

# Competitiveness of the SA primary dairy industry, 2020.

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## **1. Background to the IFCN**

The International Farm Comparison Network (IFCN) virtual conference was attended by the Project Manager as part of the Milk SA project: Economies and Markets. The specific aim of participating and attending the conference is to gauge the international competitiveness of the SA primary dairy industry. The IFCN is a knowledge driven organization. Knowledge is created via a network of dairy researchers from over a 80 countries. The data is managed and analysed by the IFCN Dairy Research Centre staff based in Kiel, Germany. The IFCN economic models and standardization ensure comparability between countries and provide a global picture. More than 140 dairy companies and organisations support and make use of the IFCN.

The values of the IFCN is Trust, Independence and Truth. Trust within the IFCN network is vital for sharing and cooperation. The IFCN is independent and committed to the truth.

In the 2021 Dairy Report of the IFCN, 171 farms in 64 dairy regions in 52 countries took part. They represent 89% of total world dairy production.

## **2. Methodology of research**

The IFCN applies the Typical Farm Approach (TFA) as a base for standardized global data collection. This approach represents the most common farm type which, at the same time, also produces a large portion of the total milk in the region. This makes it possible to obtain a comprehensive overview in order to generate information at farm level. The majority of the analyses is based on the information of 171 typical farms, one averaged sized and one large typical farm, for every region/country.

Most of the monetary results are presented in USD in order to be able to compare farm information. Therefore, the average exchange rate of each country was used. It is important to note that the exchange rate and inflation rate affect the information provided.

All unprocessed milk is converted into solid corrected milk (SCM). Unprocessed milk output with 4.0% fat and 3.3% true protein is generated. The factor used to express the density of unprocessed milk is 1.033 per litre.

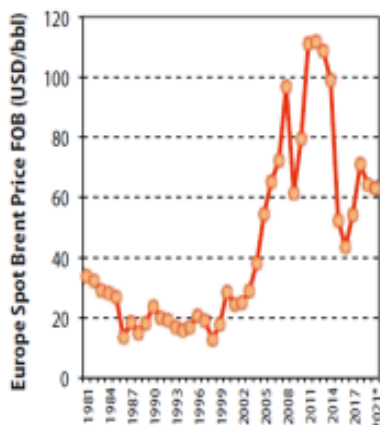
### 3. Unprocessed milk prices and drivers

Several drivers influence the world unprocessed milk price. The most relevant cost component on a milk farm is the price of feed. For example, low feed prices enable dairy farmers to maintain milk production at a high level despite low farm gate prices. In combination with supply, demand developments have a significant impact on unprocessed milk prices. In a more globalized and connected world, trade has become increasingly relevant for world unprocessed milk price developments. Macroeconomic factors such as the relative value of different currencies influence the unprocessed milk price. Environmental policies as well as unexpected and recurrent weather events also have a high impact on milk production and consequently the availability of unprocessed milk, which affect the price.

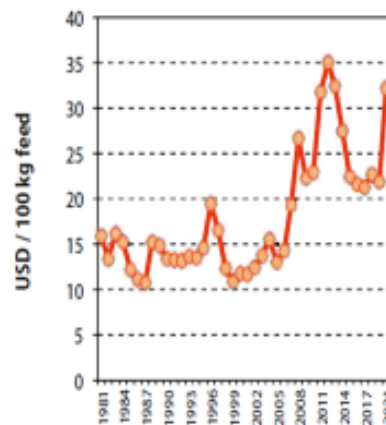
The world oil price started to increase in 2003 and continued increasing until 2008, where after the trend reversed due to the global financial crisis in 2008. The oil price started to recover in 2015, at the sunset of the global financial crisis and increased until early signs in 2018 of a possible global pandemic. There is a strong correlation between the world oil price, world feed price and the world milk price over that period. Although, the world milk price exhibited higher volatility between 2008 and 2021. In 2021, the correlation between the world feed price and the world dairy price with the oil price are less aligned.

