

The Cost of Milk Production Worldwide and Global Trends

Results of the IFCN Dairy Report 2019

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The IFCN Network Approach – 3 pillars



Mission: We help people in the dairy world with dairy data, knowledge and inspiration to make better decisions.

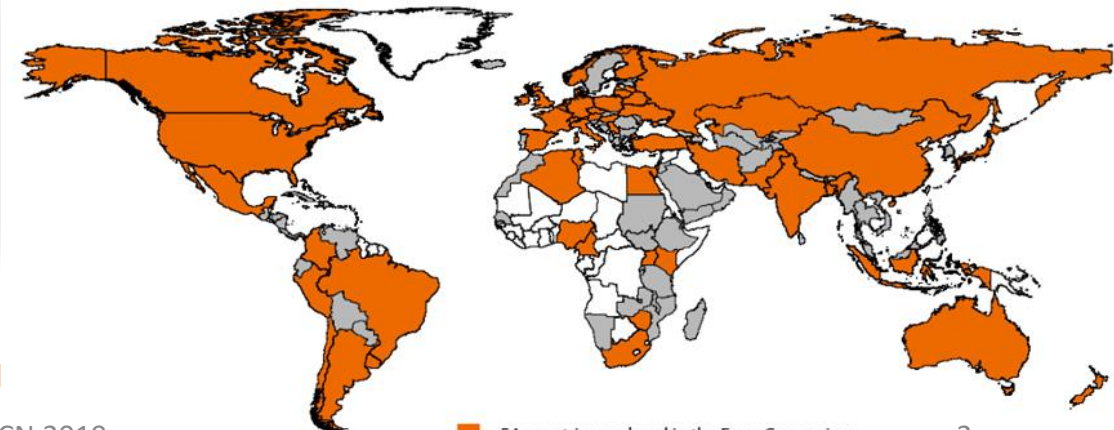
Network of Researchers, dairy economists



Network of Supporters
(companies & organizations of the dairy industry)



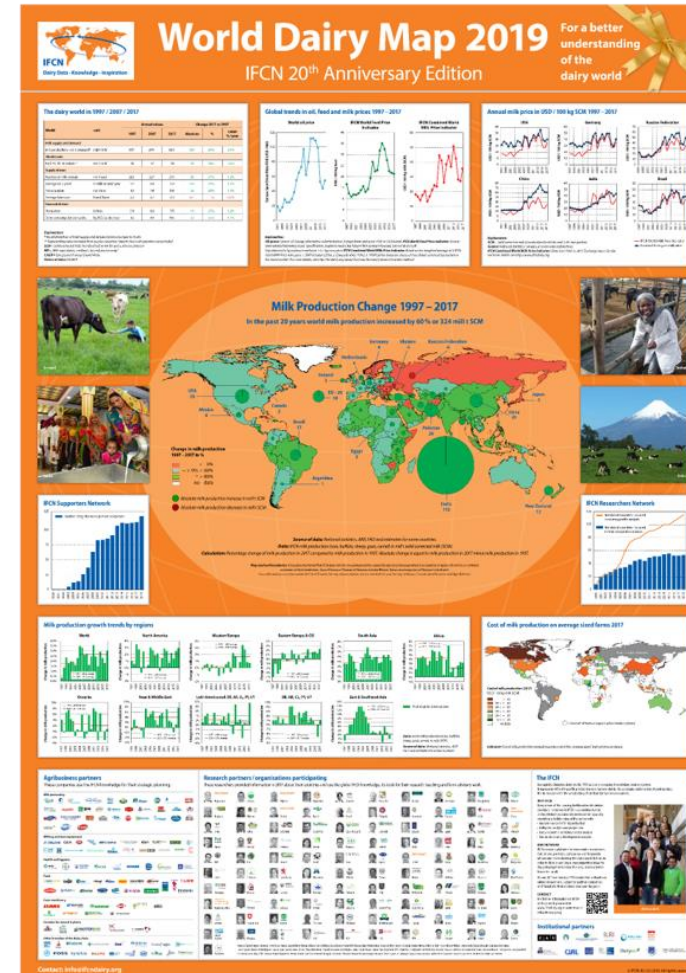
IFCN Research Center in Kiel



54 countries analysed in the Farm Comparison
62+ countries participated in the Country Pages

Agenda

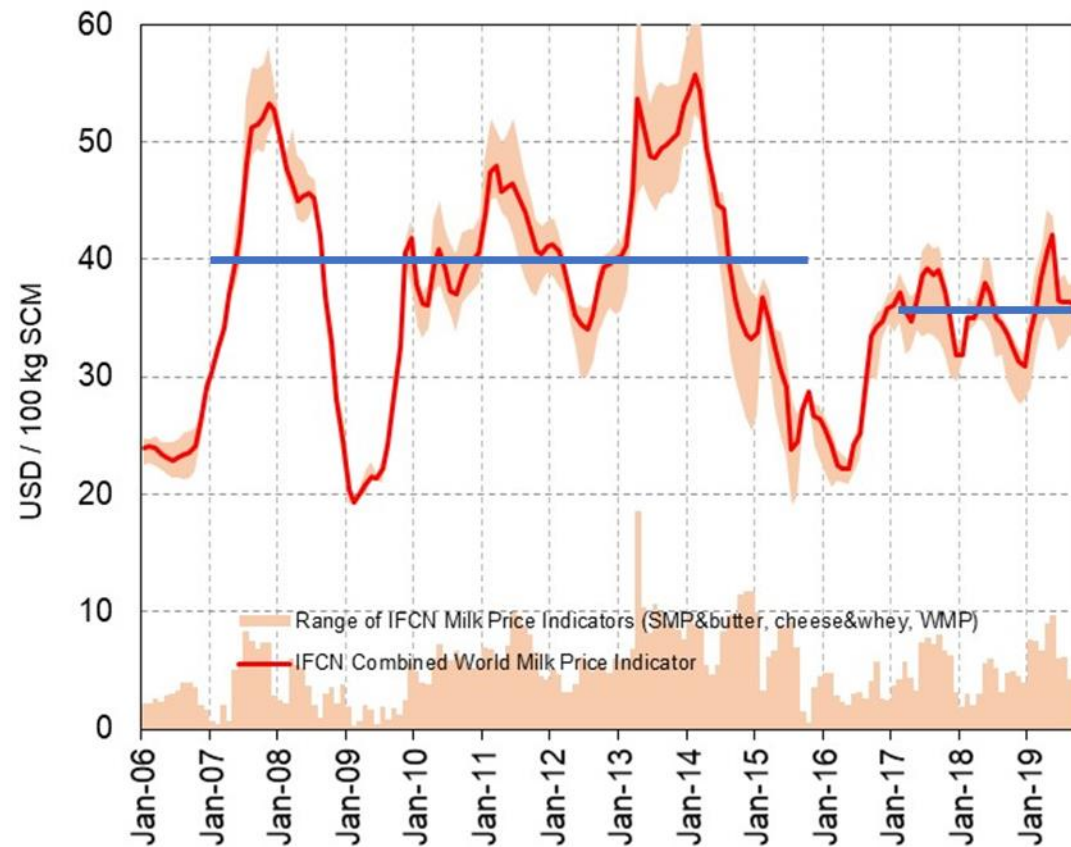
1. Milk prices
2. Status of the world
3. Dairy farm structure
4. Dairy farm economics
5. Outlook and summary



The World Milk Price



IFCN World Milk Price Indicator



The **IFCN World Milk Price Indicator** is based on

- Skim milk powder & butter (~32%)
- Cheese & whey (~51%)
- Whole milk powder (~17%)

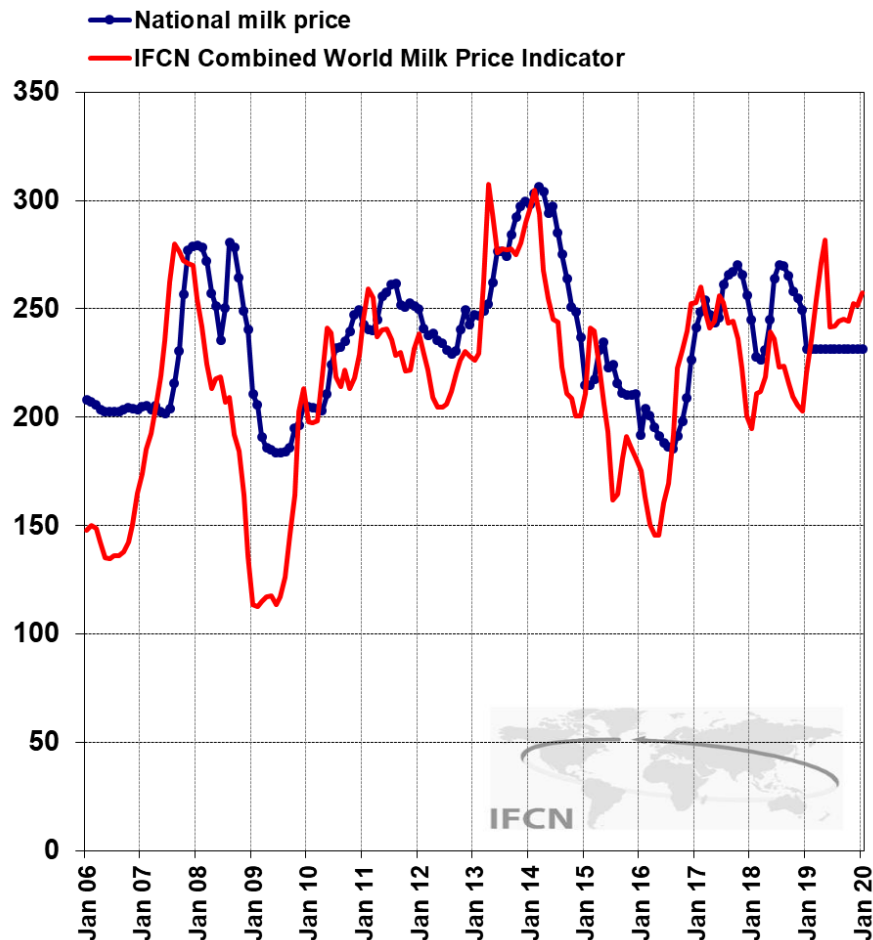
Long-term average: 40 USD/100 kg SCM, but with a high volatility

Last 4 years: average of 36 USD/100 kg SCM, but relatively stable

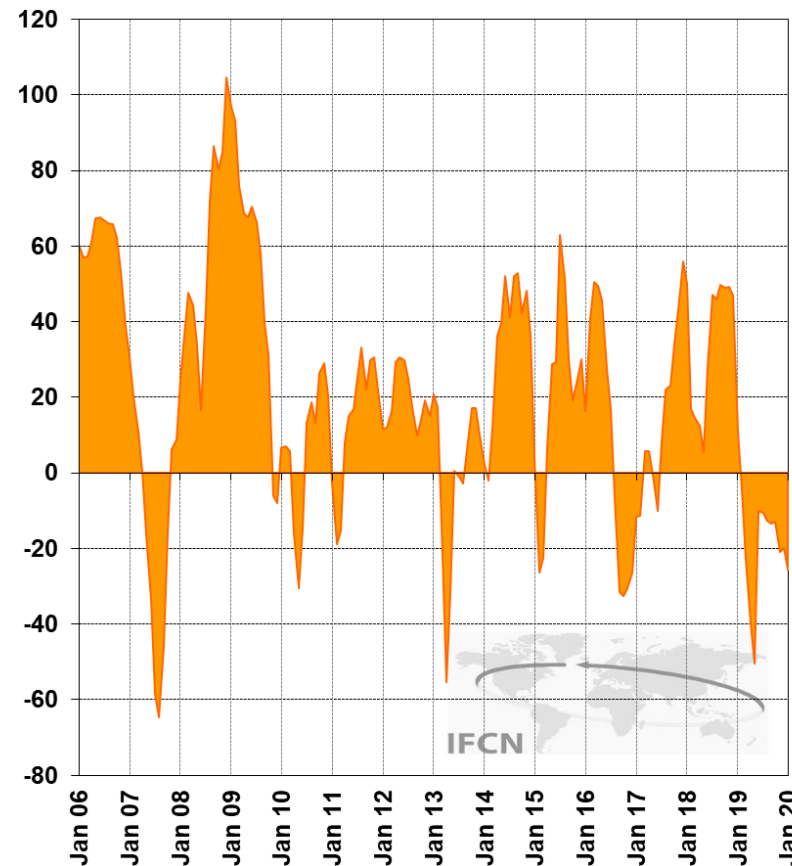


Relation of World Milk Price to the Danish Milk Price

Milk prices in DKK/100 kg SCM



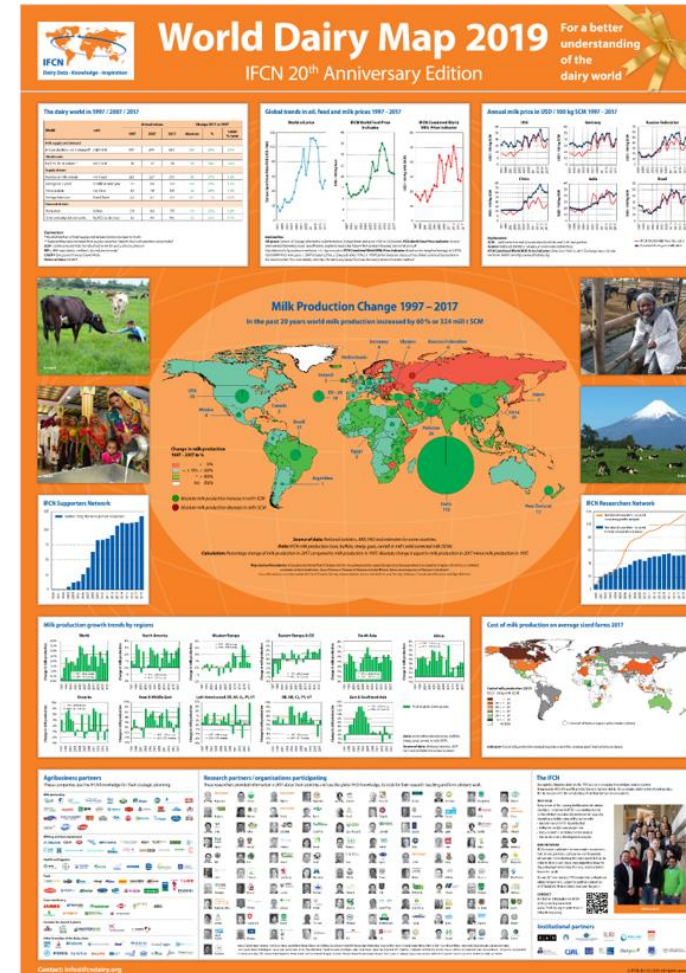
Difference of Danish milk price to IFCN World Milk Price
In DKK/100 kg SCM



