

Boundless *Potential*

Endless *Possibilities*



REPORT

on participation

by the South African organized dairy industry in
the World Dairy Summit and Business meetings
of the International Dairy Federation



South Africa
National Committee

WORLD DAIRY SUMMIT 2023

Chicago, Illinois
United States of America
October 2023





BE DAIRY

Boundless Potential Endless Possibilities

*IDF World Dairy Summit
October 16 – 19, 2023
Chicago USA*



World Dairy Summit 2023

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Preface

The IDF is funded by membership fees collected from member countries. South Africa's dairy industry is a full member through SANCIDF and has to pay the fee as determined by IDF General Assembly at the yearly World Dairy Summit.

South Africa is also a full member of the International Milk Promotion (IMP) group of IDF which specializes in marketing and advertising and has to pay its separate membership fee. The benefits of IDF membership are:

- The IDF can deal with challenges which cannot be dealt with by individual countries or by competition in the markets and must be dealt with collectively to achieve growth and development of the international dairy industry.
- The IDF can deal with food standards relating to safety and composition, nutrition and health issues, methods of analysis and sampling, dairy science and technology, animal health and welfare, sustainability, environment and economics, policies and marketing.
- International issues demand expert scientific knowledge and research and the best expertise of the member countries including South Africa, is used.
- IDF's science based approach and reputation is highly regarded by international organizations whose work strongly influence actions of countries in respect of quality and properties of the dairy products. The relevant international organizations include the WHO, FAO, OIE, Codex Alimentarius and ISO.
- The SA dairy industry is linked to the IDF through SANCIDF whose members (in 2023) were the Milk Producers' Organisation, SA Milk Processors' Organisation and the Department of Agriculture, Land reform and Rural Development whose membership fees finances part of the work of this committee.
- The opportunity to meet and exchange ideas with fellow specialists in other countries is an invaluable resource when confronted with new problems requiring solution.
- The opportunity to be part of a dairy organisation which has 39 countries as members which produce 74% of the world's milk production and 85% of milk powder exports.
- The understanding of a global vision of issues, opportunities and challenges facing the global dairy sector.
- The opportunity to be part of an organisation whose members export the bulk of cross border traded dairy products.
- The opportunity to partake in discussions on international dairy product marketing campaigns via the IMP.
- Involvement in the Federation's almost 140 separate work items in the Work Programme.

The projects and activities of Milk South Africa are aligned with that of the International Dairy Federation. The South African dairy industry is well represented on most of the IDF Standing Committees and through its Primaria Members of the local Standing Committees, the SA National Committee actively contributes to the work programmes of the IDF.

Milk South Africa and the SA National Committee of the IDF are proud to present this combined report of the attendees to the 2023 World Dairy Summit which was held in Chicago, Illinois, United States of America.

International Dairy Federation World Dairy Summit 2023 Statement

As the International Dairy Federation (IDF) celebrates its 120th anniversary of acting as the global dairy sector's voice of scientific and technical expertise and as the Food and Agriculture Organization hosts the 2023 World Food Forum, IDF's General Assembly, representing a broad swath of dairy producing countries from around the world, reinforces the importance of working together and empowering the next generation of leaders within the global dairy sector to maximize dairy's Boundless commitment and Endless ambition to sustainably nourish people and communities and to make a positive difference in the world.

Whereas there is a Boundless commitment by Dairy to support improved nutritional outcomes for global consumers through:

- Recognizing the integral part that milk and dairy products play in healthy, sustainable and nutritious diets, with consumption of milk and dairy products recommended by nearly all dietary guidelines around the world;
- Encouraging consumption of milk and dairy products while investing in production innovation to provide a unique combination of several essential nutrients for people of all ages, as well as benefits including better bone health and lower risk for type 2 diabetes and cardiovascular disease;
- Providing a reliable source of critical nutrition that children and other vulnerable populations need for optimal growth and development, including expanding accessible milk and dairy options in school, nutrition, and feeding programs; and
- Continuously innovating across the global dairy sector's farming, processing, marketing, and trading branches to respond to consumers' evolving tastes and preferences and growing global demand for dairy products.

