



Dairy Sustainability Framework

REPORTING SECTOR PROGRESS SINCE 2013



# DSF Annual Sustainability Progress

2023 Calendar Year Reporting



The Dairy Sustainability Framework (DSF) monitors and reports the annual sustainability progress of the global dairy sector. The DSF accounts for approximately 30% of global milk production and quantifies progress via 11 sustainability criteria (economic, social and environmental) and associated indicator metrics. This equates to 52% of global dairy cow and buffalo formal milk production. FAO reporting shows 2023 global milk production increasing by 1.4% from 2022, an increase on the previous year's slower growth of 0.6%.

Data included in this report is from the 2023 calendar year and reported by DSF members in 2024. The process by which the DSF manages, processes and aggregates the data is audited by the University of Nottingham (UK).

Estimated global milk production (all species) in 2023 (source: FAO Food Outlook, June 2024) was 965.2 million tonnes (up from 935.9 million tonnes in 2022). Of this, 928.1 million tonnes (901.1 billion litres), is the global dairy cow (85%) and buffalo (15%) milk production applied in DSF calculations for the 2023 year.

## 2023 Overview

- DSF 2023 reported milk volume grew by 3.6 billion litres. Two new members in 2023 contributed 2.6 billion litres of the increase in DSF total milk volume.
- For the second year in a row, Animal Care remains the number one prioritised DSF Criteria, closely followed by GHG Emissions and Rural Economies.
- Gender split reporting (initiated in 2022) of farmers, farm and processing plant employees experienced a substantial rise in members who are now able to provide data.
- DSF membership milk volume now represents 52% of the global formal milk production. In 2023 milk production growth in the formal sector was slower than the informal sector in comparison to previous years. The informal milk sector has continued to grow and in some cases growth has been more rapid.
- Market consolidation in the more mature dairy markets and selective milk sourcing by processors from 'larger' farms in emerging dairy economies seem to be emerging trends.

## DSF Development

- The DSF celebrated ten years monitoring and reporting dairy sustainability progress.
- The DSF Strategic Plan continues to drive its development activities. During 2024 it is being revised, in consultation with DSF membership and stakeholders, for the 2025-2030 period.
- Work started with DSF membership and Advisory Council to address the recommendations from the Independent Criteria review.
- The DSF strategy in Latin America coordinated by DSF Governor FEPALE in collaboration with the Inter-American Institute for Cooperation on Agriculture (IICA) submitted a funding proposal to the Development Bank of Latin America which, if successful, will enable an effective rollout of the strategy with a number of DSF pilots across several geographies.
- DSF Communities of Interest (COI) continue to provide members with the opportunity to share learnings and identify solutions to common challenges.
- The DSF published the GDP/IFAD funded case studies for the pilots that took place in Rwanda, Kenya, India and Vietnam, demonstrating the value of the DSF in emerging economies.
- The outcomes of the GDP/IFAD study fed directly into the development of the new DSF Stage 1 membership category that was developed by DSF members and Advisory Council.
- The DSF Stage 1 membership Category (for 'new entrant' dairy businesses) was launched at the DSF Annual Meeting in October 2023, where it was also announced by the National Dairy Development Board of India they would support the DSF with piloting this innovative approach.
- The DSF initiated the development of nine template 'Plans' to support DSF members in reporting progress, where a 'plan' is the required indicator metric.
- DSF played an active role (especially in the agriculture negotiations) in representing the dairy sector's sustainability efforts at COP28 in Dubai.
- DSF is an integral part of the Steering Group for the Pathways to Dairy Net Zero initiative and will provide the reporting mechanism for the global dairy sector's progress towards Net Zero.
- The updated DSF Implementation Guide released in 2022 was supported by a series of member focused webinars on DSF 'process topics' such as materiality assessment and Local Management Group formation and management.

