of years the milk price was above world market level: 5
- Milk price was on average +24% to world market
- Feed price was on average +20% to world market

## Key variables

	1996	1998	2000	2002	2004	2006	2008	2010	2011	2012	Annual growth rates '02-'07 '07-'12	
<b>Milk production (cow's)</b>												
Production (mill t ECM)	5.76	5.66	5.61	6.26	6.34	5.93	6.09	6.06	6.18	6.26	-1.2%	1.2%
Cows (in 1,000's)	882	996	1,141	1,436	1,171	992	902	861	859	859	-8.4%	-1.5%
Milk yield (t / cow / year)	6.5	5.7	4.9	4.4	5.4	6.0	6.8	7.0	7.2	7.3	7.9%	2.7%
<b>Farm structure</b>												
No. of dairy farms (in 1,000's)	151	121	98	79	64	50	39	33	33	23	-11.2%	-12.2%
Average farm size (cows / farm)	6	8	12	18	18	20	23	26	26	38	3.1%	12.2%
<b>Prices in national currency</b>												
Milk : feed price ratio	1.7	2.2	1.9	2.0	1.8	2.0	1.6	1.5	1.4	1.2	-2.1%	-8.2%
Cull cow (EUR / kg live weight)	0.97	0.94	0.85	0.86	0.80	0.99	1.08	1.20	0.70	1.31	3.6%	5.0%
Land - buy (EUR / ha)	4,616	6,125	7,292	8,026	9,024	10,402	10,974	10,163	10,003		6.6%	
Quota (EUR / kg milk)	0.21	0.31	0.40	0.37	0.39	0.27	0.27	0.17			-6.1%	

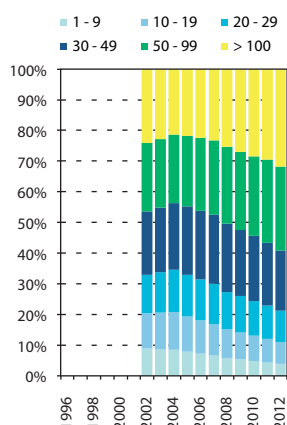
## Farm structure

% of dairy farms and cows in size classes (2012)



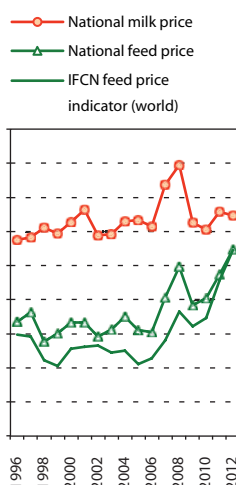
## Farm structure

% of cows per herd size



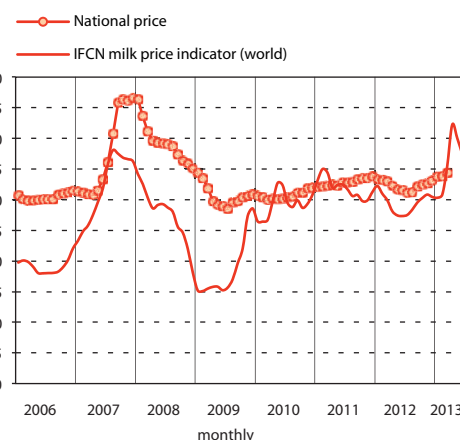
## Milk and feed price

EUR / 100 kg



## Farm gate milk prices

EUR / 100 kg milk (ECM)



\* size class where IFCN typical farms are

## Explanations

Sources: National statistics, FAO, AMI, IMF. 2013 data: Preliminary and partly estimated.

Milk map details: Data based on the year 2011, milk production.

Remarks: Quota price is fixed due to an intervention.



Hemali Kothalawala



**STATUS AND KEY DEVELOPMENTS**

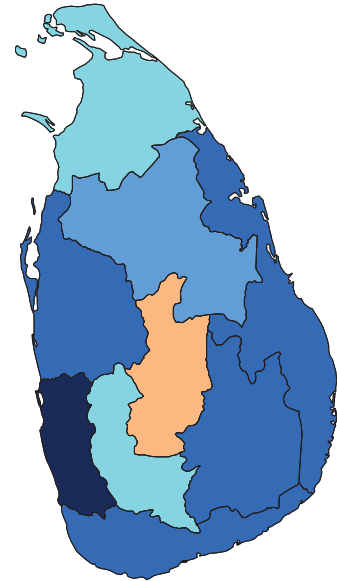
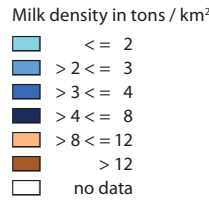
**Status 2012**

- Milk production (cow's and buffalo's): 0.4 mill t ECM (number 97 in the world)
- No. of dairy farms: 241,000
- Milk price: -2% to world market
- Feed price: +25% to world market

**Key developments over the past five years**

- Milk production growth: +11.9% per year
- Number of years the milk price was above world market level: 1
- Milk price was on average -18% to world market
- Feed price was on average +65% to world market

**Milk density 2009**  
in tons / km<sup>2</sup>

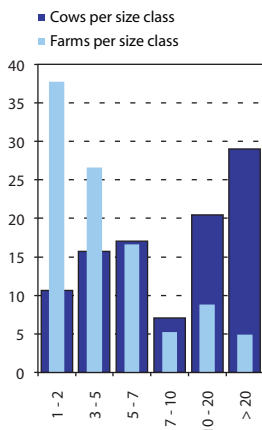


**Key variables**

	1996	1998	2000	2002	2004	2006	2008	2010	2011	2012	Annual growth rates '02-'07 '07-'12	
<b>Milk production (cow's and buffalo's)</b>												
Production (mill t ECM)	0.19	0.19	0.20	0.20	0.21	0.22	0.23	0.28	0.34	0.39	1.9%	11.9%
Cows and buffalos (in 1,000's)	1,257	1,228	1,198	1,165	1,129	1,099	1,103	968	1,002	1,031	-0.8%	-1.6%
Milk yield (t / cow / year)	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.3	0.3	0.4	2.8%	13.7%
<b>Farm structure</b>												
No. of dairy farms (in 1,000's)	595	479	364	249	176	162	152	182	238	241	-8.3%	8.3%
Average farm size (cows / farm)	2	3	3	5	6	7	7	5	4	4	8.1%	-9.1%
<b>Prices in national currency</b>												
Milk : feed price ratio	1.0	0.8	0.9	0.7	0.6	0.7	0.6	0.7	0.9	0.8	-4.4%	7.0%
Cull cow (LKR / kg live weight)	20.00	22.00	23.40	27.40	33.90	56.00	115.00	224.60	224.50	224.50	22.3%	24.5%
Land - buy (1,000 LKR / ha)	661	915	1,267	1,754	2,428	3,360	3,800	4,250	4,895	5,495	16.8%	7.5%

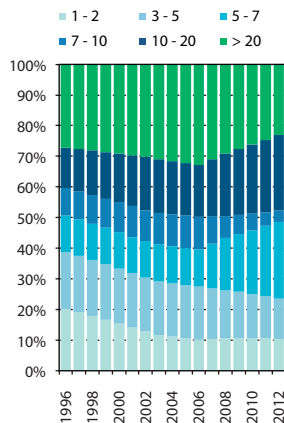
**Farm structure**

% of dairy farms and cows in size classes (2008)



**Farm structure**

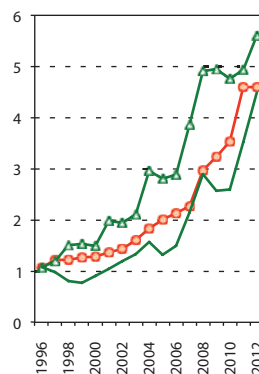
% of cows per herd size



**Milk and feed price**

1,000 LKR / 100 kg

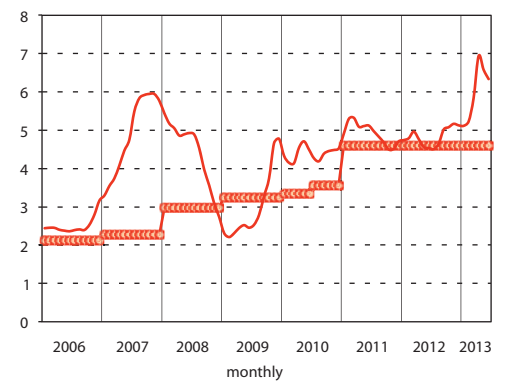
—○— National milk price  
—△— National feed price  
—■— IFCN feed price indicator (world)



**Farm gate milk prices**

1,000 LKR / 100 kg milk (ECM)

—○— National price  
—■— IFCN milk price indicator (world)



**Explanations**

**Sources:** National statistics, FAO, AMI, IMF. 2013 data: Preliminary and partly estimated.

**Milk map details:** Data based on the year 2009, milk production.

**Estimates done for:** Farm structure: Cow number 2007 by interpolation, 2009-2012 following the trend. Monthly milk prices: 2006-2012: annual averages.





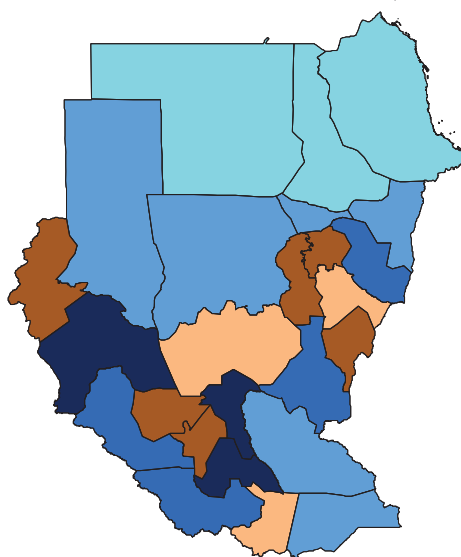
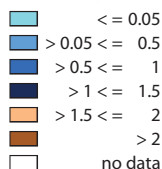
Nazar Omer Hassan Salih



## Milk density 2001

in tons / km<sup>2</sup>

Milk density in tons / km<sup>2</sup>



## STATUS AND KEY DEVELOPMENTS

### Status 2012

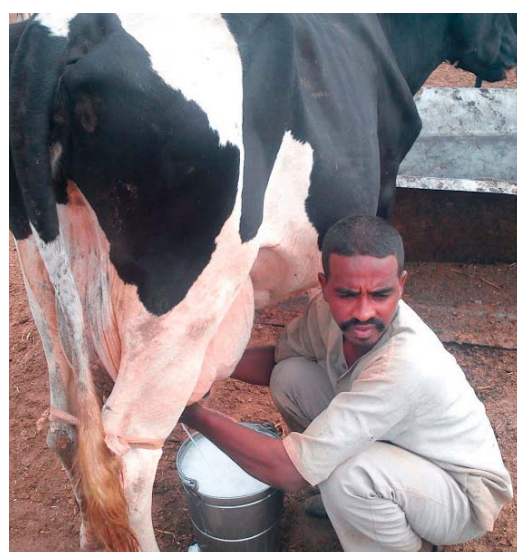
- Milk production (cow's): 5.7 mill t ECM (number 21 in the world)
- No. of dairy farms: 494,000
- Milk price: +93% to world market
- Feed price: 0% to world market

### Key developments over the past five years

- Milk production growth: +0.5% per year
- Number of years the milk price was above world market level: 4
- Milk price was on average +39% to world market
- Feed price was on average +0% to world market

## Key variables

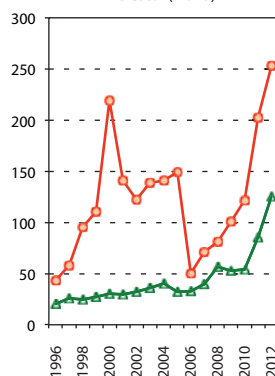
	1996	1998	2000	2002	2004	2006	2008	2010	2011	2012	Annual growth rates		
											'02-'07	'07-'12	
<b>Milk production (cow's)</b>													
Production (mill t ECM)	3.78	3.94	5.25	5.57	5.51	5.55	5.61	5.65	5.68	5.71		0.0%	0.5%
Cows (in 1,000's)	6,100	6,600	9,300	11,000	14,011	14,410	14,561	14,679	14,749	14,820		5.6%	0.5%
Milk yield (t / cow / year)	0.6	0.6	0.6	0.5	0.4	0.4	0.4	0.4	0.4	0.4		-5.3%	0.0%
<b>Farm structure</b>													
No. of dairy farms (in 1,000's)	203	220	310	367	467	480	485	489	492	494		5.6%	0.5%
Average farm size (cows / farm)	30	30	30	30	30	30	30	30	30	30		0.0%	0.0%
<b>Prices in national currency</b>													
Milk : feed price ratio	2.1	3.9	7.3	3.8	3.5	1.5	1.4	2.2	2.4	2.0		-14.3%	2.6%
Cull cow (SDG / kg live weight)													
Land - buy (SDG / ha)													



## Milk and feed price

SDG / 100 kg

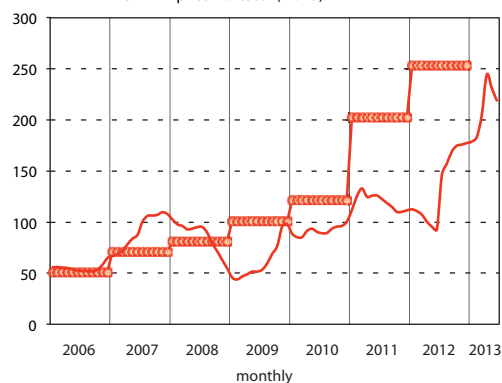
- National milk price
- △— National feed price
- IFCN feed price indicator (world)



## Farm gate milk prices

SDG / 100 kg milk (ECM)

- National price
- IFCN milk price indicator (world)



## Explanations

**Sources:** National statistics, FAO, AMI, IMF. 2013 data: Preliminary and partly estimated.

**Milk map details:** Data based on the year 2001, milk production.

**Estimates done for:** Cow milk production 1996-1999, 2005-2006 and 2008-2010. Milk price 1996-2010. The world monthly milk prices: annual average prices.

Dairy farm numbers based on the assumption that the herd size is 30 cows / farm (pastoral/ agro-pastoral system).

**Remarks:** Since no statistical information on Soybean meal and Corn price are available the world market prices are used.









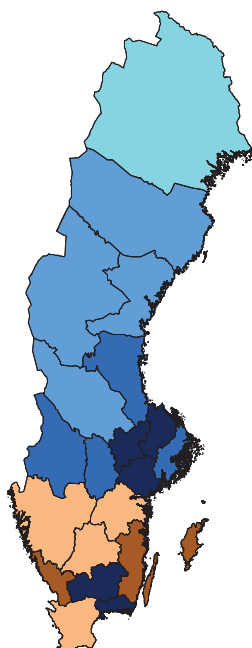
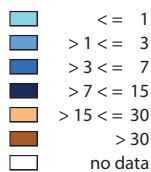
Agneta Hjelström



## Milk density 2012

in tons / km<sup>2</sup>

Milk density in tons / km<sup>2</sup>



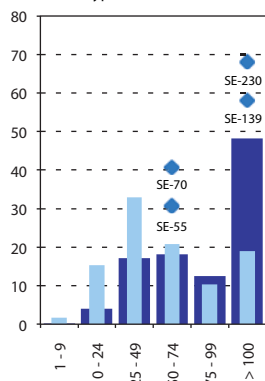
## Key variables

	1996	1998	2000	2002	2004	2006	2008	2010	2011	2012	Annual growth rates	
											'02-'07	'07-'12
<b>Milk production (cow's)</b>												
Production (mill t ECM)	3.66	3.67	3.44	3.37	3.41	3.30	3.15	3.04	3.01	3.00	-1.3%	-1.0%
Cows (in 1,000's)	466	449	428	417	404	388	357	348	346	348	-2.4%	-1.2%
Milk yield (t / cow / year)	7.9	8.2	8.0	8.1	8.4	8.5	8.8	8.7	8.7	8.6	1.1%	0.2%
<b>Farm structure</b>												
No. of dairy farms (in 1,000's)	16	14	12	11	9	8	7	6	5	5	-7.4%	-6.8%
Average farm size (cows / farm)	29	32	35	40	44	48	54	61	65	69	5.5%	6.0%
<b>Prices in national currency</b>												
Milk : feed price ratio	2.0	1.8	1.9	1.7	1.5	1.5	1.5	1.4	1.3	1.0	-6.8%	-2.6%
Cull cow (SEK / kg live weight)	7.00	7.36	7.10	8.20	7.64	8.66	9.11	9.13	9.80	10.30	0.3%	4.3%
Land - buy (SEK / ha)	11,600	14,600	16,800	18,500	22,400	34,300	40,200	40,700	50,400	48,400	14.6%	5.7%
Quota (SEK / kg milk)	1.50	1.50	1.04	1.04	0.78	0.81	0.04	0.04	0.04	0.72	-17.4%	12.5%

## Farm structure

% of dairy farms and cows in size classes (2012)

■ Cows per size class  
■ Farms per size class  
◆ IFCN typical farms\*

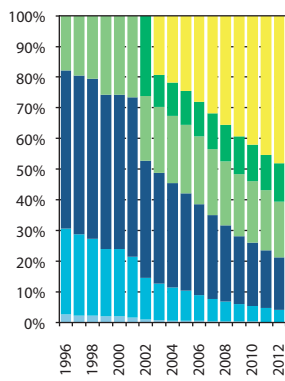


\* size class where IFCN typical farms are

## Farm structure

% of cows per herd size

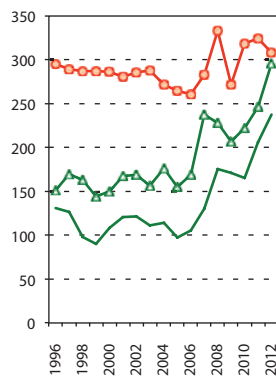
■ 1 - 9 ■ 10 - 24 ■ 25 - 49  
■ 50 - 74 ■ 75 - 99 ■ > 100



## Milk and feed price

SEK / 100 kg

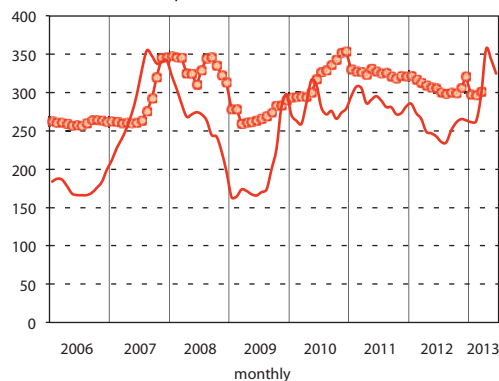
○ National milk price  
▲ National feed price  
— IFCN feed price indicator (world)



## Farm gate milk prices

SEK / 100 kg milk (ECM)

○ National price  
— IFCN milk price indicator (world)



## Explanations

Sources: National statistics, FAO, AMI, IMF. 2013 data: Preliminary and partly estimated.

Milk map details: Data based on the year 2012, milk production.

Remarks: Quota price 2012: trade only in one region.





## STATUS AND KEY DEVELOPMENTS

### Status 2012

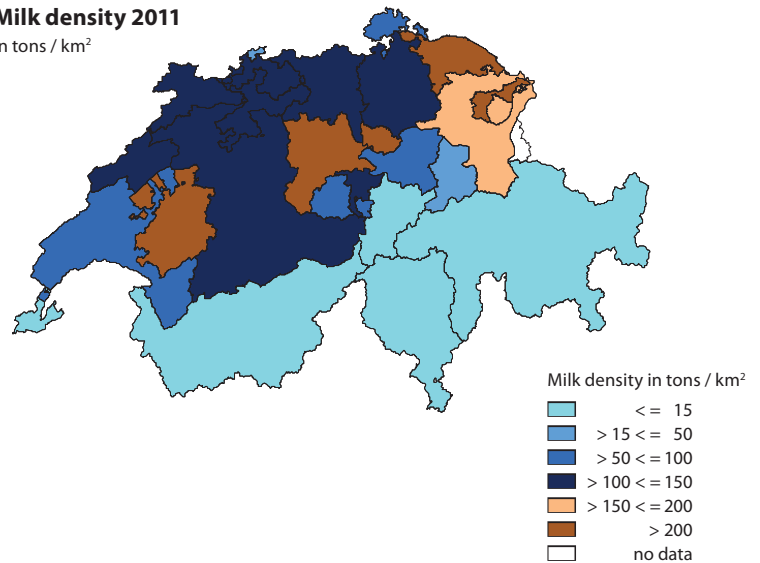
- Milk production (cow's): 4.2 mill t ECM (number 34 in the world)
- No. of dairy farms: 24,369
- Milk price: +75% to world market
- Feed price: +57% to world market

### Key developments over the past five years

- Milk production growth: +1.3% per year
- Number of years the milk price was above world market level: 5
- Milk price was on average +71% to world market
- Feed price was on average +99% to world market

### Milk density 2011

in tons / km<sup>2</sup>

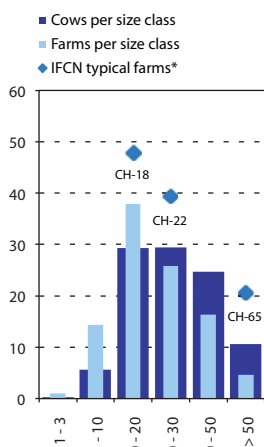


## Key variables

	1996	1998	2000	2002	2004	2006	2008	2010	2011	2012	Annual growth rates '02-'07 '07-'12	
<b>Milk production (cow's)</b>												
Production (mill t ECM)	3.81	3.85	3.83	3.88	3.87	3.88	4.12	4.12	4.17	4.17	0.2%	1.3%
Cows (in 1,000's)	605	583	572	574	554	565	578	555	550	546	-0.3%	-0.7%
Milk yield (t / cow / year)	6.3	6.6	6.7	6.8	7.0	6.9	7.1	7.4	7.6	7.6	0.4%	2.0%
<b>Farm structure</b>												
No. of dairy farms (in 1,000's)	38	36	34	32	30	29	28	27	26	24	-2.9%	-2.5%
Average farm size (cows / farm)	16	16	17	18	18	20	21	21	21	22	2.7%	1.8%
<b>Prices in national currency</b>												
Milk : feed price ratio	1.3	1.3	1.3	1.4	1.3	1.3	1.4	1.2	1.3	1.2	-1.2%	-1.8%
Cull cow (CHF / kg live weight)	1.47	2.15	3.02	2.04	2.92	3.08	3.37	3.01	2.94	2.95	9.6%	-1.8%
Land - buy (CHF / ha)	70,000	70,000	70,000	70,000	70,000	70,000	70,000	70,000	70,000	70,000	0.0%	0.0%
Quota (CHF / kg milk)			1.30	1.31	1.11	1.09	0.72	0.44	0.41	0.38	-5.3%	-17.6%

## Farm structure

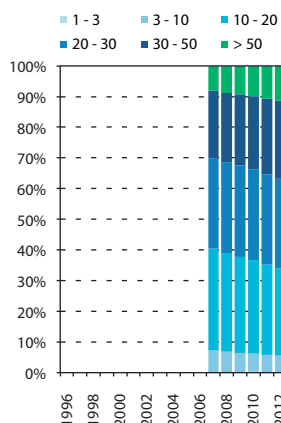
% of dairy farms and cows  
in size classes (2011)



\* size class where IFCN typical farms are

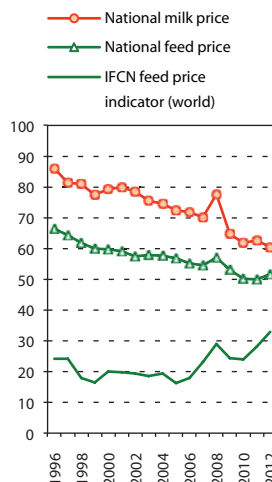
## Farm structure

% of cows per herd size



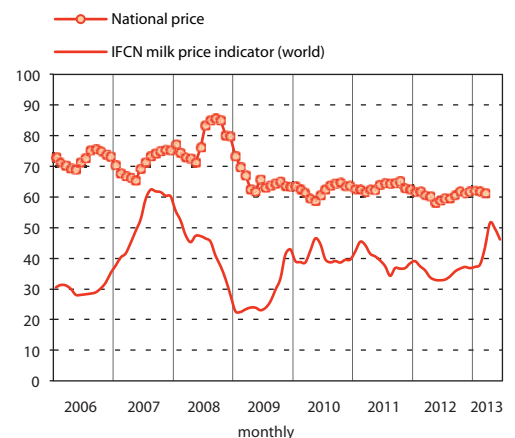
## Milk and feed price

CHF / 100 kg



## Farm gate milk prices

CHF / 100 kg milk (ECM)



### Explanations

**Sources:** National statistics, FAO, AMI, IMF. 2013 data: Preliminary and partly estimated.

**Milk map details:** Data based on the year 2011, milk delivered.

**Estimates done for:** Farm structure: Cow number 2012 following the trend.

**Remarks:** Farm structure: Includes more than dairy farms with commercial milk delivery, also those who milk their cows and feed the whole milk to the calves.

Milk cow number: 1996-2005 trend of suckler and dairy cows used, no separation in national statistics. In 2009 the official quota system ended and was replaced by contracted delivery rights between farmers and milk trading associations.



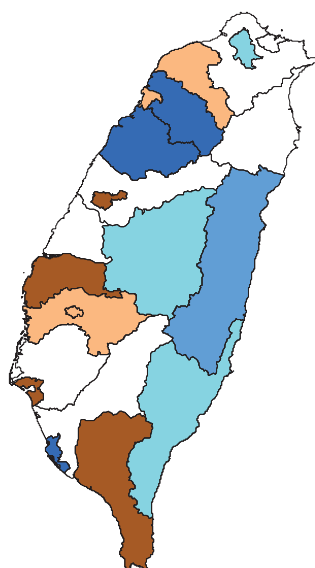
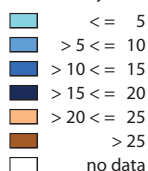
Xenia Hsiao



## Milk density 2011

in tons / km<sup>2</sup>

Milk density in tons / km<sup>2</sup>



## STATUS AND KEY DEVELOPMENTS

### Status 2012

- Milk production (cow's): 0.4 mill t ECM (number 102 in the world)
- No. of dairy farms: 560
- Milk price: +137% to world market
- Feed price: +24% to world market

### Key developments over the past five years

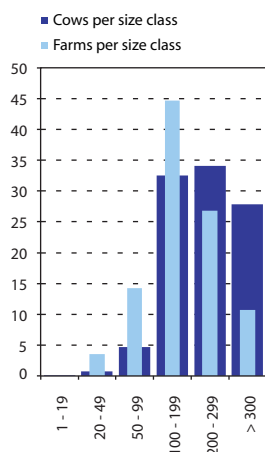
- Milk production growth: +2.4% per year
- Number of years the milk price was above world market level: 5
- Milk price was on average +105% to world market
- Feed price was on average +41% to world market

## Key variables

	1996	1998	2000	2002	2004	2006	2008	2010	2011	2012	Annual growth rates	
											'02-'07	'07-'12
<b>Milk production (cow's)</b>												
Production (mill t ECM)	0.31	0.34	0.36	0.36	0.32	0.32	0.31	0.33	0.35	0.36	-2.1%	2.4%
Cows (in 1,000's)	63	67	66	65	55	52	54	55	57	58	-3.8%	1.6%
Milk yield (t / cow / year)	5.0	5.0	5.4	5.5	5.9	6.1	5.8	6.1	6.1	6.3	1.8%	0.8%
<b>Farm structure</b>												
No. of dairy farms (in 1,000's)	0.84	0.86	0.81	0.75	0.67	0.63	0.59	0.57	0.55	0.56	-3.7%	-2.0%
Average farm size (cows / farm)	75	77	81	86	81	82	92	96	103	103	-0.1%	3.8%
<b>Prices in national currency</b>												
Milk : feed price ratio	2.4	2.7	3.1	3.4	2.4	2.7	1.9	2.3	2	2	-8.0%	-1.9%
Cull cow (TWD / kg live weight)		69.26	66.65	61.22	78.90	101.78	100.44	94.23	106.56	115.86	11.8%	1.6%
Land - buy (1,000 TWD / ha)												
Quota (TWD / kg milk)					21.33	21.33	21.33	26.10	26.10	26.10		4.1%

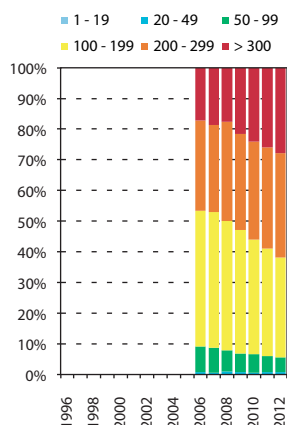
## Farm structure

% of dairy farms and cows in size classes (2012)



## Farm structure

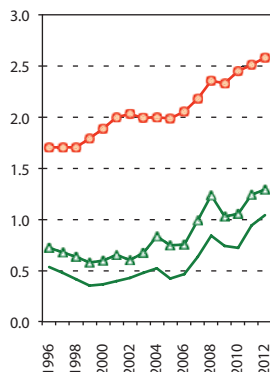
% of cows per herd size



## Milk and feed price

1,000 TWD / 100 kg

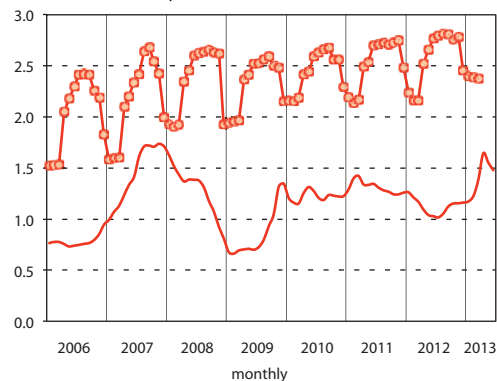
—○— National milk price  
—△— National feed price  
—■— IFCN feed price indicator (world)



## Farm gate milk prices

1,000 TWD / 100 kg milk (ECM)

—○— National price  
—■— IFCN milk price indicator (world)



## Explanations

Sources: National statistics, FAO, AMI, IMF. 2013 data: Preliminary and partly estimated.

Milk map details: Data based on the year 2011, milk production.

Estimates done for: Farm structure: Cow number 2011-2012 following the trend. Milk production 2012. Cow number 2011-12.

Remarks: Quota price: Reference price set by the government, actual prices paid is related to the total volume produced.



## STATUS AND KEY DEVELOPMENTS

### Status 2012

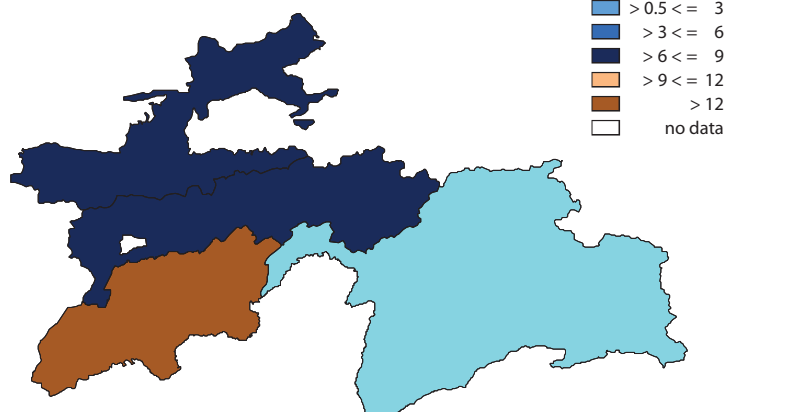
- Milk production (cow's): 0.8 mill t ECM (number 78 in the world)
- No. of dairy farms: 208,473
- Milk price: -2% to world market
- Feed price: -12% to world market

### Key developments over the past five years

- Milk production growth: +5.9% per year
- Number of years the milk price was above world market level: 1
- Milk price was on average -16% to world market
- Feed price was on average -9% to world market

### Milk density 2012

in tons / km<sup>2</sup>

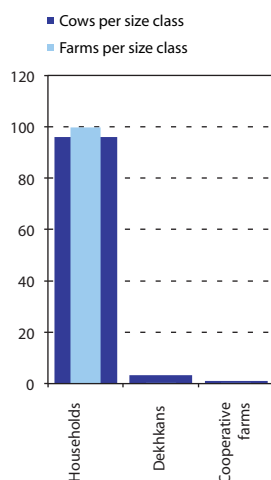


## Key variables

	1996	1998	2000	2002	2004	2006	2008	2010	2011	2012	Annual growth rates	
											'02-'07	'07-'12
<b>Milk production (cow's)</b>												
Production (mill t ECM)	0.17	0.24	0.29	0.40	0.49	0.54	0.60	0.66	0.70	0.78	7.9%	5.9%
Cows (in 1,000's)	491	473	488	517	585	720	864	951	969	1,042	7.9%	6.6%
Milk yield (t / cow / year)	0.3	0.5	0.6	0.8	0.8	0.8	0.7	0.7	0.7	0.7	0.0%	-0.6%
<b>Farm structure</b>												
No. of dairy farms (in 1,000's)	98	95	98	103	117	144	173	190	194	208	7.9%	6.6%
Average farm size (cows / farm)	5	5	5	5	5	5	5	5	5	5	0.0%	0.0%
<b>Prices in national currency</b>												
Milk : feed price ratio	3.0	2.9	1.3	1.1	1.3	1.5	1.4	1.5	1.4	1.2	-1.8%	2.1%
Cull cow (TJS / kg live weight)												
Land - buy (TJS / ha)												

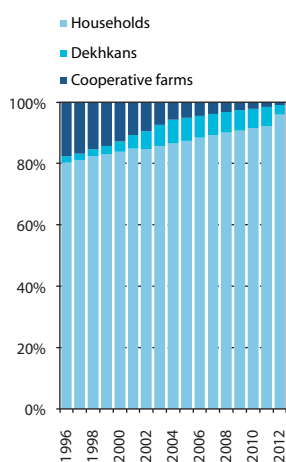
### Farm structure

% of dairy farms and cows in size classes (2012)



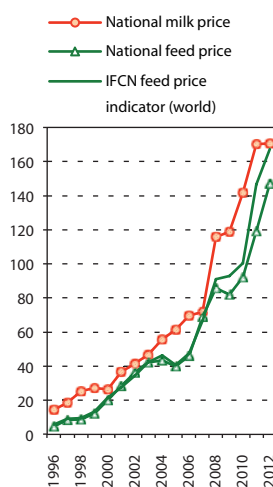
### Farm structure

% of cows per herd size



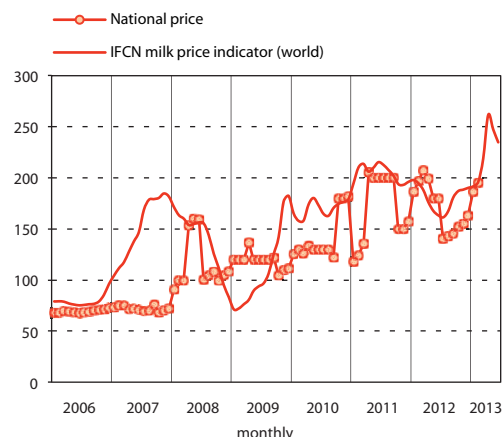
### Milk and feed price

TJS / 100 kg



### Farm gate milk prices

TJS / 100 kg milk (ECM)



### Explanations

**Sources:** National statistics, FAO, AMI, IMF. 2013 data: Preliminary and partly estimated.

**Milk map details:** Data based on the year 2012, milk production.

**Estimates done for:** Dairy farm numbers: 1996-2012 via average herd size (5 cows / farm). Feed price: Corn price 2012.