- The world milk price influences the national milk price
- The Danish milk price follows the tendency of the world milk price with a time lag
- The national milk price is often, but not always, above the world milk price
- Once you observe the world milk price development you will know what will happen in your country

Agenda

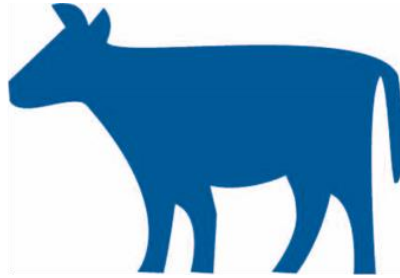
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The Dairy World Today – 2018 vs 1998



7 t milk produced per farm
(+34 %)



372 mill dairy cows
and buffalos
(+26%)



2.3 t / milk/ animal/ year
(+29%)

+321 mill t SCM more milk
(+ 63%)

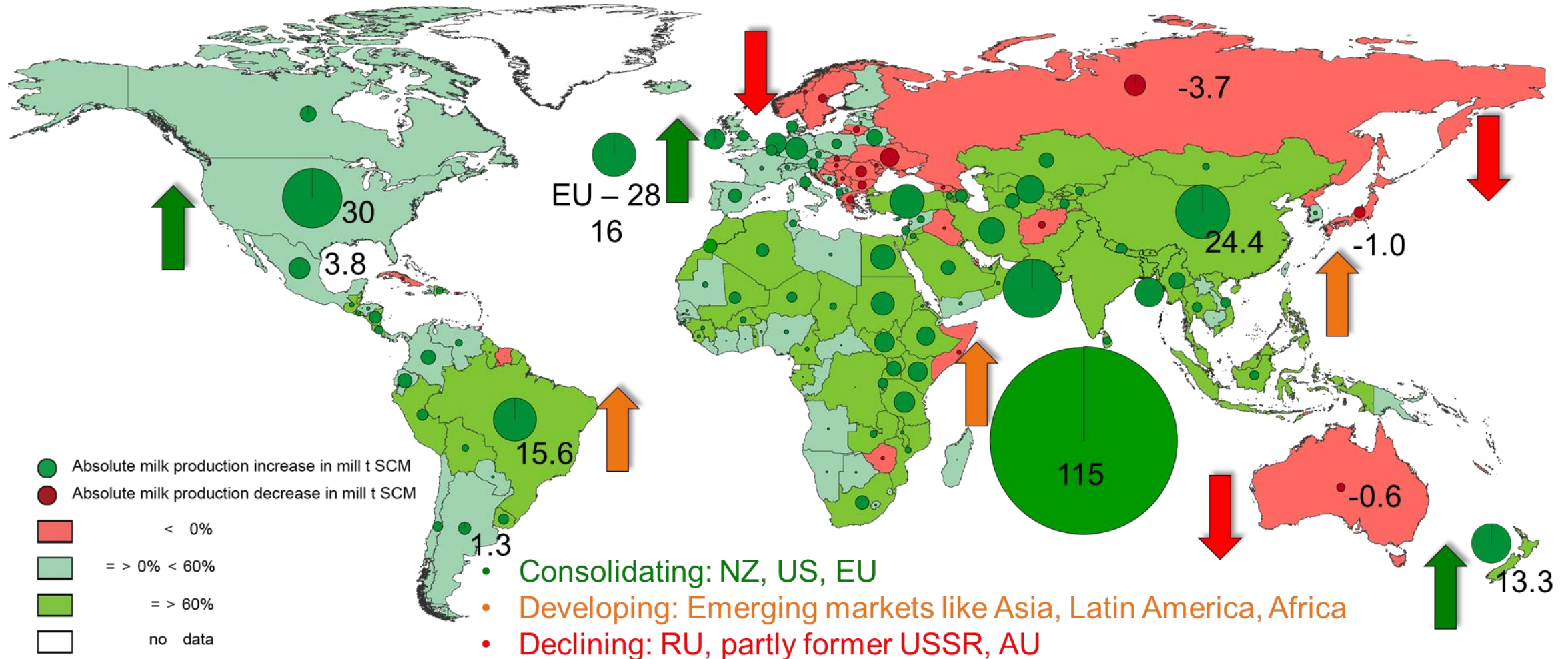


116 kg ME/capita **milk consumed**
(+26%)

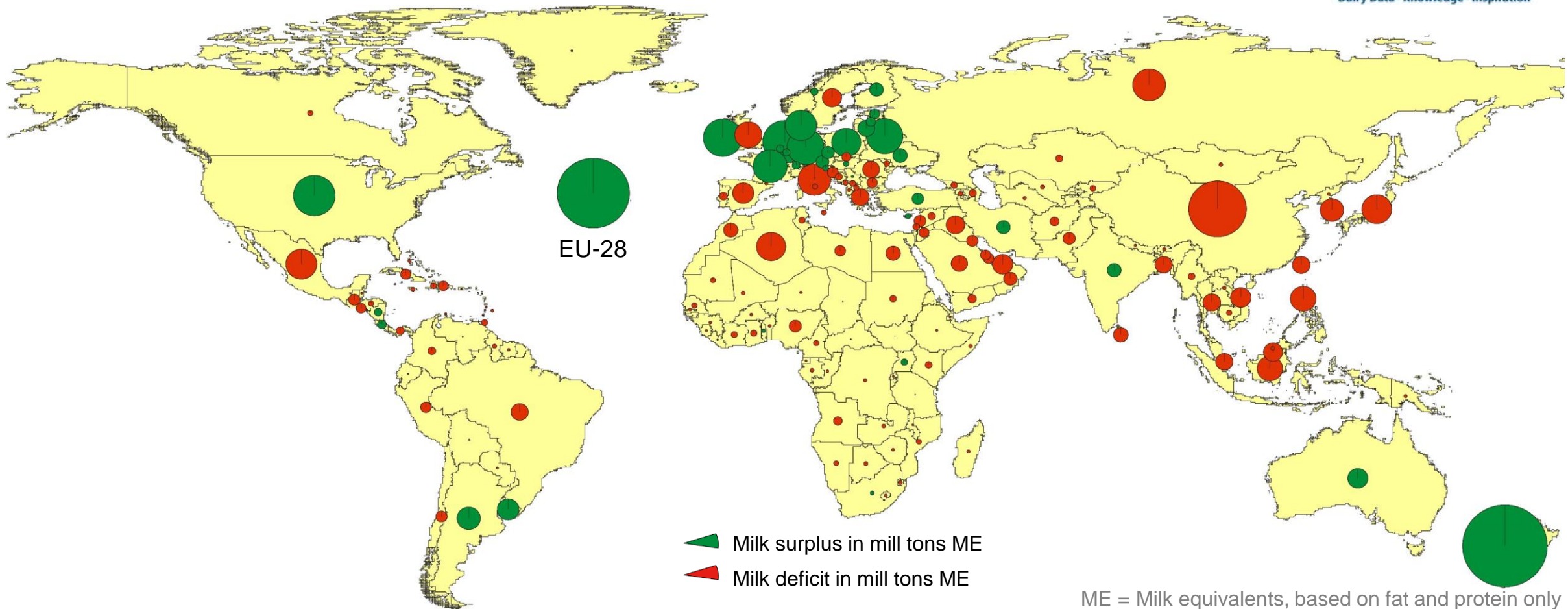


57 mill t ME **milk traded (excl. EU-intra trade)**
(+100%)

Global Dairy Supply 2018 vs 1998



Milk Deficit and Surplus



- New Zealand and the EU-28 provide ~70% of the milk on the world market (excl. EU intra trade)
- The main dairy importing regions demand 62% of the dairy available on the world market: Near and Middle East, North Africa, East and South East Asia, Russia and Mexico

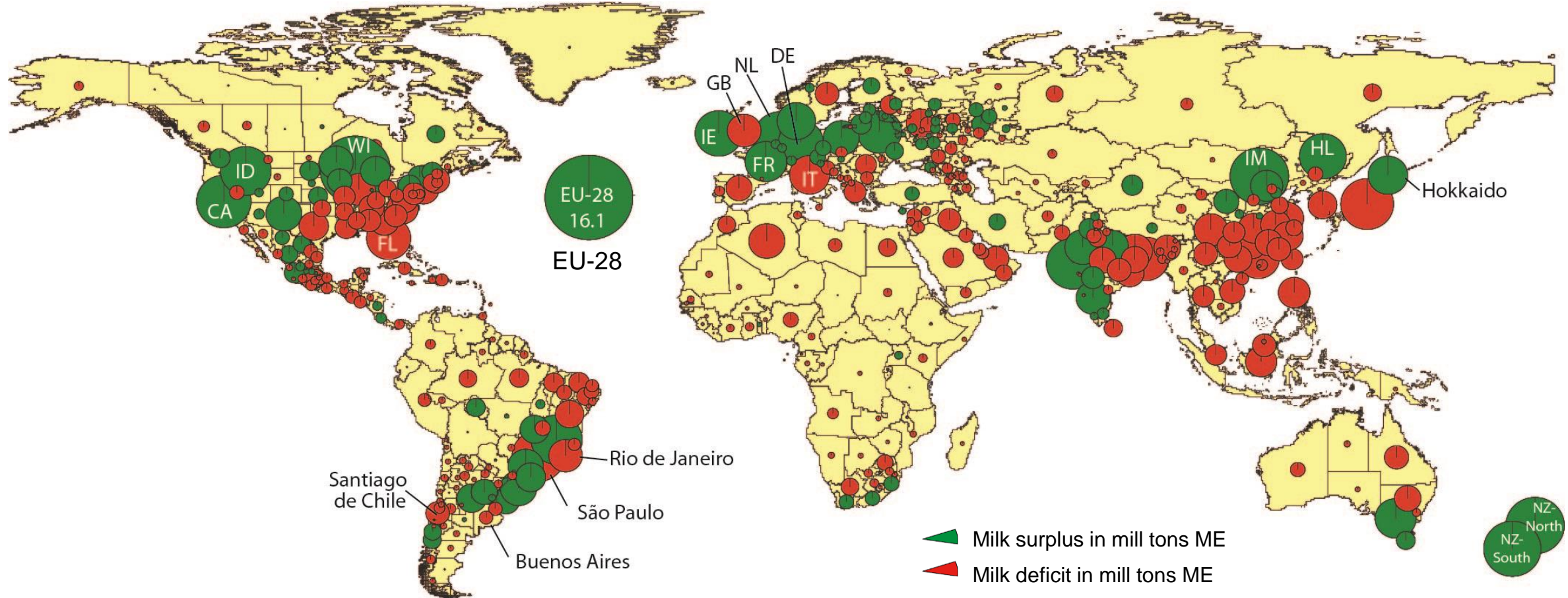
Source: D3.2 - Dairy Sector Analysis with IFCN Long-term Dairy Outlook 2040, status 3/2019

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Regional Milk Surplus and Deficit 2018