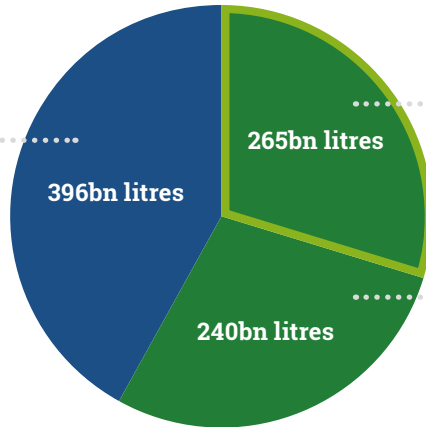
# DSF and Global Milk Production - 2023

Global Milk Production: 901 Billion Litres\*

DSF milk volume: 265 Billion Litres

## 44% Informal Milk Market\*\*

Milk sold through unstructured, unprocessed channels or consumed directly in the home



DSF represents more than 52% of the global formal milk market

56% Formal Milk Market\*\*

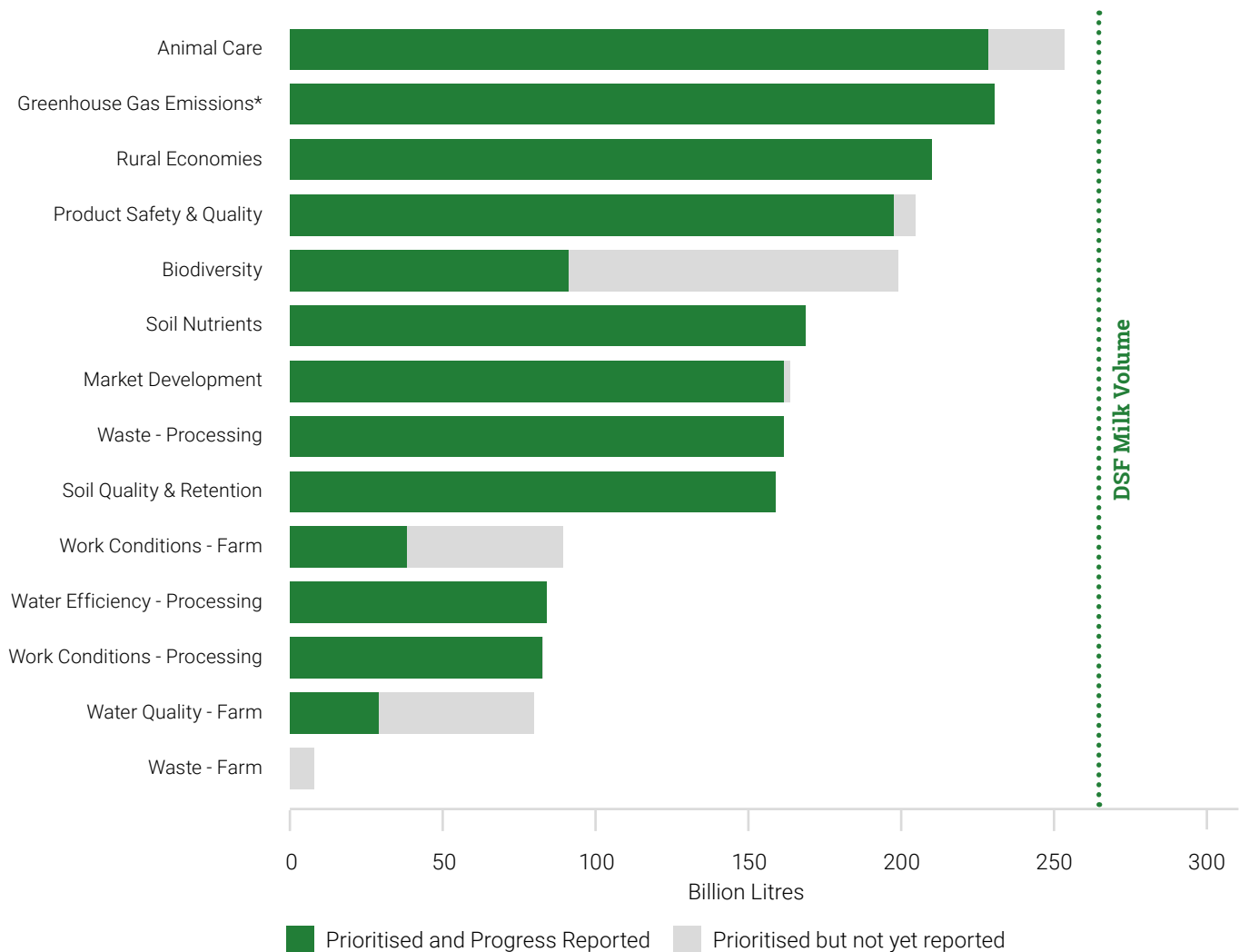
\*FAO

\*\*IFCN Dairy Network Estimate

## 2023 DSF Milk Volume, Priorities and Reporting

### Milk Production in Billion Litres

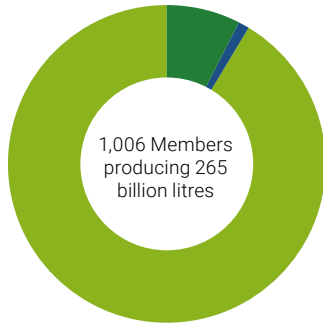
- For the second consecutive year, Animal Care and GHG Emissions are the number 1 and 2 most prioritised criteria, respectively.
- Rural Economies remains in the third position.
- Other notable changes include an increase of 3.5% (of total milk volume) for the working conditions at farm level criteria, along with a large increase of 41% (of total DSF milk volume) for the waste at processing level criteria.



\*Reporting for entire global dairy sector provided by FAO analysis.

Water, Working Conditions and Waste Criteria have two indicator metrics as they cover both farm and processing levels of the dairy value chain.