Whereas, in line with the various UN sustainability goals, there is Endless ambition by Dairy to contribute to a more sustainable future for people, animals, and the planet through:

- Furthering the dairy sector's ongoing efforts and positive potential to improve sustainability in a holistic manner by taking context-specific steps to reduce greenhouse gas emissions, preserve water quality, decrease water use,



*Piercristiano Brazzale
President
IDF*



Shawna Morris
Co-Chair
National Milk Producers Federation
U.S. Dairy Export Council



Nick Gardner
Co-Chair
U.S. Dairy Export Council

champion soil health, save energy, produce renewable energy resources, and/or develop packaging and recyclability technologies that reduce waste;

- Supporting knowledge sharing and increasing access to resources and innovations on sustainability, sustainable food systems, animal care, and other environmental/production issues facing dairy producers;
- Charting a pathway to a lower emissions future for the global dairy sector through the Pathways to Dairy Net Zero Initiative and other similar industry efforts;
- Upholding high animal care standards consistent with relevant World Organization for Animal Health standards to enhance animal welfare outcomes; and
- Fostering sustainable productivity growth to contribute to meeting the world's growing nutrition needs in a sustainable, affordable, efficient manner.

And whereas the global dairy sector plays a vital role in supporting farmer livelihoods and providing jobs and valuable revenues and resources for communities around the world through:

- Sustaining more than 600 million people living on approximately 133 million dairy farms around the world;
- Employing two hundred and forty million people across diverse cultures worldwide directly or indirectly in a dairy sector that feeds more than 80% of the world's population who regularly consume milk and dairy products;
- Providing a critical income source for the 80 million women engaged in dairy farming and the 37 million farms headed by women globally; and

Therefore, IDF calls on governments, global organizations, and the world's food and beverage sector to support "Being Dairy" by:

- Recognizing that dairy is essential to producing safe, affordable, sustainable nutrition to feed the world's growing population by contributing to healthy diets;
- Committing to promote and protect the critical role of dairy in delivering sustainable agri food systems that ensure nutritional security for all;

- Recognizing the role of trade and the international rules-based system that underpins it and promoting the development and adoption of science-based international standards and guidelines that support the trade of dairy products;
- Supporting transparency and inclusivity in policy making by ensuring an active role for the dairy sector in shaping local, national, and global policies and programs that affect the sector;
- Supporting local, national, and global policies and frameworks that provide for sustainable productivity growth by dairy, and for economic social and environmental dimensions of policies to be addressed in a balanced way informed by local circumstances;
- Championing dairy's efforts to improve environmental sustainability, ensure the safety and equitable treatment of all people earning a livelihood in dairy, and to demonstrate dairy's continuous commitment to animal welfare;
- Embracing the value of voluntary, industry-driven solutions as well as multisectoral collaboration to meet global sustainability challenges;
- Pursuing incentive-driven approaches to supporting the scaling up of sustainable dairy practices without distorting markets; and
- Expanding career pathways and leadership opportunities for the next generation of dairy across all peoples and cultures, particularly through the greater engagement of women and youth in the dairy sector.





Overview

*of the dairy industry of
the United States of America*

The U.S. dairy industry consists of nearly 30,000 farms, 94% of which are family owned and operated, as well as thousands of dairy businesses that range from global brands and manufacturers to artisanal companies delivering nutritious and innovative dairy foods and beverages to people around the world. Together, the industry supports more than 3.3 million jobs that generate \$41.6 billion in direct wages and \$753 billion in overall economic impact.

Each day, the industry strives to earn dairy's place in homes in the U.S. and around the world. It's the largest cow's milk producing country in the world and the third largest dairy exporting region. On average, 95% of American households purchase dairy. Domestically, dairy has achieved consistent growth in per capita consumption for more than a quarter-century.

America's dairy farms, many of which are multigenerational, are diverse in size, region and practice. The average herd size is just over 300 dairy cows. In total, nearly 9 million cows produce more than 26 billion gallons of milk annually. Today, 99% of the domestic milk supply comes from farms that participate in the ISO-certified National Dairy Farmers Assuring Responsible Management (FARM) Animal Care program, setting high standards for animal care, antibiotic stewardship and biosecurity. The vast majority of the milk supply is also engaged in other important on-farm social responsibility initiatives through the FARM Environmental Stewardship and FARM Workforce Development pillars.

America's dairy processing sector is as diverse as its dairy farms – from family-owned and run to multinational companies to artisanal operations across the U.S. The country's dairy



processors are at the cutting edge of innovation, sustainable business practices, and smart growth in both domestic and export markets. They deliver affordable dairy nutrition to consumers around the world while showing the public the high caliber of sustainable production that occurs in the U.S. dairy sector. In addition to commercial-scale operations, numerous artisan and farmstead operations across the country make up a growing and vibrant part of the domestic processing sector.

U.S. dairy invests in nutrition research and product innovation to meet consumers' changing wellness needs while accelerating environmental sustainability solutions that reduce the industry's environmental footprint, conserve natural resources and restore ecosystems. More than 75% of the nation's milk production has voluntarily adopted the U.S. Dairy Stewardship Commitment and contribute to U.S. dairy's ability to track, aggregate and report on progress in important areas like animal care, environmental stewardship, food safety/traceability and community contributions.