#### Global trends in oil, feed, and milk prices

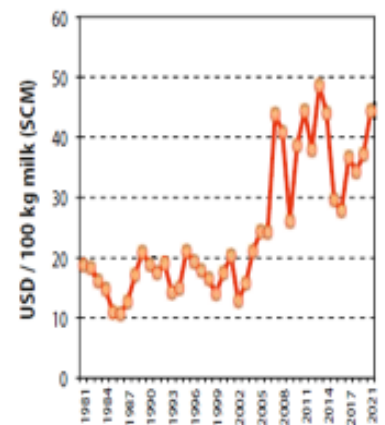
World oil price



IFCN World Feed Price Indicator



IFCN Combined World Milk Price Indicator



Source: IFCN, Dairy Report 2021

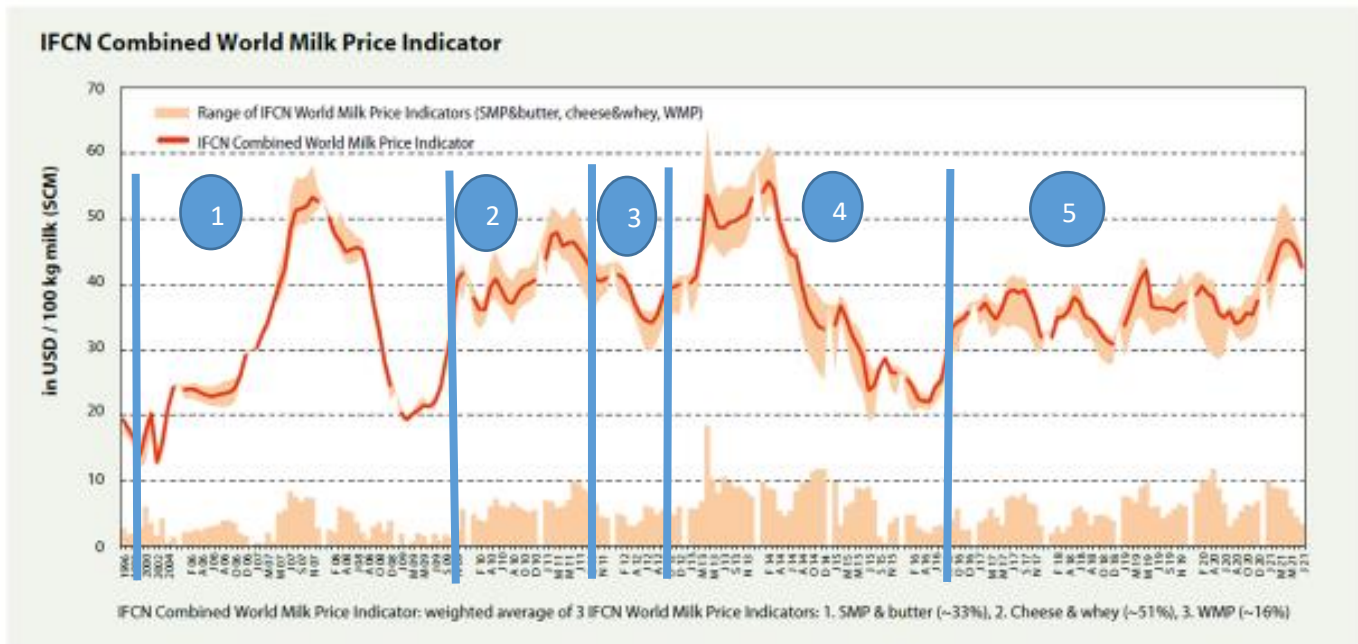
The **trend in the world unprocessed milk price** from 1996 to 2021 is reflected in the graph below. The volatility in the period from 1996 to middle 2016 is noteworthy higher than the period thereafter inclusive of the first six months of 2021. The IFCN calculated the long term average price, from 2007 to 2015 at \$40 per 100kg SCM. At the end of 2015/16 a new reality dawned with an average price at \$35 per 100kg SCM (2016 to middle 2019). In 2019 the average calculated IFCN unprocessed milk price was \$37.2 per 100kg SCM and the calculated unprocessed milk price in 2020 came in at \$36.5 per 100kg SCM, 1.8% lower than in 2019. In 2020 the unprocessed milk price peaked at \$39.8 per 100kg SCM with the minimum unprocessed milk price at \$34.0 per 100kg SCM. The performance of the unprocessed milk price in 2020 essentially means a continuation of the Zig-Zag scenario. Cycles in the unprocessed milk price are simplified into the following timeframes:

1. 1<sup>st</sup> rollercoaster: 2007 – 2009, length 3 years, fluctuation 50%, indicating imbalance.
2. 1<sup>st</sup> Zig-Zag: 2010/11, length 12 months, fluctuation 10%, indicating balance.
3. 1<sup>st</sup> Dynamic wave: 2011 -2012, length 2 years, fluctuation 20%, indicating balance.
4. 2<sup>nd</sup> Rollercoaster: 2013 – 2016, length 4 years, fluctuation 50%, indicating imbalance.
5. 2<sup>nd</sup> Zig-Zag: 2017 - ?, length in play, fluctuation 10%, indicating balance.

These cycles are demonstrated in the graph below.

# The IFCN Combined Milk Price Indicator

USD/100 kg milk (SCM)



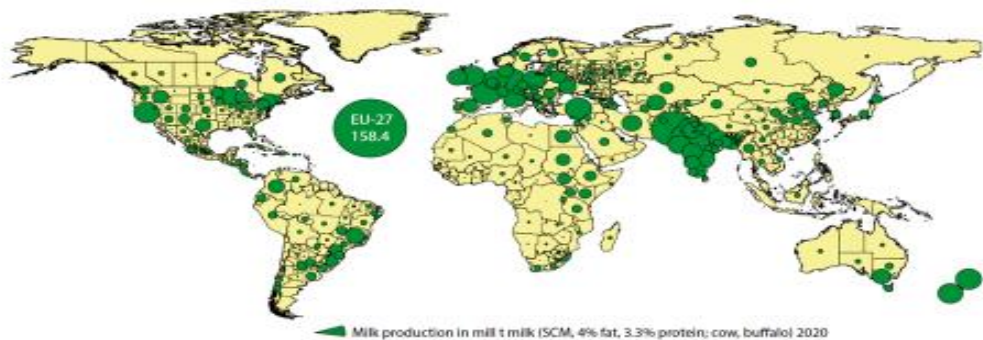
(Source: IFCN, Dairy Report 2021.)

## 4. World unprocessed milk production in 2020 is illustrated in the map below and surplus and deficit situations in the next four maps

The map below reflects the absolute levels of unprocessed milk production in the world during 2020. (Source: the following 5 maps, IFCN, Dairy Report 2021.)