**Remarks:** Since no national information is available, world soybean meal and barley prices are taken.



## 3.91 Thailand – Milk production fact sheet



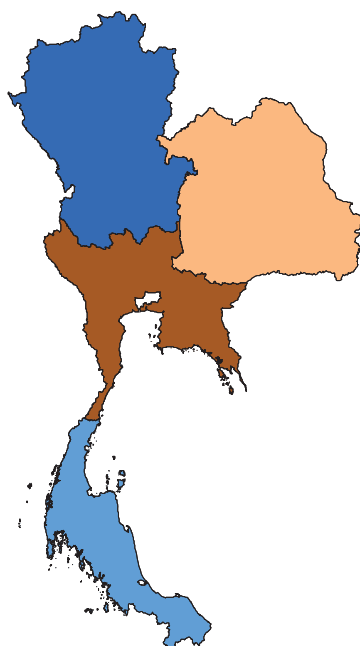
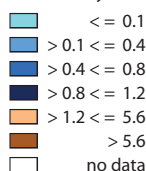
Adul Vangtal



### Milk density 2012

in tons / km<sup>2</sup>

Milk density in tons / km<sup>2</sup>



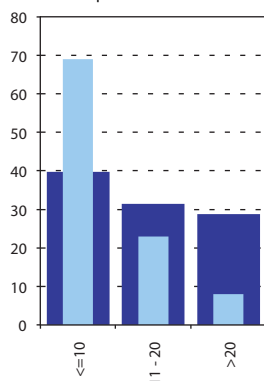
### Key variables

	1996	1998	2000	2002	2004	2006	2008	2010	2011	2012	Annual growth rates	
											'02-'07	'07-'12
<b>Milk production (cow's)</b>												
Production (mill t ECM)	0.39	0.43	0.52	0.65	0.84	0.80	0.78	0.93	0.98	1.06	2.0%	7.9%
Cows (in 1,000's)	116	132	146	159	203	215	208	280	288	296	5.5%	7.3%
Milk yield (t / cow / year)	3.3	3.3	3.5	4.1	4.1	3.7	3.7	3.3	3.4	3.6	-3.3%	0.5%
<b>Farm structure</b>												
No. of dairy farms (in 1,000's)	17	17	19	21	24	21	19	19	21	21	-2.0%	2.1%
Average farm size (cows / farm)	7	8	8	8	8	10	11	15	14	14	7.7%	5.1%
<b>Prices in national currency</b>												
Milk : feed price ratio	1.7	1.8	1.8	1.7	1.6	1.3	1.4	1.6	1.5	1.5	-6.2%	3.3%
Cull cow (THB / kg live weight)					27	35	34	35	37	40		1.6%
Land - buy (1,000 THB / ha)	1,300	1,300	1,300	1,300	1,300	1,300	1,300	1,350	1,350	1,350	0.0%	0.8%

### Farm structure

% of dairy farms and cows in size classes (2010)

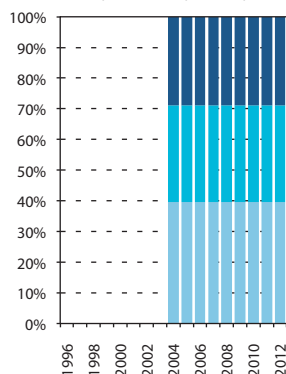
■ Cows per size class  
■ Farms per size class



### Farm structure

% of cows per herd size

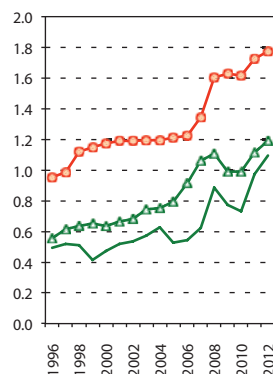
■ ≤10 ■ 11-20 ■ >20



### Milk and feed price

1,000 THB / 100 kg

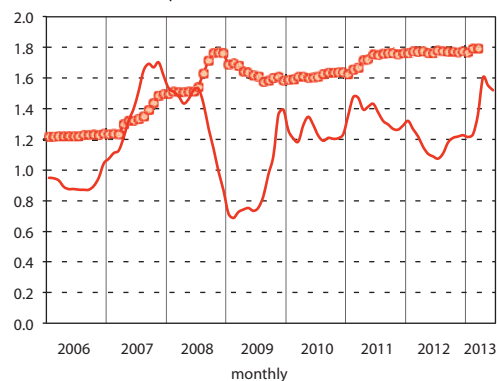
○ National milk price  
△ National feed price  
— IFCN feed price indicator (world)



### Farm gate milk prices

1,000 THB / 100 kg milk (ECM)

○ National price  
— IFCN milk price indicator (world)



### Explanations

**Sources:** National statistics, FAO, AMI, IMF. 2013 data: Preliminary and partly estimated.

**Milk map details:** Data based on the year 2012, milk production.

**Estimates done for:** Farm structure: 2005-2012.



**STATUS AND KEY DEVELOPMENTS**

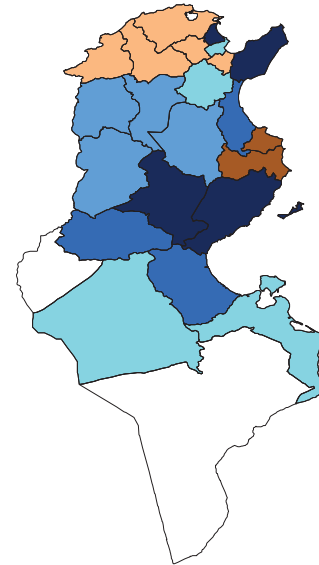
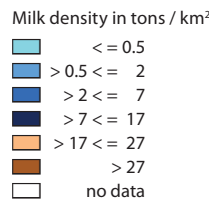
**Status 2012**

- Milk production (cow's): 1.2 mill t ECM (number 71 in the world)
- No. of dairy farms: 112,000
- Milk price: +13% to world market
- Feed price: +31% to world market

**Key developments over the past five years**

- Milk production growth: +3.4% per year
- Number of years the milk price was above world market level: 4
- Milk price was on average +19% to world market
- Feed price was on average +20% to world market

**Milk density 2012**  
in tons / km<sup>2</sup>

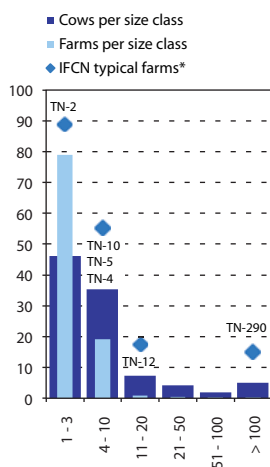


**Key variables**

	1996	1998	2000	2002	2004	2006	2008	2010	2011	2012	Annual growth rates '02-'07 '07-'12	
<b>Milk production (cow's)</b>												
Production (mill t ECM)	0.61	0.73	0.88	0.93	0.85	0.95	1.03	1.08	1.16	1.18	1.4%	3.4%
Cows (in 1,000's)	409	463	482	485	435	480	530	565	585	595	0.6%	3.5%
Milk yield (t / cow / year)	1.5	1.6	1.8	1.9	2.0	2.0	1.9	1.9	2.0	2.0	0.8%	-0.1%
<b>Farm structure</b>												
No. of dairy farms (in 1,000's)	112	112	112	112	112	112	112	112	112	112	0.0%	0.0%
Average farm size (cows / farm)	4	4	4	4	4	4	5	5	5	5	0.6%	3.5%
<b>Prices in national currency</b>												
Milk : feed price ratio	1.8	2.3	2.1	2.1	1.7	2.1	1.4	1.6	1.3	0.9	-3.6%	-12.5%
Cull cow (TND / kg live weight)						1.50	2.08	2.31	2.54	2.69		8.8%
Land - buy (TND / ha)	1,881	2,223	2,626	3,244	4,189	5,409	6,985	9,019	10,249	11,647	13.6%	13.6%

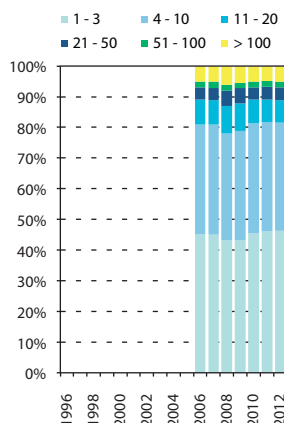
**Farm structure**

% of dairy farms and cows in size classes (2012)



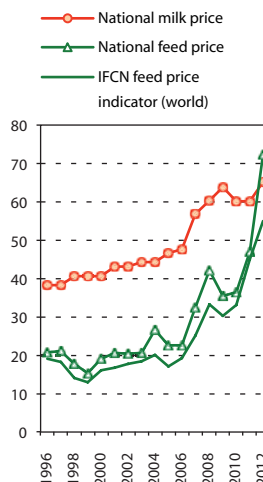
**Farm structure**

% of cows per herd size



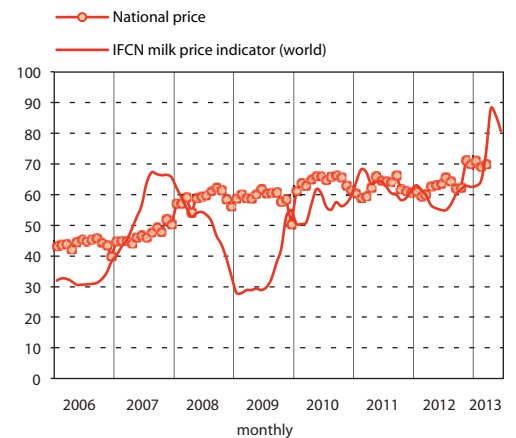
**Milk and feed price**

TND / 100 kg



**Farm gate milk prices**

TND / 100 kg milk (ECM)



\* size class where IFCN typical farms are

**Explanations**

Sources: National statistics, FAO, AMI, IMF. 2013 data: Preliminary and partly estimated.

Milk map details: Data based on the year 2012, milk production.



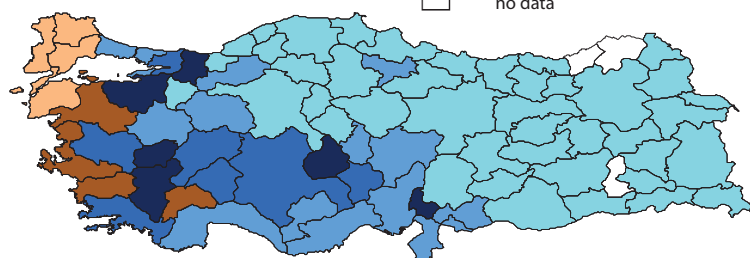
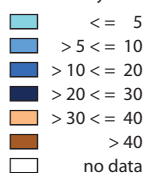
Muhittin Özder



## Milk density 2012

in tons / km<sup>2</sup>

Milk density in tons / km<sup>2</sup>



## STATUS AND KEY DEVELOPMENTS

### Status 2012

- Milk production (cow's and buffalo's): 14.9 mill t ECM (number 10 in the world)
- No. of dairy farms: 1,382,000
- Milk price: +29% to world market
- Feed price: +21% to world market

### Key developments over the past five years

- Milk production growth: +7% per year
- Number of years the milk price was above world market level: 5
- Milk price was on average +30% to world market
- Feed price was on average +51% to world market

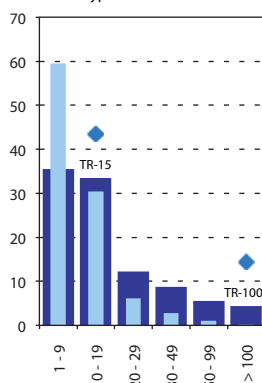
## Key variables

	1996	1998	2000	2002	2004	2006	2008	2010	2011	2012	Annual growth rates '02-'07 '07-'12	
<b>Milk production (cow's and buffalo's)</b>												
Production (mill t ECM)	10.14	9.46	9.30	7.87	9.07	10.57	10.75	12.06	12.22	14.91	6.2%	7.0%
Cows and buffalos (in 1,000's)	6,082	5,574	5,349	4,444	3,915	4,224	4,111	4,420	4,529	5,276	-0.8%	4.4%
Milk yield (t / cow / year)	1.7	1.7	1.7	1.8	2.3	2.5	2.6	2.7	2.7	2.8	7.1%	2.5%
<b>Farm structure</b>												
No. of dairy farms (in 1,000's)	2,147	2,147	2,147	2,170	2,217	1,665	1,093	1,101	1,105	1,382	-12.9%	4.9%
Average farm size (cows / farm)	3	3	2	2	2	3	4	4	4	4	13.8%	-0.5%
<b>Prices in national currency</b>												
Milk : feed price ratio	1.0	1.8	1.7	1.5	1.3	1.2	1.0	1.8	1.4	1.1	-6.4%	0.3%
Cull cow (TRY / kg live weight)						3.40	3.80	6.50	6.00	6.00		11.4%
Land - buy (TRY / ha)						20,000	30,000					

## Farm structure

% of dairy farms and cows in size classes (2011)

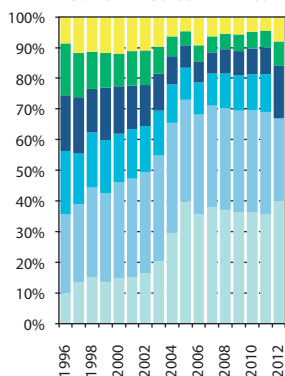
■ Cows per size class  
■ Farms per size class  
◆ IFCN typical farms\*



## Farm structure

% of cows per herd size

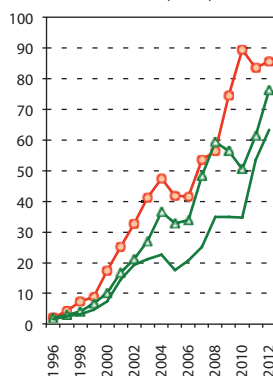
■ 1 - 9 ■ 10 - 19 ■ 20 - 29  
■ 30 - 49 ■ 50 - 99 ■ > 100



## Milk and feed price

TRY / 100 kg

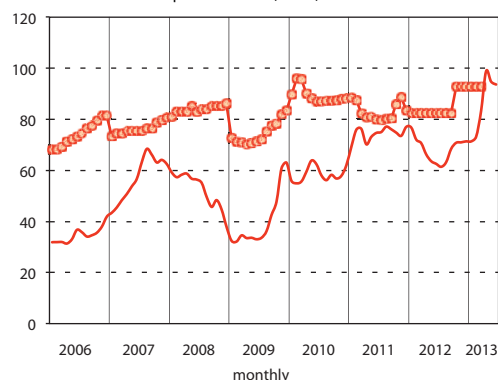
—○— National milk price  
—△— National feed price  
—■— IFCN feed price indicator (world)



## Farm gate milk prices

TRY / 100 kg milk (ECM)

—○— National price  
—■— IFCN milk price indicator (world)



\* size class where IFCN typical farms are

## Explanations

Sources: National statistics, FAO, AMI, IMF. 2013 data: Preliminary and partly estimated.

Milk map details: Data based on the year 2012, milk delivered.

Estimates done for: Dairy farm numbers 2008-2010. Soybean meal price 1996-1999 estimated based on world market price development. Farm structure: 2009-2011



### STATUS AND KEY DEVELOPMENTS

#### Status 2012

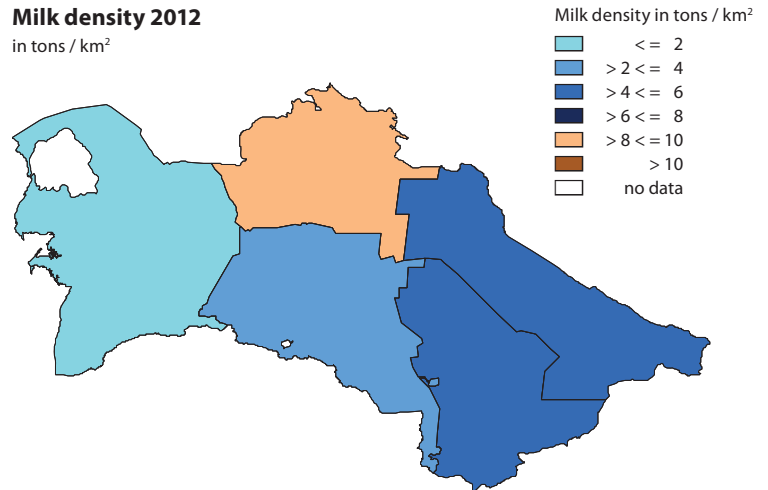
- Milk production (cow's): 2.2 mill t ECM (number 48 in the world)
- No. of dairy farms: 82,511
- Milk price: +41% to world market
- Feed price: -12% to world market

#### Key developments over the past five years

- Milk production growth: +1% per year
- Number of years the milk price was above world market level: 4
- Milk price was on average +51% to world market
- Feed price was on average -9% to world market

#### Milk density 2012

in tons / km<sup>2</sup>

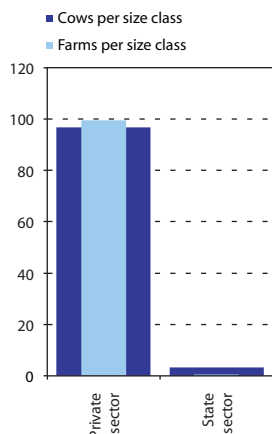


### Key variables

	1996	1998	2000	2002	2004	2006	2008	2010	2011	2012	Annual growth rates '02-'07 '07-'12	
<b>Milk production (cow's)</b>												
Production (mill t ECM)	0.75	0.77	0.99	1.40	1.40	1.20	2.07	2.15	2.15	2.18	8.2%	1.0%
Cows (in 1,000's)	567	485	620	770	1,000	1,032	1,652	1,754	1,750	1,746	14.3%	3.1%
Milk yield (t / cow / year)	1.3	1.6	1.6	1.8	1.4	1.2	1.3	1.2	1.2	1.2	-5.4%	-2.0%
<b>Farm structure</b>												
No. of dairy farms (in 1,000's)	83	83	83	83	83	83	83	83	83	83	0.0%	0.0%
Average farm size (cows / farm)	7	6	8	9	12	13	20	21	21	21	14.3%	3.1%
<b>Prices in national currency</b>												
Milk : feed price ratio	2.4	2.4	4.7	4.4	5.2	6.2	1.6	2.5	2.1	1.7	2.8%	-19.8%
Cull cow (TMT / kg live weight)												
Land - buy (TMT / ha)												

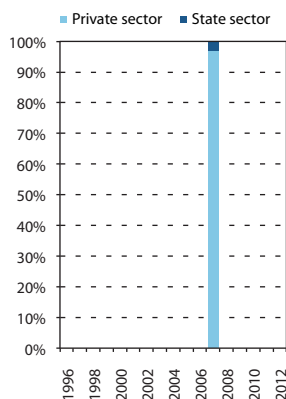
#### Farm structure

% of dairy farms and cows in size classes (2007)



#### Farm structure

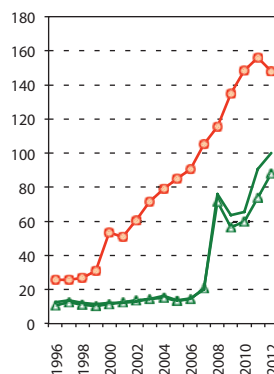
% of cows per herd size



#### Milk and feed price

TMT / 100 kg

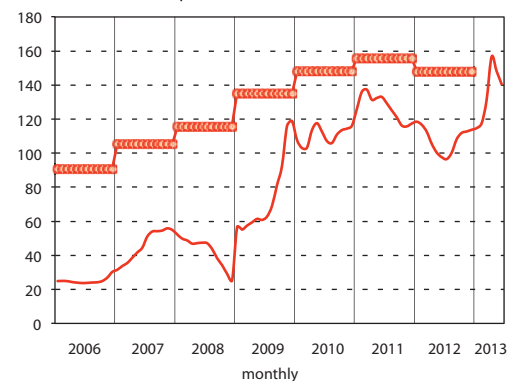
—○— National milk price  
—△— National feed price  
—■— IFCN feed price indicator (world)



#### Farm gate milk prices

TMT / 100 kg milk (ECM)

—○— National price  
—■— IFCN milk price indicator (world)



#### Explanations

**Sources:** National statistics, FAO, AMI, IMF. 2013 data: Preliminary and partly estimated.

**Milk map details:** Data based on the year 2004, milk production.

**Estimates done for:** Farm number: only 2007 available, assumed stable. Milk production, milk price and cow number: is based on FAO. Feed price: since no national information is available, world soybean meal and barley prices are taken.

**Remarks:** Monthly milk price: annual averages.

## 3.95 Uganda – Milk production fact sheet



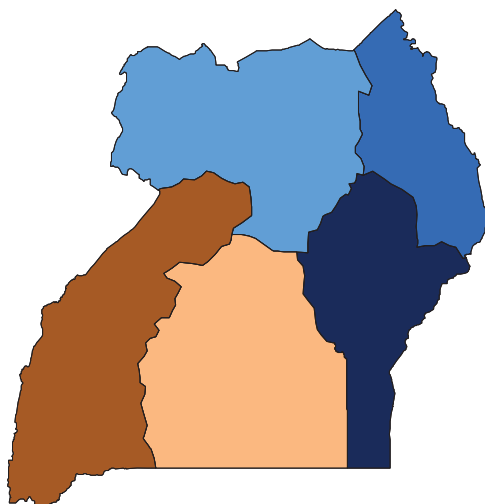
Aikiriza Steven



### Milk density 2012

in tons / km<sup>2</sup>

Milk density in tons / km<sup>2</sup>



### STATUS AND KEY DEVELOPMENTS

#### Status 2012

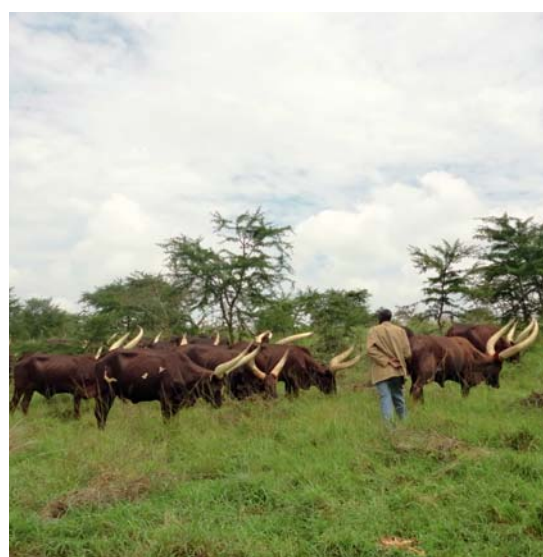
- Milk production (cow's): 1.8 mill t ECM (number 57 in the world)
- No. of dairy farms: 1,977,000
- Milk price: -54% to world market
- Feed price: -4% to world market

#### Key developments over the past five years

- Milk production growth: +12% per year
- Number of years the milk price was above world market level: 0
- Milk price was on average -54% to world market
- Feed price was on average +34% to world market

### Key variables

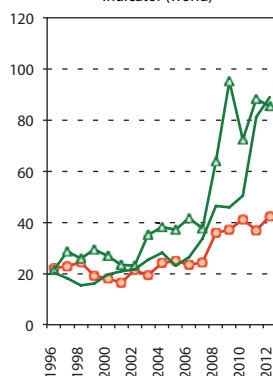
	1996	1998	2000	2002	2004	2006	2008	2010	2011	2012	Annual growth rates '02-'07 '07-'12	
<b>Milk production (cow's)</b>												
Production (mill t ECM)	0.62	0.66	0.74	0.82	0.90	0.99	1.05	1.23	1.69	1.84	4.9%	12.0%
Cows (in 1,000's)	1,325	1,413	1,492	1,582	1,700	2,767	3,721	4,293	4,612	5,226	12.3%	13.1%
Milk yield (t / cow / year)	0.5	0.5	0.5	0.5	0.5	0.4	0.3	0.3	0.4	0.4	-6.6%	-0.9%
<b>Farm structure</b>												
No. of dairy farms (in 1,000's)	671	715	755	801	941	1,106	1,300	1,663	1,854	1,977	8.4%	10.5%
Average farm size (cows / farm)	2	2	2	2	2	3	3	3	2	3	3.6%	2.3%
<b>Prices in national currency</b>												
Milk : feed price ratio	1.0	0.9	0.7	0.9	0.6	0.6	0.6	0.6	0.4	0.5	-6.8%	-5.1%
Cull cow (UGX / kg live weight)	700	750	780	800	900	1,000	1,714	2,661	2,889	3,000	7.7%	20.9%
Land - buy (1,000 UGX / ha)	300	400	500	750	1,235	1,850	2,470	4,551	5,750	8,750	22.4%	33.5%



### Milk and feed price

1,000 UGX / 100 kg

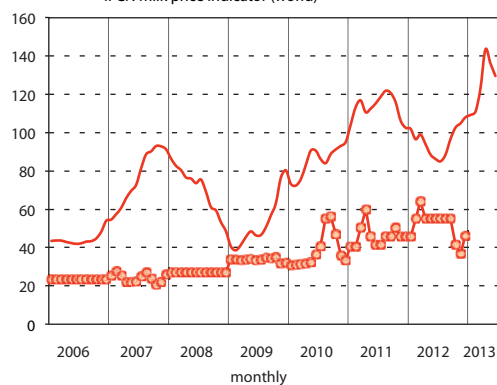
- National milk price
- △ National feed price
- IFCN feed price indicator (world)



### Farm gate milk prices

1,000 UGX / 100 kg milk (ECM)

- National price
- IFCN milk price indicator (world)



### Explanations

**Sources:** National statistics, FAO, AMI, IMF. 2013 data: Preliminary and partly estimated.

**Milk map details:** Data based on the year 2012, milk production.

**Estimates done for:** Soybean meal prices 1996-2000. Monthly milk price 2006-2008: annual averages.



Olga Kozak



## STATUS AND KEY DEVELOPMENTS

### Status 2012

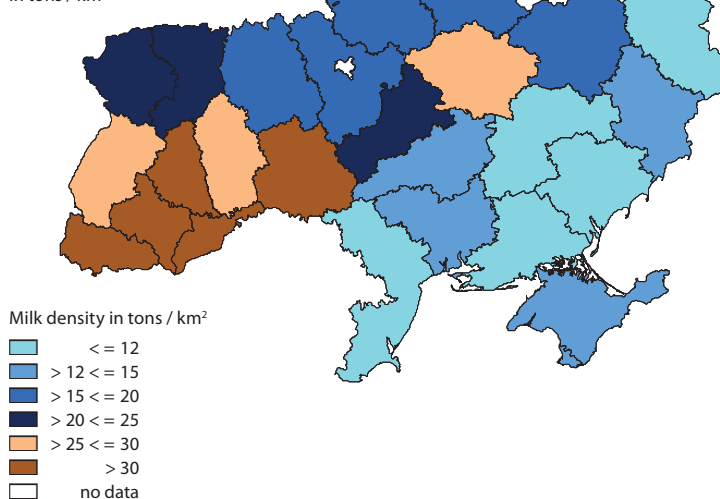
- Milk production (cow's): 10.6 mill t ECM (number 17 in the world)
- No. of dairy farms: 1,665,000
- Milk price: -5% to world market
- Feed price: -26% to world market

### Key developments over the past five years

- Milk production growth: -1.3% per year
- Number of years the milk price was above world market level: 1
- Milk price was on average -11% to world market
- Feed price was on average -19% to world market

### Milk density 2012

in tons / km<sup>2</sup>

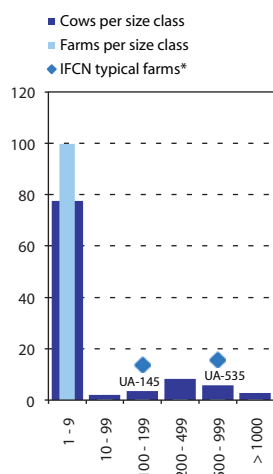


## Key variables

	1996	1998	2000	2002	2004	2006	2008	2010	2011	2012	Annual growth rates	
											'02-'07	'07-'12
<b>Milk production (cow's)</b>												
Production (mill t ECM)	13.48	12.48	11.54	12.90	12.65	12.27	10.91	10.50	10.23	10.60	-2.6%	-1.3%
Cows (in 1,000's)	6,972	5,841	4,958	4,716	3,926	3,347	2,920	2,677	2,589	2,582	-8.1%	-3.6%
Milk yield (t / cow / year)	1.9	2.1	2.3	2.7	3.2	3.7	3.7	3.9	4.0	4.1	6.0%	2.4%
<b>Farm structure</b>												
No. of dairy farms (in 1,000's)	2,443	2,459	2,735	2,803	2,610	2,476	2,305	1,865	1,700	1,665	-2.5%	-7.6%
Average farm size (cows / farm)	3	2	2	2	2	1	1	1	2	2	-5.7%	4.3%
<b>Prices in national currency</b>												
Milk : feed price ratio	1.1	1.3	1.2	1.2	1.3	1.6	1.6	2.2	1.8	1.3	3.0%	-1.5%
Cull cow (UAH / kg live weight)	0.83	1.24	2.07	2.92	5.15	5.29	9.41	9.42	12.10	12.56	19.0%	12.5%
Land - rent (UAH / ha)				85	104	120	185	292	365	539	8.8%	33.0%

## Farm structure

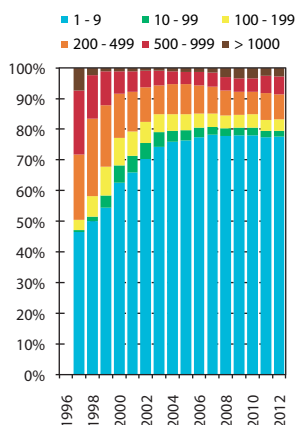
% of dairy farms and cows in size classes (2012)



\* size class where IFCN typical farms are

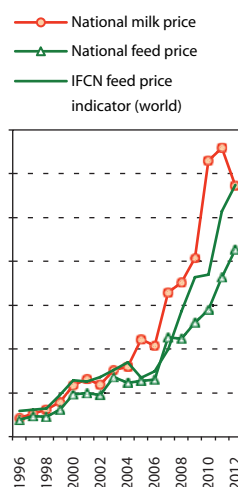
## Farm structure

% of cows per herd size



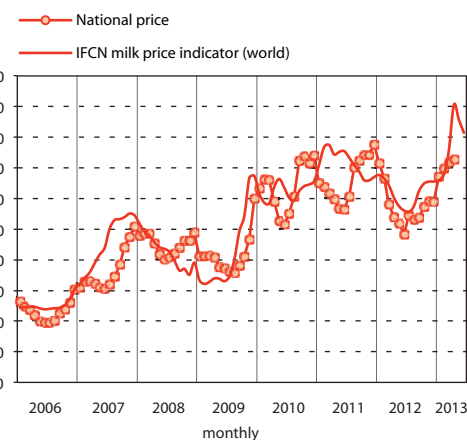
## Milk and feed price

UAH / 100 kg



## Farm gate milk prices

UAH / 100 kg milk (ECM)



## Explanations

Sources: National statistics, FAO, AMI, IMF. 2013 data: Preliminary and partly estimated.