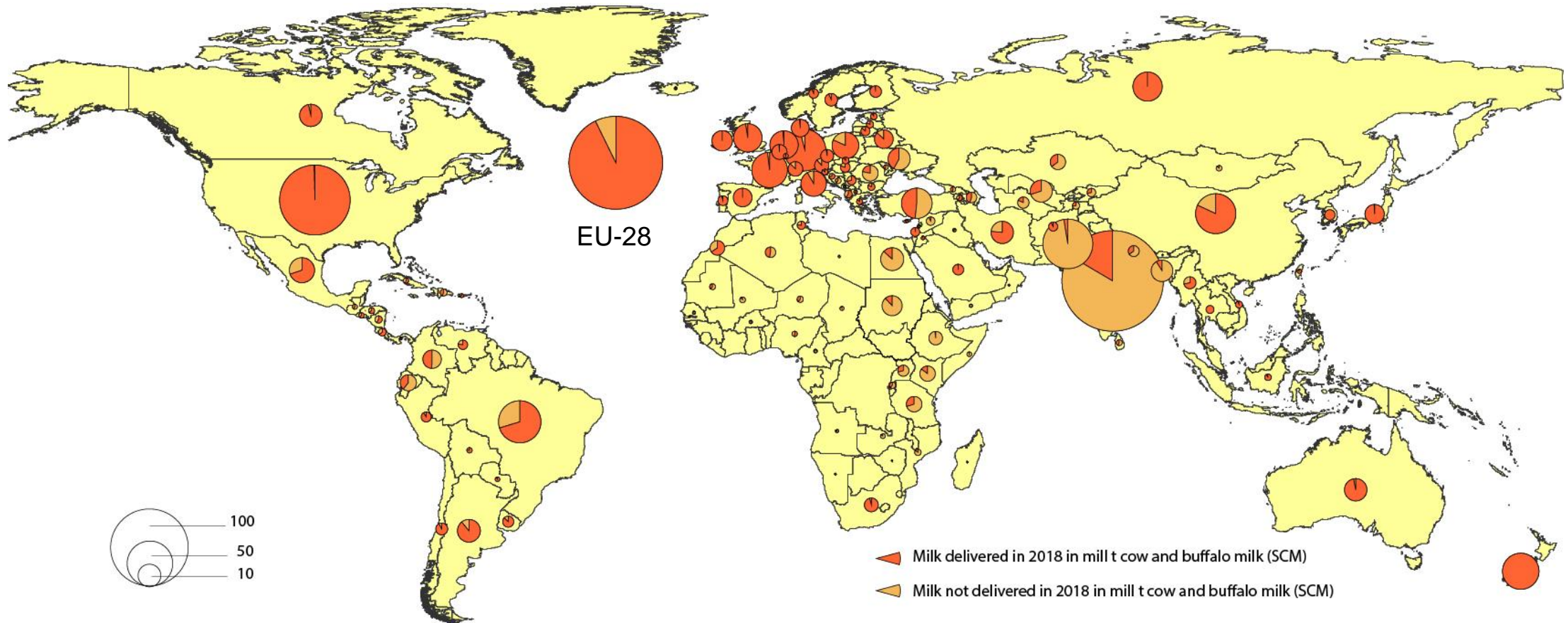
Milk surplus and deficit in mill t Milk equivalents



Source: D3.2 - Dairy Sector Analysis with IFCN Long-term Dairy Outlook 2040, status 3/2019

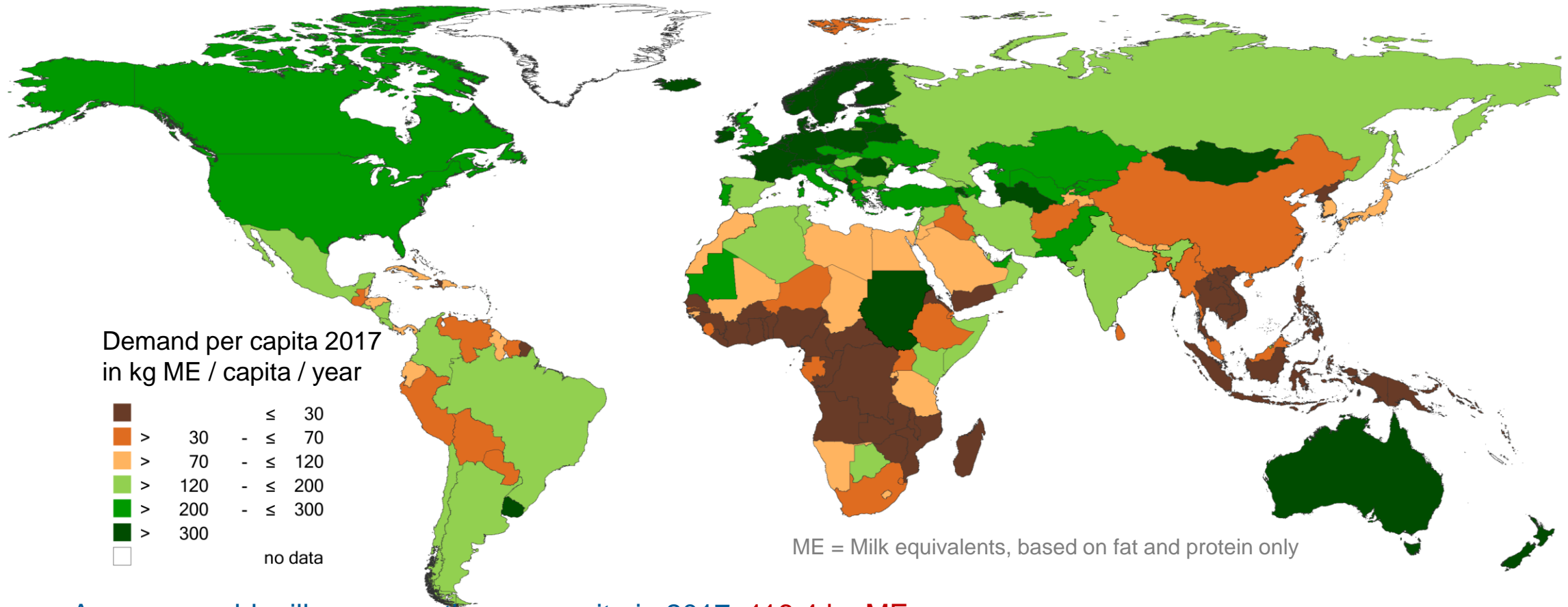
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Status of Milk Production and Delivery



- ~60% of world milk production (cow and buffalo) is delivered to dairies
- India, China and Pakistan produce 32% of world milk, however only 34% of that milk is delivered
- The EU-28, the USA and Oceania produce 35% of world milk and deliver 97% of that milk to dairies

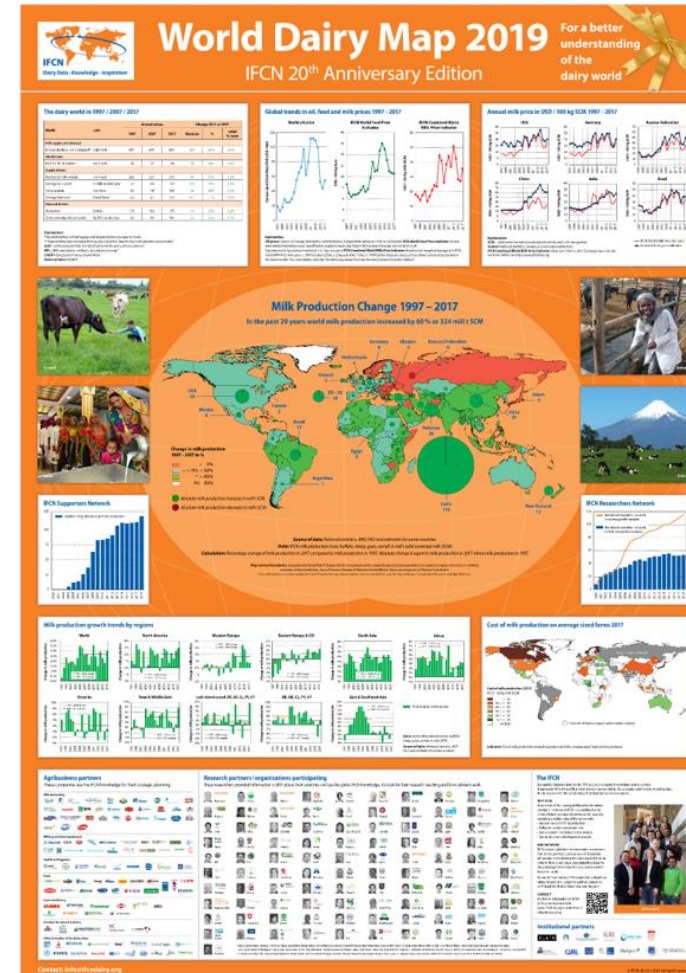
World Milk Demand 2017



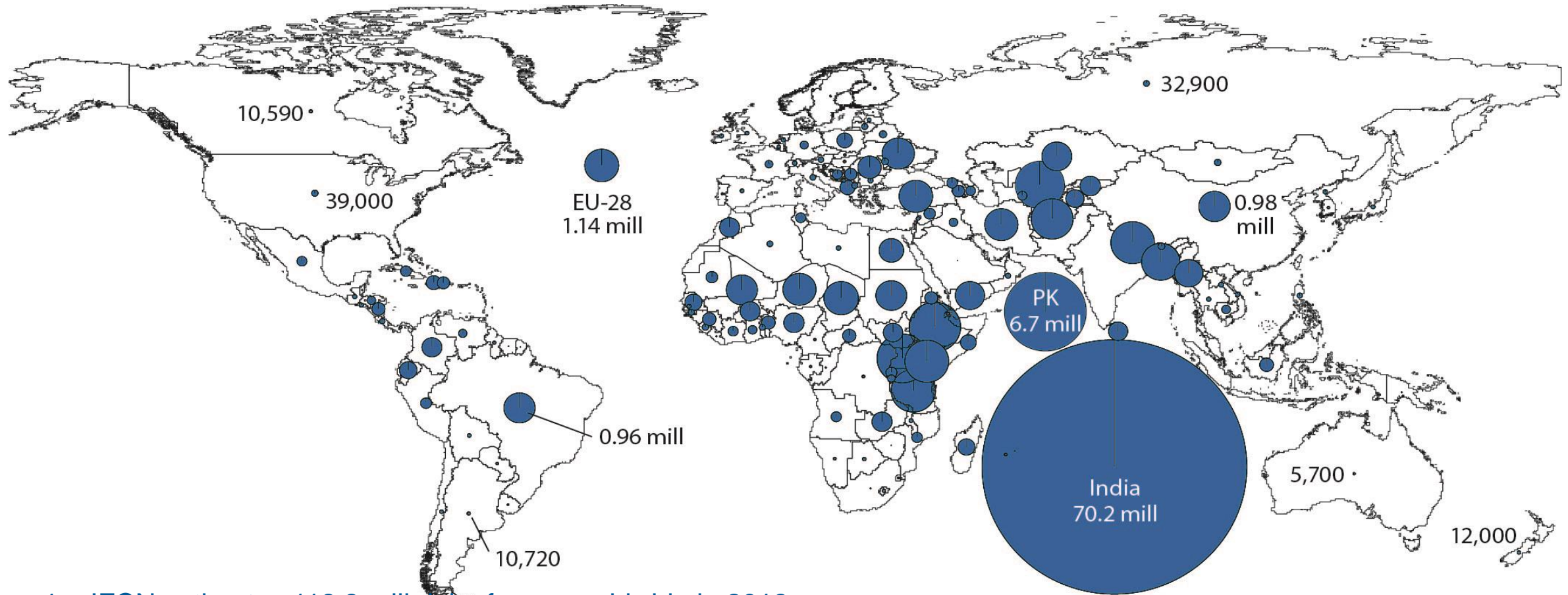
- Average world milk consumption per capita in 2017: **116.4 kg ME**
- China and India make up 36% of world population, average Indian consumes 4 times more than Chinese
- Highest consumption in Western Europe - **323 kg ME**, lowest in East and Southeast Asia - **22 kg ME**

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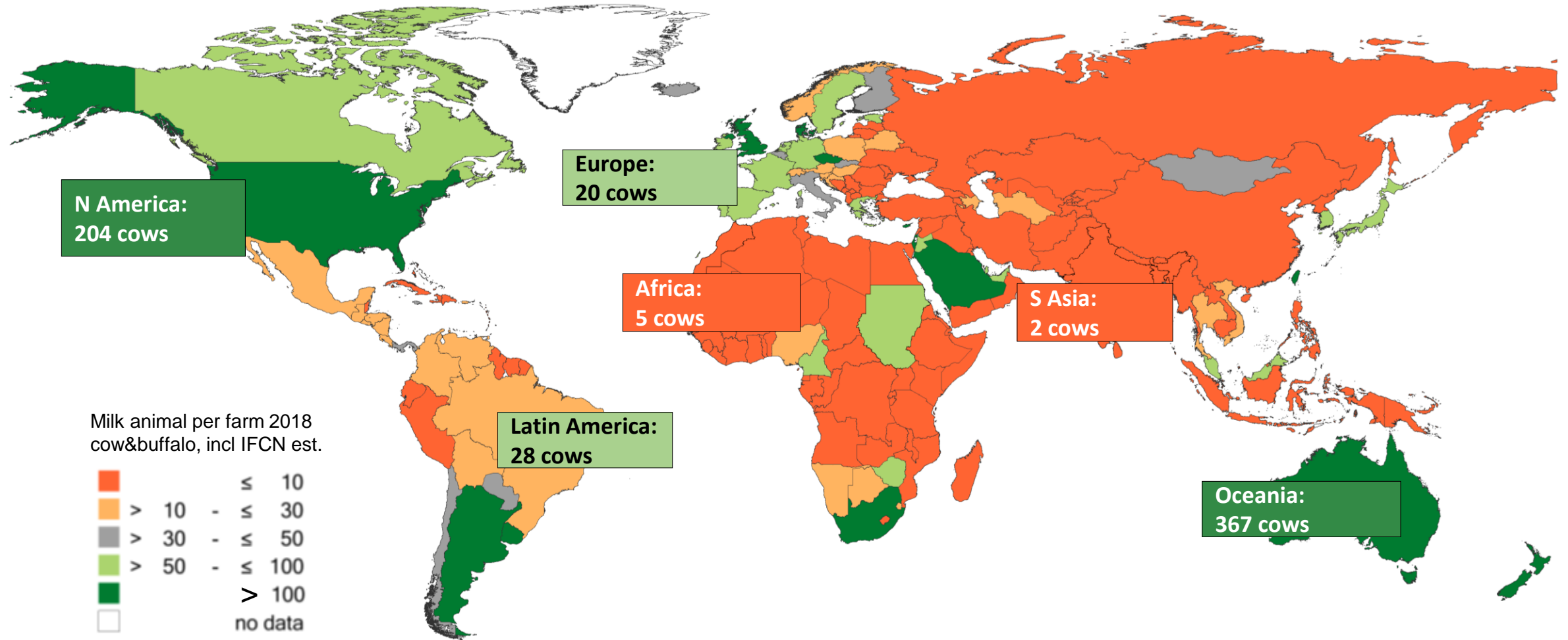