## DSF Membership by category



**76** Implementing

**11** Aggregating

**919** Organisations represented by aggregating members

Access more information on the DSF [membership categories](#).

## New DSF members in 2023



**+12,440**  
farms



**+421,300**  
cows



**+852**  
processing plants



**+9,688**  
dairy farmers



**+6,196**  
employees



**+2.6 billion**  
litres of milk

## 2023 Snapshot - Total Membership



**446,669**  
farms



**33.7 million**  
cows



**4,091**  
processing plants



**540,681**  
farmers



**2.1 million**  
employees



**265 billion**  
litres of milk



**>26 million**  
hectares

- The majority of the world's dairy farms are family farms that include more than one family member, which can result in more than one farmer per farm.

## Gender and Employment

### Dairy Farmers



DSF Volume of milk reporting  
**77%**  
(24% reported in 2022)

### Dairy Farm Employees



DSF Volume of milk reporting  
**33%**  
(24% reported in 2022)

### Milk Processing Employees



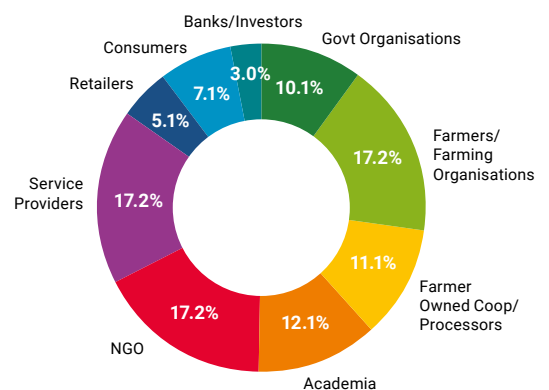
DSF Volume of milk reporting  
**40%**  
(35% reported in 2022)

This is the second year the DSF is reporting gender profile across the value chain. It is encouraging to receive data from a greater number of DSF members as they update their reporting protocols.