Milk map details: Data based on the year 2012, milk production.





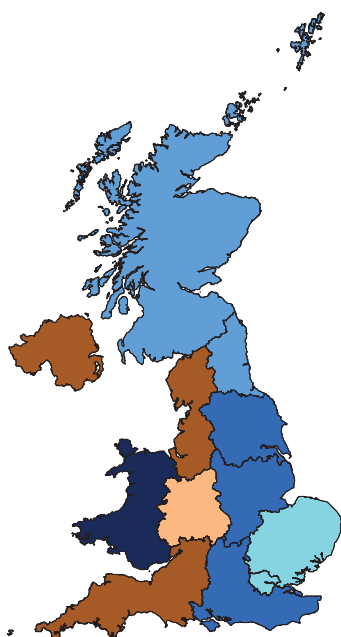
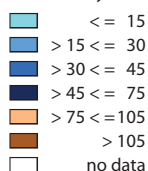
Karolina Klaskova



## Milk density 2010

in tons / km<sup>2</sup>

Milk density in tons / km<sup>2</sup>



## STATUS AND KEY DEVELOPMENTS

### Status 2012

- Milk production (cow's): 14 mill t ECM (number 11 in the world)
- No. of dairy farms: 14,115
- Milk price: +17% to world market
- Feed price: +4% to world market

### Key developments over the past five years

- Milk production growth: -0.1% per year
- Number of years the milk price was above world market level: 3
- Milk price was on average +8% to world market
- Feed price was on average +10% to world market

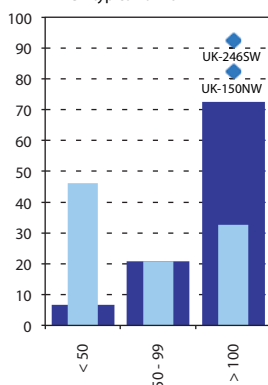
## Key variables

	1996	1998	2000	2002	2004	2006	2008	2010	2011	2012	Annual growth rates '02-'07 '07-'12	
<b>Milk production (cow's)</b>												
Production (mill t ECM)	14.71	14.76	14.51	14.65	14.37	14.26	13.75	13.81	14.15	13.99	-0.8%	-0.1%
Cows (in 1,000's)	2,511	2,439	2,336	2,227	2,129	2,066	1,909	1,847	1,814	1,812	-2.6%	-1.5%
Milk yield (t / cow / year)	5.9	6.1	6.2	6.6	6.8	6.9	7.2	7.5	7.8	7.7	1.8%	1.4%
<b>Farm structure</b>												
No. of dairy farms (in 1,000's)	37	35	32	25	22	19	17	15	15	14	-6.4%	-4.7%
Average farm size (cows / farm)	67	70	73	89	98	109	112	121	123	128	4.1%	3.3%
<b>Prices in national currency</b>												
Milk : feed price ratio	1.8	2.0	1.8	2.0	1.8	1.9	1.5	1.6	1.3	1.2	-5.2%	-4.8%
Cull cow (GBP / kg live weight)	0.52	0.38	0.39	0.40	0.43	0.56	0.83	0.85	1.04	1.10	7.2%	14.2%
Land - buy (GBP / ha)	4,700	5,555	6,450	7,396	7,312	6,361	9,866	10,792	14,106	14,803	0.0%	14.9%
Quota (GBP / kg milk)	0.63	0.42	0.23	0.18	0.18	0.03	0.01	0.002	0.003	0.002	-35.0%	-40.2%

## Farm structure

% of dairy farms and cows in size classes (2011)

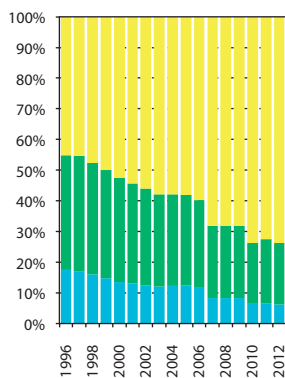
- Cows per size class
- Farms per size class
- ◆ IFCN typical farms\*



## Farm structure

% of cows per herd size

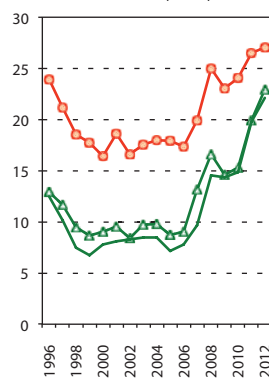
- < 50
- 50 - 99
- > 100



## Milk and feed price

GBP / 100 kg

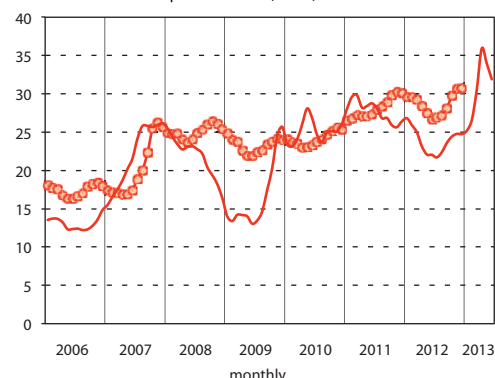
- National milk price
- △ National feed price
- IFCN feed price indicator (world)



## Farm gate milk prices

GBP / 100 kg milk (ECM)

- National price
- IFCN milk price indicator (world)



\* size class where IFCN typical farms are

## Explanations

Sources: National statistics, FAO, AMI, IMF. 2013 data: Preliminary and partly estimated.

Milk map details: Data based on the year 2010, milk production.

Estimates done for: Farm structure: Cow number 2012 following the trend.

Remarks: Land price data base: until 2010 UK, since 2011 England and Wales pasture land.



**STATUS AND KEY DEVELOPMENTS**

**Status 2012**

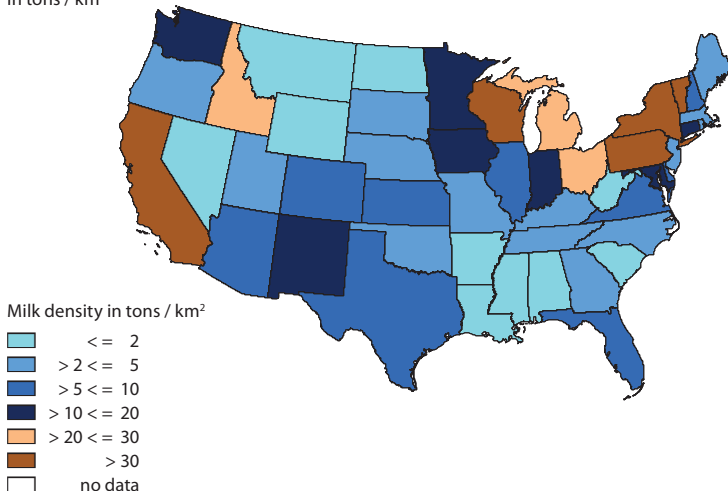
- Milk production (cow's): 86.1 mill t ECM (number 2 in the world)
- No. of dairy farms: 57,708
- Milk price: +17% to world market
- Feed price: -10% to world market

**Key developments over the past five years**

- Milk production growth: +1.7% per year
- Number of years the milk price was above world market level: 4
- Milk price was on average +7% to world market
- Feed price was on average -10% to world market

**Milk density 2012**

in tons / km<sup>2</sup>

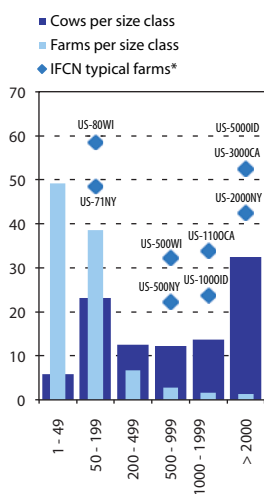


**Key variables**

	1996	1998	2000	2002	2004	2006	2008	2010	2011	2012	Annual growth rates	
											'02-'07	'07-'12
<b>Milk production (cow's)</b>												
Production (mill t ECM)	65.82	66.90	71.51	72.71	72.95	77.80	81.18	82.09	84.30	86.12	1.8%	1.7%
Cows (in 1,000's)	9,372	9,151	9,199	9,139	9,012	9,112	9,315	9,113	9,194	9,233	0.0%	0.2%
Milk yield (t / cow / year)	7.0	7.3	7.8	8.0	8.1	8.5	8.7	9.0	9.2	9.3	1.7%	1.5%
<b>Farm structure</b>												
No. of dairy farms (in 1,000's)	131	117	105	91	82	75	67	63	60	58	-5.2%	-3.8%
Average farm size (cows / farm)	72	78	88	100	111	122	139	146	153	160	5.5%	4.1%
<b>Prices in national currency</b>												
Milk : feed price ratio	2.4	3.3	2.8	2.4	2.8	2.1	1.9	1.8	1.7	1.4	1.0%	-11.3%
Cull cow (USD / kg live weight)	0.63	0.75	0.84	0.82	1.11	1.03	1.12	1.21	1.58	1.78	5.2%	11.0%
Land - buy (USD / ha)	2,964	3,310	3,606	3,927	4,372	5,681	6,817	6,669	7,660	8,772	9.7%	7.0%

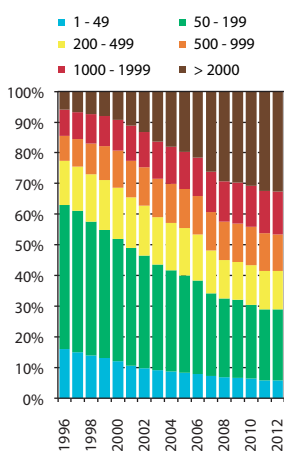
**Farm structure**

% of dairy farms and cows in size classes (2011)



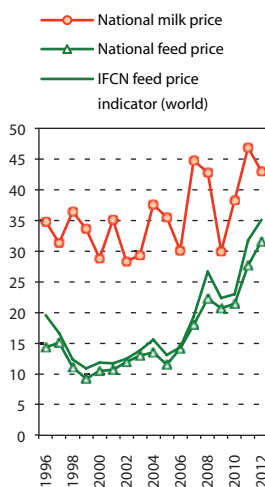
**Farm structure**

% of cows per herd size



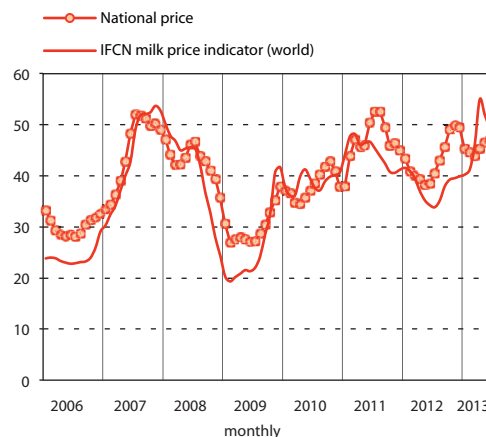
**Milk and feed price**

USD / 100 kg



**Farm gate milk prices**

USD / 100 kg milk (ECM)



\* size class where IFCN typical farms are

**Explanations**

**Sources:** National statistics, FAO, AMI, IMF. 2013 data: Preliminary and partly estimated.

**Milk map details:** Data based on the year 2012, milk production.

**Estimates done for:** Farm structure: Cow number 2011-2012 following the trend.



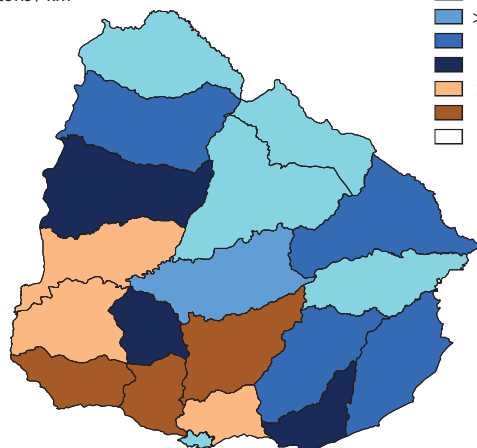
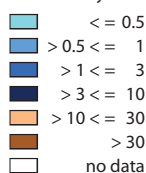
Gabriel Bagnato



## Milk density 2011

in tons / km<sup>2</sup>

Milk density in tons / km<sup>2</sup>



## STATUS AND KEY DEVELOPMENTS

### Status 2012

- Milk production (cow's): 2.2 mill t ECM (number 49 in the world)
- No. of dairy farms: 4,433
- Milk price: +1% to world market
- Feed price: -1% to world market

### Key developments over the past five years

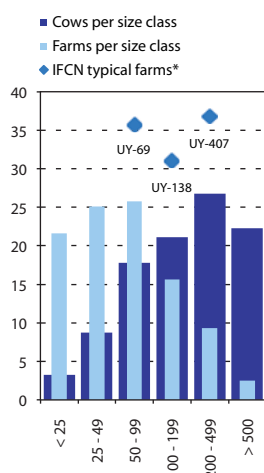
- Milk production growth: +6.2% per year
- Number of years the milk price was above world market level: 1
- Milk price was on average -16% to world market
- Feed price was on average +12% to world market

## Key variables

	1996	1998	2000	2002	2004	2006	2008	2010	2011	2012	Annual growth rates	
											'02-'07	'07-'12
<b>Milk production (cow's)</b>												
Production (mill t ECM)	1.23	1.39	1.29	1.37	1.57	1.71	1.77	1.81	2.03	2.17	3.3%	6.2%
Cows (in 1,000's)	380	394	403	443	389	400	409	428	428	450	-1.7%	2.0%
Milk yield (t / cow / year)	3.2	3.5	3.2	3.1	4.0	4.3	4.3	4.2	4.7	4.8	5.1%	4.1%
<b>Farm structure</b>												
No. of dairy farms (in 1,000's)	6	6	5	5	5	5	5	5	5	4	-2.4%	-0.5%
Average farm size (cows / farm)	65	71	80	86	79	86	88	95	95	102	0.7%	2.5%
<b>Prices in national currency</b>												
Milk : feed price ratio	0.9	1.1	0.9	0.5	0.9	1.0	1.0	1.1	1.3	1.1	21.2%	-3.8%
Cull cow (UYU / kg live weight)	4.83	7.77	7.74	8.75	21.03	20.06	24.10	26.01	29.35	34.70	20.3%	9.5%
Land - buy (1,000 UYU / ha)			8	13	21	28	39	50	62	69	20.1%	15.6%

## Farm structure

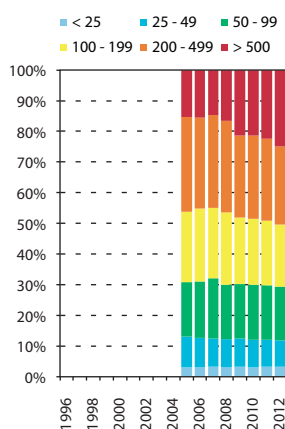
% of dairy farms and cows in size classes (2011)



\* size class where IFCN typical farms are

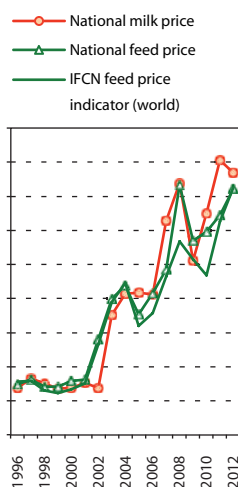
## Farm structure

% of cows per herd size



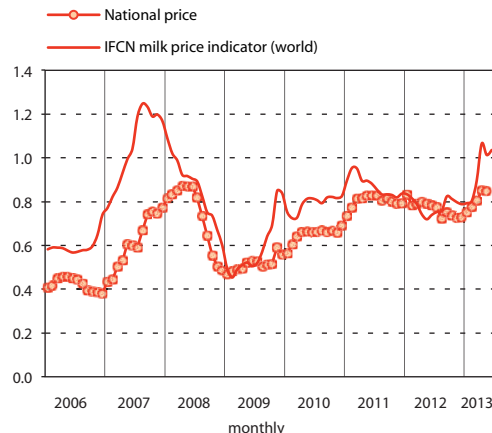
## Milk and feed price

1,000 UYU / 100 kg



## Farm gate milk prices

1,000 UYU / 100 kg milk (ECM)



## Explanations

Sources: National statistics, FAO, AMI, IMF. 2013 data: Preliminary and partly estimated.

Milk map details: Data based on the year 2011, milk production.







## STATUS AND KEY DEVELOPMENTS

### Status 2012

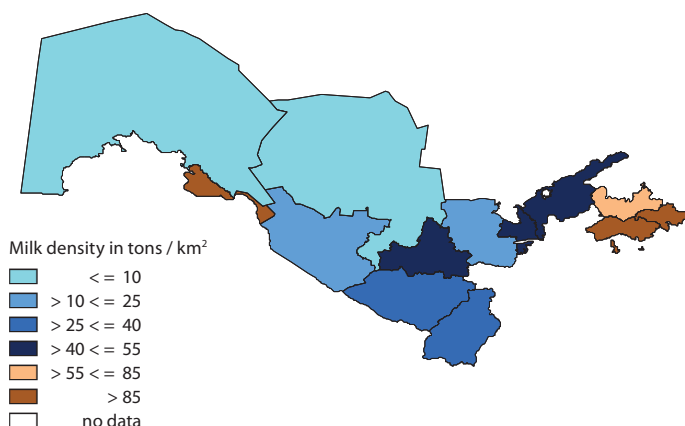
- Milk production (cow's): 6.8 mill t ECM (number 25 in the world)
- No. of dairy farms: 1,963,074
- Milk price: +97% to world market
- Feed price: -12% to world market

### Key developments over the past five years

- Milk production growth: +7.4% per year
- Number of years the milk price was above world market level: 5
- Milk price was on average +49% to world market
- Feed price was on average -9% to world market

### Milk density 2012

in tons / km<sup>2</sup>

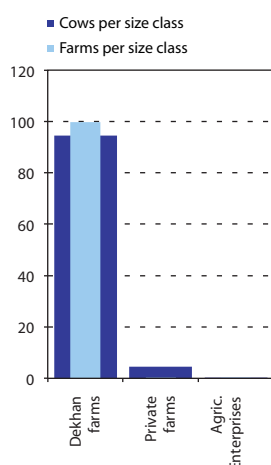


## Key variables

	1996	1998	2000	2002	2004	2006	2008	2010	2011	2012	Annual growth rates '02-'07 '07-'12	
<b>Milk production (cow's)</b>												
Production (mill t ECM)	3.08	3.22	3.31	3.38	3.98	4.52	5.05	5.74	6.30	6.77	7.0%	7.4%
Cows (in 1,000's)	2,234	2,310	2,362	2,557	2,700	2,983	3,327	3,764	3,878	4,017	4.1%	5.1%
Milk yield (t / cow / year)	1.4	1.4	1.4	1.3	1.5	1.5	1.5	1.5	1.6	1.7	2.8%	2.2%
<b>Farm structure</b>												
No. of dairy farms (in 1,000's)	942	1,014	1,057	1,102	1,288	1,414	1,573	1,757	1,857	1,963	6.1%	5.7%
Average farm size (cows / farm)	2	2	2	2	2	2	2	2	2	2	-1.9%	-0.6%
<b>Prices in national currency</b>												
Milk : feed price ratio		5.2	2.8	1.0	1.2	1.9	1.9	2.8	2.9	2.3	5.9%	12.7%
Cull cow (UZS / kg live weight)								6,100	6,500			
Land - buy (1,000 UZS / ha)												

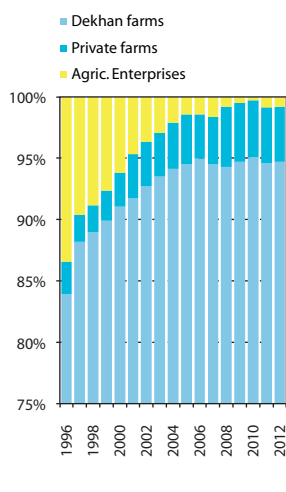
## Farm structure

% of dairy farms and cows in size classes (2010)



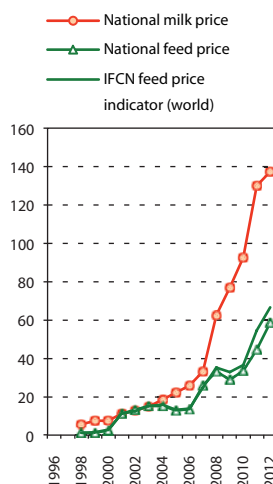
## Farm structure

% of cows per herd size



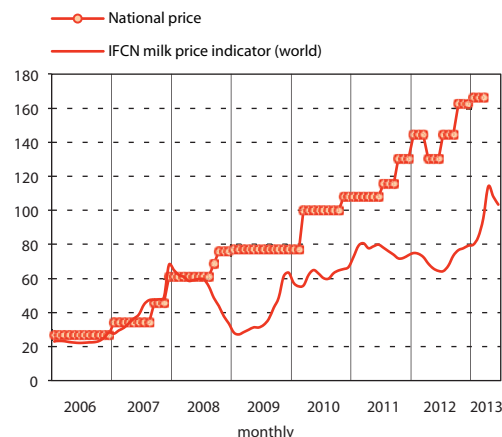
## Milk and feed price

1,000 UZS / 100 kg



## Farm gate milk prices

1,000 UZS / 100 kg milk (ECM)



### Explanations

**Sources:** National statistics, FAO, AMI, IMF. 2013 data: Preliminary and partly estimated.

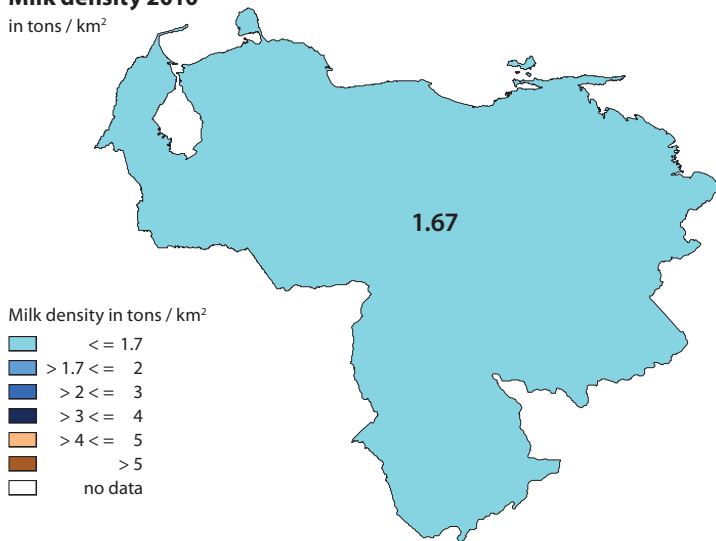
**Milk map details:** Data based on the year 2012, milk production.

**Estimates done for:** Dairy farms: 2009-12. Cull cow price 2012.

**Remarks:** Farm structure: Average cow number per herd size class: Dekhan: 2 cows; Private farm: 30 cows; Agricultural enterprises: 100 cows. Dekhan farms: Family enterprises involved in agriculture, producing on land given on grounds of lifelong hereditary possession after Soviet Rule. Since no statistical information on feed prices are available the world market price is used.

## Milk density 2010

in tons / km<sup>2</sup>



## STATUS AND KEY DEVELOPMENTS

### Status 2012

- Milk production (cow's): 1.7 mill t ECM (number 64 in the world)
- No. of dairy farms: 60,344
- Milk price: +58% to world market
- Feed price: 0% to world market

### Key developments over the past five years

- Milk production growth: +3.4% per year
- Number of years the milk price was above world market level: 5
- Milk price was on average +80% to world market
- Feed price was on average +0% to world market

## Key variables

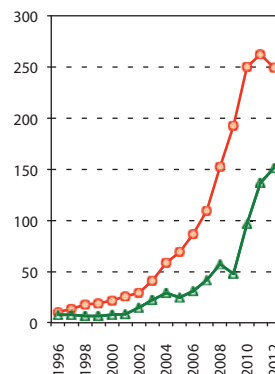
	1996	1998	2000	2002	2004	2006	2008	2010	2011	2012	Annual growth rates	
											'02-'07	'07-'12
<b>Milk production (cow's)</b>												
Production (mill t ECM)	1.31	1.31	1.31	1.30	1.28	1.33	1.47	1.60	1.67	1.71	2.1%	3.4%
Cows (in 1,000's)	740	740	735	730	730	747	811	864	896	905	1.9%	2.4%
Milk yield (t / cow / year)	1.8	1.8	1.8	1.8	1.7	1.8	1.8	1.8	1.9	1.9	0.2%	1.0%
<b>Farm structure</b>												
No. of dairy farms (in 1,000's)	49	49	49	49	49	50	54	58	60	60	1.9%	2.4%
Average farm size (cows / farm)	15	15	15	15	15	15	15	15	15	15	0.0%	0.0%
<b>Prices in national currency</b>												
Milk : feed price ratio	1.3	2.6	2.7	2.0	2.0	2.8	2.6	2.6	1.9	1.7	5.4%	-8.8%
Cull cow (VEF / kg live weight)												
Land - buy (VEF / ha)												



## Milk and feed price

VEF / 100 kg

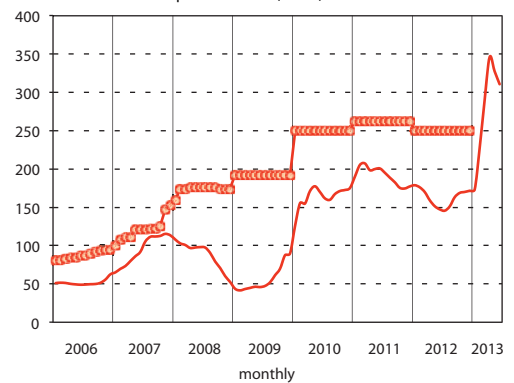
- National milk price
- △— National feed price
- IFCN feed price indicator (world)



## Farm gate milk prices

VEF / 100 kg milk (ECM)

- National price
- IFCN milk price indicator (world)



## Explanations

**Sources:** National statistics, FAO, AMI, IMF. 2013 data: Preliminary and partly estimated.

**Milk map details:** Data based on the year 2010, milk production.

**Estimates done for:** Monthly milk price 2009-12: annual averages. Dairy farms based on the assumption that the average herd size is about 15 cows/farm.

**Remarks:** Since no statistical information on Soybean meal and Corn prices are available the world market price is used.



## STATUS AND KEY DEVELOPMENTS

### Status 2012

- Milk production (cow's): 0.4 mill t ECM (number 100 in the world)
- No. of dairy farms: 20,546
- Milk price: +48% to world market
- Feed price: +72% to world market

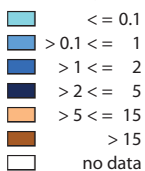
### Key developments over the past five years

- Milk production growth: +9.6% per year
- Number of years the milk price was above world market level: 5
- Milk price was on average +26% to world market
- Feed price was on average +54% to world market

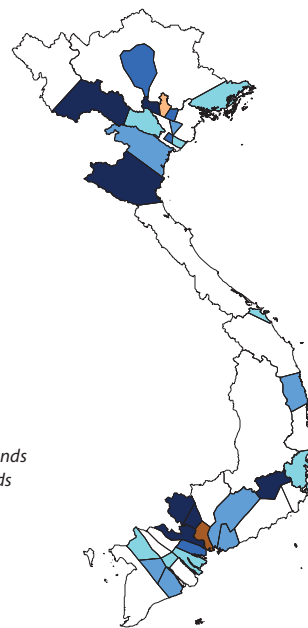
### Milk density 2012

in tons / km<sup>2</sup>

Milk density in tons / km<sup>2</sup>



**Remarks:** The absence of Sparty Islands (Trung Sa islands) and Paracel Islands (Hoang Sa islands) due to none-milk production in these areas.

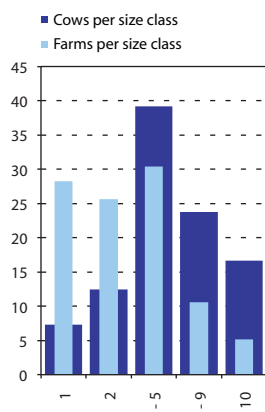


## Key variables

	1996	1998	2000	2002	2004	2006	2008	2010	2011	2012	Annual growth rates				
											'02-'07	'07-'12			
<b>Milk production (cow's)</b>															
Production (mill t ECM)	0.04	0.03	0.05	0.08	0.15	0.21	0.26	0.30	0.33	0.37	24.5%	9.6%			
Cows (in 1,000's)	53	41	68	56	96	113	108	129	143	167	12.0%	11.1%			
Milk yield (t / cow / year)	0.8	0.8	0.8	1.4	1.6	1.9	2.4	2.3	2.3	2.2	11.1%	-1.4%			
<b>Farm structure</b>															
No. of dairy farms (in 1,000's)	8	10	12	15	18	20	20	20	20	21	5.7%	0.9%			
Average farm size (cows / farm)	7	4	6	4	5	6	5	6	7	8	6.0%	10.1%			
<b>Prices in national currency</b>															
Milk : feed price ratio	1.6	1.8	1.7	1.6	1.4	2.0	1.4	1.2	1.1	0.9	1.1%	-12.2%			
Cull cow (VND / kg live weight)											25,000	26,000	27,500	30,000	0.0%
Land - buy (1,000 VND / ha)														1,578,298	

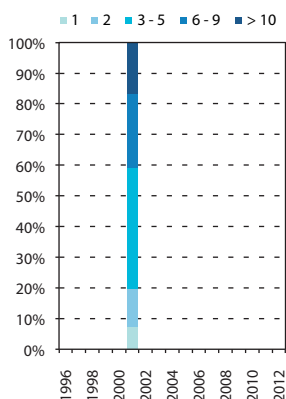
### Farm structure

% of dairy farms and cows in size classes (2001)



### Farm structure

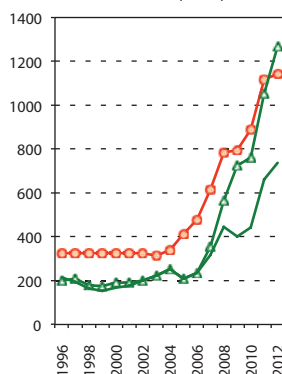
% of cows per herd size



### Milk and feed price

1,000 VND / 100 kg

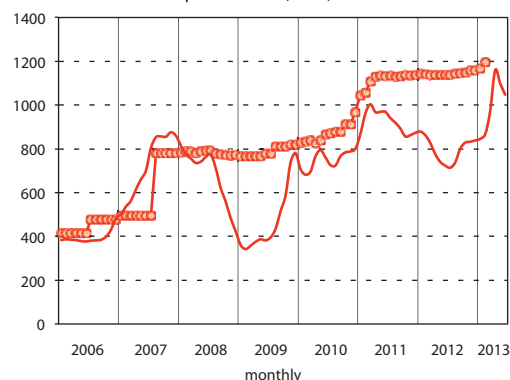
Legend: National milk price (red circle), National feed price (green triangle), IFCN feed price indicator (world) (green line)



### Farm gate milk prices

1,000 VND / 100 kg milk (ECM)

Legend: National price (red circle), IFCN milk price indicator (world) (red line)



### Explanations

**Sources:** National statistics, FAO, AMI, IMF. 2013 data: Preliminary and partly estimated.

**Milk map details:** Data based on the year 2012, milk production.

**Estimates done for:** Dairy farms: 2009-12.

**Remarks:** Soybean meal and corn prices 1996-2006 are linked to world market prices.



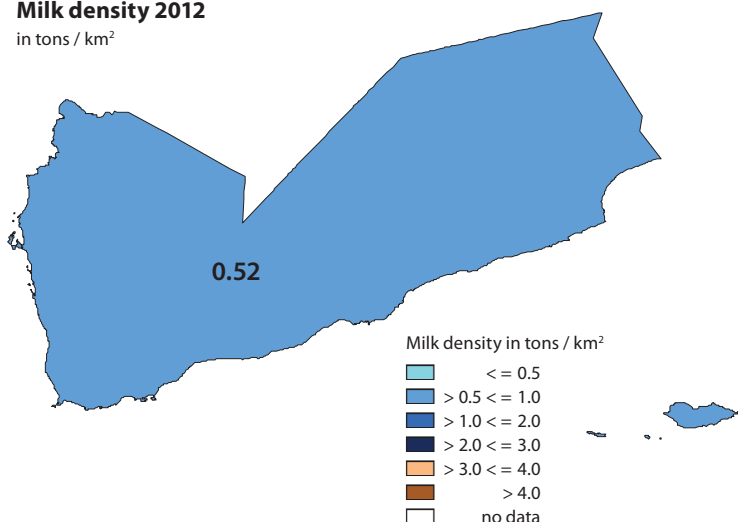


Abdulkarim Abdulmageed Amad



## Milk density 2012

in tons / km<sup>2</sup>



## STATUS AND KEY DEVELOPMENTS

### Status 2012

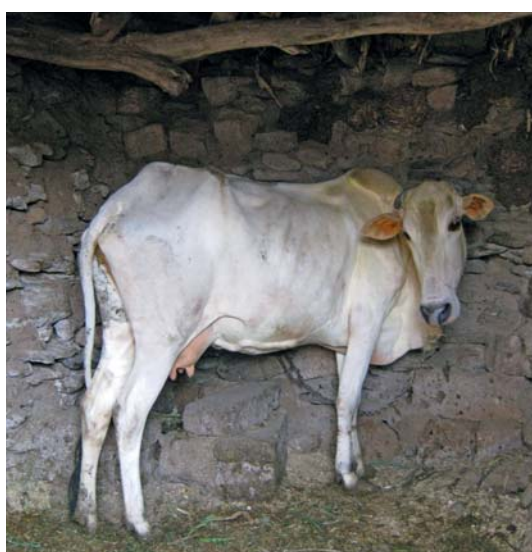
- Milk production (cow's): 0.2 mill t ECM (number 103 in the world)
- No. of dairy farms: 842,000
- Milk price: +267% to world market
- Feed price: +78% to world market

### Key developments over the past five years

- Milk production growth: +5.4% per year
- Number of years the milk price was above world market level: 5
- Milk price was on average +154% to world market
- Feed price was on average +98% to world market

## Key variables

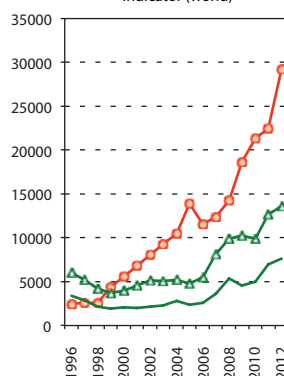
	1996	1998	2000	2002	2004	2006	2008	2010	2011	2012	Annual growth rates '02-'07 '07-'12	
<b>Milk production (cow's)</b>												
Production (mill t ECM)							0.18	0.20	0.21	0.22		5.4%
Cows (in 1,000's)							1,531	1,605	1,654	1,684		35.8%
Milk yield (t / cow / year)							0.1	0.1	0.1	0.1		-22.4%
<b>Farm structure</b>												
No. of dairy farms (in 1,000's)										842		
Average farm size (cows / farm)										2		
<b>Prices in national currency</b>												
Milk : feed price ratio	0.4	0.6	1.4	1.6	2.0	2.1	1.4	2.2	1.8	2.2	-0.5%	7.1%
Cull cow (YER / kg live weight)												
Land - buy (YER / ha)												



## Milk and feed price

YER / 100 kg

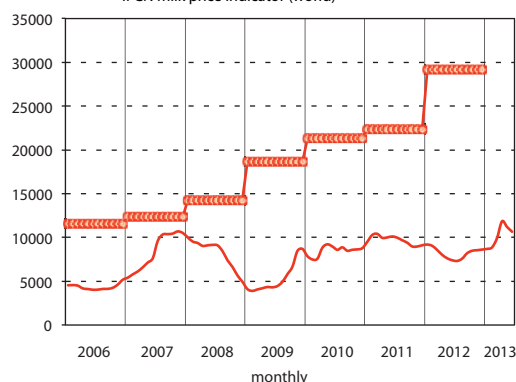
- National milk price
- △— National feed price
- IFCN feed price indicator (world)



## Farm gate milk prices

YER / 100 kg milk (ECM)

- National price
- IFCN milk price indicator (world)



## Explanations

Sources: National statistics, FAO, AMI, IMF. 2013 data: Preliminary and partly estimated.