### Milk production world-wide 2020

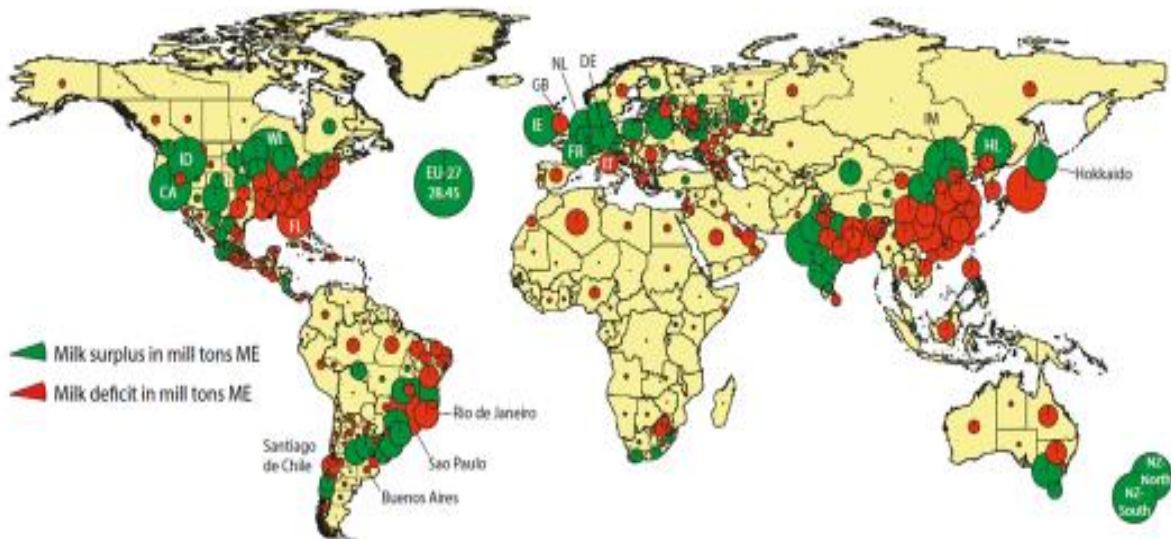
Milk production world-wide 2020



Data: Country data: Milk production 2020 (cow and buffalo) in SCM. Regional data: Milk production 2020 (cow and buffalo) in natural fat and protein contents. Source: National statistics, FAO, estimations for some countries

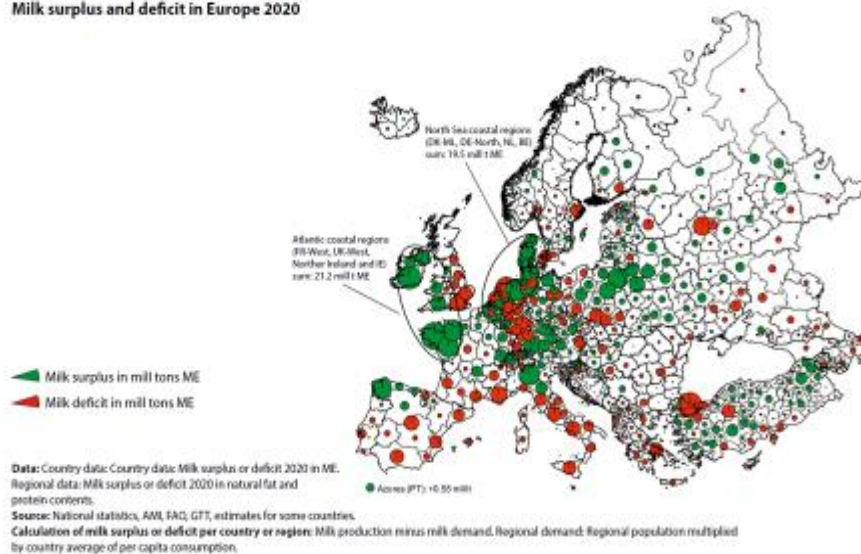
# Milk surplus and deficit world-wide 2020

Milk surplus and deficit world-wide 2020



# Milk surplus and deficit in Europe 2020

Milk surplus and deficit in Europe 2020









## 5. Country comparison: average size of dairy herds

The global average dairy farmer owns 2 to 3 dairy cows. Larger herds are found in Saudi Arabia, South Africa, New Zealand, the United States of America and a few other countries. South Africa's average dairy herd size is one of the largest in the world. Table one reflects the average dairy herd size of a few selected countries. The USA replaced Australia at number four.

**Table 1. Average number of cows in dairy herd, selected countries; 2020**

<b>Country</b>	<b>Average number of cows in herd</b>
Saudi Arabia	7 403
South Africa	453
New Zealand	440
USA	297
Australia	279
Czech Republic	248
Denmark	210
Israel	195
United Kingdom	157
Argentina	152
Uruguay	124
Nederland	101
Ireland	97
France	69
Poland	10
India (cows and buffalos)	2

Source: IFCN, Dairy Report 2021

## 6. Country comparison: number of dairy farms

The number of dairy farms differ hugely between countries. There is some correlation between the average number of cows per herd and the number of farms. The smaller cow numbers per herd tend to be associated with large farm numbers. Table two reflects the number of farms for a few selected countries.