Dairy Farm Numbers in the World - 2018



1. IFCN estimates 118.3 mill dairy farms worldwide in 2018
2. The number of dairy farms worldwide has decreased at -1.1% per annum since 2013
3. India is the country with the highest number of farms and represents about 70% of all household farms world-wide

Average Farm Size per Country

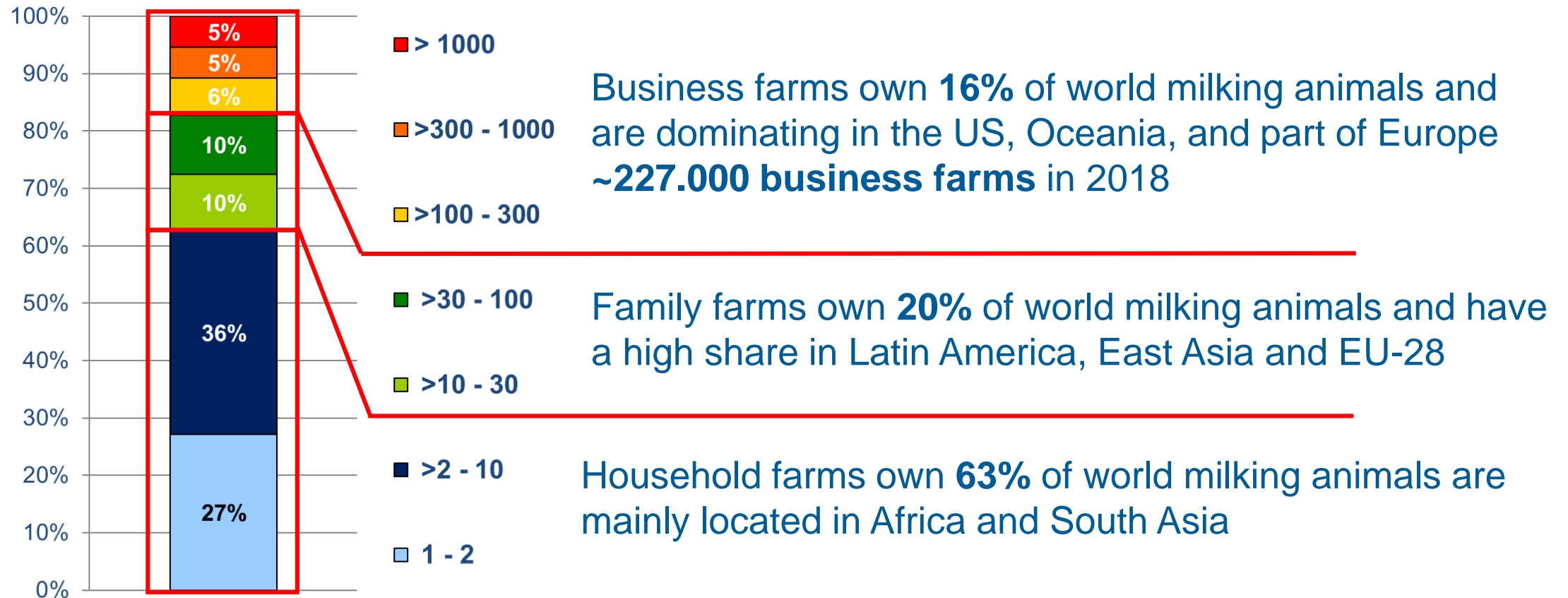


Farm Structure Status in 2018

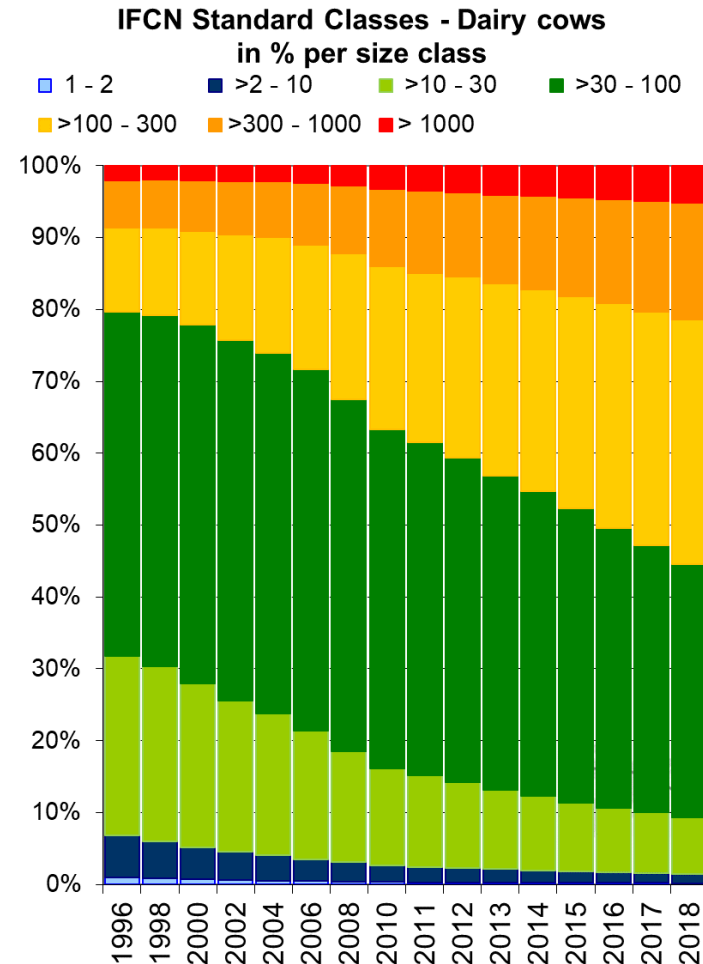
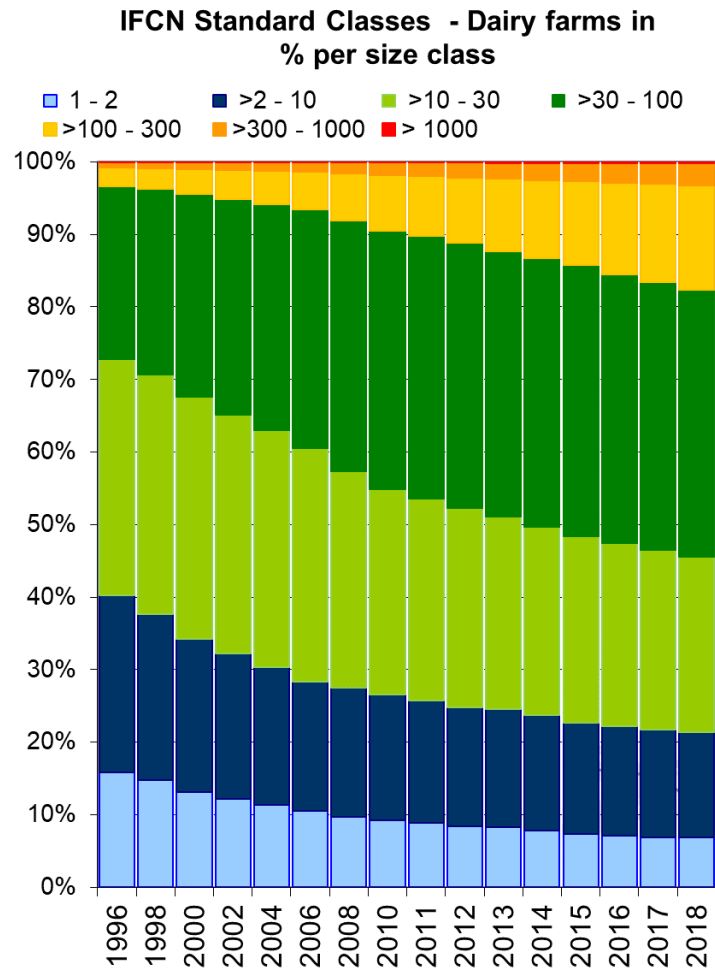
IFCN Farm structure database > 90 countries



IFCN Standard Classes – World dairy animals in % per size class

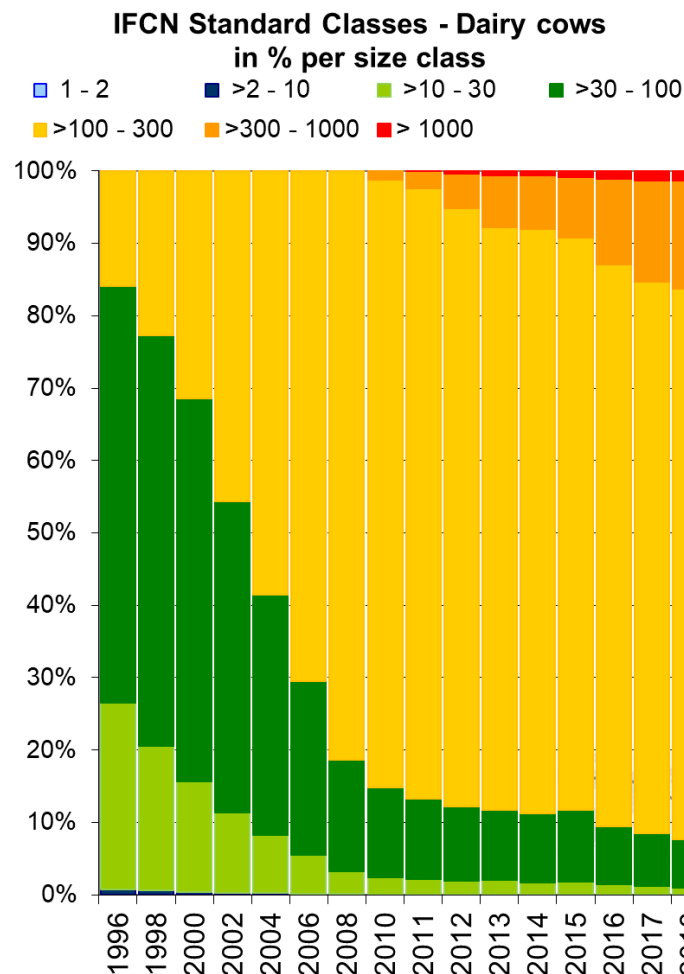
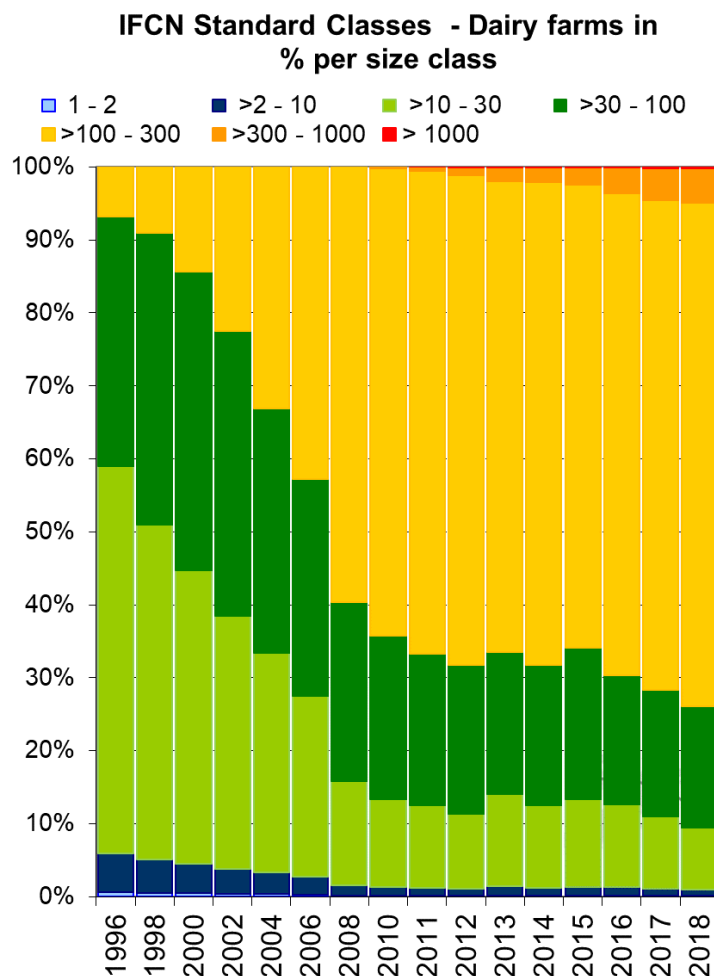