U.S. dairy believes in the boundless potential and endless possibilities for dairy to nourish a growing global population, the planet and communities around the world.



*McCormick Place, Chicago -
Venue for the IDF World Dairy Summit*

Delegates

*to the 2023 World Dairy Summit
held in Chicago, Illinois, USA*



Melt Loubser

- President: SA National Committee of the IDF
- Chairman: SA Milk Processors' Organisation
- Director & Vice-Chairman: Milk SA
- Chairman: Milk SA Advisory Committee, Economies & Markets
- Chairman: Milk SA Advisory Committee, Customs duties & Market access
- Director & CEO: Fair Cape Dairies



Christine Leighton

- Vice-Chairperson of the Standing Committee of Marketing
- Member of the International Milk Promotion Group (IMP)
- Project Manager: Milk SA Consumer Education Project



Maretha Vermaak

- Member of IDF Standing Committee on Nutrition and Health
- Action Team Leader: IDF School Milk Programmes
- Registered Dietitian: Milk SA Consumer Education Project

Jompie Burger ♦

IDF

- Member of IDF SC Standards of Identity and Labeling
- Member of IDF SC Food Additives
- Member of IDF Animal Health and Welfare
- Member of IDF SC Microbiological Hygiene
- Coordinator: Technical Secretary Standing Committee activities
- Member of IDF SC Analytical Methods for Additives and Contaminants
- Member of IDF SC Analytical Methods for Composition
- Member of IDF SC Methods for Dairy Microorganisms
- Member of IDF SC Science and Technology
- Member of Action Team on Food Fraud
- Member of Action Team Guidelines for Milk Microbiological quality management and troubleshooting



Dairy Standard Agency (DSA)

- Managing Director: DSA
- DSA Member representative of the Consumer Council of South Africa – Food Safety Initiative
- DSA Member representative of the South African Consumer Union
- DSA Member representative of the South African Association for Food Science and Technology
- DSA Member of the SA European Hygienic Engineering and Design Group
- Member of the Department of Health – Food Legislative Advisory Group
- Chairman of the SABS/TC 034/SC05 Milk and Milk Products
- Member of the African Organization for Standardisation (ARSO) TC 034/SC04 Milk and Milk Products.
- Member of the South African Society of Dairy Technology (SASDT) management committee of the Northern region.
- Member of the Advisory Boards of the Departments of Environmental Health of the Tshwane University of Technology (TUT) as well as Nelson Mandela Metropolitan University.

Milk SA

- Project Manager: Regulation and Standards Project of Milk SA
- Member of the Dairy Research and Development Project of Milk SA (DRDC – Mancom)
- Member of the Management Committee DRDC – Mancom
- Member of the Milk SA Project Coordinating Committee



Dr Mark Chimes 💧

- Milk SA Programme Manager: Animal Health and Welfare
- DSA: Dairy auditor and Veterinary advisor
- Member of the Dairy Research & Development Committee of Milk SA
- Milk SA representative on the National Animal Health Forum (NAHF)



Dr Ndumiso Mazibuko 💧

- Senior Economist: SA Milk Processors' Organisation (SAMPRO)
- Member of the Milk SA Advisory Committee: Economies & Markets
- Member of the Milk SA Work Group: Economies & Markets
- Member of the Milk SA Advisory Committee: Customs Duties and Market Access
- Member of the IDF Standing Committee on Dairy Policies & Economics
- Dairy Industry representative on the Agriculture and Agro-processing Masterplan.



Fanie Ferreira

- Director of Milk SA
- CEO of the Milk Producers' Organisation (MPO)
- Chairperson of the Milk SA Subcommittee on Skills & Knowledge Development, Primary Dairy Industry Sector
- Member of the Advisory Committee: Skills & Knowledge Development of Milk SA
- Member of the Milk SA Executive Committee
- Member of the Milk SA Statutory Measures Committee



Dr Colin Ohlhoff

- Milk SA Programme Manager: Environmental Sustainability
- Member of the Dairy Research & Development Committee of Milk SA
- Vice-Chairperson: IDF Standing Committee on the Environment
- Committee Member: South African Society of Dairy Technology









Bertus van Heerden

- Milk SA Project Manager: Economies & Markets
- Member: Work Group, Economies & Markets of Milk SA
- Member: Advisory Committee, Economy & Markets of Milk SA
- MPO Chief Economist
- Member: Advisory Committee, Customs Duty and Access of Milk SA



Nico Fouché

- Chief Executive Officer of Milk South Africa

-  • Delegates were funded by Milk South Africa
-  • Delegates were funded by the SA National Committee of the IDF
-  • Delegate was funded by the Milk Producers' Organisation
-  • Delegate was funded by the SA Milk Processors' Organisation