## Local Multi-Stakeholder Management Groups

An integral component of the DSF implementation process is the formation and coordination by each member of a Local Multi-stakeholder Management Group (LMG). This group of stakeholders has an interest in dairy sustainability and is used by DSF members as an outside set of eyes and ears supporting identification of their priorities and how they can be addressed. Listening to the views of external experts and stakeholders is critical to the success of the DSF delivery process.

DSF members provide a breakdown of their LMGs. The chart demonstrates the composition of these groups across the DSF membership.



# Action on Priorities

The data provided by the DSF membership is clearly starting to reflect the diversity of global dairy production and processing. It highlights the unique needs of different geographies, stages of development and structural change across the sector as it drives towards more sustainable and resilient value chains.

## Key

1. Criteria: e.g. GHG Emissions.
  2. **Strategic Intent**: When prioritised this is the member's focus.
  3. **Indicator Metric**: Members provide this annual reporting to the DSF.
  4. The progress report: 2023 aggregated reporting and new baseline.
  5. Supporting information: Additional information supporting the reporting.
- Members report the number of farms they represent.
  - Assumption: 1 plan per farm.
  - 2023 progress against a 2022 baseline is indicated in blue.



## Animal Care

Dairy animals are treated with care and are free from hunger, thirst, discomfort, pain, injury and disease and are able to engage with relatively normal patterns of behaviour.

Arithmetic mean of Somatic Cell Count across the reporting period.

The DSF Board agreed in 2023 that the indicator metric for Animal Care will change in 2027 to "Animal Health and Welfare Plans implemented." As the membership transitions across to this new metric, the DSF has initiated collecting data and is able to report progress.

All reporting members	2018	2019	2020	2021	2022	2023	Change from 2022 to 2023
Volume of milk reporting (billion litres)	213.3	188.8	200.5	205.1	223.4	228.5	+5.1 billion litres
Average annual weighted Somatic Cell Count (SCC)	201,000	183,539	182,108	178,478	183,347	181,927	-0.8%

- The milk volume of DSF members reporting on this criteria increased by 5.1 bn litres vs. 2022 and saw a very slight reduction of SCC of 0.8%.

Members prioritising Animal Care	2023
Number of farms associated with the prioritisation	428,507
Number of plans already implemented	74,040
% of farms with an AHW plan	17.3%

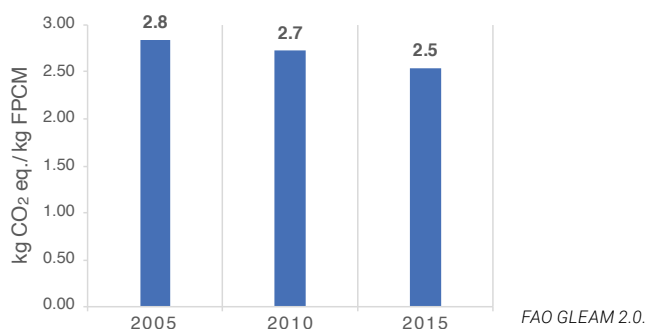


## GHG Emissions

GHG emissions across the full value chain are quantified and reduced by all economically viable means.

DSF and others continue to ask FAO to update its GLEAM data. For the industry to make informed and strategic decisions related to GHG emissions, it is essential that global datasets are regularly updated and are as accurate as possible.

FAO "Climate Change and the Global Dairy Sector" report, 2005-2015:



- The full report can be accessed [here](#).
- DSF members that prioritise this Criteria are required to apply the latest version of the [The IDF Global Carbon Footprint Standard for the Dairy Sector](#).



## Rural Economies

The dairy sector contributes to the resilience and economic viability of farmers and rural communities.

Total annual payments made to farmers for milk.