Farm Structure in Western Europe



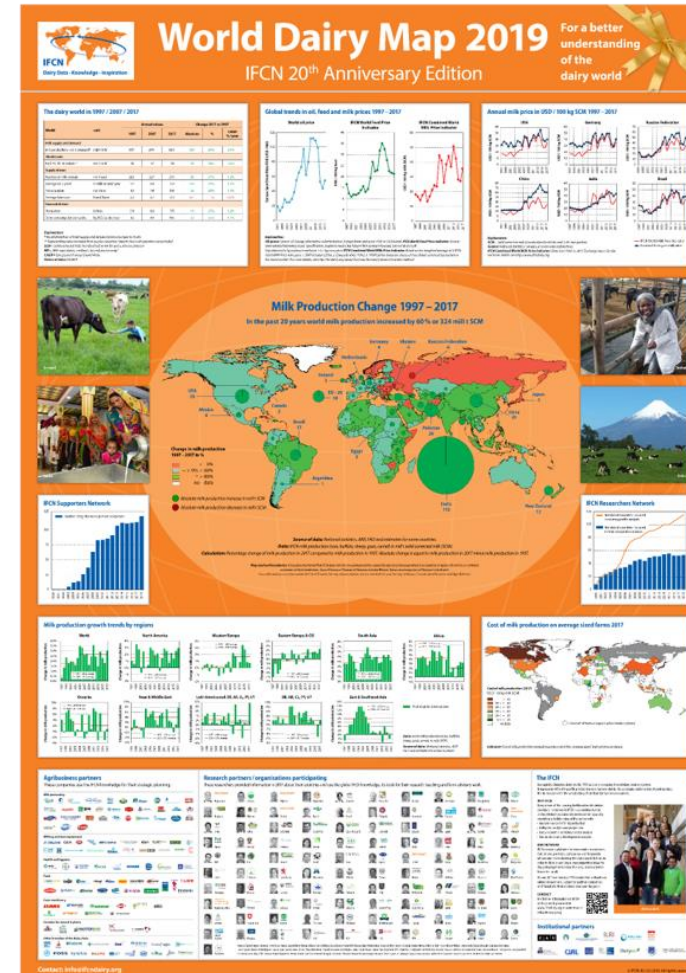
- Although there are still ~20% of all farms with <10 cows, these do not contribute to the milk production in W-Europe anymore.
- Fastest growing farm size: 100 – 300 cows
- ~55% of all cows are on farms with >100 cows
- Already ~5% of all cows are kept on farms with >1000 cows

Farm Structure in Denmark



- Denmark is the country with the highest average cow number in Western Europe (>200 cows/farm)
- Nearly 75% of all cows are on farms with 100 – 300 cows (large family farms)
- Farms with >300 cows have appeared over the last 10 years

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Farm Comparison Analysis Done 2018



What? Detailed comparison of farms annually from 2000 onwards

Why? Estimation of competitiveness and future dairy trends

How? Method

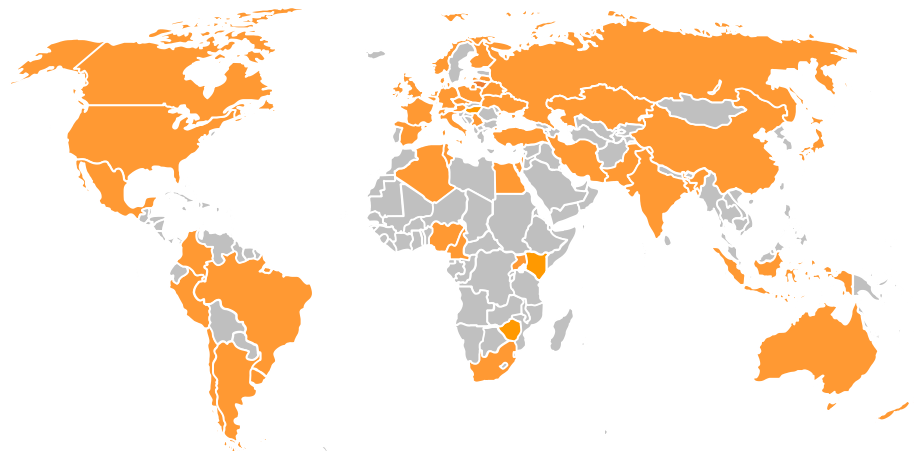
- a) Typical farm concept
- b) Model TYPICAL
- c) Validation loops & Quality check

How to use?

Milk processor: Where to source milk; sustainability of the farms in a region

Farm input companies: Economic situation of the farms in different regions and behaviour in the future

Participating countries 2018



Details of analysis

No. of typical farm types: 178

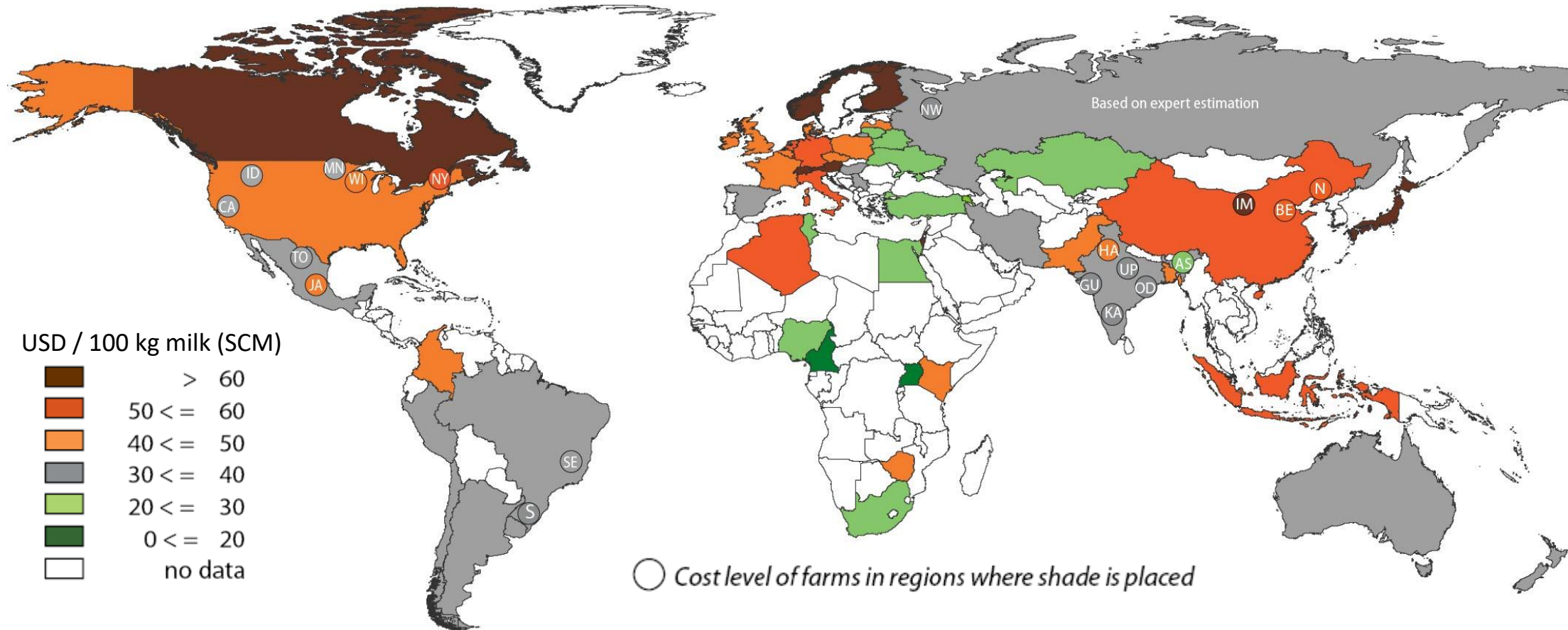
Example: NZ-408= Farm with 408 cows

Time period: Calendar year 2018

Coverage: 54 countries; 89 % production

Cost of Milk Production - 2018

On average sized typical farms in USD/100 kg milk (SCM*)



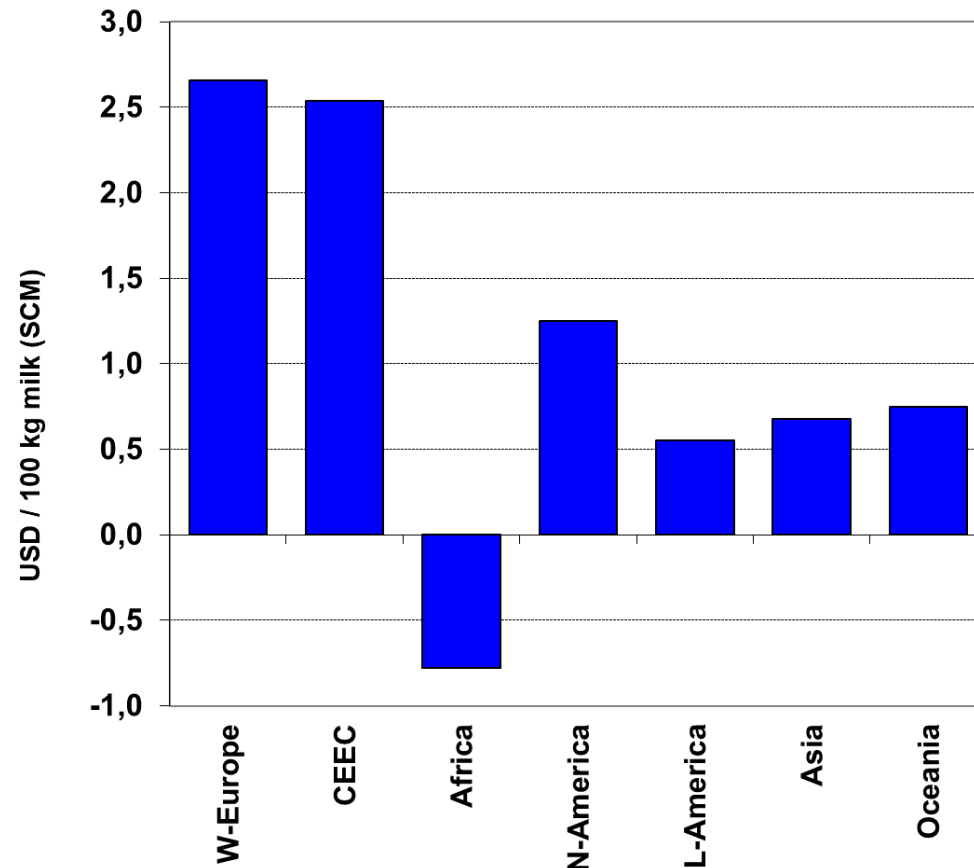
Low cost (< 30 USD): New Zealand, Ukraine, Argentina, Uruguay, Peru, South Africa

Moderate (30 – 50 USD): Australia, parts of Latin America, parts of Europe, US, South Asia