The following persons, who are not members of the South African Organized Dairy Industry, also attended the World Dairy Summit in Chicago and were paid for by their respective institutions:

- Dr Liska Robb: Lecturer, University of the Free State
- Prof Elna Buys: University of South Africa
- Dr Lobke Steyn: University of Stellenbosch



Nico Fouché, Dr Mark Chimes, Bertus van Heerden, Melt Loubser, Fanie Ferreira, Jompié Burger,
Dr Liska Robb, Maretha Vermaak, Christine Leighton, Dr Colin Ohlhoff, Dr Ndumiso Mazibuko

WDS 2023 – Chicago

Combined Reports

Report by: MELT LOUBSER



1 GENERAL

I report on a high-level overview of my observations and concerns regarding this summit and will not be delving into the details of each session as I believe that there are more specialized experts who attended the various sessions and will report their observations and conclusions.

The Venue in Chicago was excellently suited for a conference of this magnitude because all the sessions could be hosted in one area, which makes sessions very easily accessible and productive.

The biggest focus that stood out amongst all others was the enormous focus on environmental sustainability, animal welfare and nutrition. What started off as a trickle five to ten years ago, has now turned into a major river in flood, and there was not a single session that did not devote time to these.

Consumer impressions of the dairy industry are in many instances not positive due to the populist view on high levels of methane emissions and disregard for issues such as animal welfare. The scientific approach by the work groups of the IDF, in collaboration with prominent academic institutions, has resulted in undisputed findings that are highly contradicting to these populist beliefs. It is however vital that this information is packed clearly and concisely and communicated effectively to consumers to change the negative perceptions on dairy.

The dairy industry has a very good story to tell when stripped of the negative and mostly false perceptions. The tasty, nutrient dense nutritional value of dairy products can go a long way to serve the ever-increasing nutrient deficit amongst many of the world population, especially in developing countries.

Simply put, the world needs the dairy industry to assist in the nutritional demand of the nine billion world population. Even though the focus on a plant-based alternative, as a source of nutrition, has increased over the last few years, this phenomenon is not founded on a sustainable solution, but driven by oversimplified views, emotional debate, and uninformed consumers.

Attendance from South Africa in all sessions were very prominent with strong participation in the business and standing committee meetings.

The parallel between the IDF standing committee portfolios and the various projects of Milk SA, contribute to the value added by the South African delegation to the meetings, complimentary to the value added to Milk SA as a result.

A user-friendly app was developed as a great tool for participation in the conference. This included communication during sessions as well as program guidance and other relevant information.

2 IDF GENERAL ASSEMBLY - 15 OCTOBER 2023

I was present in person with Edu Roux, the General Secretary, who participated through virtual media. The meeting was well presented by member countries, and it was remarkable to see the many young faces present. Time has passed quickly, and I now count amongst the few elderly left.

2.1 General

I am concerned about the fact that there seems to be a high concentration of certain countries on the BOD. At this stage the board comprises of eight members of which three from India and two from China. This creates the opportunity for these countries to impact the strategic outlook to serve their own interest. South Africa can play a meaningful role at the board level and in the senior leadership positions. Our expertise in creating an effective Macro environment in a deregulated dairy industry provides for a unique outlook on how to deal with common challenges even in the international sphere, which should not be lost because of limited participation.

I believe that we need to ensure a broad participation from amongst the individual member countries to ensure proper representation around the world in leadership and other strategic positions.

Of further interest is the fact that Zimbabwe and Ruanda are now fully paid members of the IDF.

2.2 Finance

I am concerned, as was the case in the past, about the financial position of IDF. Budget has virtually no room for movement. For the 2023 financial year, certain assumptions are made of expected income, and if these incomes do not materialize for whatever reason, the finances will go into a shortfall. Certain member states have not yet paid, and I am not sure that these payments will necessarily take place.

A substantial capital loss was again incurred because of investments of IDF surplus funds. This is like what happened a few years ago, where the IDF lost money on the stock exchanges due to a high-risk appetite as a driver for profiting from these investments. The current losses are seen as temporary and not accounted for in the financial statements. This issue was raised during the board meeting by Jeremy Hill, me, and others with a request to the board to reassess the policy on administration of reserve funds.

Increased travel costs were also debated as the cost of travel again increased substantially over the last year. I am not convinced that all travel of the IDF head office officials is necessary, especially in an environment where the budgeted funds are barely enough to cover the running expense of this organization. One example was the report back from Caroline Emond on her and a colleague travelling to Zimbabwe to welcome them as fully paid members of the IDF.