All members who prioritised	2019	2020	2021	2022	2023	Change from 2022 to 2023
Milk volume reporting (billion litres)	138	172	174	<del>207</del> 209	210	+33
Total annual payment made to farmers in US \$	59.28 billion	71.75 billion	77.62 billion	<del>77.85</del> 114.65 billion	106.1 billion	-8.6 billion

- As part of ongoing QA, a reporting error was identified for the 2022 volume and payments made indicated by the strikethrough with correct numbers now shown.
- An increase of 1 billion litres prioritising this criteria from 2022 levels.
- Average milk value is \$0.51/litre, a reduction of \$0.04/litre from 2022.

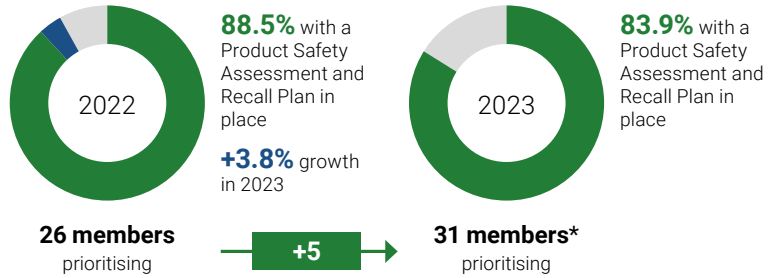
Exchange rates sourced from OandA.com



## Product Safety and Quality

The integrity and transparency of the dairy supply chain is safeguarded, so as to ensure the optimal nutrition, quality, and safety of products.

Implementation of a Product Safety Assessment and Recall Plan (PS&RP) and how many public product recalls during the reporting period.



\* Of the 31 members, five are Aggregating members reporting on behalf of over 765 organisations.

### Public Product Recalls

2019	2020	2021	2022	2023	% prioritisation change 2022-2023
37	34	183	190	422	+0.7%

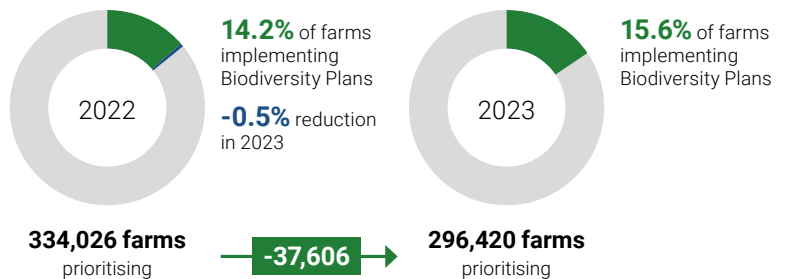
- New DSF members are prioritising this criteria. Prioritisation of Product Safety & Quality is equivalent to 77.2% of DSF milk volume.
- A higher proportion of members who have prioritised this criteria previously now have a Product Safety Assessment & Recall Plan in place.
- The rise in public product recalls is due predominantly to aggregating membership (representing a large number of dairy processors) organisations that have now established systems to capture and report this data.



## Biodiversity

Direct and indirect biodiversity risks and opportunities are understood and strategies to maintain and enhance it are established.

A Biodiversity Plan (BP) is implemented to preserve, restore and improve biodiversity on-farm and across the supply chain - number of Biodiversity Plans implemented.



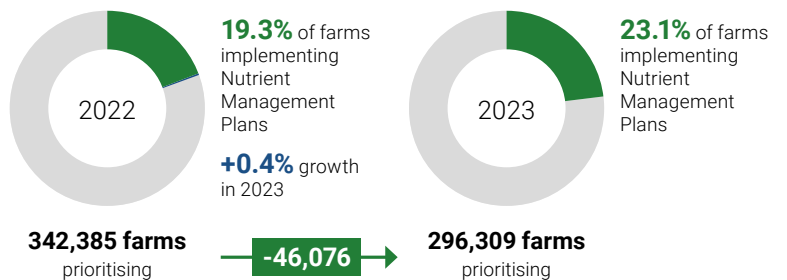
- Market consolidation in some of the more mature dairy markets continue to have an impact on the number of plans implemented (see 2023 Overview).