Milk map details: Data based on the year 2012, milk production.

Estimates done for: Monthly milk price: annual averages. Feed price: Soybean meal: world price, barley price: 1996-2007 linked to world barley trend. Exchange rate: 1996-2001 assumed constant.









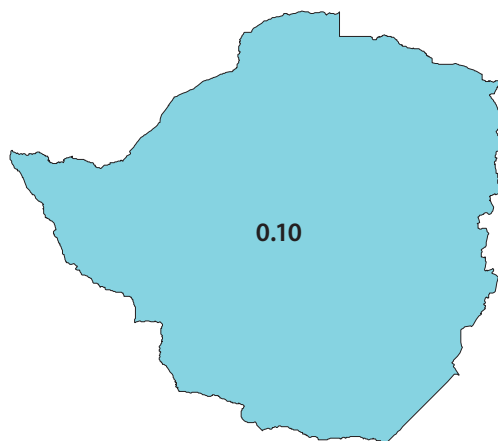
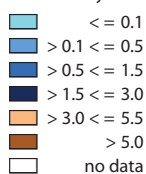
R. A. Jansen-van Vuuren



## Milk density 2012

in tons / km<sup>2</sup>

Milk density in tons / km<sup>2</sup>



## STATUS AND KEY DEVELOPMENTS

### Status 2012

- Milk production (cow's): 0.1 mill t ECM (number 137 in the world)
- No. of dairy farms: 210
- Milk price: +43% to world market
- Feed price: +31% to world market

### Key developments over the past five years

- Milk production growth: -7.2% per year
- Number of years the milk price was above world market level: 4
- Milk price was on average +42% to world market
- Feed price was on average +9% to world market

## Key variables

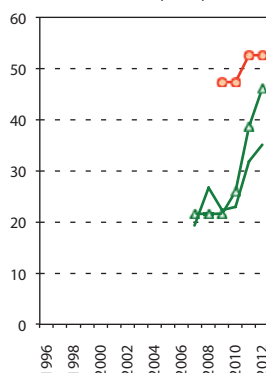
	1996	1998	2000	2002	2004	2006	2008	2010	2011	2012	Annual growth rates	
											'02-'07	'07-'12
<b>Milk production (cow's)</b>												
Production (mill t ECM)	0.19	0.18	0.17	0.14	0.09	0.09	0.05	0.04	0.05	0.05	-11.2%	-7.2%
Cows (in 1,000's)	39	44	30	39	24	21	18	14	12	12	-12.9%	-9.3%
Milk yield (t / cow / year)	4.8	4.1	5.6	3.6	3.7	4.1	2.7	3.2	4.0	4.4	2.0%	2.2%
<b>Farm structure</b>												
No. of dairy farms (in 1,000's)	0.4	0.3	0.3	0.3	0.3	0.3	0.3	0.2	0.2	0.2	0.0%	-5.6%
Average farm size (cows / farm)	111	133	94	139	86	75	64	58	52	57	-12.9%	-3.9%
<b>Prices in national currency</b>												
Milk : feed price ratio								1.8	1.4	1.1		
Cull cow (USD / kg live weight)								1.15	1.50	1.65		
Land - buy (USD / ha)												



## Milk and feed price

USD / 100 kg

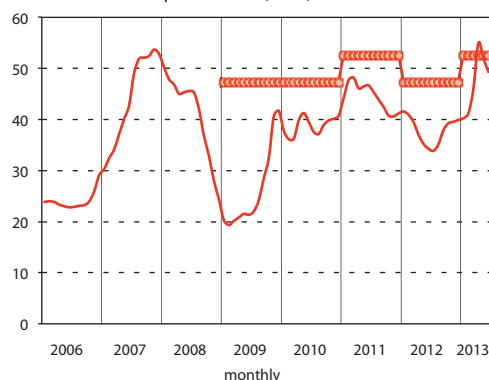
- National milk price
- △— National feed price
- IFCN feed price indicator (world)



## Farm gate milk prices

USD / 100 kg milk (ECM)

- National price
- IFCN milk price indicator (world)



## Explanations

**Sources:** National statistics, FAO, AMI, IMF. 2013 data: Preliminary and partly estimated.

**Milk map details:** Data based on the year 2012, milk production.

**Estimates done for:** Monthly milk price 2009-11: annual average. Cow numbers: 2005-07 and 09-10 interpolation.

**Remarks:** Zimbabwe changed to a multi currency denomination in 2009 with USD being the most commonly used currency, so all financial data in Country Profile is in USD.









Turkey













Poland – pictures by Torsten Hemme

## Chapter 4 – Special studies

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Mohammad Mohi Uddin

### Introduction

The global dairy industry today has been facing challenges due to the fluctuating and extremely volatile milk price, together with a substantial increase of feed price. This imbalance in the input-output price development affects all the stakeholders in the global dairy supply chain, thus compelling dairy farmers to search for options to reduce costs. The historic development of cost of milk production only and the factors that cause variation are important indicators for predicting future cost scenarios as well as farm resource use. However, due to the dynamic nature of the input and output market, making a prediction of cost is a challenge. Time series regression analysis might be a solution to this, even though it is difficult to do time series analysis in heterogeneous farms. This study aims at applying regression analysis to answer the question: what drives the cost of milk production only and what is the relationship between cost of milk production only and milk yield, farm size and milk price.

### Methodological background and data

In order to identify the share of the individual cost components to the cost of milk production only, the individual cost items from 104 farms were ranked in 2010 based on their average value. In addition, regression analysis was done to evaluate the relationship between individual cost components and cost of milk production only. In order to understand the strength of the relationship between input and output, the following hypotheses were tested by using regression analysis: i) hypothesis 1: cost of milk production only decreases as the milk yield and farm size increases, and ii) hypothesis 2: cost of milk production only increases as the milk price increases. Finally, a time series regression analysis was also done to track the historic development of cost of milk production only and milk yield, taking into consideration that feed price has fluctuated over the years. The IFCN typical farm data base 2010 (n= 104) was used for the detailed analysis, while the typical farm database 2008 to 2011 was used for the time series analysis.

### Results

#### Share of individual cost components to the cost of milk production only in 2010

The results of ranking (Table 1) reveal that feed cost, especially purchased feed cost, is the highest share to the cost of milk production only, but regression analysis (also shown in Table 1) indicates no link ( $R^2 = 0.03$ ) between feed cost and cost of milk production. This might be due to the fluctuating feed price over the years. Labour cost, on the other hand, is the second highest share to the cost of milk production only but the fact that the regression coefficient ( $R^2 = 0.18$ ) is higher than the feed cost, implies that there is scope to improve labour inputs and its management to reduce the cost. Machinery cost was the third highest cost item. This might indicate that investment decisions on machinery play a key role, especially in developed and specialised dairy producing

### Explanations

All = all farms analysed in the year

HSC = higher subsidised countries

HSC+CA = higher subsidised countries + Canada

regions, for example Western Europe and North America. This is also revealed from the higher regression coefficient for machinery ( $R^2 = 0.34$ )

### Regression analysis between cost of milk production only and economies of scale (milk yield and herd size) and milk price in 2010

The regression results (Figure 2a and b) did not confirm our first hypothesis (stated in the methodological section). The main reason could be the fact that most of the small-scale farms were from developing countries e.g., Africa and Asia, which had very small herds and low milk yield but also low costs/year. The other reason could be that these farms were operating on low factor prices and a low output basis, which was highly integrated with other agricultural activities such as crops and beef. It is interesting to note that the milk price, which is external to the farm and beyond the farmers' control, also affected the cost of milk production. A higher milk price was associated with higher costs (Figure 2c). This implies that the milk price policy in the country plays a significant role in the cost of milk production.

### Time series regression between cost and milk yield 2008 – 2011

The detailed regression results in 2010 revealed an unexpected low relationship and, therefore, the hypotheses were not accepted, especially between cost of milk production only and milk yield and farm size. In order to identify the reasons for this, a time series regression analysis between cost of milk production only and milk yield was performed for four years (2008 to 2011). Figure 3a shows the number of farms analysed in different years. The summary of the results of the regression is depicted in Figure 3b. Based on the time series results, the highest regression coefficient was observed in 2009 ( $R^2 = 0.43$ ). Both before and after 2009, the coefficient was lower. Before 2009, the feed price was low (see chapter 2.2, pp: 41 DR 2010) which might weaken the relationship while after 2009, the higher and fluctuating feed price, together with an increase in salaries in low yield farm types and emerging countries, were assumed to be the main reasons. The countries having higher direct payments (e.g., Norway, Switzerland, Austria and Finland) weakened the relationship as was revealed by a lower  $R^2$  (table 1) when the regression included all farms.

### Conclusion

This study does not confirm the widely spread hypothesis that an increase of economies of scale leads to decreasing cost. It could possibly indicate that a strategy to optimise the productivity might be the best option to reduce cost. In addition, the heterogeneous nature of typical farms, diverse farming systems and rapid changes of input prices, especially feed prices, were responsible for the delinking of the relationship between cost of milk production only and inputs. The IFCN time series tool for regression analysis is a good approach for understanding both backward and forward trends for cost drivers, although further in depth investigation might be needed in order to quantify the cost drivers and feeding system optimisation.



# 4.1 Cost of milk production only and its drivers: application of regression analysis

## Cost of milk production only and its drivers: application of regression analysis

Fig. 1. Cost of milk production only (n =104) in 2010

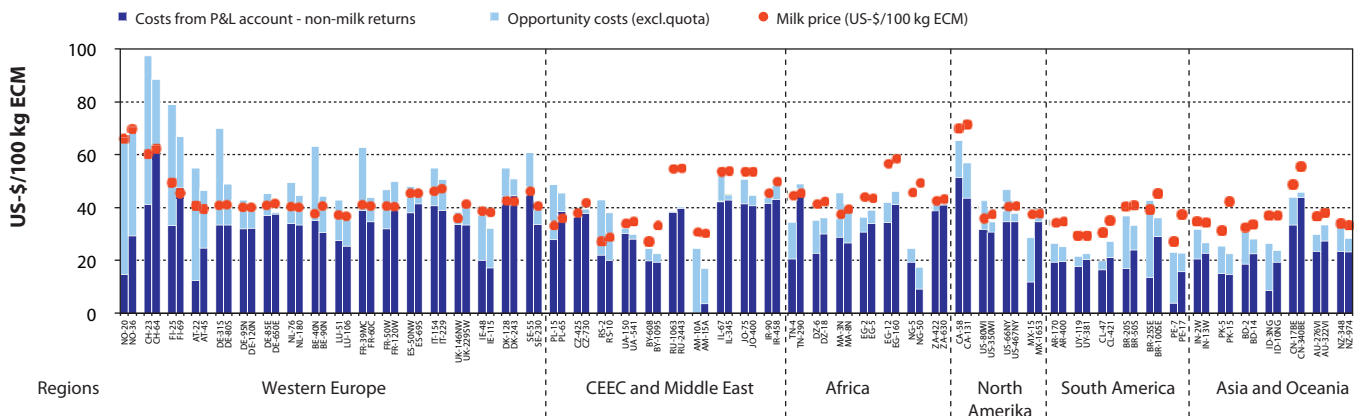


Table 1. Different individual input costs to the cost of milk production only (US-\$/100 kg ECM)

World average cost of milk production only (n=104): 42 US/100 kg ECM (from figure 1)

Rank	Individual components of cost of milk production only	Ave. costs (n= 104)	R2
1	Feed (purchased feed, fertilizer, seed, pesticides etc.)	18.15	0.03
2	Total labour costs	11.98	0.18
3	Machinery (maintenance, depreciation, contractor)	4.81	0.34
4	Total land costs	3.29	0.02
5	Total capital costs	3.1	0.28
6	Buildings (maintenance, depreciation)	2.52	0.17
7	Fuel, energy, lubricants, water	2.41	0.13
8	Veterinary and medicine and insemination	2.09	0.26
9	Other inputs (dairy enterprise)*	1.64	n.a***
10	Other inputs (whole farm enterprise)**	1.26	n.a
11	Insurance taxes	0.91	n.a
12	Animal Purchases	0.81	n.a
13	VAT Balance (if negative)	0.11	n.a

\* Other inputs dairy enterprise: Milk supplies, herd testing, fees for pedigree records, bedding, fees for disease prevention board, hauling, promotion, milk quota-not used

\*\* Other inputs: Fees for accounting and book keeping, advisory costs, phone & utilities

\*\*\* n.a = not applicable

Fig 2. Regression analysis (excluding NO, CH, AT, FI)

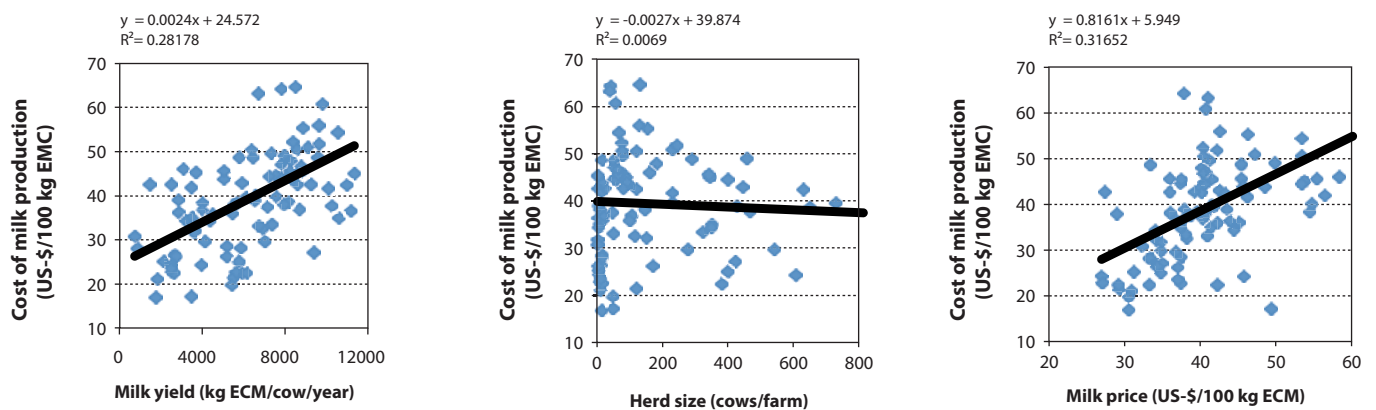
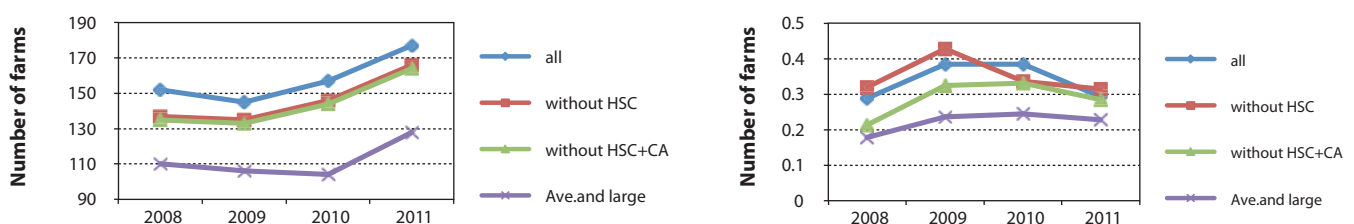


Fig. 3. Number of farms analysed (left) and R-squared between milk yield and cost of milk production only (right)



Note: HSC = highly subsidized countries; HSC +CA = highly subsidized countries and Canada; Ave. and large = farms used in DR; all = all farms analysed but not shown in DR

## 4.2 Effect of increased concentrate prices on dairy farm economics



Maria Schmeer, Rebecca Kühn, Asaah Ndambi

### Introduction

Feed costs represent an important driver for costs of milk production and in most farms, the costs for purchased concentrate amount to one third of the total costs. Moreover, variations in feed prices may also influence the rent prices of land in the long run. In times of increased concentrate prices as in recent years, the influence of these price fluctuations on dairy farm economics demands attention.

Regarding the period analysed from 2006 to 2012, the world market feed price increased by 145% (14.3 to 35.1 US-\$ 100 kg<sup>-1</sup> feed) (figure 1); while from 2011 to 2012 an increase of 10.4% (31.8 to 35.1 US-\$ 100 kg<sup>-1</sup> feed) in concentrate price was observed. Particularly noteworthy is the price difference of 27.7 (December 2011) and 40.8 US-\$ 100 kg<sup>-1</sup> feed (August 2012), which means an increase of 47% within nine months.

This study examines the impact of increased concentrate prices on dairy farm economics, with additional consideration of increased opportunity costs of land use.

### Method

The impact of increased concentrate prices on farm economics was analysed for six different typical farms. The typical German farm with 98 cows (DE-98N) represents approximately 60-70% of milk production in Northern Germany. The farm types US-500WI and US-3000CA represent larger family farm types in Wisconsin and California and about 20 - 30% of milk each in the USA. The Argentinian farm (AR-400) represents a larger farm producing approx. 20% of the total milk in Argentina. The BD-2 farm type is the typical average sized farm in Bangladesh with 60% of the total milk production. The New Zealand farm (NZ-355) is chosen as reference for grazing farms with zero concentrate input. Typical farm data from the year 2011 was used for this analysis.

The increase in concentrate price was applied to the calculation of farm economics under the assumption of ceteris paribus conditions for the farming systems considered. The absolute increase of concentrate costs was calculated as follows:

$$\Delta \text{concentrate costs} = \text{costs for purchased concentrate} * \Delta \emptyset \text{ annual world market concentrate price}$$

Since the variation of concentrate prices could also influence the opportunity costs of arable land use, these costs were calculated based on the approach developed by Sommer and Hemme (2012) as follows:

$$\Delta \text{opportunity costs of land use} = \frac{\Delta \text{feed price} * \text{grain yield per hectare} * \text{arable land used for dairy}}{\text{total milk output}}$$

### Results

The feed ration of lactating cows of the Californian US-farm is characterised by high concentrate DM-intake (50% concentrate, 50% roughage), whereas on the German, Argentinian and Wisconsin US-farms (DE-98N, US-500WI, AR-400), the ration is based on grass and legume silage, maize silage and hay, and actually a percentage of pasture (only for AR-400), and a moderate concentrate intake (6 to 10 kg DM per cow and

day and accordingly 31 to 39% of the feed ration) (figure 2). The feeding system on the average sized Bangladeshi farm is characterized by low quality feed (straw) and low concentrate input of 1 kg DM per cow and day. The New Zealand farm represents a pasture based farm with zero concentrate input.

The concentrate intensity as a function of concentrate intake and milk yield is described in figure 3. The Argentinian farm (with lower milk yield) as well as the US-3000CA farm with high concentrate input have an intensity of up to 400 g per kg ECM, the German and US-500WI farms with moderate concentrate input and higher milk yield have a concentrate intensity of 250 to 300 g per kg ECM. The Bangladeshi farm (BD-2) with low concentrate input has an intermediate intensity because of a low milk yield (722 kg ECM per cow and year). The NZ-355 farm has zero concentrate input hence the concentrate intensity is zero as well.

Figure 4 shows the absolute increase of concentrate costs due to an annual increase of concentrate prices of 10.4%. The highest increase of costs can be detected for the large US-farm (US-3000CA) with 1.65 US-\$ per 100 kg ECM based on the high concentrate intensity and a high percentage of purchased concentrate. A similar situation can be found on the BD-2 farm with an increase of costs of 1.19 US-\$ per 100 kg ECM as a result of the low milk yield. The absolute increase for the other farms ranged between 0.78 (US-500WI), 0.86 (AR-400) and 0.95 (DE-98N) US-\$ per 100 kg ECM.

For dairy farms with feed crop production on arable land, the opportunity costs of land use increased as a consequence of increased concentrate prices. The opportunity costs of land use rose by 2.1 US-\$ per 100 kg ECM for the US-500WI farm because of a high level of grain yield and the acreage of arable land which is used for the dairy production (figure 4). On the Bangladeshi farm, the increased concentrate price led to an increased opportunity costs of land use of 1.3 US-\$ per 100 kg ECM due to a low milk yield but a high level of grain yield. For the other farms the increase in opportunity costs was below 1 US-\$ per 100 kg ECM.

The cost of milk production, the increases in concentrate costs and opportunity costs of land use are summarized in figure 5. Both US-farms, as well as the Argentinian farm, are able to withstand the increased concentrate costs and opportunity costs of land use. In contrast, the German and the Bangladeshi farm could not bear up under increased concentrate prices. The New Zealand farm is not affected by an increased concentrate price.

### Conclusion

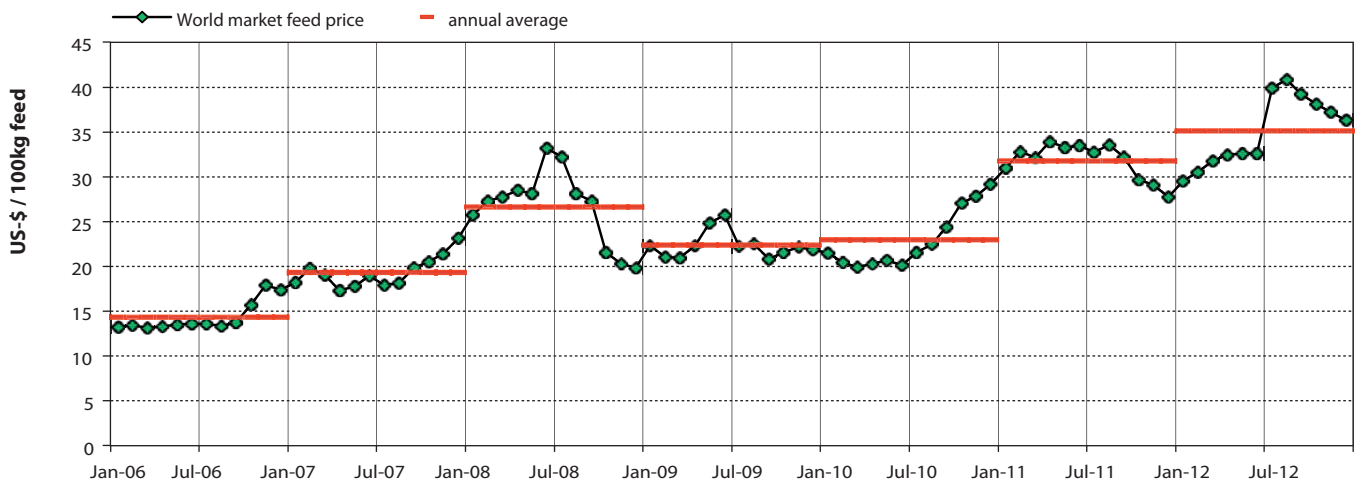
The concentrate price increase of 10.4% from the average 2011 to the average 2012 leads to an average increase in cost of milk production of 1.4 US-\$ per 100 kg ECM for all farms in the IFCN database (177 farms) which is 3.4%. Considering also the shift in opportunity costs of land use due to increased feed prices, the cost of milk production increases by an average of 5.8% for all farms.

Taking into account the difference in concentrate price between the years 2010 and 2011 (38.5%), the average cost of milk production would increase by 5.3 US-\$ per 100 kg ECM, and accordingly, the cost of milk production would increase by 12.6% or 15.3% in the case of included opportunity costs of land use. Hence, an increase of concentrate price could lead – depending on the amount of the increase – to a significant increase of costs of milk production, which can cause a huge impact on farm economics especially on farms with a small margin, such as DE-98 and BD-2. Therefore, the next step should be to point out possibilities in improving the feed ration to withstand fluctuations in concentrate prices, and hence to improve also dairy farm profitability.

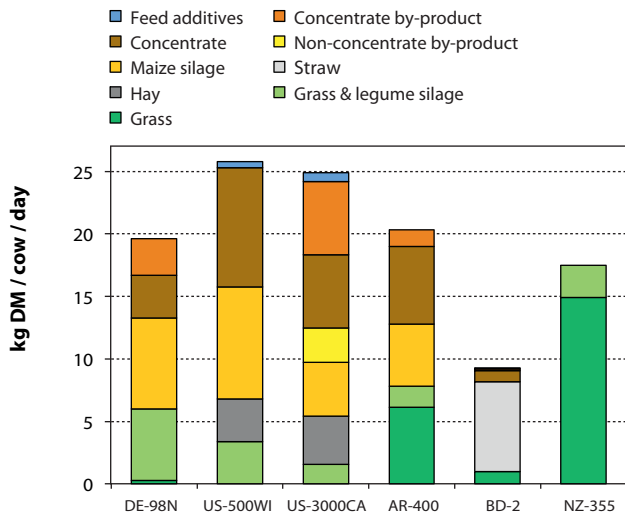
### Explanations

Sommer and Hemme, 2012, *Opportunity costs of land use*, IFCN Dairy Report 2012, Chapter 4.6, pp. 184-185

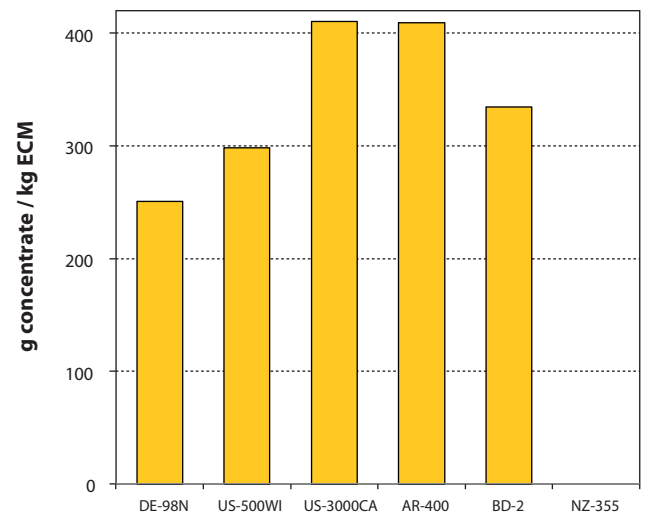
**Fig. 1: Feed price development 2006-2012 (monthly)**



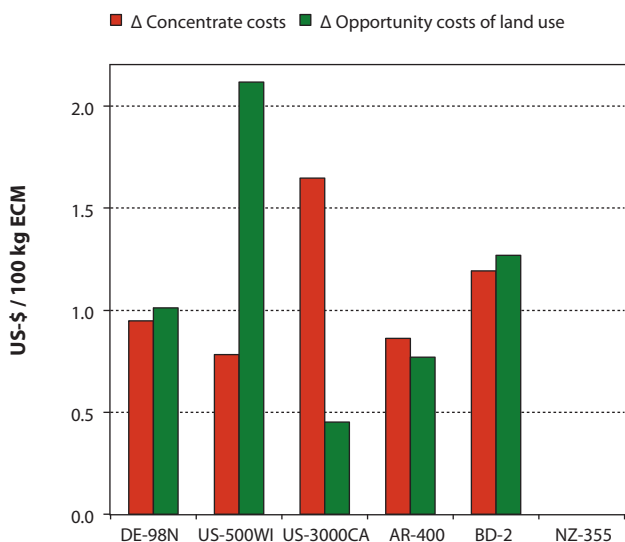
**Fig. 2: Feed ration of lactating cows**



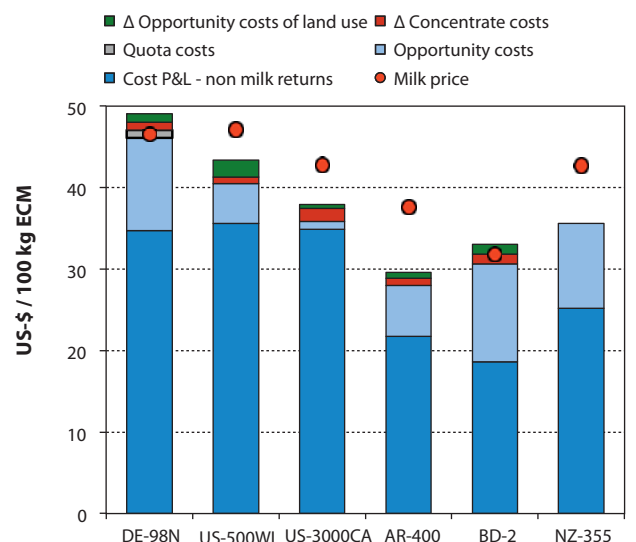
**Fig. 3: Concentrate intensity**



**Fig. 4: Increase of concentrate costs and opportunity costs of land use (feed price increase from average 2011 to average 2012)**



**Fig. 5: Cost of milk production only + increased concentrate costs & opportunity costs of land use**





## 4.3 Benchmarking consumptive water use in global milk production



Mst. Nadira Sultana  
and Dorothee Boelling

### Introduction

Consumptive water use (CWU) in dairy farming has been a featured topic in the debate of climate changes and the rapidly growing gap between milk demand and supply. Hence, an adaptation strategy is needed to ensure water availability to increase milk production. Analyses of CWU in different milk production systems and different countries are scarce. Therefore, this study sets out to measure consumptive water use (CWU/kg ECM) of milk production systems in 60 dairy regions from 49 countries representing 85% of the world's milk production. This study further considers differences in three milk production systems (intensive: DE-95N, US-350WI; grazing: NZ-348, BR-20SC, and small-scale: EG-2, BD-2) to explore the causes of variation of CWU in milk production. The key questions arise: how many litres of water are required to produce 1 kg milk in different dairy production systems globally, what is the range of CWU per kg ECM production at farm-gate level, and what is the regional variability?