It further bothers me that an unbudgeted amount of €37 500 is mentioned to be used from the so-called social fund, which is basically a depletion of the capital reserves. This principle was established in 2019 and South Africa had strong views regarding the principle of a social fund that can be used at the peril of the board. Our written objection at the time seems to be in file thirteen. It was proposed that the membership fees increase by 3% to cover inflation, which proposal was accepted.

2.3 Overview

A presentation by Mr Jamie Jonker, head of SPCC provided a perspective of the magnitude of the scientific impact and role of the IDF. It remains a very strategic asset of the international dairy fraternity as an enabler for the collective to deal with an ever-increasing number of challenges facing our industry world-wide. The alignment of Milk SA to the strategic various SPCC disciplines and the role of SA delegates in these various committees of SPCC certainly is of great value to the SA Dairy industry.

2.4 Structure

Four new board members were elected namely Dr Meenesh Shah (IN) as delegate of the General Assembly, Dr Zhanyou Yu (CN), Ms Marit Haugan (NO) and Ms Sharon Mitchell (NZ).

3 CONFERENCE SESSIONS

Sessions attended

I attended the following sessions:

- Dairy's role in nourishing the world and the impact of policy.
- Global leader's forum
- IDF forum: Today's focus, tomorrow's vision
- World dairy situation and marketing trends reports
- Dairy farming around the world: Today's focus, tomorrow's vision
- Economic outlook on dairy drivers and the decade ahead
- Advanced tools in foodborne pathogen monitoring for the dairy industry.
- Dairy processing around the world: Today's focus, tomorrow's vision
- Marketing: Earning trust for dairy's sustainability with today's global consumer
- Managing heat stress in dairy cattle
- Dairy's building blocks for nourishing prenatal brain development: Helping children reach their full potential.

The theme throughout these sessions can be summarized in the following bullet points.

- The relevance of environmental matters in shaping policy direction in the US and Europe was very prominent.
- Finding value in waste streams is of utmost importance – creating secondary income for farmers, developing another level of economic opportunity.
- Carbon as a commodity is gaining momentum – emphasized in the US by mechanisms to trade carbon through offsetting programs. Still some questions around a globally accepted means of accounting for carbon.
- The uptake of greenhouse gas reducing initiatives and technologies in the US is being subsidized by the US Government. An example in Europe was provided where milk price is determined by the amount of CO2 that you release. Is this where we are heading globally? Feed efficiency optimization is the area most farmers are focusing on towards reducing their carbon footprint.
- A speaker mentioned that the “Cow is the How” – fixing climate issues is complex and the sector must be open to change (embrace change). Dairy has tremendous potential to do good. We can be nature positive and productive at the same time.
- From the consumer side, the role of dairy in healthy diets produced in a sustainable manner needs to be promoted. Science-based facts in a world of social media is vital. The consumer is the ultimate ‘judge and jury’ and building and maintaining their trust is more important than ever. There are signs that consumers are beginning to see through dairy alternatives, i.e. there is a desire for “real food”.

Quote that I recall which I thought was thought provoking: *"Milk is a product that is consumed by most people around the world, every day! That is not a commodity – that is power!"*

I summarize the bullet point highlights of certain sessions:



3.1 Phil Hogan: Health, Nutrition and Sustainability

The current day food system is broken. It is not a responsible system and leads to social and other unhappiness. Waste, soil degradation, malnutrition etc.

Certain EU objectives will require farmers to be more committed to good farming practices. These objectives include for, societal objectives, climate agenda, water quality, air quality and animal welfare. These objectives are going to exert short and medium term demands on farmers. Energy creation etc. can reward farmers for their efforts in dealing with these as an alternative income stream for their farms.

3.2 Tom Bilsack: Circular Economy

Farmers find themselves at the low end of the scale due to massive sustainable responsibilities. It is all about climate smart practices with a value-added product of secondary value that can add to farm income. Sustainably produced practices are of the essence.

Waste product conversion into energy and climate smart agriculture was emphasized. Farmers should be awarded for their efforts towards smart agriculture, for which the secondary benefits are to complement farmer income.

3.3 William Loux (Vice President): Global Economic Affairs

The USA experiences strong domestic consumption while there is a potentially looming international market. Production growth over the last two decades in the USA was 1.5% p.a on average.

There are 9.4 million dairy cows in 28 000 dairy farms in the USA and the majority herds were up to 50 cows. The average production is 24 000 lb per cow per annum. The USA supplies 11% of the global milk. Cheese and whey the driving growth in consumption. Also, the butter side is growing. Fluid milk in decline. Big US investment in growing processing capacity with a focus on cheese.