High cost (>50 USD): Canada, Japan, Switzerland, Scandinavia, China

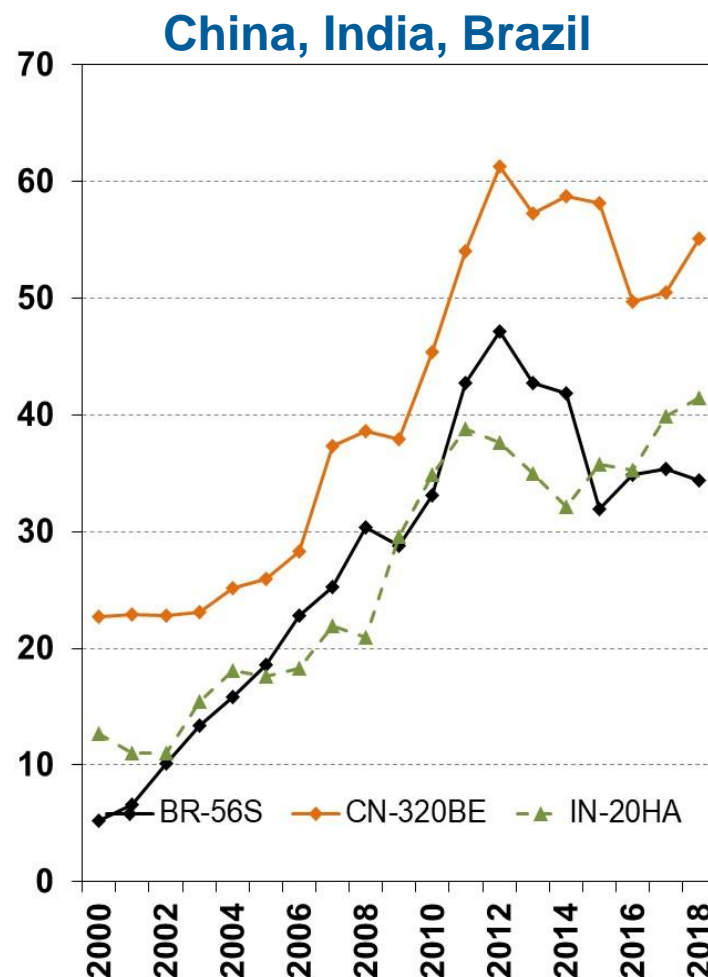
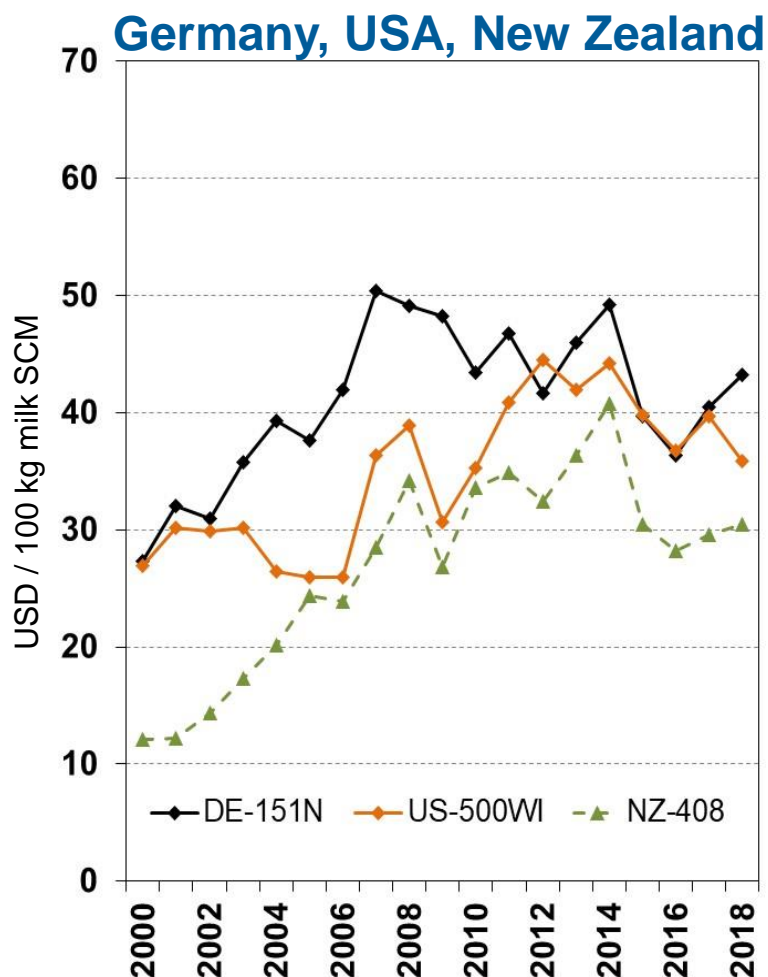
Change in Cost of Milk Production 2018 vs 2017

Cost of milk production 2018 vs 2017



- **Average:** Increase +1.1 USD/100 kg milk
- **EU / CEEC:** Increase approx. +2.6 USD/100 kg milk
Drivers: investments after the crisis 2016
- **Oceania:** Increase +0.8 USD/100 kg milk
Drivers: more spending because of the high milk price
- **North America:** Increase +1.3 USD/100 kg milk
Drivers: mainly feed price
- **Latin America:** Increase +0.6 USD/100 kg milk
Drivers: exchange rate, inflation rate
- **Asia:** Decrease -0.8 USD/100 kg milk
Drivers: labour, feed

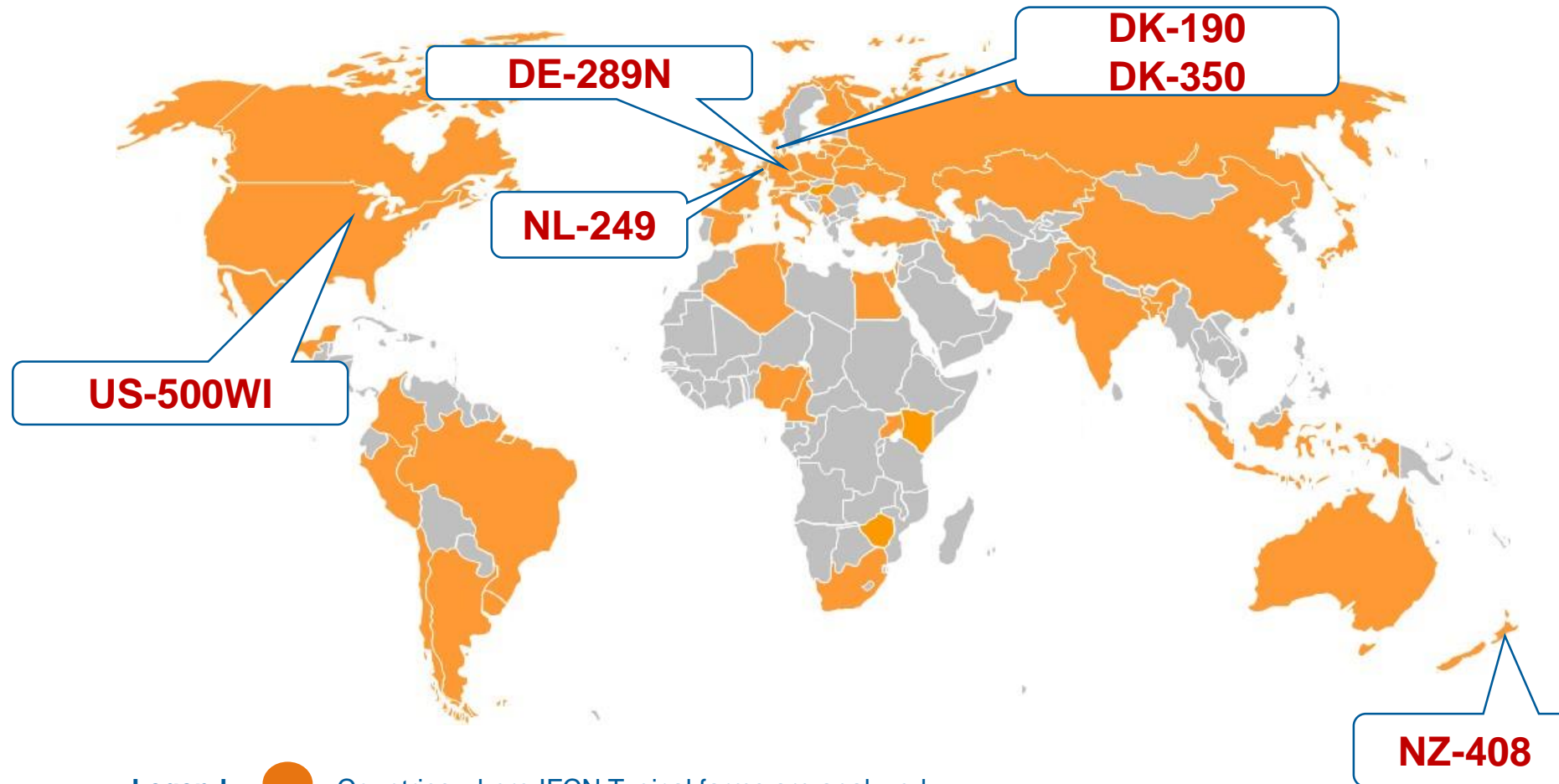
Cost Trend Analysis of Typical Farms



Drivers of cost competitiveness trends:

- Costs doubled or tripled over the last 18 years
- Currency developments
- Farm structural changes
- Farm input costs (feed, labour)

Examples out of 178 Typical Farm Types in 54 Countries



Legend: ● Countries where IFCN Typical farms are analyzed

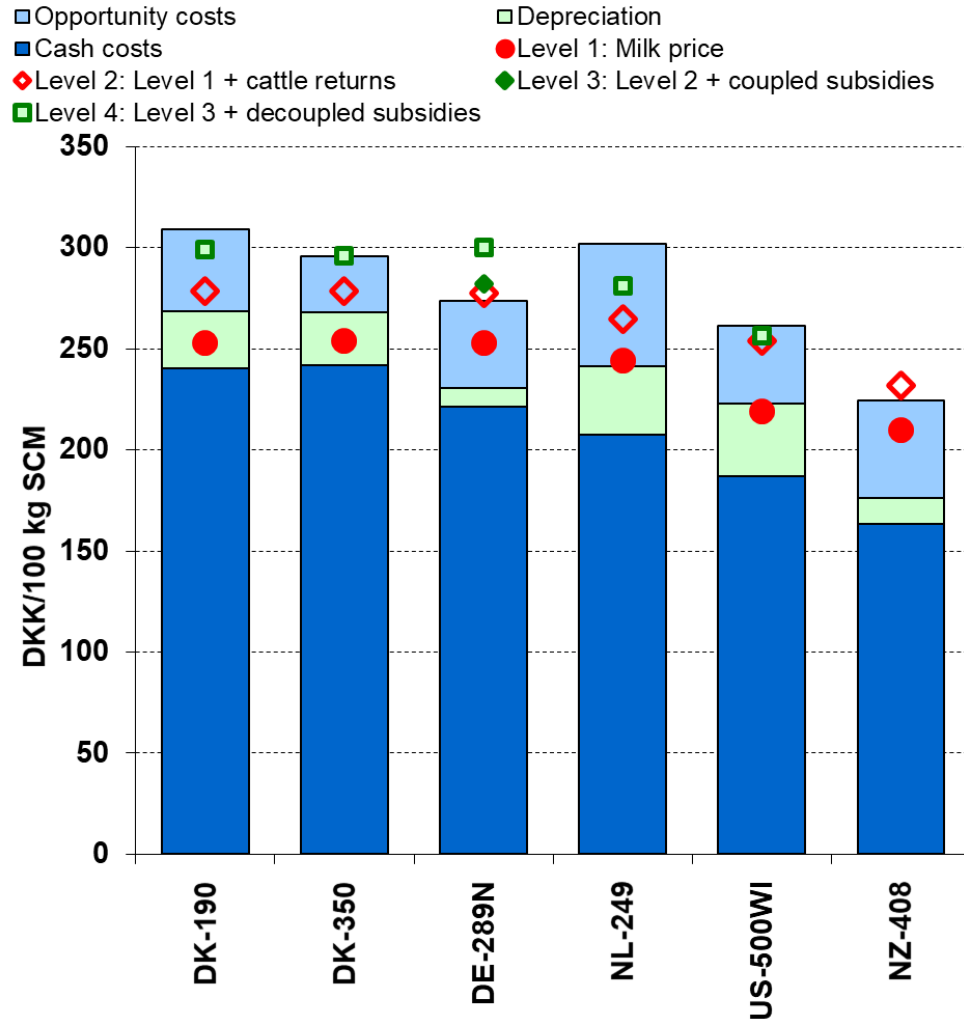
DE-289N: Typical German dairy farm with a herd size of 289 cows in the northern part of the country

Farm Description



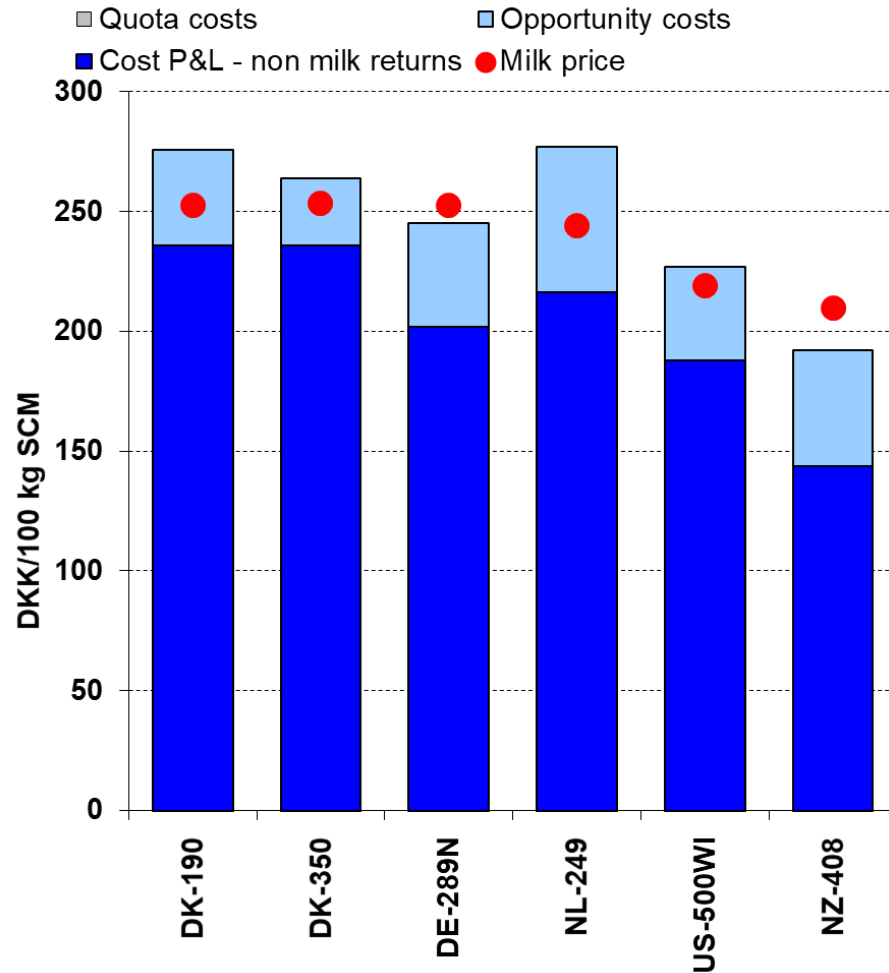
	DK-190	DK-350	DE-289N	NL-249	US-500WI	NZ-408
	Jutland	Jutland	SH - North		Wisconsin	Waikato
Cows	190	350	289	249	500	408
Breed	Dan. Holstein	Dan. Holstein	HF	HF	HF	HF * Jersey
Stocking rate Livestock/ha	2.08	2.24	1.51	2.41	1.8	2.65
Labour intensity (hrs/cow)	24.4	23.5	34.9	24.8	52.4	15.4
Milk yield/cow	11.321 kg	11.889 kg	8.819 kg	9.661 kg	11.008 kg	5.224 kg
Replacement rate	43 %	41 %	35 %	28 %	35 %	24 %
Age at first calving	25 months	25 months	26 months	26 months	26 months	24 months