## Soil Nutrients

Nutrient application is managed to minimise impacts on water and air, while maintaining and enhancing soil quality.

Implementation of a Nutrient Management Plan (NMP) to enhance production and reduce water and air pollution - number of NMP's implemented.



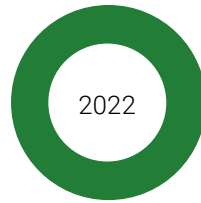
- Industry consolidation is directly impacting the number of farms included in DSF reporting (see 2023 Overview).
- Considering the reduction in farm numbers, there was a significant increase in the number of nutrient management plans developed and implemented.



## Market Development

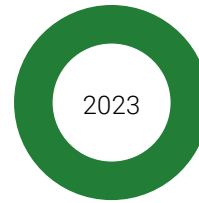
Members along the dairy value chain are able to build economically viable businesses through the development of transparent and effective markets.

Process in place to inform producers of market opportunities and challenges.



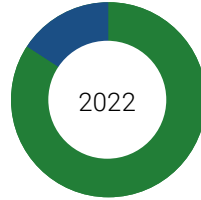
**13 Members**  
prioritising

**100%** of Members prioritising Market Development had a process in place to inform farmers of market opportunities and challenges



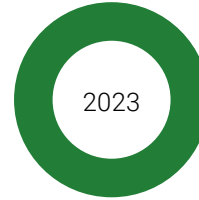
**16 Members**  
prioritising

**100%** of Members prioritising Market Development had a process in place to inform farmers of market opportunities and challenges



**312,297 farms**  
prioritising\*

**100%** farms reached  
**-15.6%** farms reached in 2023



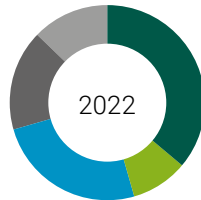
**265,084 farms**  
prioritising

**100%** farms reached

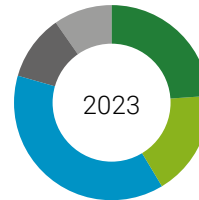
**-47,213**

\*Number of farms supplying DSF members that prioritised this Criteria. i.e. potential reach.

How did DSF Members communicate with their supplying farmers during 2023 about market opportunities (Total number of activities)?



**36.3%** Newsletter  
**9.3%** Webinars  
**25.2%** Farmer Meetings  
**16.5%** Informal publications  
**12.7%** Other (videos, on-line Q and A, weekly market updates in website portal)



**24.1%** Newsletter  
**17.4%** Webinars  
**38.1%** Farmer Meetings  
**10.8%** Informal publications  
**9.5%** Other (videos, on-line Q and A, weekly market updates in website portal)

Note: There was a clear focus in 2023 on verbal and face to face communication channels over printed and other methods of transferring market development information.



## Waste - Processing Level

Waste generation is minimised, and where unavoidable, waste is reused and recycled.

Mass of waste to landfill per year.

All members who prioritised	2019	2020	2021	2022	2023	Change from 2022 to 2023
Total number of processing plants	323	299	351	399	1741	+1342 plants
Tonnes of waste to landfill in the year	45,181	41,591	71,281	81,835	248,701	+166,866

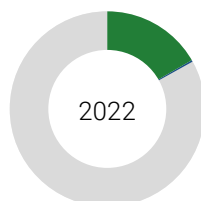
The increase in processing plants and associated waste is a combination of new members prioritisation and existing members newly prioritising this criteria as well as introducing some new plants.



## Soil Quality and Retention

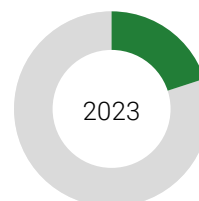
Soil quality and retention is proactively managed and enhanced to ensure optimum productivity.

Soil quality is maintained or improved by good management practices defined in a Soil Quality Management Plan (SQMP) - number of SQMP's implemented.