3.4 Barbara O'Brien (President and Chief Executive Officer: Innovation Centre and Dairy Management Inc.)

Ms O'Brien's talk was about:

- Food security for all.
- Need to continue research.
- Environmental sustainability.
- Sustainable food service.
- Leave the farm better than you found it.

3.5 Miles Hurrell (Chief Executive Officer: Fonterra)

- The future for dairy looks bright.
- Knowledge of the goodness of dairy nutrition needs to be conveyed to consumers.
- Need high value product growth.
- Agroculture, innovation, curbing methane emission and other sustainability measures must be good for the cow, good for the farmer, good for the environment.
- Very promising cultures to cut off methane production in cows.
- Need to do everything we can to ensure consumers continue to choose dairy.

3.6 Patricia Stroup (Chief Procurement Officer: Nestlé)

- Never been a more exciting time than right now. \
- Faced with a huge opportunity to deal with the challenges facing us.
- Malnutrition, climate change, and food security are huge challenges, but create huge opportunities and the Dairy Industry is excellently positioned to meet these challenges.
- Nestlé will be carbon neutral by 2050.
- The first milestone for Nestle will be a 20% reduction in Methane in 2025, a 50% reduction in 2035 and 100 % in 2050.
- All the issues that are currently facing the Dairy Industry can be fixed, but we don't know yet how to fully deal with the issue of climate change.
- The great minds in this conference need to come up with solutions.

3.7 Steen Norgaard Madsen: Chair, Danish Dairy Board

- Milk price of farmers is linked to the methane emissions.
- Points can be earned for various actions taken.
- Mostly what goes into the farm, and what leaves the farm, and every point adds to the milk price. Maybe this is something for the future, but the administration of such a process can be difficult and tedious.
- If you have a low CO2 output in your business, you will most probably have a profitable business.

4 PLENARY SESSION, 17 OCTOBER 2023

4.1 Simon Vander Woude: Chairperson, California Dairies, Inc.

Again, the main theme of this discussion evolved around environmental sustainability. Lots of focus on renewable energy. A huge focus on genomics will also optimise the number of heifers per cow. Pregnancy with beef semen whilst producing milk ensures a decrease in footprint of beef production.

Uncertainties related to 10-year projections:

- Plant-based replacements for dairy
- Environmental legislation
- Russia's war against Ukraine
- Changes in domestic policies
- Changes in the trade environment

What does this mean over the next decade?

- Dairy demand remains resilient and stable in developed markets and growing in developing countries. Changing demographics will impact dairy demand with a greater focus on personalized nutrition in developed countries.

- Fluid milk consumption is expected to increase in developing countries; however, demand in developed countries is moving toward protein-dense, or a purposeful-product (health & wellness), that is conveniently packaged.
- Stagnant growth in global milk production will result in adequate farmgate milk prices, with greatest margin expansion coming from eco-system deliverables that are both private and public sector driven. Dairy farmers that optimize the eco-system marketplace are reducing their dependence on the milk price.
- Dairy farmers social license to produce milk and retain market share in developed countries will be tied to reducing the sectors carbon footprint, which is also imperative to prevent being “formulated-out” of retail CPG products.

4.2 Lee Ann Jackson: Head of the Agro-Food trade and markets division,

Organization for Economic Cooperation and Development

- Only seven percent of dairy products are traded internationally. Seems like the US role in international trade will increase.
- Africa demand for dairy products in the next decade exceeds the growth of production and therefore a destination for exports of dairy products.
- Long-term (10 years) projections show prices sideways in real terms or slightly decreasing.

4.3 Mary Ledman: Global Sector Strategist, Rabo AgriFinance

- 705 million people to be added to the world population up to 2030 with half in Africa.
- In China, there will be 61 million less people younger than 20 by 2030.
- Need to think about the needs of elderly consumers on dairy products.
- New Zealand milk production decline to 2030.
- Risk in India as any climate change will impact heavily on their dairy industry.

4.4 William Loux: Vice-President, Global Economic Affairs, National Milk Producers Federation, U.S. Dairy Export Council

- Drivers of growth are either increase in per capita consumption such as in China, or population growth such as in Africa.
- A slowdown was experienced in international trade.
- In US about 5% of income goes to food consumption compared to countries where this number is 40%.
- Cheese will drive improved international trade, and this product seems to be the favorite everywhere.
- Taste and nutrition remain a top purchase driver with associated benefits of protein.
- Leverage strengths on taste and nutrition.

4.5 YiFan Li HEAD OF DAIRY - ASIA StoneX Group Deep understanding of Asia dairy demand.

- There are mainly UHT products on the shelf in the rural areas of China.
- The potential in China is due to their low per capita expense on food compared to other countries in the region.
- High levels of product innovation in China.
- Production of raw milk in China went up by 30% in the last decade.