### Methodological background and data

The analysis was based on the database of the typical farms in the IFCN and on different coefficients converting all the resources used for milk production to CWU. The extended version of TIPI-CAL 5.2 including the water module (see details of the methodology in the IFCN Dairy Report 2011) was used for the data analysis.

### Results and discussion

#### Farm level consumptive water use

The CWU, including the water consumption from feed and other inputs, e.g. drinking, servicing, production inputs and capital goods in milk production systems from seven geographical regions, is shown in Figure 1. The CWU ranged between 739 litres on the Danish farm (DK-128) to 5622 litres on the Ugandan farm (UG-3) per kg ECM with an average of 1833 l/kg ECM. When looking at averages per region, the CWU was lowest in Europe (913 l/kg ECM) and highest in Africa (3384 l/kg ECM). Nevertheless, there were also large intraregional differences, especially in Africa where small scale systems and highly intensive large scale operations could be found. In regions with a high yield intensity and energy-concentrate based feeding systems, e.g. Europe and North America, the variation was small and the CWU/kg ECM was low. All the typical farming systems analysed showed substantial variations in farm inputs and productivity which were also reflected by a high standard deviation (1063 l CWU/Kg ECM). However, feed showed the highest CWU by far, accounting for 94 to 99 % of the total water consumption.

#### Production systems

The typical ration and milk yield and their corresponding level of CWU (Figure 2 and 3, respectively) revealed considerable differences among the farms. The milk yield varied between 2 kg (BD-2) and 29 kg (US-350WI) ECM per day, and the dry matter intake between 9.5 kg and 27 kg for these two farms, respectively. In the intensive systems, the main feed components were concentrate, grass silage and maize silage, whereas it was mainly grass in the grazing systems and by-products on the household farms. Figure 3 shows in more detail how much CWU per kg ECM was

used by the feed ration on the different farms and how much was attributed to individual ingredients of the ration. A substantial variation in CWU was found among the countries and production systems, ranging from 730 l in DE-95N to 3800 l in EG-2. The main reasons for this high range were the difference in milk yield of the animals and the water scarcity of the region where the feed was grown, as expressed by the different CWU of concentrate in Germany and Egypt. The CWU for crops was mainly attributed to the main crop products, not the low quality crop residues (Mekonnen and Hoekstra, 2010), giving Bangladesh a relative advantage over Egypt. A simplified presentation of the relative contribution of CWU by concentrate and roughage is given in Figure 4. Concentrate provided up to 80 % of the CWU of the feed ration, depending on ration and evapotranspiration.

In Figure 5, the CWU was split up according to use of green water (natural rainfall) and irrigation plus blue water (surface and ground water) for dairy operations. About 12% of the CWU was blue water across all the farms presented. A dairy farmer could increase land productivity by irrigating pasture instead of relying on natural rainfall. However, the potential increase in environmental harm could be enormous in farms that use irrigation in high water scarcity areas. A consequence of using more blue water involves taking water from the environment, meaning it is no longer available for other human uses or for environmental flows. However, the use of natural rainfall by pasture does not really have any negative impact on water resources, except if we consider pollution from fertilizers and potential impacts on water resources from erosion if overgrazing is allowed.

#### Drivers

Milk yield is the biggest driver, while the selection of feed type for the ration also has a great impact on CWU/kg ECM. A regression analysis involving the same farms as presented in Fig. 1 ( $R^2 = 0.57$ ) indicated that each additional kg ECM per cow and year decreased the CWU per kg ECM by 0.3 litre.

#### Summary

This study highlighted the complexity of measuring CWU in various typical milk production systems of different regions. The key findings from this study are that:

- There was a large range in CWU with significant intra- and interregional differences.
- Feed was by far the highest contributor to total CWU.
- Low yielding cows, especially those with a high share of concentrate in the ration, demanded more CWU/kg ECM than high yielding cows.
- Variations were due to the interactions between the production intensity (milk yield/cow), feed efficiency (not shown here) and type of feed used in the ration.
- Increasing the milk yield per cow and year can reduce CWU/kg ECM, but can also lead to the opposite when this increase is dependent on land irrigation in water scarce areas.

To sum up, the findings of this study showed the need to address the feed ration, feeding systems, and milk production intensity simultaneously when aiming at efficient water resource management. The comparison of this global study makes it possible to identify which farming systems are more water efficient than others, and how less water efficient systems can potentially be improved towards sustainable farming systems.

#### Explanations:

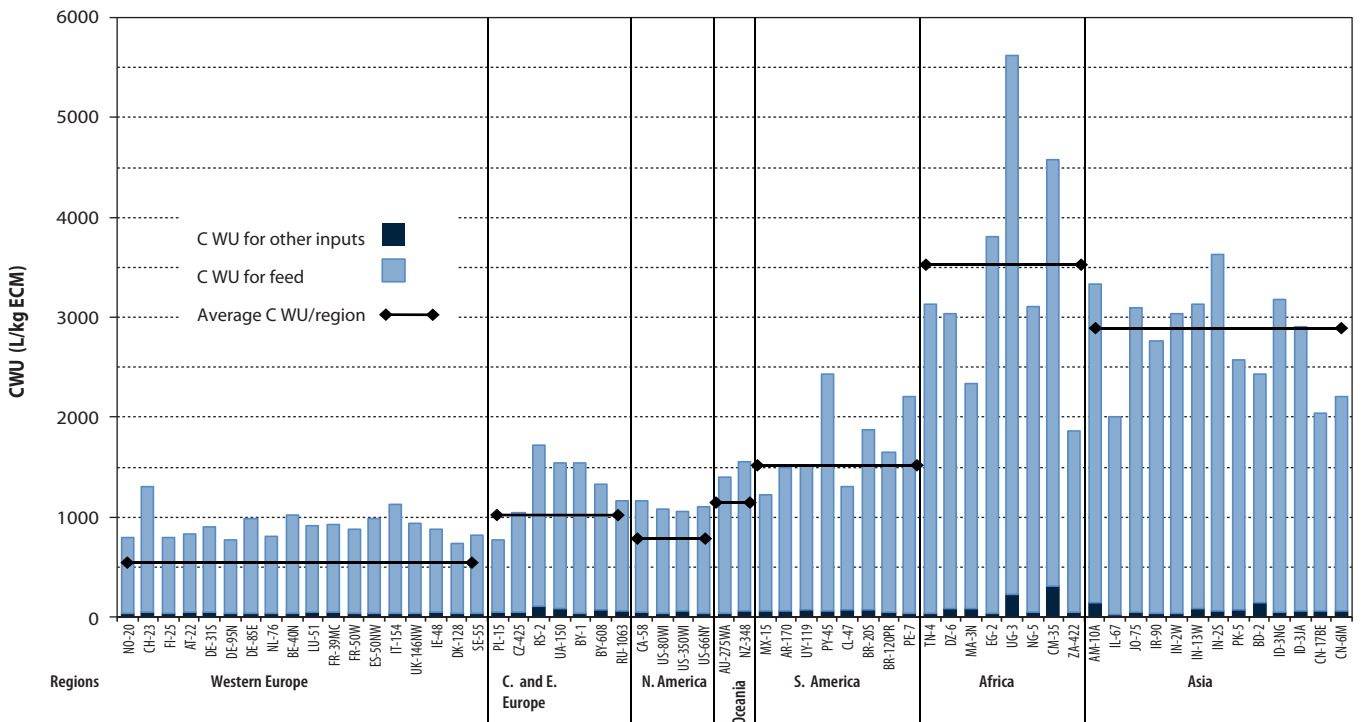
Farm names: First 2 letters represent country, number denoting number of dairy cows on the farm, final letters for region, e.g. N = North, WI = Wisconsin,

SC = Santa Catarina, SD = standard deviation

Mekonnen, M.M., Hoekstra, A.Y., 2010. The green, blue and grey water footprint of farm animals and animal products. Vol. 1: Main report.

Value of water research report series number 48. Twente water Centre, University of Twente, Enschede; the Netherlands.

**Fig. 1: Benchmarking consumptive water use**



### Consumptive water use and typical feed ration

**Information for Fig. 1**

**Example farm code DE-95N:**

DE = Germany, 95 = no. of cows, N = North

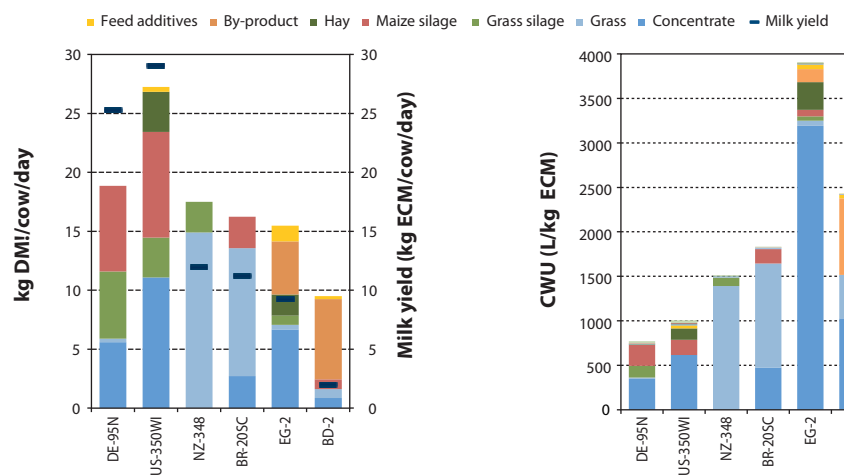
**Explanation: CWU:**

Consumptive water use

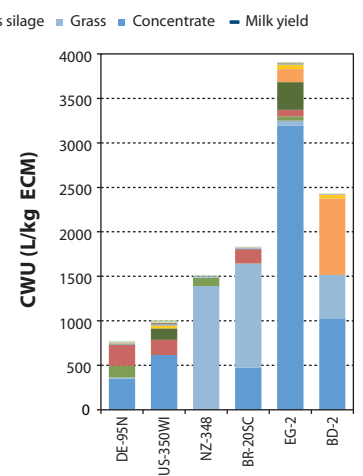
33 intensive, 11 grazing, and 16 small scale farms were selected from different regions

Statistics	Total CWU per kg ECM	Total CWU other inputs
Mean (SD)	1833 (1063)	62 (45)
Min. (Max)	739 (5622)	31 (304)

**Fig 2: Typical ration and milk yield**

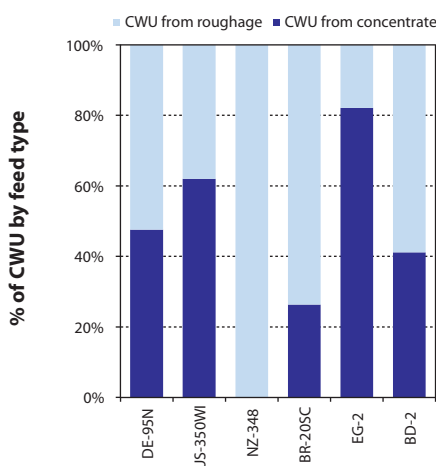


**Fig 3: CWU by feed ration**

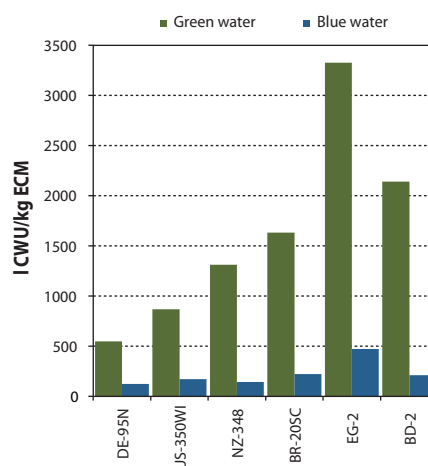


### Dry matter intake, disaggregated CWU in milk production and regression between CWU and milk yield

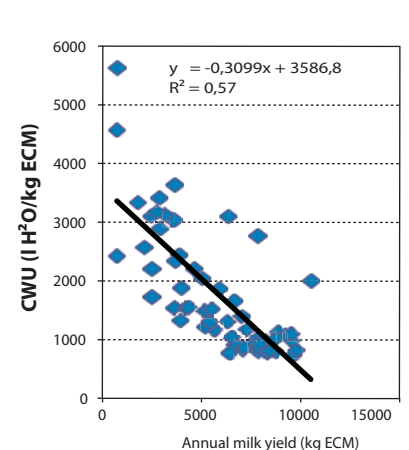
**Fig. 4: Relative dry matter intake**



**Fig. 5: Green and blue CWU**



**Fig. 6: Regression**





Asaah Ndambi and Dorothee Boelling

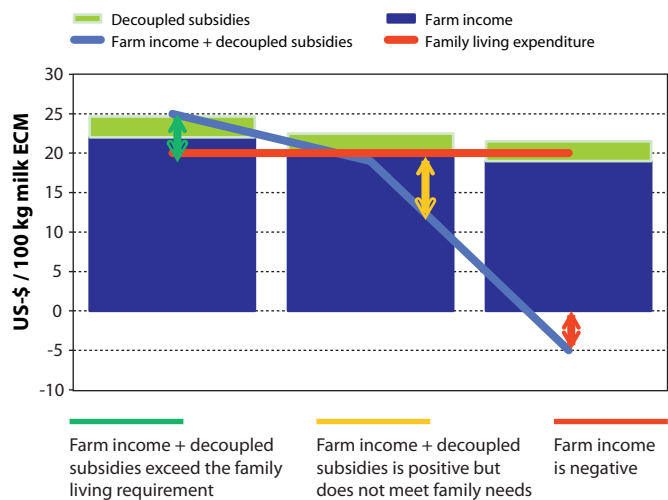
### Introduction

In recent years, farm economics have been changing very fast. The prices of major inputs, especially feed and also oil-dependent goods like fertilizer, have been unstable and mainly increasing, while the main output of the dairy enterprise, i.e. milk, has experienced volatile prices over the last few years. Therefore, annual assessments of farm economics may over-simplify the trends and more frequent evaluations are needed for up-to-date decision making. This study presents a method with which to obtain a quick overview on the economic situation on a dairy farm, based on monthly data.

### Method

**Indexing approach:** Monthly data were obtained by indexing annual data from the reference year 2012, backwards and forwards. Indexing was done using national monthly milk prices from the output side and feed prices from the input side, obtained from the IFCN Monthly Database (Product 3.4) currently covering 60 countries. The deviation percentage of the monthly feed and milk prices from their average annual value in the reference year was used for indexing. Monthly exchange rates as well as inflation rates obtained from Oanda and IMF, respectively, were applied.

The milk price index was applied for milk returns while the feed price index was applied on all feed costs, with an additional amplification based on the concentrate intensity of the farm.



**Grading using a traffic light approach:** Grading of the farm economic situation was based on the total income (a sum of the family farm income and the decoupled payments and subsidies) represented by the blue line on the chart. When the total income is above the family living expenditure (represented by the red line), then the farm is in good shape, money can be saved. This is indicated by a green box at the bottom. If the total income is positive, but below the family living expenditure, the family starts to cut down on expenditure or lives off its savings; this is shown by a yellow box. If the farm income is negative, i.e. the farm spends more money than it makes and no money is available for the family, this is specified by a red box.

### Results

This method is able to show in more detail, how the economic situation on a dairy farm evolves on a monthly basis. In our example, a farm with 74 dairy cows in southern Spain is presented. The upper graph shows the costs of milk production only per 100 kg ECM on a monthly basis for the period in question. The second chart shows the family income with an interpretation of the results in the traffic light bar at the bottom. For the first nine months of 2010, this farm was profitable and the family farm expenditure fully covered. The following year proved to be more difficult, as the family farm income was positive, but not high enough to meet the family requirements. Only in the winter 2011/2012, economics recovered and the family could save money. Overall, it can be concluded that this farm was making enough money to sustain the family only for 16 months out of the last 3.5 years. For most of the time, economics had been tight and the farm even made a loss for 7 months. Altogether, milk production only did not generate the appropriate share of the income to support the family most of the time, and an additional income was necessary.

Some more traffic light examples are shown in the bottom graph. The small scale farm in Bangladesh did not make enough money to support the family; on the other hand, this is a household farm which, in any case, depends on the milk and on further off-farm income. In Argentina, the dairy enterprise created enough income to meet the family requirements, apart from two or three months. The farm in California is a business farm and green boxes indicate a farm income above zero and red boxes a negative farm income. The dairy farm in Wisconsin faced three shorter spells of insufficient farm income since January 2010, especially for six months during the drought 2012. For most of the time, the family farm income was above the family expenditure. In Iran, economics looked tight especially during the winter 2010/2011, when the farm income was negative. Also throughout 2012, the farm income was not high enough to cover the family expenditure, so the family had to rely on other resources.

### Conclusion and next steps

This first attempt with the traffic light bars gives a quick overview on the monthly situation on a particular farm. So far, the indexing of the costs has been based on the currency changes and, furthermore, exclusively on the variation in feed costs. In a next step, energy costs, fertilizer costs, wages or technical progress will be included, in order to determine the monthly changes in costs of the P&L account even more accurately.



## Results for a 74-cow farm from Southern Spain

Figure 1: Cost of milk production only

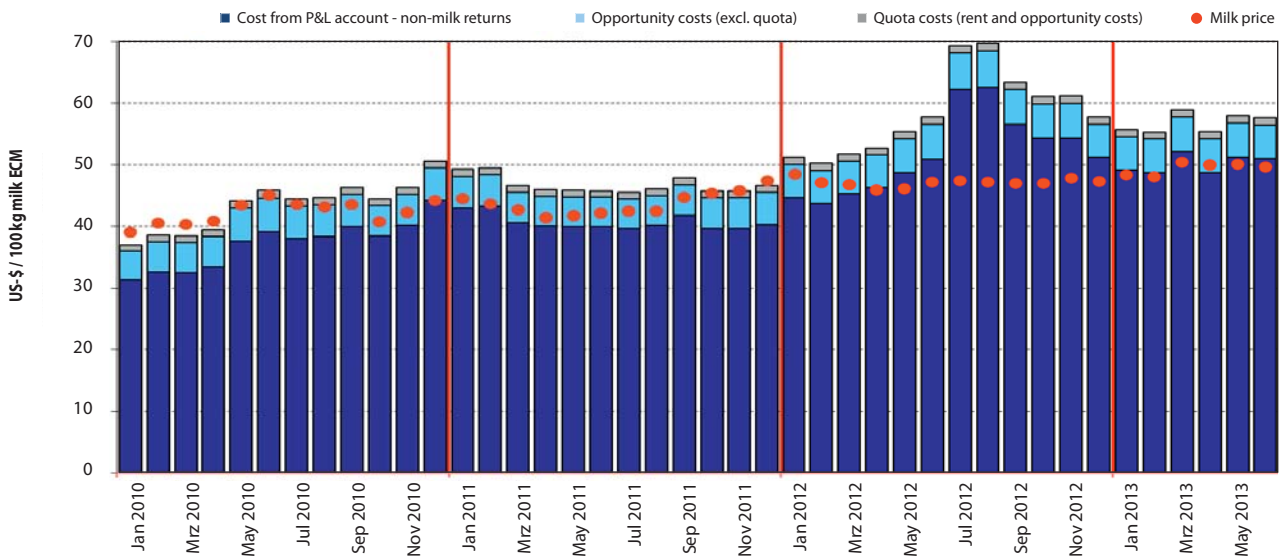


Figure 2: Farm income per 100 kg milk ECM

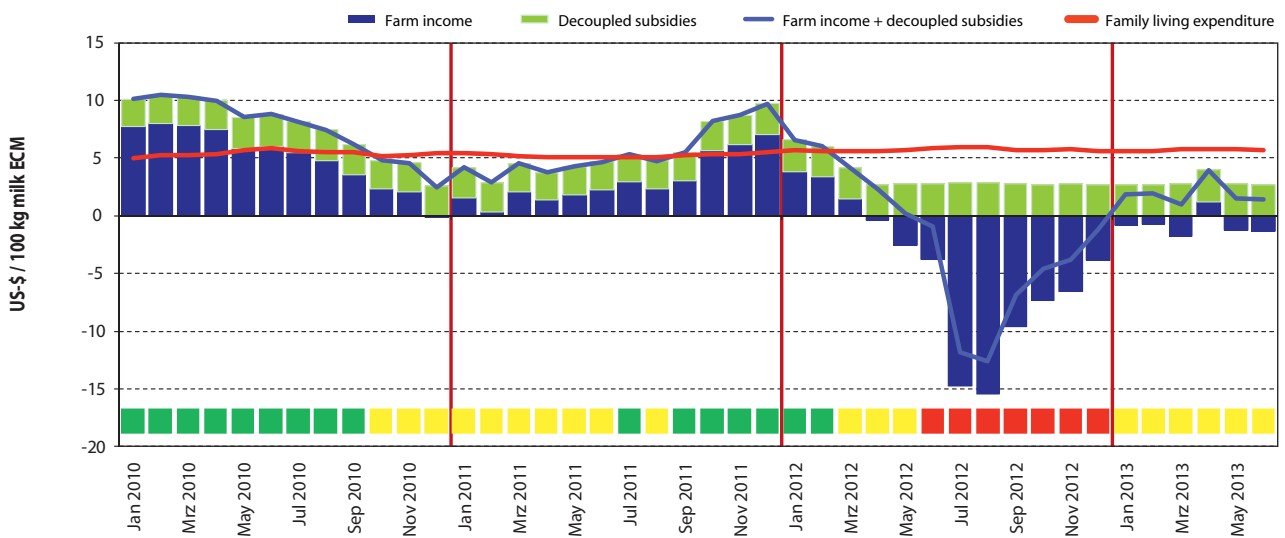
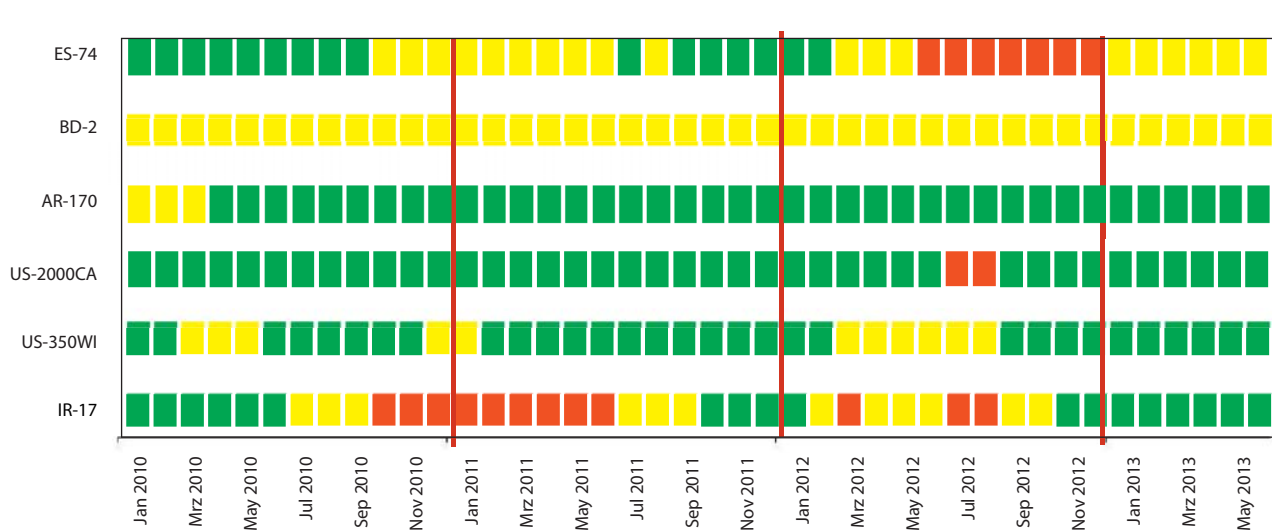


Figure 3: Traffic light bars showing farm economics of selected farms



## 4.5 IFCN Standard Classes – a tool to visualise structural change



Judit Kühn and Lukasz Wyrzykowski

### Introduction

The farm structure visualises the specific national development of production units in a time series. Moreover, this information provides the possibility to derive future trends, which makes this research particularly interesting and important. The IFCN Standard Classes were developed in order to have comparable farm structure information between the countries. The aim of this study is to illustrate the innovations that have been developed in connection with the IFCN Standard Classes approach.

### Data and methods

The IFCN Standard Classes were developed in 2011 in order to have comparable farm structure information among the countries, making it possible to obtain conclusions for the world as well as for individual countries or regions. The approach focuses on keeping the method simple to handle and easy to understand (see Dairy Report 2011, Ch. 4.7).

In order to enhance quality information, the allocation of the national farm structure to the IFCN Standard Classes was reviewed and improved. In addition, the variable Milk produced per size class has been added to the IFCN Standard Classes. Where no figures exist (e.g. for a variable or years) an estimation was made. The new method to calculate the farm structure for milk produced in size classes is based now on the average milk yield per segment, which has increased the quality of the results significantly. By calculating the three variables: Farms, cows and milk produced per size class, it is now possible to contrast country-specific developments in a time series in a total of 82 countries and 10 aggregates.

### Results

The results are presented on an example of the CIS region as a case study, to demonstrate the method application of the IFCN Standard Classes approach.

### IFCN Standard Classes Ukraine – Initial rationalisation

The example of the Ukraine is illustrated by the IFCN Standard Classes approach based on statistical data. The graphs show absolute values for a time series from 1998 to 2012. The large agricultural enterprises in particular decreased until the beginning of 2002, influencing milk output negatively, whereas the small segments have increased. Milk production per farm shows a positive trend during the past 10 years, which is strongly related to a substantial increase of the milk yield per cow in all segments. This is reflected in the IFCN Standard Classes of cows and milk produced per size class. Therefore, the IFCN Standard Classes of milk production show either considerably flatter lines or even a significant increase, as can be seen in the segment >1000. As there are no incentives for household farms to reform into small-scale farms, no transition can be observed between household farms and the next larger segments. The increase in milk production per farm indicates an initial rationalisation process of the milk production, especially within the larger segments, due to an improvement in the efficiency of the dairy enterprises.

### IFCN Standard Classes Uzbekistan – When will the turning point be?

The example of Uzbekistan is shown by the IFCN Standard Classes as percentage share of farms, cows and milk produced per size class. The

variable milk produced per size class was estimated for the whole time series 1998 to 2012. Uzbekistan shows a steady increase in farm and cow numbers especially in the small segments. Since the average herd size and the average milk yield remain comparatively constant, the development of cows and the milk production per size class show a similar trend as reflected in the graphs. The biggest share is still held by household farms, which are increasing their values steadily in absolute terms, thus having a constant or even an increasing proportion of the total number of each variable. In Uzbekistan the milk production has not been consolidated so far. Once a rationalisation process begins, the total number of farms is expected to decrease and the proportion of small segments to drop in favour of the larger herd size classes.

### IFCN Standard Classes CIS Aggregate – A potential region of milk production growth

The CIS Aggregate is illustrated by the IFCN Standard Classes as percentage share of farms, cows and milk produced per size class. The aggregate reflects the development of nine countries in the CIS region (see Explanations). The data is partly estimated and available for the time series 2001 to 2012. The CIS region includes both, countries which show a stronger concentration of milk production (BY, RU, UA) and the majority of countries whose milk production is only slightly, or not consolidated yet (UZ, TJ, AZ, AM, KZ, KY). The developments are best visible in the IFCN Standard Classes of milk produced per size class, where the fact that the share of milk produced in household farms is marginally increasing, is reflected. The segments >10-30 and >30-100 even show a slightly stronger increase as well as the size class >1000, whereas the two yellow segments are declining slightly. Russia, Belarus and Ukraine are the largest milk producers in the region. Therefore, their specific trends also have the greatest impact on the structural change reflected by the aggregate. The CIS region has a significant potential of milk volume growth. The main question arises, “when will the turning point be?” in the majority of CIS countries: A switch from milk production growth via an increase of farm and cow number to a milk volume growth related to an increase of farm size and milk yield.

### Limitations

The calculations are still being developed. The main obstacles are related to the availability and quality of the national farm structure data, which greatly influences the estimations of the IFCN Standard Classes in general. The farm structure of milk produced per size class is barely available. Since this variable is very insightful and in fact completes the picture of structural change in a country, it has been estimated for a large number of countries. Therefore, the results have to be considered as sensitive. The allocation of national data into the Standard Classes still requires estimations in general, where no further information is available. Since not all countries of the world were analysed, conclusions about the world and the aggregate distribution in the IFCN Standard Classes have to be taken as indicative.

### Conclusion

The improvements of the method and its precision allow a more accurate and comprehensive representation of the IFCN Standard Classes. Thus, the IFCN Standard Classes are becoming a quality tool to obtain holistic information about differentiated developments and future trends on country and regional levels.

We will welcome all comments and ideas for further developments.

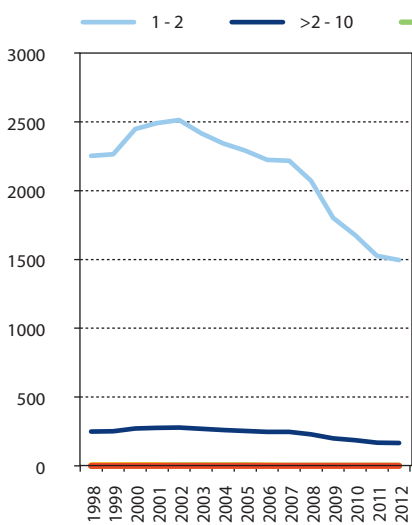
### Explanations:

**Data sources:** Country Page analysis 2013. **Estimates:** Dairy farm numbers, partly estimated: AM, KY, RU, UZ; dairy cow / buffalo numbers, partly estimated: AM, AZ, KZ, RU; milk production: AM BY, KY, RU, UZ. **CIS aggregate includes:** AM, AZ, BY, KY, KZ, RU, TJ, UA, UZ. **Remarks:** To show developments better the UZ charts were adjusted to 70%.