**Table 2. Average number of dairy farms for selected countries, 2020**

<b>Country</b>	<b>Average number of farms</b>
Saudi Arabia	26
South Africa	1 310
New Zealand	11 180
Australia	5 060
USA	31 660
Czech Republic	1 440
Denmark	2 700

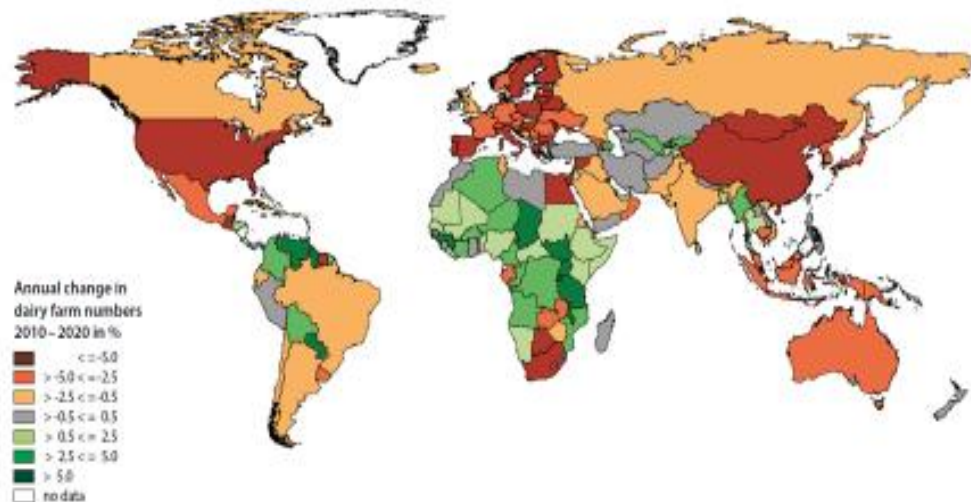
Israel	700
Argentina	10 410
United Kingdom	11 780
Uruguay	3 320
Netherlands	15 700
Ireland	16 170
France	49 570
Poland	203 500
India	68 722 000

Source: IFCN, Dairy Report 2021



## Annual change in dairy farm numbers 2010-2020

Annual change in dairy farm numbers 2010 – 2020



Data: Dairy farm numbers (cows, buffalo). If not available for 2010, dairy farm numbers 2012 data was taken (South Sudan), dairy farm numbers 2013 data was taken (Russian Federation).  
Source of data: National statistics and estimations.  
Calculations: (Dairy farm number in 2020 divided by Dairy farm number in 2010) to the power of (1 divided by 10) minus 1.

Source: IFCN, Dairy Report 2021

According to the above map, during the period 2010 to 2020, the number of dairy farms in Canada, the U.S., China, Mongolia, South Africa, Botswana, Egypt and a number of Western European countries e.g. Finland, Sweden, Spain and Poland decreased with between 2.5% to 5.0% per year.

## 7. Farm comparison: cost of unprocessed milk production

The cost of the production of unprocessed milk is a key indicator of the competitiveness of unprocessed milk production in a region/country compared to that of other regions/countries.

In the cost of unprocessed milk production analysis it was found that 20% of the farms had a cost of unprocessed milk production of  $\leq 30$  USD per 100kg SCM and are typically situated in Africa, South America and Oceania. The middle group consists of 72% of the farms with a cost of unprocessed milk production between 30 USD and 60 USD per 100kg SCM and include Europe, North America and Asia. The high cost producers (8%),  $\geq 60$  USD per 100kg SCM, are found in Scandinavia, the Alpine region, Canada, Israel and Japan.

The average cost of unprocessed milk production per 100kg SCM ranges between 9 USD in Uganda and 110.00 USD in Switzerland. The extreme low cost producers are found in countries where the feed cost is near zero, the owner's opportunity cost of labour is low and where a small percentage of the unprocessed milk produced is sold in the market.