4.6 Jeffrey Simmons PRESIDENT AND CHIEF EXECUTIVE OFFICER Elanco Animal Health

- Animal health, human health and environmental health are now critical factors.
- 60% of the world population is not getting the right nutrition.
- 50% growth in the global protein consumption.
- The solution for the future needs to deliver what people want, what animals need and less environmental impact.
- Consumers want animal protein, and we must deliver that responsibly. The cow is the how in all this.
- Climate neutral farming can only be sustainable if it is profitable. This creates another revenue stream for farmers.
- Innovation will flow like we have not seen in a very long time.
- Reduce, measure, monitor, advocate.

4.7 Richard Allen: President, Americas and Europe, Fonterra

- Over one third of the world population is deficient in one or more vital nutrients. We know that dairy contains all the vital nutrients.
- Dairy has impacted on the world environment and can be nature friendly.
- Massive investments are made towards methane reduction. This is an industry opportunity and an opportunity for individual farmers.
- Dairy can be nature positive, and dairy has a regenerative future.
- Measure how much you bring into the farm compared to how much is leaving the farm as a measure of the carbon efficiency.

5 PLENARY SESSION, 18 OCTOBER 2023: DAIRY PROCESSING AROUND THE WORLD: TODAY'S FOCUS, TOMORROW'S VISION

5.1 Mike Durkin: President and Chief Executive Officer, Leprino Foods

- What is the impact of technology on the work force?
- Innovation statement of Leprino foods:
 - *Food is medicine*
 - *Product is diversification*
- Cow productivity in US is up by 250% over the last 10 years.

5.2 Jeff McCrory: Chief Strategic Officer, R Mischief, Canada

- One to understand where you are if you want to generate trust.
- Brands such as Amazon, Google etc. are trusted. People understand the place of these in their lives.
- Gap between what people say they do, and what they do.
- People do not expect brands to have everything in place, but they want to know that a businesses have a plan to sort out the things that are not in place.
- Consumers need transparency with all your facts together, packaged in such a way that it is trustworthy and touches the emotions.

5.3 Angela Anderson: Director, Sustainable Dairy, Starbucks Coffee Company

Give back more than what you take from the environment.

5.4 Mark McGinn: Executive Director, UK Sustainability and Social Impact, Edelman EMEA

Make sure that people perceive the product as a joyful choice. Hope and joy are commodities that people aspire for.

Consequences of Heat Stress

- Reduced Milk Production
Dairy milk weights drop by more than 2kg (5 lb) per cow during warm periods.
- Reduced Conception Rates
Conception rate drops by 5 or more points during the summer.
- Increased Lameness
Typically noticed 1-2 months after periods of heat stress.
- Reduced milk quality
Studies have shown reduced fat and protein yield as well as an increase in somatic cell count.
- Decrease in Dry Matter intake (DMI) and slug feeding.
Negative impacts in milk production and components can be largely attributed to decreased feed intake.
- Reduced overall health and immune responses in all stages of life.
 - Increase risk of metabolic disorders
 - Decreased/impaired immune responses.

Take-home message:

- Heat stress treats cows' health, milk yield, reproduction efficiency and it is cause of economic losses for the dairy sector.
- The recent climate indicates a risk of heat stress widespread at all latitudes, in equatorial and tropical areas it is very high.
- The expected risk of heat stress will depend on humanity's ability to mitigate GHG emissions. The business-as-usual scenario indicates an increasing risk on a global scale even at high latitudes.
- Heat stress adaptation strategies are necessary to safeguard animal welfare and minimize losses in the dairy sector.

5.5 Andrea Vitali: Professor, Università Della Tuscia

Cold stress occurs at -5°C and thermal heat stress above 25°C.

5.6 Chanchal Waghela: Manager in Animal Nutrition Group, National Dairy Development Board (NDDB)

There are 1.7 billion cows in India and 400 million buffalo.

5.7 Mario Mondaca Duarte: Senior Technical Applications and Research Engineer, VES-Artex

Even minimal heat abatement is incredibly powerful when measured over the long term.

6 CONCLUSION

The above report covers my experience of and knowledge gained from the Summit. As I mentioned in my opening remarks, the central theme throughout this event focused on sustainability, nutrition and animal welfare. These themes are gaining momentum at an unprecedented rate amongst consumers.

There are massive innovations, research, and development to unfold each of these and allow dairy to feature its rightful place in the hearts and minds of consumers. Due to the nature of dairy farming and the emotional response from consumers, it remains a very daunting task that rests on the shoulders of each role player in this industry.

We need to do the right things, convey the right messages, and ensure that the messages are founded on science, research, and a clinical approach to the factual truths.