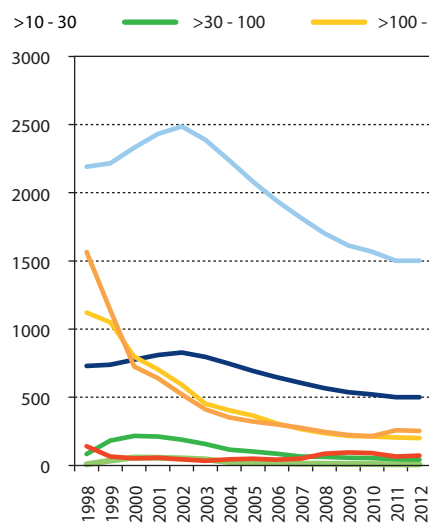
## 4.5 IFCN Standard Classes – a tool to visualise structural change

### IFCN Standard Classes Ukraine - Initial rationalisation

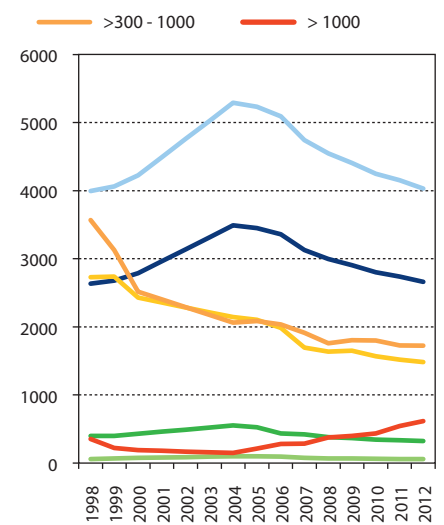
Farms per size class in 1000



Cows per size class in 1000

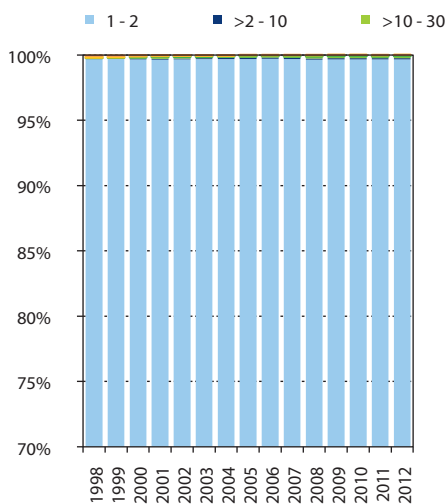


Milk produced per size class in 1000 tons

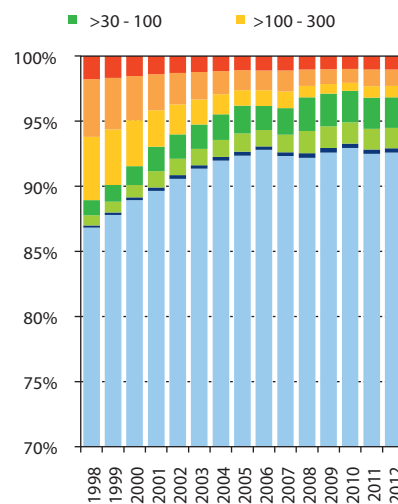


### IFCN Standard Classes Uzbekistan – When will be the turning point?

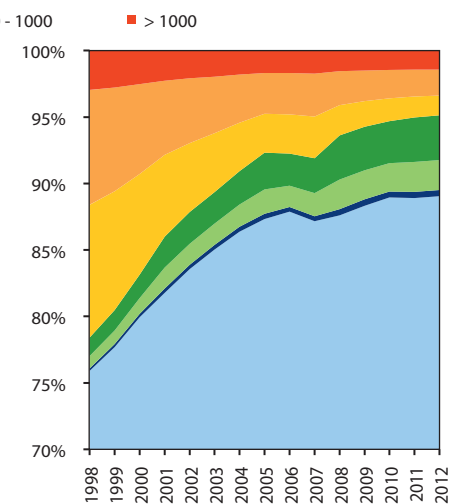
% of dairy farms



% of dairy cows

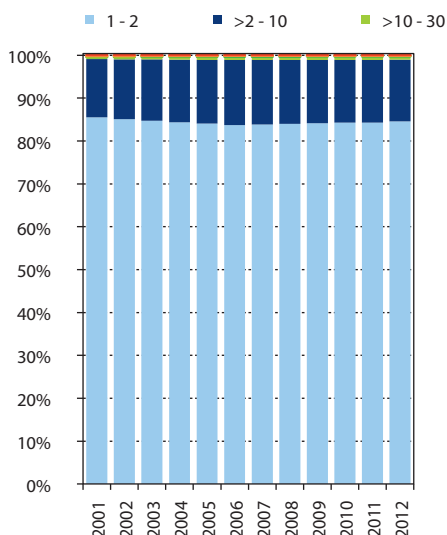


% of milk produced

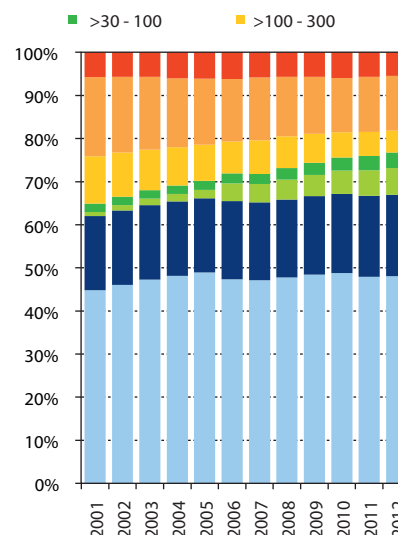


### FCN Standard Classes Uzbekistan – When will be the turning point?

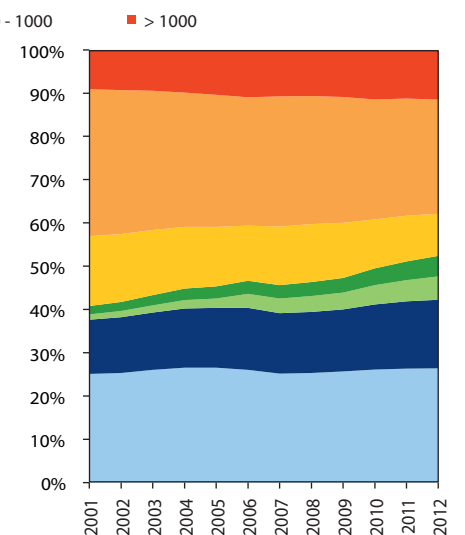
% of dairy farms



% of dairy cows



% of milk produced





# 2012 IDF Regional Conference



# 2012 IDF Regional Conference

Organized by



## International Farm Comparison Network



World Dairy Map 2012  
Results of the IFCN Dairy Report 2011 - www.ifcndairy.org

World Dairy Map 2012  
Results of the IFCN Dairy Report 2011 - www.ifcndairy.org

IFCN in action





This double page: IFCN Dairy team and its activities in 2013

## Annex

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## A.1 14<sup>th</sup> IFCN Dairy Conference – June 3 to 5 in Tekirdağ, Turkey



### Monday, 3 June – Status, trends, drivers & IFCN dairy outlook

#### Opening and get into the topic

1. Status of IFCN
2. Milk production world-wide
3. Country presentation Turkey
4. Country presentation Japan

#### Status, trends and drivers of milk production

1. Explaining milk price volatility – global and country trends and drivers
2. Dairy farm economic results

#### IFCN global dairy outlook

1. Introduction
2. Baseline 2023, short-term dairy outlook
3. Outlook presentations selected countries:
  - Czech Republic** (Iveta Boškova)
  - Italy** (Alberto Menghi)
  - UK** (Karolina Klaskova)
  - Australia** (Jon Hauser)
  - Colombia** (Enrique Ortega)
  - Russia** (Irina Kartavtseva)

### Tuesday, 4 June – Future drivers and implications for milk production

#### Special outputs of the Farm Comparison analysis

- Feed analysis and method developments  
Special outputs of the Dairy Sector analysis
1. Significant trends in farm structure development
  2. Where will the production growth come from?
  3. Partner presentations about regional milk movements:
    - Brazil** (Lorildo Stock)
    - South Africa** (Koos Coetzee)

#### Workshop session

1. Status & perspectives of milk production – Session for Turkish guests
2. Real time farm economics & farm representativeness
3. Farm structure developments
4. Farm supply reaction

#### Leading edge dairy farms

(with guests from Turkey participating)  
Partner presentations on leading edge dairy farms:

- Mexico** (Rigoberto Becerra)
- India** (Emily Getty)
- USA** (Annie AcMoody)

#### Networking evening together with

Turkish guests  
Turkish food, music and dance experience

### Wednesday, 5 June – Update on IFCN global dairy outlook and IFCN Strategy

#### IFCN global dairy outlook & future of the dairy industry

1. Where can we be in 2 and 10 years?  
Updates on the IFCN short-term outlook & Baseline 2023
2. Dairy companies facing market volatility

#### Summing up conference results & IFCN Strategy session

1. Summing up conference results and taking home messages
2. Reporting from the IFCN Board – IFCN developments & outcomes of the Strategy Workshop (June 1<sup>st</sup>)
3. Feedback & closing

#### End of conference

### IFCN Awards 2013

The IFCN awards were institutionalised in the year 2005 to acknowledge very good research within the IFCN Dairy Network. The 2013 winners were chosen by the IFCN board members Anders Fagerberg, Torsten Hemme, Ernesto Reyes and Luc Morelon.

**I-Award for the best innovation:** This award was given to the Dairy Sector Analysis team from IFCN Dairy Research Center for the first reliable estimation of dairy farm numbers in the world and the first step into the baseline looking into 2023.

**F-Award for the fast and reliable cooperation in IFCN:** The award was given to Simone Adam from Luxembourg for the continuous good and fast correspondence and her valuable contribution to the EU policy issues in IFCN Dairy Report 2012.

**C-Award for the best conference presentation:** Koos Coetzee (Milk Producers Organisation) from South Africa was given this award for his country presentation on South African milk movements and for his continuous good input to IFCN.

**N-Award for the best network contribution:** This award was dedicated to the Turkish Milk Council, namely Muhittin Özder and his team for the great hospitality, the great time we had in Turkey and the great inspiration given to the network to have IFCN conferences in different countries.



## A.2 10<sup>th</sup> IFCN Supporter Conference – September 17 to 19, 2012, in Cork, Ireland



Participants of the 10th IFCN Supporter Conference 2012 in Cork, Ireland



The 10<sup>th</sup> IFCN Supporter Conference was held in Cork, Ireland. 100 participants from 70 dairy related companies attended the conference which was hosted by the Irish Dairy Industries Association.

<b>Welcome &amp; global overview, Monday, 17 September</b>	<b>IFCN global dairy analysis, outlook and Irish perspective, Tuesday, 18 September</b>	<b>Dairy developments and perspectives in important dairy regions, Wednesday, September</b>
<p><b>Optional program:</b></p> <p><b>IFCN concept, methods, data, tools and services:</b>                      Session A: IFCN introduction                      Session B: IFCN Databases &amp; tools</p> <p><b>Official start of the conference</b>                      Reception and mingle</p> <p><b>Session 1:                      Getting into the topic</b>                      1. Opening                      2. What drives the dairy world? What are the relevant questions? What do we know today, what not?</p> <p><b>Welcome evening</b>                      Titanic experience in Cobh &amp; dinner</p>	<p><b>Session 2:                      IFCN global dairy analysis and outlook</b>                      1. Macro perspectives of dairy                      2. Dairy farm economic results                      3. IFCN dairy outlook for 2012-2014</p> <p><b>Session 3:                      Milk production in Ireland</b>                      1. Introduction about milk production in Ireland                      2. Field trip – Farm visits                      3. Round table discussion with representatives of the Irish dairy sector</p> <p><b>Networking evening</b>                      Dinner with Irish experience</p>	<p><b>Session 4:                      Status and perspectives of world dairy regions</b>  <b>USA:</b> New policies &amp; how to cope with rising feed prices?  <b>EU-27:</b> What might happen after quota abolishment in 2015?  <b>Brazil:</b> How to cope with rising salaries and strong competition from cash crops?  <b>India:</b> Can the National Dairy Plan boost milk production?  <b>Russia:</b> Has become the largest dairy importer in the world. What's next?  <b>China:</b> Restructuring of dairy farming since 2008. What's next?</p> <p><b>Status and perspectives of the dairy chain</b>                      1. IFCN Dairy chain analysis 2012                      2. Vision 2025: A scenario for the dairy industry                      3. Closing session</p>



## A.3 Typical farm approach and data quality assessment

### 1. The “Typical farm approach” (TFA)

The key issue in creating high quality farm comparison results is to apply the same method to all farms. Therefore this section describes the Standard Operating Procedure, called „Typical farm approach“ (TFA). The TFA has 3 elements: 1. Definition of the typical farms, 2. Data collection, 3. Data analysis / validation

#### Definition of the typical farms

The inception of using typical farms or representative farms in economic analysis occurred in 1928 when Elliot defined a typical farm as being “a modal farm in a frequency distribution of farms of the same universe; or it is representative of what a group of farmers are doing who are doing essentially the same thing” (\*Dillon and Skold, 1992). In IFCN, a typical farm represents a certain production system, farm size, production technology used and the related milk volume in a country/dairy region. The technical and economic data to describe the typical farms are preferably neither individual farm data nor statistical averages but based on a consensus achieved in a panel meeting. Two typical farms (and a third or even fourth one occasionally) are set up in each region. **First farm:** Mode sized farm with average management performance (mode is the value that occurs most frequently). **Second farm:** This farm is larger than the first one, to show economies of scale. It should also have an average management performance. The additional farms (which are usually optional) could represent, for example, a „future farm“ which is larger than and/or has better management than the other farms. It might also represent a different production system with a relatively high share of milk production in the respective country.

### 2. Data collection and validation (see column “data collection” in table next page)

1. **Panel approach:** A panel (farmer, advisor and scientist) discuss the data and agree on the results of the typical farm.
2. **Statistical approach only:** The data are taken mainly from accounting statistics and are discussed among dairy experts to create a typical farm.
3. **Single farm approach only:** The data are taken mainly from a single farm and are discussed among dairy experts to create a typical farm.
4. **Single farm case:** The data are taken from a single farm. The data represent this single case rather than a type of dairy farm in the region.

#### Data analysis / validation

This is a very important step of the TFA on which we have begun to focus more since 2010. After including the data into the TIPI-CAL model, a cross check of the results is vital as an initial step to the data validation process. It can be performed via a) a review with accounting statistics b) a review with a panel of farmers c) a review with national experts d) own review of results by country partner and e) other review methods adapted to the country situation.

### 3. Data quality assessment

Assuring high data quality is an important step for representing valuable results. We focus on four main areas: a) selection of typical farms, b) sourcing of farm data, c) farm data quality by comparing data between

farms of the same year and farms between the previous and current year, and d) communication between the partner and the IFCN.

#### Challenges in data quality

Five major challenges were identified based on the data quality assessment.

- a). **Selection of typical farms:** To make a comparison between farms which are really comparable we need to select the “right” typical farms. These need to have an average management level and at the same time have a typical herd size and structure for the country or region. Some countries still use better managed farms and farms which have more cows than the size-group which is typical for the country. Defining the right typical farm is therefore one of the biggest points to work on.
- b). **Sourcing of farm data** is a challenge in most developing countries and in developed countries where accounting statistics are not available. Many partners who plan to source their data from panels sometimes fail or are too late because they underestimate the preparations in setting up a panel. As this is the best option in most countries, we recommend this approach and like to draw your attention to the fact that it takes time to organise and to have a good panel. Therefore you should plan your panel meetings early enough ahead of the deadlines.
- c). **Completeness and consistency of data sets:** We face the challenge of getting incomplete data sets. This requires lot of time from the IFCN responsible person and the partner in trying to get the rest of the data and in making it consistent.
- d). **Timeliness in data delivery and correspondence:** The farm data quality is strongly influenced by the source, but also by the validation steps. When data are received late and/or partners do not respond to our emails within a reasonable time, important check loops of the IFCN are missed. Ensuring high quality is a challenge in these cases.
- e). **New countries or partners in the FC:** Since the Dairy Research Center needs time to understand dairying in a new country and the new partner also needs time to get used to IFCN methods, it is usually more time-consuming to get good quality data from new countries in the very first year. In 2013, Japan joined the IFCN for the first time.

#### 1. Time period for farm data

Differences in the analysed time period for farm data (calendar vs. accounting year/season) can lead to different results in farm economics, especially in times of volatile prices such as the present. Five groups of countries were classified based on the period of data collection:

##### Time period for farm data:

1. Calendar year 2012
2. Calendar year 2011 indexed to calendar year 2012
3. Financial year or season July 2011 to June 2012
4. Financial year or season April 2012 to March 2013
5. Financial year or season June 2011 to May 2012

#### Explanations

\*Dillon F M and Skold M D 1992 'Typical Farm Theory in Agricultural Research', *Journal of Sustainable Agriculture* 2 (2): 43-58.



## A.3 Typical farm approach and data quality assessment



Farm	Data collection	Time period
NO-20	2/3	1
NO-35	2/3	1
CH-18	2/3	1
CH-22	2/3	1
CH-65	2/3	1
FI-22	2	1
FI-77	2	1
FI-131	2	1
AT-14	3	1
AT-27bio	3	1
AT-58	3	1
DE-30S	2	1
DE-80S	2	1
DE-107S	2	1
DE-106N	1/2	1
DE-120N	1/2	1
DE-106N++	1/2	1
DE-240N	1/2	1
DE-650E	1/2	1
DE-650E++	1/2	1
DE-85E	1/2	2
DE-450E	1/2	2
DE-1150E	1/2	2
NL-76	2	1
NL-173	2	1
NL-116AMS	2/4	1
BE-40N	1	1
BE-90N	1	1
LU-50	2	1/2
LU-113	2	1/2
FR-38MC	2/3	1
FR-72C	2/3	1
FR-50W	2/3	1
ES-50NW	1/3	1
ES-74S	3/4	1
ES-120NW	1/3	1
ES-62CN	1/4	1
IT-154	1	1
IT-229	1	1
UK-150NW	1/2	1
UK-246SW	1/2	1
IE-62	23	1
IE-126	3	1
DK-150	2	1
DK-275	2	1

Farm	Data collection	Time period
SE-55	1/2	1
SE-70	1/2	1
SE-139	1/2	1
SE-230	1/2	1
PL-16	2/3	1
PL-65	2/3	1
PL-110	2/3	1
CZ-80	3	1
CZ-390	3	1
CZ-730	3	1
RS-2	1/2	1
RS-10	1/2	1
RS-84	1/2	1
UA-150	2	1
UA-535	2	1
BY-1	3	1
BY-633	2/3	1
BY-1268	2/3	1
RU-544	4	1
RU-1428	4	1
RU-2680	4	1
AM-5	3	2
AM-7	3	2
AM-35	3	2
TR-15	2	1
TR-100	2	1
IL-74	1	1
IL-385	1	1
JO-75	3	1
JO-400	3	1
IR-90	1	1
IR-120	1	1
IR-276	1	1
IR-458	1	1
IR-17	1	1
IR-27	1	1
TN-2	1/2	1
TN-4	3/4	1
TN-5	1/2	1
TN-10	1/2	1
TN-12	1/2	1
TN-290	2/3	1
DZ-6	1/2	1
DZ-18	1/2	1

Farm	Data collection	Time period
EG-4B	4	1
EG-4	4	1
EG-8	4	1
EG-16	4	1
EG-170	4	1
MA-3N	3	1
MA-8N	3	1
UG-1	1	1
UG-3	1	1
UG-13	1	1
CM-2	1/3	1
CM-11	1/3	1
CM-35	1/3	1
CM-50	1/3	1
ET-4	4	1
ET-50	3	1
ZA-230	1	1
ZA-520	1/2	1
ZA-630	1	1
CA-49	2/3	1
CA-83	2/3	1
CA-355	2/3	1
US-80WI	2	1
US-500WI	2	1
US-71NY	2	1
US-500NY	2	1
US-2000NY	2	1
US-1000ID	2/3	1
US-5000ID	2/3	1
US-1100CA	2/3	1
US-3000CA	2/3	1
MX-10S	1/2	1
MX-58S	2/4	1
MX-1000To	3	1
MX-2000To	3	1
CO-6	3/4	1
CO-100	1/4	1
CO-100DP	1/4	1
AR-170	1/2	1
AR-400	1/2	1
AR-600	1/2	1
UY-69	2	3
UY-138	2/3	3
UY-407	2/3	3

Farm	Data collection	Time period
CL-57	3/1	1
CL-103	1	1
CL-421	3/1	1
CL-428++	1	1
CL-1121	3/1	1
BR-25S	1	1
BR-50S	1	1
BR-50SE	1	1
BR-100SE	1	1
BR-120PR	1/2/4	2
BR-571PR	1/2/4	2
PE-7	4	1
PE-17	4	1
IN-3S	1/3	4
IN-4N	2/3	4
IN-3W	2/3	4
IN-18N	2/3	4
IN-25E	3	1
IN-35E	3	1
IN-45E	3	1
IN-235E	3	1
IN-225SE	3	1
PK-6	3/4	1
PK-25	3/4	4
PK-100	3/4	1
BD-2	1/2	1
BD-14	1/2	1
ID-3NG	1	1
ID-10NG	1	1
ID-21A	1	1
ID-10JA	1	1
JP-36	2	1
JP-68	2	1
CN-17BE	1	1
CN-340BE	1	1
CN-5HJ	1/3	2
CN-10HJ	1/3	2
CN-40HJ	1/3	2
CN-135	1/3	1
CN-240	1/3	1
CN-1600	1/3	1
AU-300	1/2	1
AU-750	1/2	1
NZ-348	2	5
NZ-1201	2	5



## A.4 Description of the typical dairy farms analysed

Typical farm	AM-5	AM-7	AM-35	AR-170	AR-400	AR-600	AT-14	AT-27-bio	AT-58	AU-300
Region	Shirak	Gegharkunik	Shirak	Sta.Fé-Córdoba	Mary Sierras Dairy - Buenos Aires Province	Oeste (Trenque Lauquen)	Steiermark	Oberösterreich	Oberösterreich	Gippsland, Victoria
Kind of farm	Family farm	Family farm	Family farm	Family farm partnership	Corporate farming system	Family farm partnership	Family farm	Family farm	Family farm	Family farm
Production system	fs	st	st	gr	gr	gr	st	fs	fs	gr
No. of cows	5	7	35	170	400	600	14	27	58	300
Breed	Holstein	Caucasian brown, Swiss	Caucasian brown	HF	HF	HF	Simmental	Simmental	Simmental	Friesian
Total land (ha) 1) / % used for dairy enterprise	7 (50%)	3 (67%)	130 (80%)	227 (30%)	485 (100%)	750 (100%)	42 (50%)	89 (25%)	62 (73%)	160 (74%)
Stocking rate per ha land 2)	0.88	2.80	0.29	2.80	0.96	0.97	0.81	0.83	1.91	2.15
Total labour input 3) / % used for dairy enterprise	3.6 (100%)	2.4 (100%)	11. (75%)	4.8 (20%)	7.3 (9%)	12.3 (5%)	1.8 (100%)	1.3 (100%)	2.3 (100%)	3.1 (54%)
Other enterprises/comments	Cash crops, beef fattening, other	Cash crops, other	Beef fattening, manure, other	Cash crops	-	-	Beef fattening	-	-	Beef fattening
<b>Dairy specific data</b>										
Milk yield (kg ECM 4) / cow	2917	1349	2468	4907	5587	6294	7100	6333	8816	6884
Milk production (t ECM 4)	15	10	88	845	2250	3815	99	171	511	2065
Replacement rate (%)	17%	15%	15%	26%	27%	28%	36%	25%	29%	15%
Age of first calving (months)	28	33	33	29	27	27	33	26	26	24
<b>Farm background (from the year box)</b>										
Rearing system of calves (text)	-	-	-	CM and MR	CM and MR	CM and MR	ML	ML	ML	CM
Age of male calves at time of sale (weeks)	-	-	-	1	1	1	2	4	4	1
Share of costs of concentrate which is used for young stock (%)	0%	0%	0%	17%	17%	17%	22%	26%	20%	5%
Average temperature on farm (°C)				19	14	16	7	7.5	7.5	15



Typical farm	AU-750	BD-2	BD-14	BE-40N	BE-90N	BR-25S	BR-50S	BR-50SE	BR-100SE	BR-120PR
Region	Gippsland, Victoria	Dinajpur	Dinajpur	Belgium-Flanders	Belgium-Flanders	Santa Catarina	Santa Catarina	Minas Gerais	Minas Gerais	Paraná - BR
Kind of farm	Family farm	Family farm	Corporate farming system	Family farm	Family farm	Household with farming activities	Corporate farming system	Family farm	Corporate farming system	Cooperative
Production system	gr	ss	ss	fs	fs	gr	fl	fl	fl	fl
No. of cows	750	2	14	40	90	25	50	50	100	120
Breed	Friesian	Local	Local*Shahiwal or Friesian	HF	HF	5/8 Holstein & Gir	Holstein	5/8 Holstein & Gir	Holstein	Holstein
Total land (ha) 1) / % used for dairy enterprise	401 (74%)	1 (30%)	3 (45%)	40 (81%)	60 (100%)	17 (100%)	33 (100%)	40 (100%)	92 (100%)	117 (64%)
Stocking rate per ha land 2)	2.14	-	-	1.66	2.03	1.44	1.74	1.34	1.27	1.52
Total labour input 3) / % used for dairy enterprise	6.6 (35%)	1. (75%)	2.4 (20%)	2.2 (100%)	2.5 (99%)	1.3 (100%)	3.1 (43%)	2.6 (67%)	4. (11%)	6.9 (51%)
Other enterprises/comments	Beef fattening	Beef fattening	Beef fattening	Cash crops, beef fattening	Cash crops, beef fattening	Cash crops and other (80% dairy)	other (100% dairy)	other (100% dairy)	other (100% dairy)	Cash crops, manure, other
<b>Dairy specific data</b>										
Milk yield (kg ECM 4) / cow	6884	736	878	7775	8558	4037	6313	4406	6758	6639
Milk production (t ECM 4)	5163	1	12	316	782	104	322	226	687	885
Replacement rate (%)	16%	16%	16%	34%	37%	26%	28%	23%	21%	21%
Age of first calving (months)	24	42	36	28	26	26	26	31	30	26
<b>Farm background (from the year box)</b>										
Rearing system of calves (text)	CM	ML	ML	CM	CM	other	other	other	other	-
Age of male calves at time of sale (weeks)	1	42	42	2	2	-	-	-	-	-
Share of costs of concentrate which is used for young stock (%)	5%	10%	12%	10%	10%	22%	21%	14%	14%	0%
Average temperature on farm (°C)	15	29	29			18	18	23	23	

Typical farm	BR-571PR	BY-1	BY-633	BY-1268	CA-49	CA-83	CA-355	CH-18	CH-22	CH-65
Region	Paraná - BR	Petrikov/Belarus	Slutsk/Belarus	Minsk/Belarus	Québec	Ontario	Western provinces	Mountain area	Hill area	Plain area
Kind of farm	Cooperative	Household with farming activities	Corporate farming system	Corporate farming system	Family farm	Family farm	Corporate farming system	Family farm	Family farm	Family farm
Production system	fs	ss	st	fs	st	fs	fs	st	st	fs
No. of cows	571	1	633	1268	49	83	355	18	22	65
Breed	Holstein	Belarusian black-and-white	Belarusian black-and-white	Belarusian black-and-white	HF	HF	HF	Brown swiss	Brown swiss	Brown swiss
Total land (ha) 1) / % used for dairy enterprise	360 (58%)	1 (79%)	2547 (68%)	4376 (49%)	78 (93%)	203 (93%)	439 (93%)	29 (82%)	27 (83%)	43 (86%)
Stocking rate per ha land 2)	3.28	0.86	0.31	0.61	0.93	0.60	1.19	0.96	1.19	2.05
Total labour input 3) / % used for dairy enterprise	22.1 (14%)	1.2 (100%)	169.7 (0%)	208.7 (0%)	2.4 (51%)	2.4 (100%)	6. (40%)	2.1 (82%)	2. (81%)	2.9 (60%)
Other enterprises/comments	Cash crops, manure, other	Cash crops other	Cash crops, beef fattening, manure, other	Cash crops, beef fattening, other	-	-	-	Cash crops, beef fattening	Cash crops, beef fattening	Cash crops, beef fattening
<b>Dairy specific data</b>										
Milk yield (kg ECM 4) / cow	9223	4059	5556	5677	7475	8629	8189	5849	6548	7096
Milk production (t ECM 4)	5855	4	3702	7499	387	750	3043	109	149	475
Replacement rate (%)	35%	1%	35%	38%	41%	41%	41%	34%	34%	38%
Age of first calving (months)	24	27	25	26	26	26	26	32	30	28
<b>Farm background (from the year box)</b>										
Rearing system of calves (text)	-	CM	CM	CM	CM	CM	MR	CM	CM	CM
Age of male calves at time of sale (weeks)	-	8	8	8	1	1	1	10	10	7
Share of costs of concentrate which is used for young stock (%)	0%	5%	35%	40%	-	-	-	12%	12%	10%
Average temperature on farm (°C)		8	7.5	7				6.7	8.3	9.6

### Explanations:

<sup>1)</sup> incl. Setaside, <sup>2)</sup> Livestock units/ ha of dairy land, <sup>3)</sup> Hired and family labour input for the whole farm shown in labour units (1 unit = 2,100 hours),

<sup>4)</sup> ECM = Energy corrected milk (4% fat, 3.3 % protein)

**Production system codes:** st = stanchion barn, fs = free stall barn, fl = feedlot farms, gr = grazing farms, ss = small scale farms

**Calves rearing system:** ML = calves used for milk let down, CM = calves taken away and fed on cow's milk, MR = calves taken away and fed on milk replacer, SO = calves sold or outsourced

## A.4 Description of the typical dairy farms analysed

Typical farm	CN-340BE	CN-5HJ	CN-10HJ	CN-40HJ	CN-135	CN-240	CN-1600	CO-6	CO-100	CO-100DP
Region	North China	Shuangcheng	Shuangcheng	Shuangcheng	Hebei	Beijing	Hebei	cund,boyaca,anty Nariño	cundi boyaca	cordoba-cesar
Kind of farm	Corporate farming system	Family farm	Family farm	Family farm	Household with farming activities	Corporate farming system	Cooperative	Household with farming activities	Corporate farming system	Corporate farming system
Production system	fl	fl	fl	fl	fs	fs	fs	gr	gr	gr
No. of cows	340	5	10	40	135	240	1600	6	100	100
Breed	Holstein	Holstein	Holstein	Holstein	Holstein	Holstein	Holstein	HF	HF	Holstein/Zebu & American brown/ Zebu
Total land (ha) 1) / % used for dairy enterprise	4 (100%)	1 (100%)	2 (100%)	2 (100%)	6 (80%)	15 (0%)	40 (0%)	2 (100%)	50 (93%)	100 (81%)
Stocking rate per ha land 2)	-	4.54	-	-	-	-	-	2.91	2.38	0.98
Total labour input 3) / % used for dairy enterprise	52.2 (4%)	.9 (100%)	1.7 (100%)	5.7 (50%)	35.2 (23%)	28.6 (9%)	144.6 (0%)	1.9 (74%)	7.8 (6%)	6.6 (5%)
Other enterprises/comments	manure	-	-	-	Beef fattening, manure	Beef fattening, manure	Beef fattening, manure	-	-	Beef fattening
<b>Dairy specific data</b>										
Milk yield (kg ECM 4) / cow)	4797	4245	4245	4245	5467	6335	6326	4442	5810	1585
Milk production (t ECM 4)	1735	21	42	170	753	1552	10328	27	593	167
Replacement rate (%)	21%	18%	18%	18%	24%	27%	27%	20%	25%	28%
Age of first calving (months)	26	27	27	27	24	24	23	32	30	40
<b>Farm background (from the year box)</b>										
Rearing system of calves (text)	CM	-	-	-	CM	CM	CM	CM	CM	ML
Age of male calves at time of sale (weeks)	1	-	-	-	-	-	1	1	1	28
Share of costs of concentrate which is used for young stock (%)	35%	0%	0%	0%	40%	40%	17%	5%	800%	500%
Average temperature on farm (°C)	11.8				17	15	17	14	16	28



Typical farm	CZ-80	CZ-390	CZ-730	DE-30S	DE-80S	DE-107S	DE-106N	DE-120N	DE-106N++	DE-240N
Region	Northeast	Eastern Bohemia	central Bohemia	Bavaria	Bavaria	Bavaria	Northern Germany	Northern Germany	Northern Germany	Northern Germany
Kind of farm	Family farm	Corporate farming system	Cooperative	Family farm	Family farm	Family farm	Family farm	Family farm	Family farm	Family farm
Production system	fs	fs	fs	st	fs	fs	fs	fs	fs	fs
No. of cows	80	390	730	30	80	107	106	120	106	240
Breed	HF	Simmental	75% HF, Simmental, other	Simmental	Simmental	Simmental	HF	HF	HF	HF
Total land (ha) 1) / % used for dairy enterprise	108 (100%)	1263 (66%)	3252 (40%)	39 (83%)	79 (83%)	96 (80%)	105 (93%)	119 (100%)	100 (100%)	238 (100%)
Stocking rate per ha land 2)	0.94	0.59	0.78	1.39	1.72	1.96	1.37	1.32	1.33	1.25
Total labour input 3) / % used for dairy enterprise	2.7 (67%)	57.6 (0%)	96.2 (0%)	1.7 (96%)	2.4 (83%)	2.8 (78%)	2.5 (60%)	2.6 (57%)	2.5 (60%)	4.3 (35%)
Other enterprises/comments	Cash crops	Cash crops	Cash crops, beef fattening	Cash crops, beef fattening	Cash crops, beef fattening	Cash crops, beef fattening	Cash crops			Cash crops
<b>Dairy specific data</b>										
Milk yield (kg ECM 4) / cow)	9859	6730	7060	6707	7305	7519	8972	9019	9813	9165
Milk production (t ECM 4)	822	2763	5425	214	599	827	980	1116	1072	2268
Replacement rate (%)	24%	38%	37%	32%	28%	27%	38%	38%	39%	38%
Age of first calving (months)	29	28	30	28	28	28	28	28	26	26
<b>Farm background (from the year box)</b>										
Rearing system of calves (text)	MR	MR	MR	CM	CM and MR	CM and MR	CM	CM	CM	CM
Age of male calves at time of sale (weeks)	1	1	1	9	9	9	2	2	2	2
Share of costs of concentrate which is used for young stock (%)	15%	15%	15%	30%	30%	30%	25%	25%	25%	25%
Average temperature on farm (°C)	7	7	6.8	9	9	9	8	8	8	8

Typical farm	DE-650E	DE-650E++	DE-85E	DE-400E	DE-1150E	DK-150	DK-275	DZ-6	DZ-18	EG-4B
Region	Eastern Germany, Sachsen-Anhalt	Eastern Germany, Sachsen-Anhalt	Eastern Germany	Eastern Germany	Eastern Germany	Jutland	Jutland	North Centrer	Nord-Est	Rahmane Behera
Kind of farm	Corporate farming system	Corporate farming system	Family farm	Corporate farming system	Corporate farming system	Family farm	Family farm	Household with farming activities	Family farm	Household with farming activities
Production system	fs	fs	fs	fs	fs	fs	fs	st	fs	ss
No. of cows	650	650	85	400	1150	150	275	6	18	4
Breed	HF	HF	HF	HF	HF	SDM	SDM	Holstein + Montbé-liard + Simmental	Holstein + Montbé-liard + Simmental	Egyptian buffaloes
Total land (ha) 1) / % used for dairy enterprise	1700 (29%)	1700 (29%)	130 (49%)	1540 (29%)	2400 (39%)	148 (78%)	236 (81%)	1 (60%)	5 (60%)	1 (58%)
Stocking rate per ha land 2)	1.57	1.57	1.57	0.98	1.34	1.66	1.90	-	-	-
Total labour input 3) / % used for dairy enterprise	23.1 (0%)	21.1 (0%)	3.2 (68%)	23. (0%)	52. (0%)	2.5 (38%)	3.5 (27%)	2.7 (100%)	5. (52%)	.7 (100%)
Other enterprises/comments	Cash crops	Cash crops, biogas plant	Cash crops	Cash crops	Cash crops	Cash crops	Cash crops	Cash crops, beef fattening	Cash crops, beef fattening	Cash crops, beef fattening, manure
<b>Dairy specific data</b>										
Milk yield (kg ECM 4) / cow)	7978	8204	8329	8710	8700	9497	9592	3384	4430	3553
Milk production (t ECM 4)	5762	5925	761	3746	10758	1484	2748	22	84	15
Replacement rate (%)	41%	38%	36%	39%	40%	42%	39%	20%	27%	10%
Age of first calving (months)	26	25	28	26	26	26	28	29	28	35
<b>Farm background (from the year box)</b>										
Rearing system of calves (text)	CM	CM	-	-	-	MR	MR	CM	MR	ML
Age of male calves at time of sale (weeks)	2	2	-	-	-	5	5	56	56	5
Share of costs of concentrate which is used for young stock (%)	25%	25%				22%	22%	15%	20%	15%
Average temperature on farm (°C)	8.73	9				7.5	7.5	28	28	25