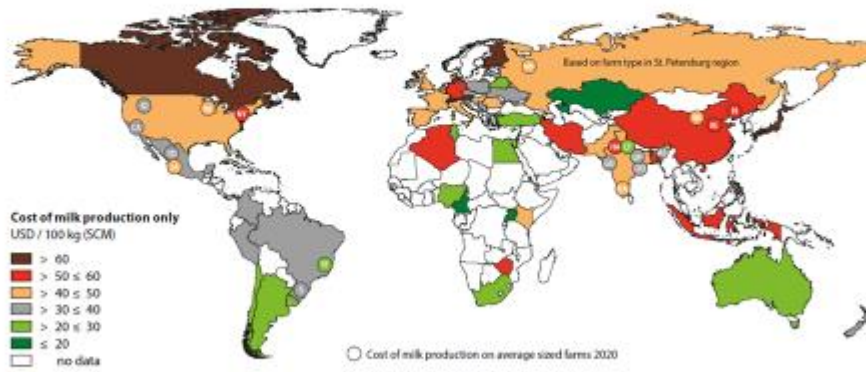
In the IFCN typical farm comparison analysis, South Africa included three farms. A small farm with 230 cows on grazing plus concentrate, an average farm with 650 cows (ZA-650) on grazing and a 800 cows (ZA-800) farm on intensive total mixed rations were included.

The costs were grouped into seven categories: variable feed costs, total labour, land and capital, depreciation of machinery and buildings, veterinary, medicine, insemination and other costs.

The first map below reflects the cost of unprocessed milk production on average sized milk farms for 2020 and the second map on large farms for 2020 (USD/100kg, SCM). South Africa rates amongst the lowest cost producers in the world ( $>20 \leq 30$  USD/100kg SCM)

## Cost of milk production only on average sized farms USD/100 kg milk (SCM)

Cost of milk production on average sized farms 2020

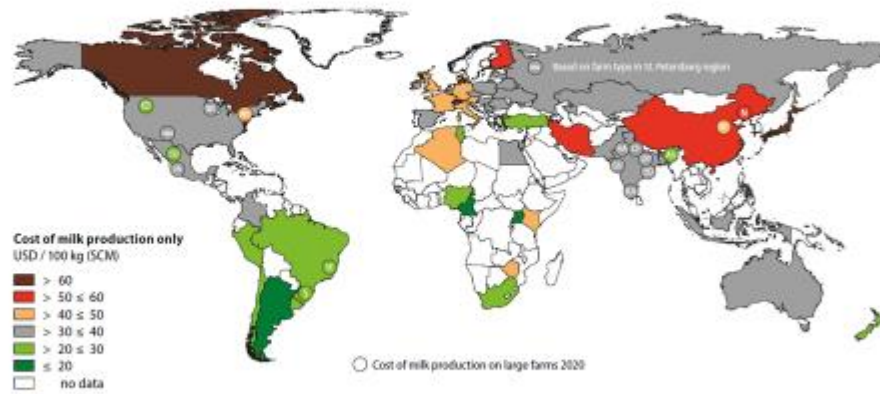


Indikator: Cost of milk production (excluding quota cost) of the "average sized" typical farms analysed.

Source: IFCN, Dairy Reports, 2021.