Total Costs and Returns of the Dairy Enterprise



- Costs vary between 260 – 300 DKK/100 kg SCM, only NZ produce at lower costs
- Decoupled subsidies are an (important) source of income for EU-farmers
- Only the farms in DE and NZ cover all their costs without subsidies

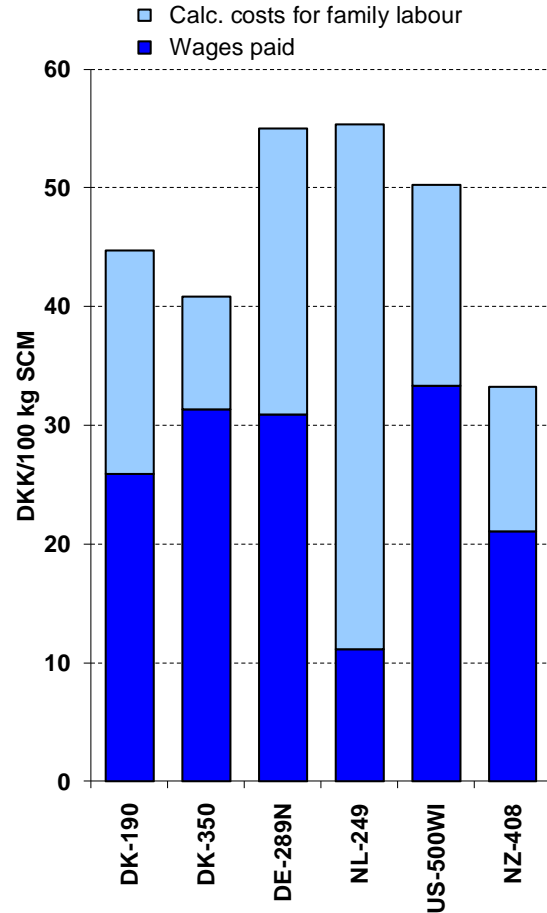
Cost of milk Production Only



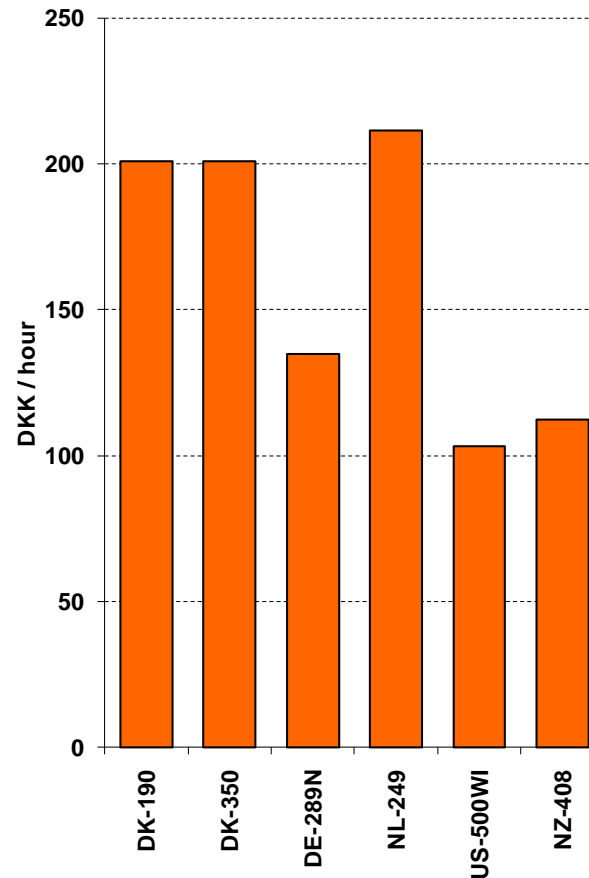
- The (standardised) milk price is very similar in DK, DE, and NL and higher than in US and NZ
- DK and NL have similar costs and the opportunity costs for land and labour are not fully covered
- The farms in US and NZ produce at lower costs in order to account for the lower milk price

Labour

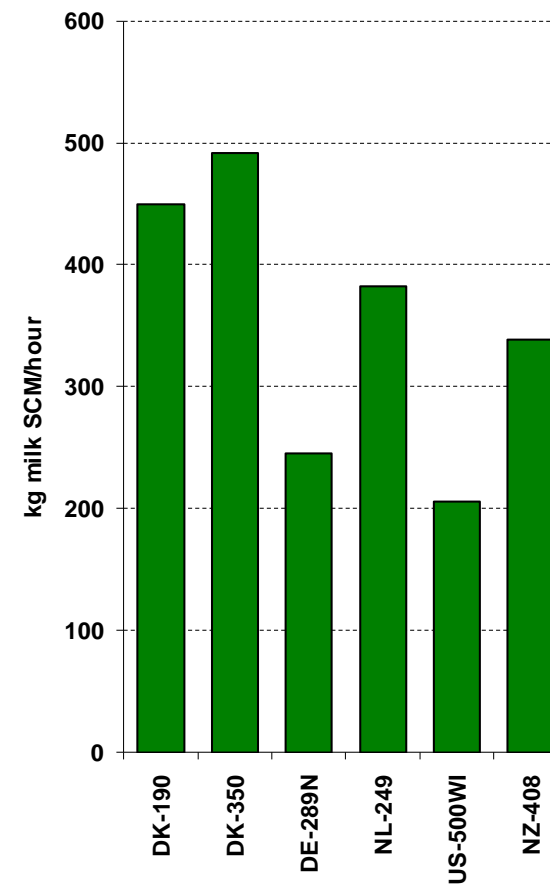
Labour costs



Average wages on the farm



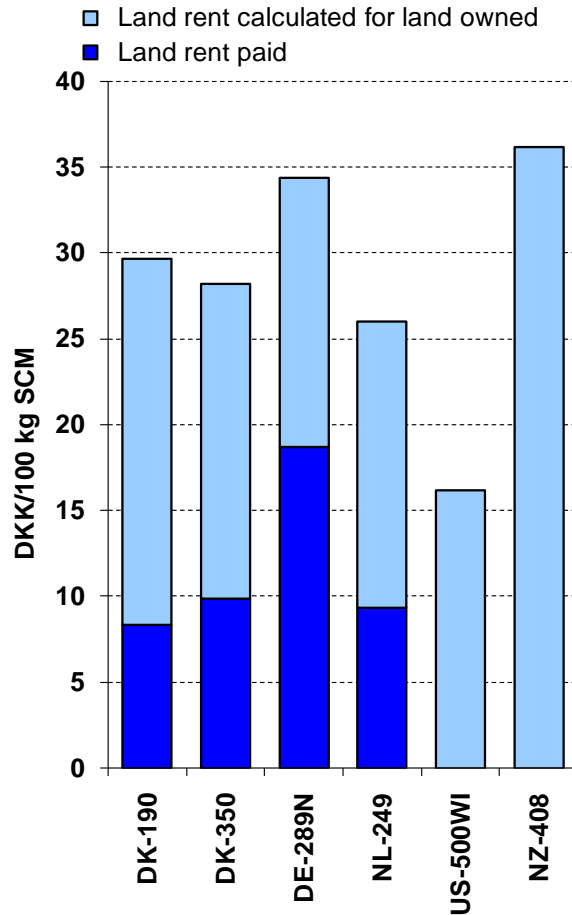
Labour productivity



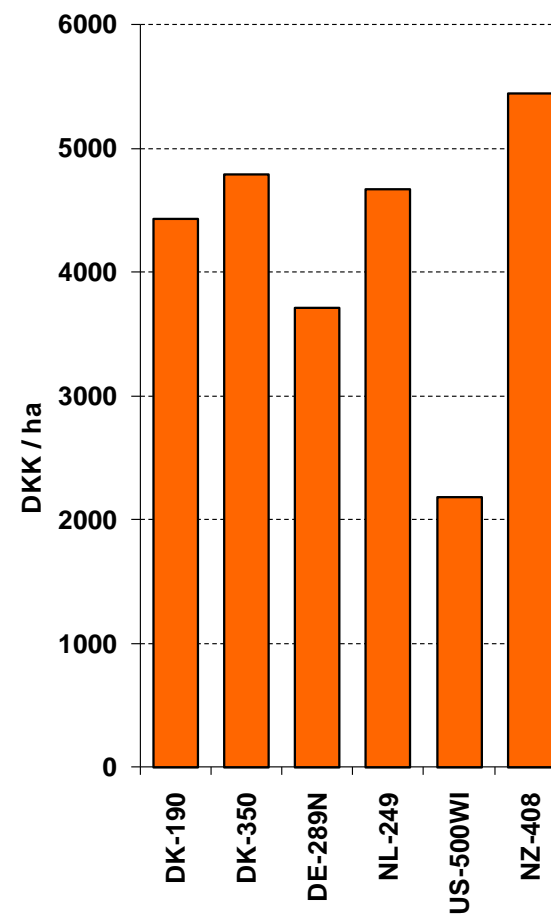
- All farms are run with employees and family labour
- Labour costs are a function of wage level and productivity
- Labour productivity is highest in DK
- Wages are lowest in DE, US, NZ