### Explanations:

<sup>1)</sup> incl. Setaside, <sup>2)</sup> Livestock units/ ha of dairy land, <sup>3)</sup> Hired and family labour input for the whole farm shown in labour units (1 unit = 2,100 hours),

<sup>4)</sup> ECM = Energy corrected milk (4% fat, 3.3% protein)

**Production system codes:** st = stanchion barn, fs = free stall barn, fl = feedlot farms, gr = grazing farms, ss = small scale farms

**Calves rearing system:** ML = calves used for milk let down, CM = calves taken away and fed on cow's milk, MR = calves taken away and fed on milk replacer, SO = calves sold or outsourced

## A.4 Description of the typical dairy farms analysed

Typical farm	EG-4	EG-8	EG-16	EG-170	ES-50NW	ES-74S	ES-120NW	ES-62CN	ET-4	ET-50
Region	Rahmane Behera	Rahmane Behera and Sakha	Rahmane Behera	Rahmane Behera	Galicia	Andalucia	Ribadeo, Lugo, Galicia	Castilla y León	Oromia	Oromia
Kind of farm	Household with farming activities	Household with farming activities	Household with farming activities	Other	Family farm	Family farm	Family farm	Family farm	Family farm	Corporate farming system
Production system	ss	ss	ss	fs	fs	fs	fs	fs	ss	st
No. of cows	4	8	16	170	50	74	120	62	4	50
Breed	HF	Egyptian buffaloes	HF	HF	Holstein	Holstein	Holstein	Holstein	Zebu and Holstein-Zebu crossbred	Zebu and Holstein-Zebu crossbred
Total land (ha) 1) / % used for dairy enterprise	2 (82%)	1 (67%)	3 (100%)	26 (62%)	23 (80%)	90 (100%)	47 (79%)	38 (95%)	5 (30%)	8 (93%)
Stocking rate per ha land 2)	2.95	-	-	-	2.71	1.02	3.49	1.88	1.75	4.48
Total labour input 3) / % used for dairy enterprise	.7 (100%)	1.6 (53%)	2.2 (65%)	21.4 (0%)	1.9 (100%)	1.4 (28%)	3.9 (48%)	1.7 (95%)	3.4 (61%)	12.1 (2%)
Other enterprises/comments	Cash crops, beef fattening, manure	Cash crops, beef fattening, manure	Cash crops, beef fattening, manure	Cash crops, beef fattening, manure	-	-	-	-	Cash crops, beef fattening	Beef fattening
<b>Dairy specific data</b>										
Milk yield (kg ECM 4) / cow	2751	3416	2660	2435	9330	9100	10663	10324	3023	3793
Milk production (t ECM 4)	11	28	44	431	471	687	1292	653	16	208
Replacement rate (%)	10%	18%	13%	23%	28%	38%	37%	38%	12%	4%
Age of first calving (months)	32	34	30	32	24	25	24	25	38	24
<b>Farm background (from the year box)</b>										
Rearing system of calves (text)	ML	CM	CM	CM	CM and MR	CM and MR	CM and MR	CM	-	-
Age of male calves at time of sale (weeks)	5	5	5	104	2	1	2	3	-	-
Share of costs of concentrate which is used for young stock (%)	15%	15%	15%	15%	26%	22%	17%	24%	-	-
Average temperature on farm (°C)	25	25	25	25	13.8	17.6	13.8	12.7	-	-



Typical farm	FI-23	FI-67	FI-131	FR-38MC	FR-72C	FR-50W	ID-3NG	ID-10NG	ID-2JA	ID-10JA
Region	Päijät-Häme Southern Finland	Etelä- ja Keski-Pohjanmaa	Etelä- ja Keski-Pohjanmaa	Massif Central	Centre	West	East Java	East Java	East Java	East Java
Kind of farm	Family farm	Family farm	Family farm	Family farm	Family farm	Family farm	Family farm	Family farm	Family farm	Family farm
Production system	st	fs	fs	st	fs	fs	ss	ss	ss	ss
No. of cows	23	67	131	38	72	50	3	10	2	10
Breed	Ayrshire/HF	Ayrshire/HF	Ayrshire/HF	Montbéliarde	HF	HF	HF	HF	HF	HF
Total land (ha) 1) / % used for dairy enterprise	54 (93%)	110 (95%)	135 (99%)	56 (100%)	120 (59%)	61 (98%)	(100%)	1 (100%)	1 (30%)	2 (30%)
Stocking rate per ha land 2)	0.56	0.77	1.18	0.91	1.33	1.33	-	-	-	-
Total labour input 3) / % used for dairy enterprise	2.5 (100%)	3.1 (75%)	3.8 (68%)	1.5 (100%)	2.8 (72%)	1.6 (100%)	1.4 (100%)	3.4 (67%)	1.2 (100%)	2.7 (51%)
Other enterprises/comments	Cash crops	Cash crops	Cash crops	-	Cash crops	Cash crops	-	-	-	-
<b>Dairy specific data</b>										
Milk yield (kg ECM 4) / cow	9232	9400	8767	7138	8678	8293	2662	2754	2754	3061
Milk production (t ECM 4)	215	628	1149	271	626	413	8	28	6	31
Replacement rate (%)	38%	28%	34%	35%	32%	41%	15%	12%	19%	17%
Age of first calving (months)	26	26	26	33	30	30	27	27	29	27
<b>Farm background (from the year box)</b>										
Rearing system of calves (text)	CM and MR	CM and MR	CM and MR	CM	CM	CM	calves sold	-	calves sold	-
Age of male calves at time of sale (weeks)	2	2	2	3	2	2	12	-	1.5	-
Share of costs of concentrate which is used for young stock (%)	31%	12%	12%	17%	10%	9%	0%	0%	0%	0%
Average temperature on farm (°C)	4	3	3	12	15	15	18	-	18	-

Typical farm	IE-62	IE-126	IL-74	IL-385	IN-35	IN-4N	IN-3W	IN-18N	IN-25E	IN-35E
Region	National average	South East	All the country	All the country	Southern Region, Karnataka	Gureh Village, West Ludhiana, Jagraon taluka	Western Region, Gujarat	Gureh Village, West Ludhiana, Jagraon taluka	Thanjavur, Tamil Nadu	Vallam, Tamil Nadu
Kind of farm	Family farm	Family farm	Family farm	Cooperative	Household with farming activities	Family farm	Household with farming activities	Family farm	Family farm	Family farm
Production system	gr	gr	fl	fl	ss	ss	ss	fl	ss	ss
No. of cows	62	126	74	385	3	4	3	18	2	3
Breed	HF	HF	HF	HF	HF Crossbred	2Jersey+2Murrah	Local Mehsani Buffaloes	HF	Jersey Cross and HF Cross	Multi-breed cross, unknown
Total land (ha) 1) / % used for dairy enterprise	53 (66%)	108 (99%)	(0%)	2 (0%)	3 (10%)	3 (23%)	3 (7%)	3 (56%)	(95%)	3 (50%)
Stocking rate per ha land 2)	1.55	1.09	-	-	-	-	-	-	1.98	1.04
Total labour input 3) / % used for dairy enterprise	2.1 (93%)	3.8 (80%)	2.7 (56%)	9.5 (0%)	1.9 (100%)	2.3 (100%)	1.8 (81%)	4.9 (36%)	.5 (100%)	.7 (100%)
Other enterprises/comments	Cash crops, beef fattening	Cash crops, beef fattening	-	-	Cash crops, manure	Cash crops, manure	Cash crops, manure	Cash crops, manure	other	Cash crops
<b>Dairy specific data</b>										
Milk yield (kg ECM 4) / cow	5281	6475	10696	11507	2944	4213	2319	5486	1656	1319
Milk production (t ECM 4)	345	868	792	4430	9	17	7	99	3	4
Replacement rate (%)	20%	24%	38%	34%	14%	29%	64%	28%	100%	40%
Age of first calving (months)	25	25	25	25	30	33	48	23	22	26
<b>Farm background (from the year box)</b>										
Rearing system of calves (text)	MR	MR	SO	SO	ML	ML	ML	CM	ML	ML
Age of male calves at time of sale (weeks)	12	12	1	1	24	24	24	10	52	78
Share of costs of concentrate which is used for young stock (%)	25%	25%	9%	9%	16%	15%	15%	20%	25%	0%
Average temperature on farm (°C)	9	9.5	21	21	31	26	30	26	32	34

### Explanations:

<sup>1)</sup> incl. Setaside, <sup>2)</sup> Livestock units/ ha of dairy land, <sup>3)</sup> Hired and family labour input for the whole farm shown in labour units (1 unit = 2,100 hours),

<sup>4)</sup> ECM = Energy corrected milk (4% fat, 3.3 % protein)

**Production system codes:** st = stanchion barn, fs = free stall barn, fl = feedlot farms, gr = grazing farms, ss = small scale farms

**Calves rearing system:** ML = calves used for milk let down, CM = calves taken away and fed on cow's milk, MR = calves taken away and fed on milk replacer, SO = calves sold or outsourced



## A.4 Description of the typical dairy farms analysed

Typical farm	IN-4SE	IN-23SE	IN-225SE	IR-17	IR-27	IR-90	IR-120	IR-276	IR-458	IT-154
Region	Thanjavur, Tamil Nadu	Salem, Tamil Nadu	Pollachi, Tamil Nadu	Khorasan Razavi Province	Tapesalam, Khorasan Razavi	Karaj, Iran	Karaj, Iran	Esfahan/North Broan	Esfahan/Flavaranj	Lombardia
Kind of farm	Family farm	Corporate farming system	Corporate farming system	Family farm	Family farm	Corporate farming system	Corporate farming system	Corporate farming system	Corporate farming system	Family farm
Production system	ss	fl	fs	fs	fs	fs	fs	fs	fs	fs
No. of cows	4	23	225	17	27	90	120	276	458	154
Breed	Jersey Cross	17 HF cross, 8 Jersey cross	HF Cross	HF	HF	HF	HF	HF	HF	HF
Total land (ha) 1) / % used for dairy enterprise	(0%)	2 (100%)	12 (100%)	(0%)	1 (0%)	1 (52%)	2 (41%)	340 (39%)	70 (6%)	72 (100%)
Stocking rate per ha land 2)	0.00	-	-	-	-	-	-	2.43	-	2.23
Total labour input 3) / % used for dairy enterprise	1. (100%)	5.2 (23%)	28.8 (0%)	1.9 (76%)	1. (0%)	10. (14%)	7. (21%)	27.1 (0%)	40.3 (0%)	4.3 (56%)
Other enterprises/comments	manure		manure, direct sale of milk to city dwellers	Beef fattening, manure	Beef fattening, manure	manure	manure	manure	Cash crops, manure other	
<b>Dairy specific data</b>										
Milk yield (kg ECM 4) / cow)	2373	3137	4276	8557	8557	7838	8418	8835	7918	8809
Milk production (t ECM 4)	11	74	972	148	236	784	1063	2488	3674	1362
Replacement rate (%)	25%	25%	5%	21%	21%	20%	21%	19%	24%	28%
Age of first calving (months)	36	38	28	25	26	25	25	25	25	26
<b>Farm background (from the year box)</b>										
Rearing system of calves (text)	ML	-	CM	MR	MR	CM	CM	CM	CM	MR and SO
Age of male calves at time of sale (weeks)	-	-	1	52	52	9	9	9	9	4
Share of costs of concentrate which is used for young stock (%)	0%	0%	5%	25%	25%	6%	6%	6%	6%	10%
Average temperature on farm (°C)	35		35	14		18	18	20	20	10



Typical farm	IT-229	JO-75	JO-400	JP-36	JP-68	LU-50	LU-113	MA-3N	MA-8N	MX-10S
Region	Lombardia	Al-Dhuleel	Al-Dhuleel	Other prefecture	North Island, Hokkaido	none	none	tadla	Tadla	Veracruz
Kind of farm	Family farm	Family farm	Family farm	Family farm	Family farm	Family farm	Family farm	Household with farming activities	Family farm	Corporate farming system
Production system	fs	fl	fl	st	fs	fs	fs	st	fs	gr
No. of cows	229	75	400	36	68	50	113	3	8	10
Breed	HF	HF	HF	HF	HF	HF	HF	Pie Noire, (Pie Noire x Local)	Pie Noire	Cebu breed
Total land (ha) 1) / % used for dairy enterprise	130 (100%)	5 (0%)	9 (0%)	10 (80%)	72 (66%)	107 (49%)	180 (61%)	3 (100%)	14 (25%)	26.5 (33%)
Stocking rate per ha land 2)	1.88	-	-	-	1.29	1.12	1.25	1.03	1.41	1.194715414
Total labour input 3) / % used for dairy enterprise	4.9 (61%)	5.4 (21%)	17.2 (6%)	2.1 (89%)	2.9 (90%)	1.9 (92%)	3.2 (87%)	1.1 (89%)	6.1 (23%)	0.26 (78%)
Other enterprises/comments				Beef fattening, manure	Beef fattening, manure	Cash crops, beef fattening	Cash crops, beef fattening	Cash crops, beef fattening, manure	Cash crops, beef fattening, manure	other
<b>Dairy specific data</b>										
Milk yield (kg ECM 4) / cow)	9068	6358	7260	8048	7711	7937	8484	2713	3587	591
Milk production (t ECM 4)	2084	482	2933	289	526	394	959	11	32	6
Replacement rate (%)	28%	21%	38%	22%	28%	34%	37%	0%	18%	31%
Age of first calving (months)	26	27	26	25	25	30	30	28	28	48
<b>Farm background (from the year box)</b>										
Rearing system of calves (text)	MR and SO	MR, SO	SO	MR	MR	CM and MR	CM and MR	ML	ML	CM
Age of male calves at time of sale (weeks)	4	2	2	3	3	2	2	-	24	30
Share of costs of concentrate which is used for young stock (%)	10%	1%	1%	25%	25%	3%	5%	0%	0%	0%
Average temperature on farm (°C)	10	17.5	17.5	15	8	9.6	9.6	11	11	26

Typical farm	MX-58S	MX-1000To	MX-2000To	NL-76	NL-173	NL-116AMS	NO-22	NO-35	NZ-348	NZ-1201
Region	Veracruz	North Mexico (La Laguna)	North Mexico (La Laguna)				Nord-Østerdalen	Jæren	Waikato	Canterbury
Kind of farm	Corporate farming system	Corporate farming system	Corporate farming system	Family farm	Family farm	Family farm	Family farm	Family farm	Family farm	Family farm partnership
Production system	gr	fl	fl	fs	fs	fs	st	st	gr	gr
No. of cows	58	1000	2000	76	173	116	22	35	348	1201
Breed	Brown Swiss & Cross Bred HF/Zebu	Holstein	Holstein	HF	HF	HF	Norwegian Red	Norwegian Red	Crossbred	Friesian
Total land (ha) 1) / % used for dairy enterprise	100 (79%)	300 (93%)	600 (95%)	45 (100%)	101 (100%)	52 (100%)	27 (80%)	30 (79%)	118 (100%)	423 (100%)
Stocking rate per ha land 2)	0.68	3.78	3.83	2.09	2.12	2.78	1.14	1.66	3.00	3.21
Total labour input 3) / % used for dairy enterprise	5.9 (10%)	80.1 (4%)	133.6 (2%)	1.1 (91%)	1.6 (69%)	1.7 (97%)	1.7 (86%)	1.7 (77%)	2.8 (36%)	7.2 (7%)
Other enterprises/comments	Beef fattening	other	other			other (100% dairy)	Beef fattening	Beef fattening	rent of cottages, skins, rebates on inputs	rent of cottages, skins, rebates on inputs
<b>Dairy specific data</b>										
Milk yield (kg ECM 4) / cow)	1946	8894	8260	8590	8560	10456	7371	6297	5642	6212
Milk production (t ECM 4)	113	8984	16857	654	1484	1214	167	244	1963	7461
Replacement rate (%)	22%	36%	36%	29%	27%	28%	47%	18%	26%	27%
Age of first calving (months)	35	25	25	26	26	26	25	26	24	24
<b>Farm background (from the year box)</b>										
Rearing system of calves (text)	CM	MR	CM	MR	MR	MR	MR	MR	CM	CM
Age of male calves at time of sale (weeks)	26	-	60	2	2	2	-	-	0.7	0.7
Share of costs of concentrate which is used for young stock (%)	0%	15%	15%	8%	8%	8%	7%	10%	100%	100%
Average temperature on farm (°C)	25.5	26	26	10.1	10.1	10.1		8	12.5	11.5

### Explanations:

<sup>1)</sup> incl. Setaside, <sup>2)</sup> Livestock units/ ha of dairy land, <sup>3)</sup> Hired and family labour input for the whole farm shown in labour units (1 unit = 2,100 hours),

<sup>4)</sup> ECM = Energy corrected milk (4% fat, 3.3% protein)

**Production system codes:** st = stanchion barn, fs = free stall barn, fl = feedlot farms, gr = grazing farms, ss = small scale farms

**Calves rearing system:** ML = calves used for milk let down, CM = calves taken away and fed on cow's milk, MR = calves taken away and fed on milk replacer, SO = calves sold or outsourced

## A.4 Description of the typical dairy farms analysed

Typical farm	PE-7	PE-17	PK-6	PK-25	PK-100	PL-16	PL-65	PL-110	RS-2	RS-10
Region	Polloc, Cajamarca	La Campiña, Cajamarca	Lahore, Punjab	Lahore, Punjab	Sialkot, Punjab	Mazowieckie	Śląsk	Śląsk/powiat raciborski	Sumadija and Western Serbia	Province of Vojvodina
Kind of farm	Family farm	Corporate farming system	Household with farming activities	Family farm	Family farm partnership	Family farm	Family farm	Family farm	Family farm	Family farm
Production system	ss	gr	ss	fs	fs	st	fs	fs	ss	ss
No. of cows	7	17	6	25	100	16	65	110	2	10
Breed	Brown Swiss	Holstein	Nili Ravi, Sahiwal/Cholistani	Nili Ravi, Sahiwal, Crossbred	HF, Jersey and HFx	HF+local breed	HF	HF	Simmentaler dominant	5 cows Holstein, 5 cows Simmentaler
Total land (ha) 1) / % used for dairy enterprise	16 (83%)	7 (100%)	2 (25%)	17 (32%)	30 (60%)	32 (98%)	100 (81%)	98 (100%)	5 (30%)	15 (69%)
Stocking rate per ha land 2)	0.58	2.79	-	4.50	-	0.62	1.04	1.33	0.48	1.16
Total labour input 3) / % used for dairy enterprise	1.9 (100%)	3.7 (29%)	3.1 (57%)	6.8 (77%)	26.5 (7%)	2.5 (100%)	5.2 (47%)	4.7 (53%)	.6 (100%)	1.9 (100%)
Other enterprises/comments	-	-	Beef fattening, manure	Beef fattening, manure	manure		Cash crops		Cash crops, beef fattening, manure	Cash crops, manure
<b>Dairy specific data</b>										
Milk yield (kg ECM 4) / cow	2573	5867	1918	2230	5496	6550	8394	8841	2478	5276
Milk production (t ECM 4)	19	101	13	59	578	108	563	1008	7	57
Replacement rate (%)	22%	19%	31%	28%	22%	34%	34%	34%	22%	33%
Age of first calving (months)	32	27	37	36	24	26	27	26	23	24
<b>Farm background (from the year box)</b>										
Rearing system of calves (text)	ML	CM	ML	ML	MR	MR	MR	CM and MR	ML	CM
Age of male calves at time of sale (weeks)	16	2	36	30	6	6	6	6	10	8
Share of costs of concentrate which is used for young stock (%)	5%	10%	6%	5%	10%	5%	15%	7%	0%	20%
Average temperature on farm (°C)	11	14.4	38	38	36	7.5	8	8	12	11.5



Typical farm	RS-84	RU-544	RU-1428	RU-2680	SE-139	SE-230	SE-55	SE-70	TN-2	TN-4
Region	Province of Vojvodina	Belgorod	Voronezh	Lipetsk	Skåne, Hörde	Falkenberg, Halland	Säter Dalarna	Luleå Kustområdet Normerjejer	CE Tunisia	North Tunisia
Kind of farm	Family farm	Corporate farming system	Corporate farming system	Corporate farming system	Family farm	Corporate farming system	Family farm	Family farm	Family farm	Family farm
Production system	fs	st	fs	fs	fs	fs	st	fs	ss	ss
No. of cows	84	544	1428	2680	139	230	55	70	2	4
Breed	Holstein 60% and Simmentaler 40%	HF	Holstein black & white	Holstein black & white	Holstein	Holstein	70% Swedish red, 30% Holstein	50% Swedish red, 50% Black Holstein	Holstein	Holstein
Total land (ha) 1) / % used for dairy enterprise	240 (40%)	(0%)	3000 (100%)	3630 (100%)	180 (70%)	215 (100%)	155 (74%)	120 (100%)	2 (50%)	4 (50%)
Stocking rate per ha land 2)	1.06	0.00	0.47	0.72	1.52	1.46	0.66	0.78	1.72	1.77
Total labour input 3) / % used for dairy enterprise	5.1 (47%)	25.5 (0%)	50. (0%)	82.7 (0%)	2.7 (36%)	5.2 (31%)	2.4 (54%)	2.3 (75%)	.5 (100%)	.8 (100%)
Other enterprises/comments	Cash crops, manure	Cash crops, beef fattening		Cash crops, beef fattening, other	Cash crops		Cash crops		Cash crops	Cash crops
<b>Dairy specific data</b>										
Milk yield (kg ECM 4) / cow	6196	6390	7248	6938	9956	9996	9798	10107	6803	3470
Milk production (t ECM 4)	531	3570	10758	19209	1442	2438	567	737	14	14
Replacement rate (%)	30%	20%	24%	32%	45%	40%	45%	45%	13%	13%
Age of first calving (months)	24	24	24	25	27	26	27	25	28	28
<b>Farm background (from the year box)</b>										
Rearing system of calves (text)	MR	-	-	-	MR	CM	MR	MR	CM	CM
Age of male calves at time of sale (weeks)	2	-	-	-	8	8	8	8	2	2
Share of costs of concentrate which is used for young stock (%)	20%	30%	0%	0%	7%	4%	8%	15%	0%	0%
Average temperature on farm (°C)	11.5	6.8			7	7	6	2	18.9	17.6

Typical farm	TN-5	TN-10	TN-12	TN-290	TR-15	TR-100	UA-145	UA-535	UG-1	UG-3
Region	Mahdia Tunisia	Mahdia Tunisia	Mahdia Tunisia	NW Tunisia	Marmara/Thrace	Marmara/Thrace	Chernihivska oblast	Sumska oblast	Mukono District	Kayunga District
Kind of farm	Family farm	Family farm	Family farm	Other	Family farm	Family farm	Corporate farming system	Corporate farming system	Family farm	Family farm
Production system	ss	ss	ss	fs	ss	fs	fs	fs	ss	ss
No. of cows	5	10	12	290	15	100	145	535	1	3
Breed	Holstein	Holstein	Holstein	Holstein	HF	HF	ukrainian red and white	ukrainian red and white	HF	Local Ankole
Total land (ha) 1) / % used for dairy enterprise	2 (66%)	7 (38%)	4 (40%)	2750 (15%)	6 (50%)	40 (5%)	815 (13%)	3866 (14%)	1 (95%)	2 (63%)
Stocking rate per ha land 2)	4.65	2.88	-	0.69	-	-	1.29	0.78	0.90	2.51
Total labour input 3) / % used for dairy enterprise	1. (100%)	1.9 (100%)	2.3 (100%)	141. (0%)	1.6 (95%)	4.6 (19%)	84.8 (0%)	190.5 (0%)	.8 (88%)	1.6 (67%)
Other enterprises/comments	Cash crops, manure	Cash crops, manure	Cash crops, manure	Cash crops	Beef fattening	Beef fattening	Cash crops, beef fattening	Cash crops, beef fattening	-	Cash crops
<b>Dairy specific data</b>										
Milk yield (kg ECM 4) / cow	4975	4521	4981	6270	5018	7472	4976	4900	3803	696
Milk production (t ECM 4)	25	46	60	1837	84	778	803	2789	4	2
Replacement rate (%)	32%	18%	15%	30%	29%	40%	30%	35%	45%	35%
Age of first calving (months)	30	30	29	29	27	24	26	26	26	33
<b>Farm background (from the year box)</b>										
Rearing system of calves (text)	CM	CM	CM	CM	CM	CM	CM	CM	CM	CM
Age of male calves at time of sale (weeks)	2	2	2	2	10	10	8	8	4	7
Share of costs of concentrate which is used for young stock (%)	0%	0%	0%	0%	34%	28%	20%	20%	5%	5%
Average temperature on farm (°C)	18.9	18.9	18.9	17	14	13	18	18	26	26

### Explanations:

<sup>1)</sup> incl. Setaside, <sup>2)</sup> Livestock units/ ha of dairy land, <sup>3)</sup> Hired and family labour input for the whole farm shown in labour units (1 unit = 2, 100 hours),

<sup>4)</sup> ECM = Energy corrected milk (4% fat, 3.3 % protein)

**Production system codes:** st = stanchion barn, fs = free stall barn, fl = feedlot farms, gr = grazing farms, ss = small scale farms

**Calves rearing system:** ML = calves used for milk let down, CM = calves taken away and fed on cow's milk, MR = calves taken away and fed on milk replacer, SO = calves sold or outsourced

## A.4 Description of the typical dairy farms analysed

Typical farm	UG-13	UK-150NW	UK-246SW	US-80WI	US-500WI	US-71NY	US-500NY	US-2000NY	US-1000ID	US-5000ID
Region	Kayunga District	NW England	SW England	Wisconsin	Wisconsin	Northeast US	Northeast US	Northeast US	Idaho	Idaho
Kind of farm	Family farm	Family farm	Family farm	Family farm	Family farm partnership	Family farm	Family farm partnership	Corporate farming system	Corporate farming system	Corporate farming system
Production system	ss	fs	fs	st	fs	st	fs	fs	fl	fl
No. of cows	13	150	246	80	500	71	500	2000	1000	5000
Breed	Local Ankole	HF	HF	HF	HF	HF	HF	HF	Holstein	Holstein
Total land (ha) 1) / % used for dairy enterprise	6 (59%)	122 (93%)	191 (94%)	73 (95%)	346 (98%)	168 (68%)	739 (70%)	1741 (80%)	390 (95%)	550 (95%)
Stocking rate per ha land 2)	4.60	1.59	1.78	1.03	1.30	0.55	0.90	1.51	2.50	-
Total labour input 3) / % used for dairy enterprise	3.1 (50%)	2.5 (51%)	4.5 (52%)	3. (76%)	12.4 (31%)	2.8 (60%)	16.1 (17%)	57.6 (10%)	19.4 (12%)	40. (0%)
Other enterprises/comments	Cash crops	Beef fattening, manure	Beef fattening, manure	Manure	Manure	Cash crops, other	Cash crops, other	Cash crops, other	-	-
<b>Dairy specific data</b>										
Milk yield (kg ECM 4) / cow)	548	8262	7707	9394	10788	8556	10647	10927	10255	10557
Milk production (t ECM 4)	7	1278	1925	752	5396	607	5323	21854	10255	52785
Replacement rate (%)	23%	31%	24%	30%	35%	35%	33%	37%	35%	35%
Age of first calving (months)	36	27	28	26	26	24	23	23	24	24
<b>Farm background (from the year box)</b>										
Rearing system of calves (text)	ML	CM, MR and SO	CM, MR and SO	MR	MR	CM	CM and MR	CM and MR	SO	SO
Age of male calves at time of sale (weeks)	36	2.5	2.5	2	1	1	1	1	1	1
Share of costs of concentrate which is used for young stock (%)	5%	15%	15%	11%	11%	5%	5%	5%	0%	0%
Average temperature on farm (°C)	26	13	14	5.55	5.55	10	10	10	11	11



Typical farm	US-1100CA	US-3000CA	UY-69	UY-138	UY-407	ZA-230	ZA-520	ZA-630
Region	USA-Cal	USA-Cal	South Uruguay	South Uruguay	South Uruguay	Free-Sate	Kwazulu natal	Gauteng/ Western-Cape
Kind of farm	Corporate farming system	Corporate farming system	Family farm	Corporate farming system	Corporate farming system	Corporate farming system	Corporate farming system	Corporate farming system
Production system	fl	fl	gr	gr	gr	fl	gr	fs
No. of cows	1100	3000	69	138	407	230	520	630
Breed	HF	HF	Holstein	Holstein	Holstein	Holstein	Holstein	Holstein
Total land (ha) 1) / % used for dairy enterprise	236 (95%)	427 (95%)	114 (93%)	205 (93%)	624 (92%)	432 (96%)	269 (88%)	670 (7%)
Stocking rate per ha land 2)	-	-	0.71	0.77	0.74	0.73	2.47	1.23
Total labour input 3) / % used for dairy enterprise	13.3 (5%)	36.9 (2%)	2.3 (43%)	4.1 (24%)	9.4 (10%)	7. (14%)	25.8 (4%)	24.1 (4%)
Other enterprises/comments	-	-	-	-	-	-	-	-
<b>Dairy specific data</b>								
Milk yield (kg ECM 4) / cow)	10006	10536	4501	6069	6523	6171	5777	10587
Milk production (t ECM 4)	11007	31608	311	838	2655	1463	3065	6806
Replacement rate (%)	48%	52%	26%	25%	24%	31%	31%	32%
Age of first calving (months)	25	25	33	28	28	30	28	25
<b>Farm background (from the year box)</b>								
Rearing system of calves (text)	CM, MR and SO	CM, MR and SO	CM	CM	CM	CM and MR	CM and MR	CM and MR
Age of male calves at time of sale (weeks)	1	1	1	1	1	2	2	2
Share of costs of concentrate which is used for young stock (%)	0%	0%	7%	4%	6%	10%	10%	10%
Average temperature on farm (°C)	17.5	17.5	17	17	17	16	16	18.5



### Explanations:

<sup>1)</sup> incl. Setaside, <sup>2)</sup> Livestock units/ ha of dairy land, <sup>3)</sup> Hired and family labour input for the whole farm shown in labour units (1 unit = 2,100 hours),

<sup>4)</sup> ECM = Energy corrected milk (4% fat, 3.3 % protein)

**Production system codes:** st = stanchion barn, fs = free stall barn, fl = feedlot farms, gr = grazing farms, ss = small scale farms

**Calves rearing system:** ML = calves used for milk let down, CM = calves taken away and fed on cow's milk, MR = calves taken away and fed on milk replacer, SO = calves sold or outsourced



### Introduction

The aim of this page is to illustrate in greater detail the different methods used and challenges faced in the Country Page analysis. It is an extension to chapter 3.9, Method explanation of the Country Page 2013.

### The Country Page analysis

Milk production and dairy sectors vary a great deal in different countries. The goal of the Country Page analysis is to give a better understanding of milk production via a comparable, standardised analysis of national dairy sectors all over the world.

**Standardisation:** As national standards differ greatly between countries and make a direct comparison difficult, IFCN standardises. For example, the milk: feed price ratio is calculated as milk price divided by feed price (see chapter 2.6), using one method for all the countries in order to obtain comparable information out of raw data.

**Challenges:** Due to the great variety in national dairy sectors, several challenges arise in the process of standardisation and may limit the level of comparability between countries. Special attention is paid to this in the following text.

### Regional milk density

The goal is to illustrate regions with a high concentration of milk production within each country. In a number of countries national milk production statistics and regional statistics do not concur. In a similar way, in certain countries the regional milk production is the sum of regional milk deliveries, which may be up to 60% lower than the sum of milk production. Therefore, countries growing or declining in a regional sense will not be comparable in this case (see chapter 3.2 and 3.3). As a result, data of high quality is required to observe the regional development of countries in relation to milk production, volume change and regional milk surplus and deficit maps (see chapter 3.4, 3.5 and 3.6).