## Cost of milk production only on large farms USD/100 kg milk (SCM)

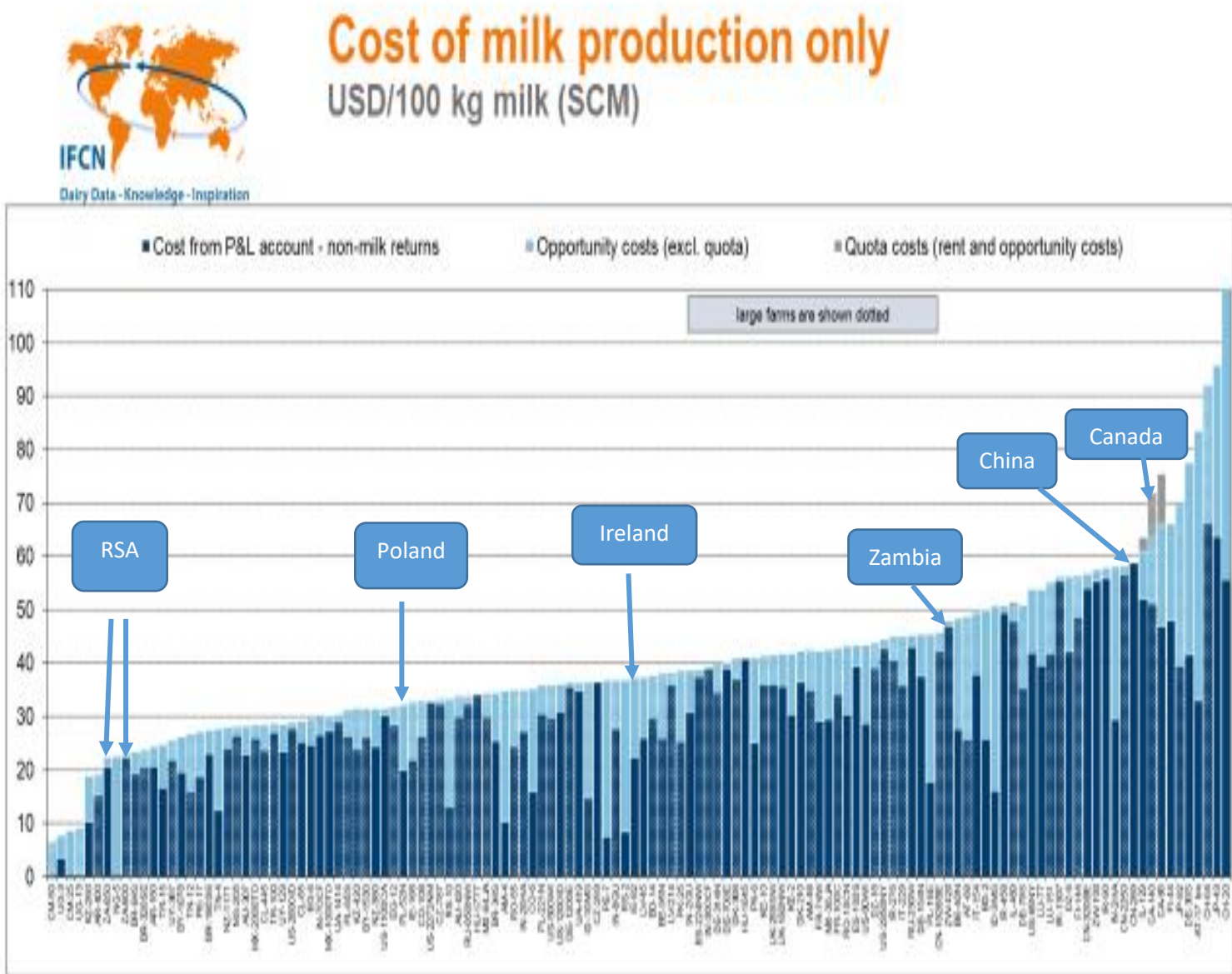
Cost of milk production on large farms 2020



Indikator: Cost of milk production (excluding quota cost) of the large typical farms analysed.

Source: IFCN, Dairy Reports, 2021.

The graph below shows the cost of unprocessed milk production on average and large sized farms between different countries.



Source: IFCN dairy report 2021

For the average sized farm (ZA 650), South Africa is number 7 of low cost producers out of 128 farms and for the larger sized farm (ZA 800), SA is number 9 of low cost producers out of 128 farms. We need to note that for average sized farms, the first 8 lowest cost farms fall into the category of the cost lower than 30USD/100kg SCM and for the large sized farms, the first 7 lowest cost farms fall into the category of the cost lower than 30USD/100kg SCM.



## 9. Conclusion

The performance of the unprocessed milk price in 2020 essentially continued with the Zig-Zag scenario that started in 2017. In this scenario the price fluctuation is approximately 10% during the year. The average world price for unprocessed milk in 2020 came in at 36.50 USD per 100kg SCM (4% fat and 3.3% protein) equating to R6.02/kg.

Unprocessed milk deficits are concentrated in the middle and eastern side of China, the eastern side of India, the north eastern side of South America and the south eastern side of the USA.

According to the IFCN report, the number of dairy farms in Canada, the USA, China, Mongolia, South Africa, Botswana, Egypt and a number of Western European countries e.g. Finland, Sweden and Poland decreased with between 2.5% to 5,0% per year.

South Africa rates amongst the lowest cost unprocessed milk producers in the world, comparing favorably to New Zealand in relation to pasture based operations and to the USA and Uruguay for intensive based operations.