Land

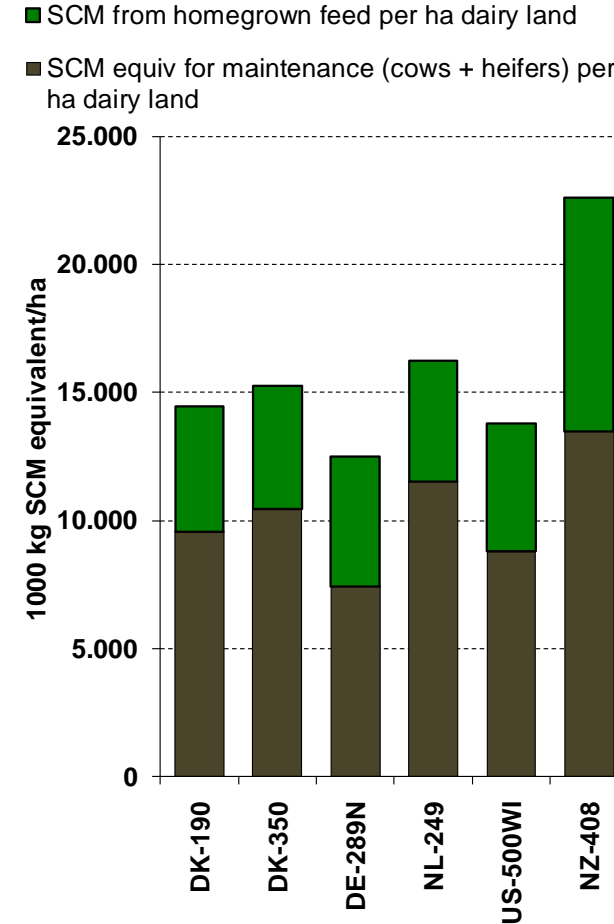
Land costs



Level of land rent

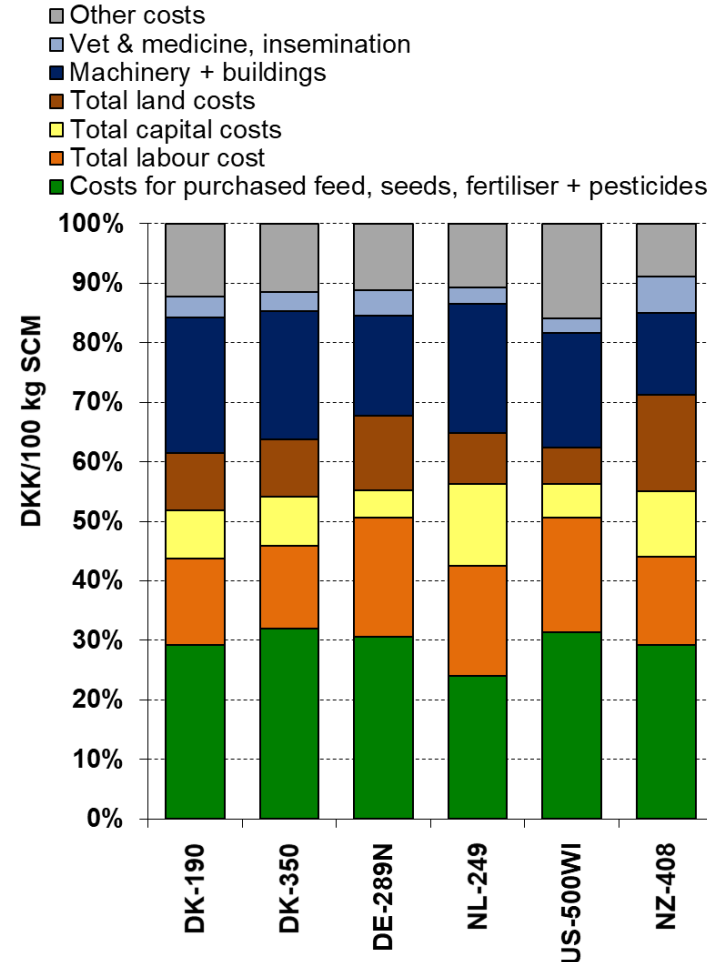
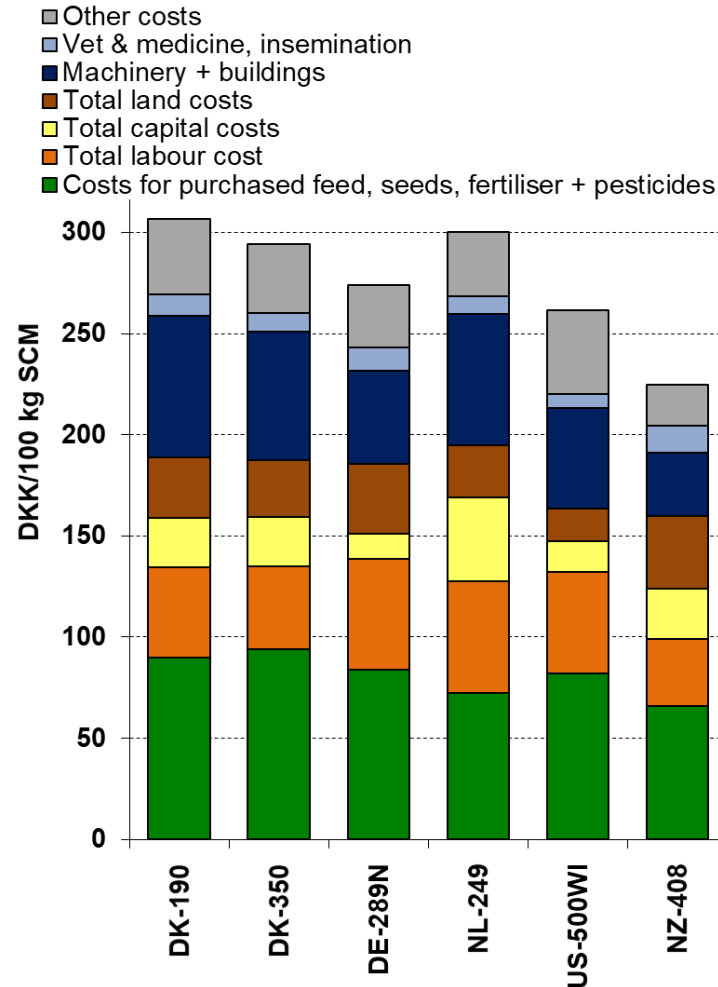


Land productivity (homegrown feed)



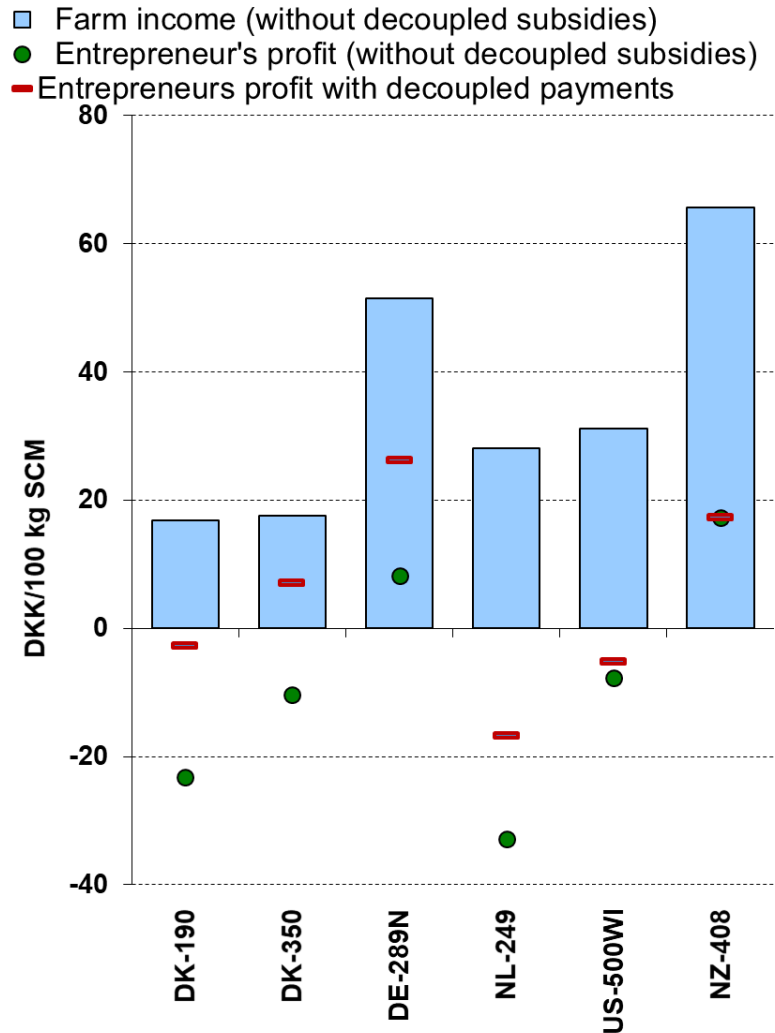
- Land costs are a function of land rent and productivity
- Land productivity is highest in NZ
- US-Wisconsin has a clear advantage over for the other countries

Cost Components



- Cost structure is very similar between the farms
- Costs for purchased feed and fodder production account for ~30% of the total costs
- NZ has lower building costs (no barns)
- NL and NZ have high capital costs (land and shares)

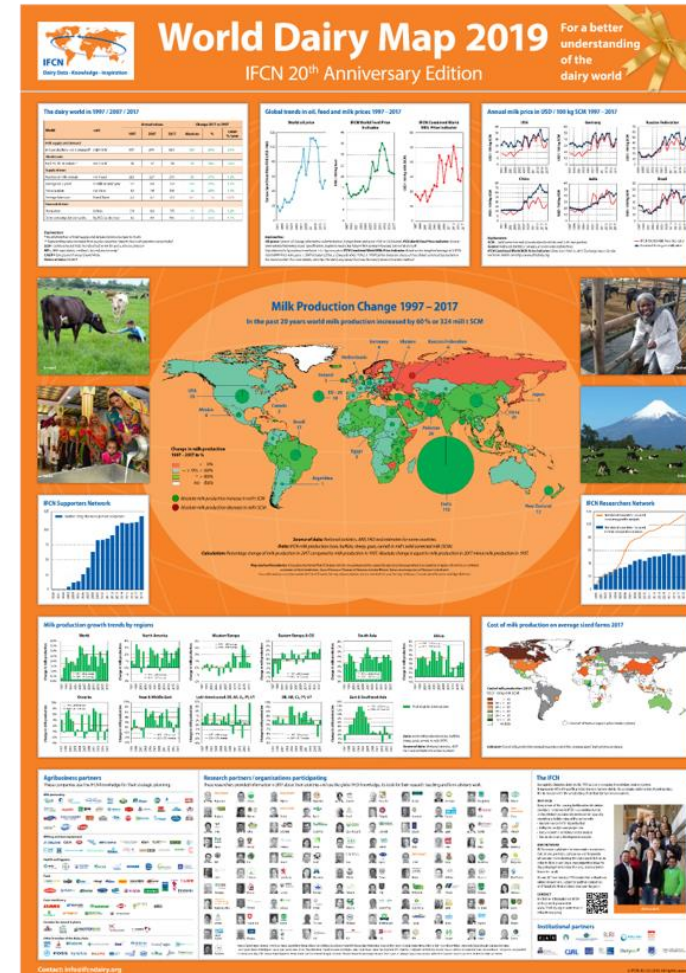
Profits



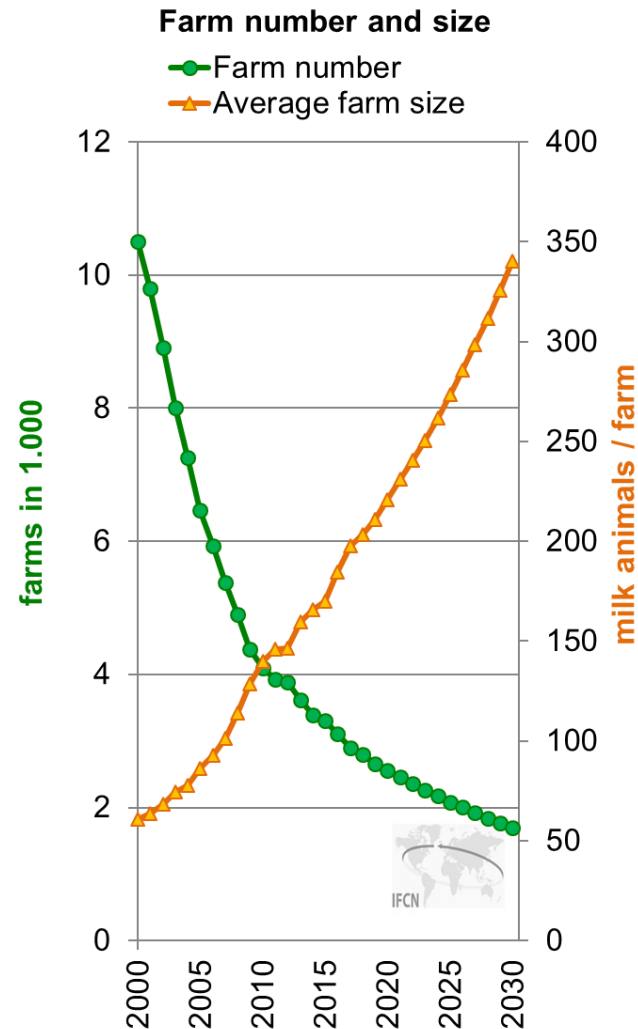
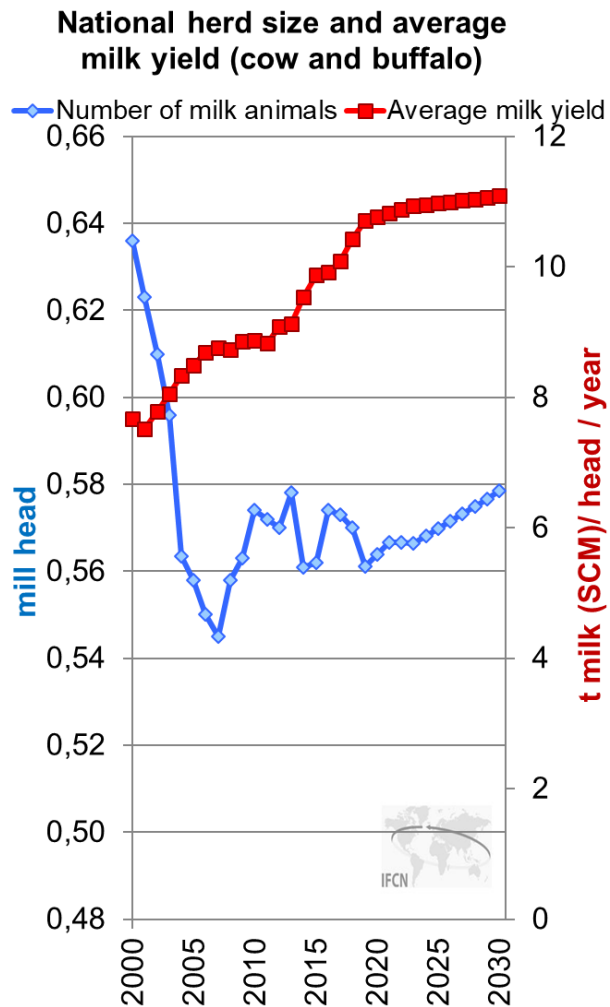
- Farm income has to cover the opportunity costs and investments
- Costs and depreciation were covered on all farms
- Entrepreneur's profit (all costs incl depreciation and opportunity costs are covered) was negative in DK, NL, US-WI
- Decoupled payments were an important part of the revenues to cover the opportunity costs for land and labour

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IFCN Outlook: Denmark in 2030



- Milk yield stabilises at around 11,000 kg / cow
- Number of dairy cows also relatively stable
- Number of farms drops further to <2000, while the average herd size keeps increasing to >300 cows/farm

Summary



- The dairy sector worldwide has experienced a remarkable growth story over the last two decades
- The international trade defines the national milk prices – and farmers have to adapt to these conditions
- Farmers manage to generate a farm income despite high cash costs – and decoupled subsidies are well received to pay for opportunity costs
- The farm structure in Denmark has consolidated considerably and will continue to do so in order to keep dairy farms internationally competitive

Thank you for your attention



Network of IFCN Researchers



IFCN Dairy Research Center



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***A great number of people have collaborated since the year 2000
to make this presentation possible***