**333,011 farms**  
prioritising

**16.7%** of farms implementing Soil Quality Management Plans  
**+0.4%** growth in 2023



**286,758 farms**  
prioritising

**20.2%** of farms have a Soil Quality and Retention Plan

**-46,253**

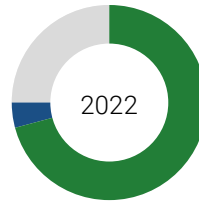
Industry consolidation is directly impacting the number of farms included in DSF reporting (see 2023 Overview).



## Working Conditions – Farm

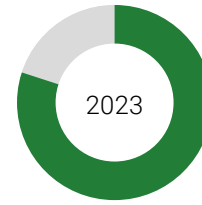
Across the dairy value chain workers operate in a safe environment, and their rights are respected and promoted.

A Farm Safety Plan (FSP) is implemented to ensure worker safety - number of FSP's implemented.



75.1% of farms implementing Farm Safety Plans  
-4.1% reduction in 2023

269,272 farms prioritising



80.2% of farms implementing Farm Safety Plans

-30,630

238,642 farms prioritising

- The percentage increase in the number of Farm Safety Plans needs to be balanced with the reduction in the number of farms under this criteria, due to industry consolidation (see 2023 Overview).



## Water Availability and Quality - Processing Level

Water availability as well as water quality is managed responsibly throughout the dairy value chain.

Water use efficiency for production and processing is measured - average volume of water (litres) per volume of product (kg).

All members who reported	2018	2019	2020	2021	2022	2023	Change from 2022 to 2023
Weighted average water efficiency (litres water to produce kg of product)	4.52	5.50	5.48	7.11	7.10	6.94	-0.16
Range	2.1 – 14.9	0.77 – 38.37	0.68 – 22.6	0.09 – 25.0	1.2 – 23.4	0.1 – 12.5	

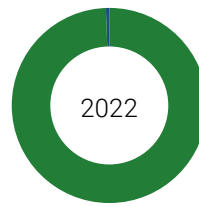
- Indicator does not differentiate between milk and dairy products produced by DSF membership.



## Working Conditions – Processing

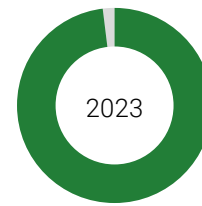
Across the dairy value chain workers operate in a safe environment, and their rights are respected and promoted.

A Facility Safety Plan (FSP) is implemented to ensure worker safety - number of FSP's implemented.



99.6% of processing plants implementing Facility Safety Plans  
+1.2% growth in 2023

1,648 processing plants prioritising



98.2% of processing plants implementing Facility Safety Plans

+50

1,698 processing plants prioritising

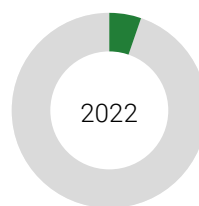
- The numbers reflect existing members incorporating newly acquired processing plants.



## Water Availability and Quality – Farm

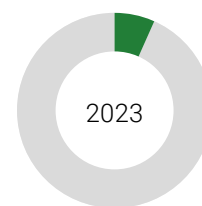
Water availability as well as water quality is managed responsibly throughout the dairy value chain.

An Effluent Management Plan (EMP) is adopted to minimise impacts to water quality - number of EMP's implemented.



5.4% of farms implementing Effluent Management Plans  
0 change in 2023

249,507 farms prioritising



6.7% of farms implementing Effluent Management Plans

-45,205

204,302 farms prioritising



## Waste - Farm Level

Waste generation is minimised, and where unavoidable, waste is reused and recycled.

Implementation of a Waste Management Plan (WMP) - number of WMP's implemented.



0% of farms implementing Waste Management Plans  
0 change in 2023

204,637 farms prioritising



0% of farms implementing Waste Management Plans

-37,771

166,951 farms prioritising

- Recognising that reporting for this criteria is challenging, the DSF has developed new resources to support the membership in providing the required data.