### Farm structure - Farm number, size and milk per farm

As mentioned in chapter 3.8, the aim of performing the farm structure is to show the movement, status and development in the size classes of the dairy farms in different countries. In a number of countries the absence of data makes it impossible to show the farm structure in the chart in Country Pages or illustrate the status of farm structure via the IFCN Standard Classes in a comparable classification worldwide (see chapter 3.8). The key factors to illustrate the farm structure in the Country Pages are the total number of dairy farms, farm size class developments, total cow number and cow size class developments as well as milk per farm. Structural changes in farms (cows or farms per size class) are a major driver for milk production as well, and are an indicator for the structural changes in the dairy chains within the countries.

### Feed price

As mentioned in chapter 3.9, the feed price is important since feed costs represent the major part of milk production costs. Feed price as an IFCN standard is calculated from the raw materials soybean meal (30%) and corn or barley (70%). This combination was chosen to reflect an average compound feed price, because the items are widely available. However, they are not fed to dairy cows in a number of countries and regions, for example Oceania, selected African countries, and some countries from the former Soviet Union. Therefore, a project has been started to define a new indicator which can reflect

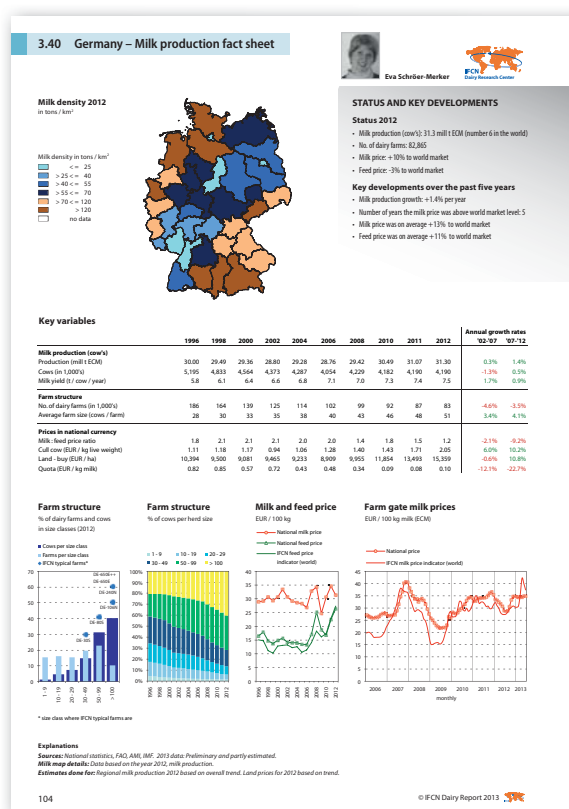
the actual feed prices in countries worldwide, without affecting the availability and comparability of data, and can make the different feed items among the countries easier to compare and understand.

### Cull cow price: live weight versus carcass weight

The aim for cull cow price data collection is to analyse the development of key prices relevant to dairy farmers. As is visible from the Country Pages, cull cow prices show a high diversity between countries. Cull cow price movements are driven by each countries' internal demand, milk prices (i.e. low milk prices can lead to a reduction of dairy herds via culling) or world market prices for beef. To illustrate the movement of beef prices in a comparable way among countries, it is necessary to have the cull cow price as a live weight price. Since some countries provide the information as carcass weight, diverging from the standard, a correction factor can be used to convert this price back to live weight. The factor differs according to the dressing percentage, and is based on the main purpose of cattle (beef, dairy, dual or multi-purpose cattle), breeds and weight of animal. The calculation goes as follows: Live weight = carcass weight / dressing percentage. If this information is not available, as an approximation it can be assumed that the carcass weight is 40% to 60% of live weight.

### Land prices

In the Dairy Report 2011 IFCN illustrated for the first time the land purchase prices for selected countries as a time series. Overall demand, competition with other sectors and the fact that land is the main asset for the major share of farmers, are key factors on country developments. As seen in chapter 3.7, in recent years land prices have changed dramatically, which has had an impact on the assets of the farmer (where the assets are traded at an inflated price) and also gives the farmer equity for obtaining a loan. Unavailability of land prices in a number of countries made it difficult to illustrate the factors affecting growth or decline in land purchase prices in those countries (see chapter 3).



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## A.7 Assumptions for the calculations

### Cost calculation

The cost calculations are based on dairy enterprises that consist of the following elements:

- milk production
- raising of replacement heifers
- forage production

The analysis results in a comparison of returns and total costs per kilogram of milk. Total costs consist of expenses from the profit and loss account (cash costs, depreciation, etc.), and opportunity costs for farm-owned factors of production (family labour, own land, own capital). The estimation of these opportunity costs must be considered carefully because the potential income of farm owned factors of production in alternative uses is difficult to determine. In the short run, the use of own production factors on a family farm can provide flexibility in the case of low returns when the family can choose to forgo income. However, in the long run opportunity costs must be considered because the potential successors of the farmer will, in most cases, make a decision on the alternative use of own production factors, in particular their own labour input, before taking over the farm. To indicate the effects of opportunity costs we have separated them from the other costs in most of the figures.

For the estimations and calculations the following assumptions were made:

### Labour costs

For hired labour, cash labour cost currently incurred was used. For unpaid family labour, the wage rate per hour for a qualified full-time worker in the region multiplied with the working time of a skilled worker was used. In some cases, mainly in developing countries, we used the approach of individual opportunity wage levels for family members multiplied with their working time in the farm.

### Land costs

For rented land, rents currently paid by the farmers were used. Regional rent prices provided by the farmers were used for owned land. In those countries with limited rental markets (like NZ), the land market value was capitalised at 3.5 % annual interest to obtain a theoretical rent price.

### Capital costs

Capital is defined as assets, without land and quota (calculation: assets for buildings, machinery, livestock and other), plus circulating capital (10% of all dairy related variable expenses). For borrowed funds, a real interest rate of 6% was used in all countries; for owner's capital, the real interest rate was assumed to be 3%.

### Quota costs

Rent values were used for rented or leased quota. Opportunity costs for own quota are calculated based on the quota value \* 3% interest rate. Depreciation of quota based on national depreciation scheme is deducted to calculate farm income.

### Depreciation

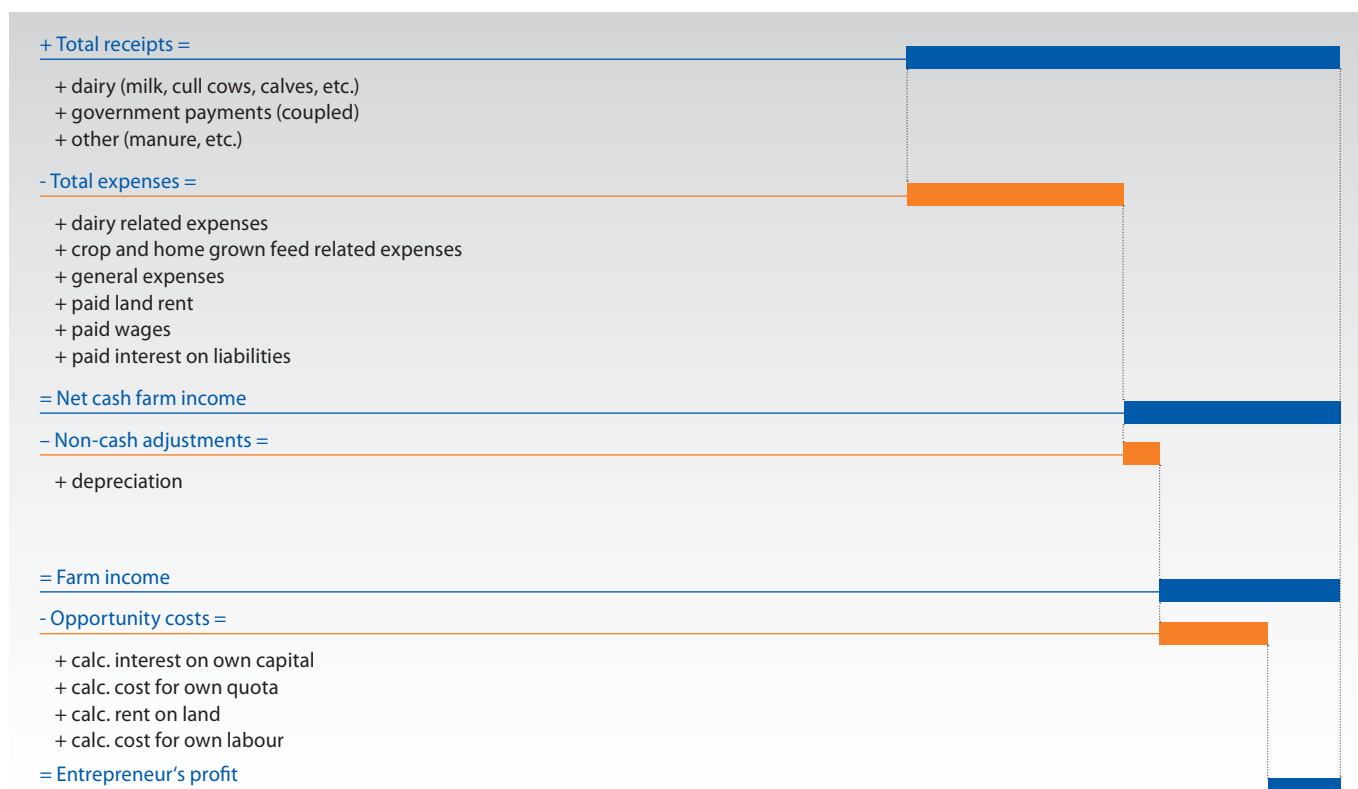
For the bookkeeping value and depreciation of machinery and buildings the figures calculated by country partners were used. In small farms in countries without a bookkeeping system, estimates were made based on the asset value and machinery list of the farm.

### Adjustment of VAT

All cost components and returns are stated without value added tax (VAT).

### Adjustment of milk ECM

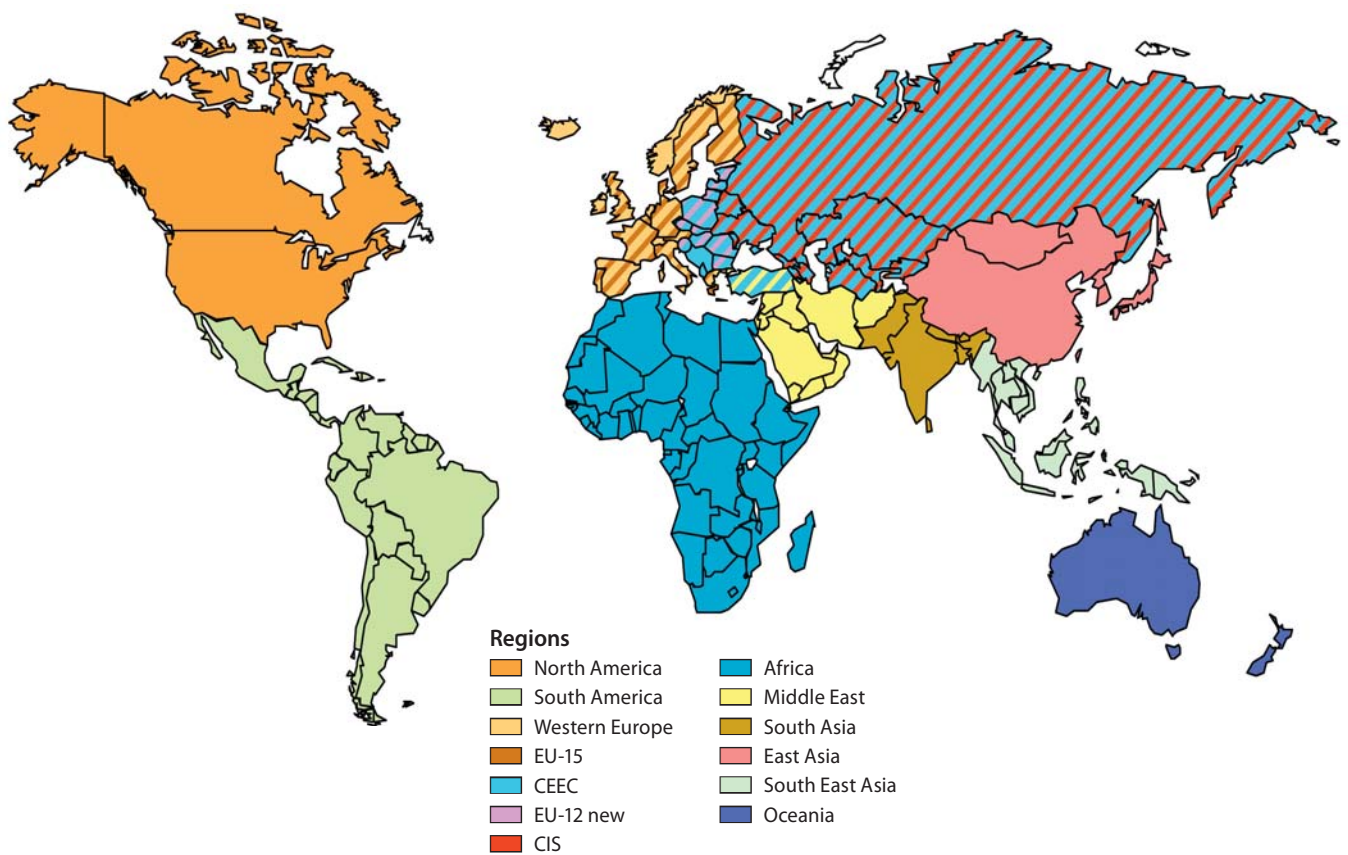
The milk output per farm is adjusted to 4 % fat, 3.3 % protein. Formula: ECM milk = (milk production \* (0.383 \* % fat + 0.242 \* % protein + 0.7832) / 3.1138). Source: DLG (2001), unpublished







Specifications of world regions



**Source:** Specification done by IFCN Dairy Research Center, Kiel, to group countries into meaningful aggregates. In some cases the aggregation does not follow the official geopolitical specification of world regions.

**Special cases:** CEEC: includes all former Soviet Union countries. South America: includes all Latin American countries.

## A.9 Exchange rates 1996-2012

Country	Currency	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	
Afghanistan	AFN	47.50	47.50	47.50	47.11	48.37	47.50	47.26	55.65	42.79	43.13	49.02	50.05	50.42	51.02	46.54	46.93	51.08	
Albania	ALL	101.56	147.71	152.44	138.64	144.82	145.87	145.44	126.34	106.80	102.93	102.91	92.57	85.62	96.68	105.88	102.68	110.10	
Algeria	DZD	54.75	57.72	58.72	66.58	76.83	78.96	82.02	79.81	74.15	74.39	75.18	70.25	65.84	74.15	75.45	73.58	78.16	
Argentina	ARS	1.00	1.00	1.00	1.00	1.00	1.00	1.00	3.11	2.99	2.96	2.93	3.09	3.13	3.17	3.74	3.92	4.13	4.56
Armenia	AMD	414.03	490.75	504.96	535.20	539.50	555.10	573.40	578.80	533.50	457.70	423.98	339.50	305.95	363.14	373.76	372.35	401.64	
Australia	AUD	1.28	1.35	1.59	1.55	1.73	1.93	1.84	1.54	1.36	1.31	1.33	1.19	1.19	1.28	1.09	0.97	0.97	
Azerbaijan	AZN	4,299.65	3,984.36	3,869.16	4,120.28	4,475.00	4,655.00	4,860.00	4,910.00	4,915.00	4,730.00	0.92	0.90	0.82	0.80	0.80	0.79	0.79	
Bangladesh	BDT	41.90	44.01	47.05	49.19	52.34	56.77	59.63	60.06	60.88	64.65	70.29	70.33	69.79	70.14	70.82	75.21	83.26	
Belarus	BYR	13,608	25,039	43,569	276,661	800	1,420	1,804	2,051	2,160	2,150	2,152	2,152	2,793	2,997	5,146	8,381		
Bolivia	BOB	5.09	5.26	5.52	5.79	6.12	6.52	6.89	7.43	7.63	8.16	8.27	8.05	7.37	7.16	7.16	7.14	7.13	
Brazil	BRL	1.00	1.08	1.16	1.82	1.83	2.38	2.97	3.12	2.93	2.43	2.18	1.93	1.84	2.01	1.77	1.68	1.96	
Bulgaria	BGN	179.45	1,645.66	1,753.92	2.18	2.18	2.18	2.07	1.73	1.58	1.57	1.57	1.43	1.34	1.41	1.48	1.41	1.52	
Cameroon	XAF	512.49	584.26	590.21	616.02	713.46	741.47	724.61	590.97	549.16	532.75	539.56	492.72	457.07	481.08	504.92	480.81	517.70	
Canada	CAD	1.36	1.38	1.48	1.49	1.49	1.55	1.57	1.40	1.30	1.21	1.13	1.07	1.06	1.14	1.03	0.99	1.00	
Chile	CLP	412.37	419.51	460.67	509.19	539.67	642.62	703.77	702.97	621.67	561.81	539.39	520.69	521.97	570.54	519.48	485.21	487.79	
China	CNY	8.31	8.29	8.28	8.28	8.28	8.28	8.29	8.29	8.29	8.20	7.98	7.60	6.94	6.84	6.78	6.47	6.32	
Colombia	COP	1,036	1,143	1,428	1,762	2,093	2,324	2,580	2,938	2,676	2,332	2,424	2,104	1,987	2,181	1,922	1,868	1,810	
Costa Rica	CRC	207.02	232.12	256.49	284.39	306.83	324.71	346.72	387.74	410.34	482.49	527.71	530.20	534.91	580.68	532.60	506.81	512.01	
Croatia	HRK	5.44	6.17	6.40	7.14	8.30	8.40	8.10	6.97	6.28	5.98	5.84	5.37	4.94	5.30	5.51	5.36	5.86	
Czech Republic	CZK	27.14	31.75	32.27	34.63	38.64	38.04	32.81	28.23	25.73	23.99	22.63	20.23	17.06	19.11	19.12	17.70	19.58	
Denmark	DKK	5.80	6.60	6.70	6.98	8.09	8.32	7.88	6.58	5.99	6.00	5.94	5.42	5.08	5.36	5.62	5.36	5.79	
Ecuador	USD	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Egypt	EGP	3.41	3.40	3.42	3.42	3.55	4.06	4.66	5.91	6.24	5.83	5.82	5.71	5.50	5.60	5.68	5.97	6.10	
Ethiopia	ETB	5.84	6.50	6.99	7.81	8.08	8.42	8.79	8.79	8.89	8.83	9.02	9.22	10.71	11.86	14.62	17.15	17.97	
Euro	EUR	0.77	0.87	0.90	0.94	1.09	1.12	1.06	0.89	0.81	0.80	0.80	0.73	0.68	0.72	0.75	0.72	0.78	
Hungary	HUF	149.45	186.85	214.49	237.40	282.89	286.59	258.08	224.50	202.93	199.94	210.83	184.02	172.80	202.63	208.22	201.26	225.38	
Iceland	ISK	66.80	71.10	71.20	72.40	78.90	97.69	91.67	76.78	70.26	62.92	70.10	63.66	88.55	125.04	124.87	116.25	125.27	
India	INR	35.44	36.34	41.29	43.06	44.95	47.23	48.68	46.66	45.34	44.12	45.32	41.08	43.80	48.86	45.94	47.23	53.75	
Indonesia	IDR	2,328	2,904	10,285	7,877	8,416	10,294	9,350	8,593	8,946	9,722	9,184	9,139	9,685	10,437	9,125	8,813	9,400	
Iran	IRR	1,585	2,399	3,297	4,195	5,094	5,992	6,890	7,900	7,900	8,283	9,492	9,524	9,641	10,050	10,205	10,728	12,329	
Israel	ILS	3.19	3.45	3.81	4.15	4.09	4.21	4.74	4.55	4.49	4.50	4.47	4.10	3.60	3.93	3.74	3.58	3.86	
Jamaica	JMD	36.09	34.39	36.02	38.57	42.55	45.60	47.72	53.48	57.41	66.35	65.76	69.53	74.32	89.92	88.17	86.80	89.72	
Japan	JPY	108.83	121.04	130.88	113.81	107.86	121.56	125.30	115.98	108.17	110.12	116.34	117.58	103.40	93.57	87.85	79.76	79.81	
Jordan	JOD	0.71	0.71	0.71	0.71	0.71	0.72	0.71	0.71	0.71	0.71	0.71	0.71	0.71	0.71	0.71	0.71	0.71	
Kazakhstan	KZT	67.87	75.63	78.64	119.83	142.31	147.55	150.77	151.91	140.81	134.17	130.59	125.41	122.38	149.63	149.46	148.74	151.38	
Kenya	KES	57.17	58.92	60.54	70.42	76.28	78.75	79.15	76.32	79.55	75.75	72.62	67.82	71.46	79.96	82.24	90.11	85.85	
Korea, Republic of	KRW	805	954	1,402	1,190	1,131	1,291	1,250	1,195	1,151	1,028	970	935	1,103	1,280	1,160	1,109	1,130	
Kyrgyzstan	KGS	12.80	17.36	20.77	39.02	47.72	48.45	46.94	43.72	42.67	41.01	41.44	39.96	36.57	42.96	45.98	46.17	47.01	
Latvia	LVL	0.55	0.58	0.59	0.59	0.61	0.63	0.62	0.57	0.54	0.56	0.56	0.51	0.49	0.51	0.54	0.51	0.54	
Lithuania	LTL	4.00	4.00	4.00	4.00	4.00	4.00	3.66	3.06	2.78	2.78	2.76	2.52	2.38	2.50	2.62	2.49	2.69	
Macedonia	MKD	49.84	57.41	58.27	60.83	70.27	72.35	68.72	57.35	52.14	52.11	50.31	45.52	42.37	44.66	46.77	44.57	48.28	
Malaysia	MYR	2.52	2.82	3.93	3.80	3.80	3.80	3.80	3.80	3.80	3.79	3.68	3.45	3.34	3.53	3.23	3.06	3.10	
Mexico	MXN	7.60	7.93	9.15	9.56	9.47	9.35	9.68	10.81	11.31	10.90	10.92	10.94	11.17	13.53	12.65	12.44	13.17	
Mongolia	MNT	466	514	819	990	1,069	1,096	1,103	1,121	1,120	1,120	1,135	1,170	1,166	1,441	1,356	1,260	1,356	
Morocco	MAD	8.71	9.53	9.62	9.91	10.64	11.32	11.07	9.69	8.97	8.96	8.91	8.22	7.80	8.15	8.49	8.15	8.71	
Nepal	NPR	55.20	56.93	61.76	68.42	71.01	76.00	80.42	78.18	74.86	73.99	75.24	68.31	70.82	78.62	74.37	75.76	86.28	
New Zealand	NZD	1.46	1.51	1.87	1.89	2.20	2.38	2.16	1.72	1.51	1.42	1.54	1.35	1.42	1.60	1.39	1.27	1.24	
Nigeria	NGN	81.86	82.19	86.46	96.00	105.14	116.95	126.40	133.07	133.56	132.10	132.44	128.22	120.15	150.92	152.81	157.40	160.07	
Norway	NOK	6.46	7.08	7.55	7.80	8.80	8.99	7.98	7.08	6.74	6.44	6.42	5.82	5.65	6.30	6.05	5.61	5.82	
Pakistan	PKR	36.00	41.08	48.73	51.40	53.94	62.63	62.26	59.89	60.01	59.74	60.25	60.78	70.73	81.75	85.91	86.99	94.04	
Panama	PAB	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.01	1.04	1.02	1.02	1.02	1.02	1.02	1.02	
Paraguay	PYG	2,038	2,165	2,690	3,112	3,485	4,054	5,561	6,367	5,861	6,246	5,843	5,172	4,434	5,071	4,849	4,286	4,530	
Peru	PEN	2.45	2.66	2.93	3.38	3.49	3.55	3.66	3.60	3.51	3.31	3.36	3.19	2.96	3.06	2.87	2.79	2.68	
Philippines	PHP	26.23	29.63	41.00	39.15	44.34	51.17	51.73	54.31	56.19	55.14	51.41	45.95	44.56	47.72	45.25	43.39	42.35	
Poland	PLN	2.70	3.28	3.49	3.97	4.35	4.10	4.07	3.89	3.65	3.24	3.11	2.77	2.41	3.13	3.02	2.97	3.26	
Romania	RON	0.31	0.72	0.89	1.54	2.17	2.93	3.41	3.41	3.34	2.94	2.82	2.43	2.53	3.06	3.19	3.05	3.47	
Russian Federation	RUB	5,134.28	5,786.85	10.22	24.98	28.17	29.19	31.39	30.70	28.82	28.29	27.19	25.49	24.87	31.86	30.43	29.45	31.16	
Saudi Arabia	SAR	3.75	3.75	3.75	3.75	3.75	3.75	3.75	3.75	3.75	3.75	3.75	3.75	3.75	3.75	3.75	3.75	3.75	
Serbia	RSD	4.92	5.00	8.99	10.92	11.61	48.31	63.53	57.68	58.96	67.07	69.36	59.50	56.18	68.02	78.11	73.76	88.40	
South Africa	ZAR	4.30	4.61	5.55	6.12	6.94	8.62	10.53	7.57	6.46	6.38	6.79	7.06	8.28	8.45	7.35	7.27	8.22	
Sri Lanka	LKR	55.31	58.98	64.91	70.77	76.92	89.61	95.78	96.55	101.24	100.59	104.29	111.19	108.62	115.20	113.30	110.72	127.79	
Sudan	SDG	1.04	1.58	1.98	2.50	2.56	2.56	2.56	2.58	2.59	2.47	2.29	2.07	2.12	2.36	2.36	2.69	3.57	
Sweden	SEK	6.71	7.64	7.95	8.27	9.17	10.33	9.72	8.08	7.35	7.47	7.38	6.74	6.59	7.66	7.21	6.49	6.78	
Switzerland	CHF	1.24	1.45	1.45	1.50	1.69	1.69	1.56	1.35	1.24	1.25	1.25	1.20	1.08	1.09	1.04	0.89	0.94	
Taiwan	TWD	27.46	28.72	33.50	32.32	31.26	33.99	34.58	34.48	33.47	32.20	32.56	32.89	31.56	33.07	31.56	29.51	29.66	
Tajikistan	TJS	0.29	0.56	0.78	1.24	1.83	2.37	2.76	3.06	2.97	3.12	3.30	3.44	3.41	4.14	4.38	4.61	4.76	
Thailand	THB</																		

**Countries**

AF	Afghanistan	KZ	Kyrgyzstan
AL	Albania	LK	Sri Lanka
AM	Armenia	LT	Lithuania
AR	Argentina	LU	Luxembourg
AT	Austria	LV	Latvia
AU	Australia	MA	Morocco
AZ	Azerbaijan	MK	Macedonia
BD	Bangladesh	MN	Mongolia
BE	Belgium	MX	Mexico
BG	Bulgaria	MY	Malaysia
BO	Bolivia	NG	Nigeria
BR	Brazil	NL	The Netherlands
BY	Belarus	NO	Norway
CA	Canada	NP	Nepal
CH	Switzerland	NZ	New Zealand
CL	Chile	PA	Panama
CM	Cameroon	PE	Peru
CN	China	PH	Philippines
CO	Colombia	PK	Pakistan
CR	Costa Rica	PL	Poland
CY	Cyprus	PT	Portugal
CZ	Czech Republic	PY	Paraguay
DE	Germany	RO	Romania
DK	Denmark	RS	Serbia
DZ	Algeria	RU	Russian Federation
EC	Ecuador	SA	Saudi Arabia
EE	Estonia	SD	Sudan
EG	Egypt	SE	Sweden
ES	Spain	SI	Slovenia
ET	Ethiopia	SK	Slovakia
FI	Finland	SY	Syria
FR	France	TH	Thailand
GR	Greece	TJ	Tajikistan
HR	Croatia	TM	Turkmenistan
HU	Hungary	TN	Tunisia
ID	Indonesia	TR	Turkey
IE	Ireland	TW	Taiwan
IL	Israel	UA	Ukraine
IN	India	UG	Uganda
IR	Iran	UK	United Kingdom
IS	Iceland	US	USA
IT	Italy	UY	Uruguay
JM	Jamaica	UZ	Uzbekistan
JO	Jordan	VE	Venezuela
JP	Japan	VN	Vietnam
KE	Kenya	YE	Yemen
KG	Kazakhstan	ZA	South Africa
KR	Korea, Republic of	ZW	Zimbabwe

**Currencies**

AFN	Afghanistan Afghani	MNT	Tögrög
ALL	Albanian Lek	MXN	Mexican Peso
AMD	Armenian Dram	MYR	Malaysian Ringgit
ARS	Argentine Peso	NGN	Nigerian Naira
AUD	Australian Dollar	NOK	Norwegian Kroner
AZN	Azerbaijan New Manat	NPR	Nepalese Rupee
AZN	Azerbaijan New Manat	NZD	New Zealand Dollar
BDT	Bangladeshi Taka	PEN	Peruvian Nuevo Sol
BGN	Bulgarian Lev	PHP	Philippine Peso
BOB	Bolvia Boliviano	PKR	Pakistan Rupee
BRL	Brazilian Real	PLN	Polish Zloty
BYR	Belarusian Ruble	PYG	Paraguay Guarani
CAD	Canadian Dollar	RON	Romanian New Lei
CHF	Swiss Franc	RSD	Serbian Dinar
CLP	Chilean Peso	RUB	Russian Rouble
CNY	Chinese Yuan Renminbi	SAR	Saudi Riyal
COP	Colombian Peso	SDG	Sudanese Pound
CRC	Costa Rican colón	SEK	Swedish Krona
CZK	Czech Koruna	SYP	Syrian Pound
DKK	Danish Krone	THB	Thai Baht
DZD	Algerian Dinar	TJS	Tajikistani Somoni
EEK	Estonian Kroon	TMT	Turkmenistan New Manat
EGP	Egyptian Pound	TND	Tunisian Dinar
ETB	Ethiopian Birr	TRY	Turkish Lira
EUR	European Euro	TWD	Taiwan Dollar
GBP	British Pound	UAH	Ukraine Hryvnia
HRK	Croatian Kuna	UGX	Uganda Shilling
HUF	Hungarian Forint	USD	US Dollar
IDR	Indonesian Rupiah	UYU	Uruguayan Peso
ILS	Israeli New Shekel	UZS	Uzbekistan Som
INR	Indian Rupee	VEF	Venezuelan bolívar
IRR	Iranian Rial	VND	Vietnamese Dong
ISK	Iceland Krona	XAF	Central African CFA frank
JMD	Jamaican Dollar	YER	Yemeni Rial
JOD	Jordanian Dinar	ZAR	South African Rand
JPY	Japanese Yen		
KES	Kenyan Shilling		
KGS	Kyrgyzstani Som		
KRW	South Korean Won		
KZT	Kazakhstan Tenge		
LKR	Sri Lanka Rupee		
LTL	Lithuanian Litas		
LVL	Latvian Lats		
MAD	Moroccan Dirham		
MKD	Macedonian Denar		

**Others**

bn	Billion	kg	Kilogram
CEEC	Central and Eastern European Countries	l	Litre
CIS	Commonwealth of Independent states	LCA	Life cycle assessment
CPI	Consumer price index	LP	Linear Programming
DM	Dry matter	ME	Milk Equivalent
DMI	Dry matter intake	MILC	Milk Income Loss Contract (US national program to support low milk prices)
ECM	Energy corrected milk 4% fat, 3.3% protein	mill	Million
EU	European Union	NDF	Neutral detergent fiber
FAO	Food and Agricultural Organisation of the United Nations	ROI	Return on investment
GHG	Greenhouse gas (emissions)	SMP	Skim milk powder
h	Hour	t	Metric tons
ha	Hectare	TIPI-CAL	Technology Impact and Policy Impact Calculations
HF	Holstein Friesian	UHT	Ultra High Temperature (milk)
HH	Household	US-\$	US Dollar
IFCN	International Farm Comparison Network	USDA	United States Department of Agriculture
IMF	International Monetary Fund	VAT	Value added tax
IPCC	Intergovernmental Panel on Climate Change	WMP	Whole milk powder
		Xa	Xa region in Chile

**Farm Codes**

++	Farms better managed than average
bio	Organic
BR-PR	Brazil-Paraná
C	Central
CN-BE	China-Beijing
CN-HJ	China-Heilongjiang
E	East
ES-CN	Spain-Center North
FR-MC	France-Massif Central
ID-JA	Indonesia-Jabung
ID-NG	Indonesia-Ngatang
N	North
NW	North West
S	South
SE	South East
SW	South West
MX-To	Mexico-Torreon
US-NY	US-New York
US-WI	US-Wisconsin
US-CA	US-California
US-ID	USA-Idaho
W	West



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### Photography

Pictures in the IFCN Dairy Report 2013 were taken mainly by the members of the IFCN Dairy Research Center in Kiel or researchers participating in the IFCN. The portrait of Torsten Hemme on page one was taken by Ute Boeters. The cover picture and the pictures shown in Annex 4 demonstrate the IFCN exercise to get a new perspective on a topic by looking through orange sunglasses.



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# Partners of the IFCN Dairy Network

Dairy researchers representing 95 countries

## Institutional partners



## Agribusiness partners

### Milk processing



### Milking and barn equipment



### Health and hygiene



### Feed



### Farm machinery



### Genetics for animal & plants



### Other branches of the dairy chain