There is no emotional debate in the effort to position dairy for its rightful place as the most essential contributor to food security in a undernourished world.



1 BACKGROUND

This report gives a glance at the 2023 International Dairy Federation (IDF) Business meetings and the World Dairy Summit (WDS). This is based on the IDF business meetings attended, and the Sessions of the WDS attended. The International Dairy Federation WDS is an annual meeting of the global dairy sector, bringing together approximately 1500 participants from all over the world. The summit is composed of a series of scientific and technical sessions.

The days before the WDS, are normally reserved for the IDF Business meetings. This year, the meetings took place between 12 and 15 October 2023, and they were followed by the IDF WDS, which took place, between 16 and 19 October 2023. The 2023 WDS was held under the theme “Be Dairy, Boundless Potential, Endless Possibilities”. The Summit also covered the conference, panel discussions, side events, poster sessions, networking, and technical tours.

In terms of the available information by the organisers, the 2023 WDS, was attended by more than 1,240 dairy leaders from 55 countries. This included national and international dairy leaders, experts, farmers, processors, researchers, academics, and producers. In terms of the WDS, there were eight main sessions and 21 break-out sessions focused on policy, scientific and technical insights, and exclusive market analysis. The sections which follow, highlight some of the discussions and observations from the 2023 WDS, based on the meetings and sessions attended.



2 IDF BUSINESS MEETINGS ATTENDED BETWEEN 14 AND 15 OCTOBER 2023

The first of the IDF Business meetings attended was on the “IDF Joint Steering Committee on Dairy Policies and Economics and Steering Committee on Marketing”. The meeting kicked off by giving the country updates on the different countries. The report was prepared by Chile, of which 20 Countries submitted their reports, and South Africa was one of the countries that submitted their reports on time. The report covered topics around Dairy policy and economics, dairy product consumption trends, other issues, and generic communication activities.

The report highlighted that the Milk Production Trends were as highlighted below, and this was based on the most recent 6-month period to June 2023 (or most recent) compared to the same period in the previous year.

- | | |
|-----------------------|----------------------|
| • Norway -7.3% | • United States 1.1% |
| • Chile -5.4% | • Iceland 1.2% |
| • Japan -4.3% | • Canada 2.3% |
| • France -2.2% | • Netherlands 2.6% |
| • Australia -2.0% | • Germany 2.6% |
| • South Africa -1.74% | • Belgium 3% |
| • Italy -1.2% | • India 5% |
| • Ireland -0.9% | • China 7.5% |
| • Switzerland 0.1% | |

The report highlighted that the Farm Gate Price Trends were as highlighted below, and this was based on the most recent 6-month period to June 2023 (or most recent) compared to the same period in the previous year.

- Norway 5.6%
- Chile 9.2%
- Japan 4.7%
- France 13%
- Australia 31.0%
- South Africa 12.80%
- Italy 7.1%
- Ireland -8.1%
- Switzerland 0.3%
- United States -32.0%
- UK -30.0%
- Iceland 12.80%
- Canada 1.20%
- Netherlands 10.0%
- Belgium -33.0%
- China -7.5%

In terms of the overall market prospects, the below was highlighted in terms of the countries that reported:

- **Norway:** Expectation of stable price performance. Slightly increased production in the second half of 2023 compared to the first half due to increased milk quota.
- **South Africa:** In 2022, lower milk production continued, and demand for dairy products remained weak. The outlook for 2023 was not optimistic due to subdued GDP growth and low exposure to foreign competition.
- **UK:** GB milk production is forecast to total 12.31bn litres for 2023/24, -0.6% down on 2022/23. Lower farmgate prices to continue.
- **USA:** Despite a decline in U.S. dairy markets from 2022 highs, signs suggest a potential turnaround. Economic resilience, slowing production growth, strong domestic demand, and future export prospects signal hope amid volatility.
- **Belgium:** Low Chinese demand has its effects on the world dairy market.
- **China:** The economy was not very good, so the demand side was not optimistic, and the raw milk was excessive, leading to the decline of price on the supply side, so the past 6 months for the dairy industry were not quite good.
- **France:** Overall consumption is not doing so bad as out-of-home consumption is also at good levels. But as milk collection is decreasing, imports are on the rise.
- **Germany:** The market will be less volatile than in the last 24 months.
- **India:** The E-commerce business of dairy products will continue to grow at a healthy rate.
- **Ireland:** In the first half of 2023, Irish milk production faced challenges due to wet weather, higher costs, and nitrate regulations. Milk prices peaked in December 2022, dropped in Quarter 1, 2023, and stabilized in Quarter 2, 2023. Retail dairy sales are below 2020-2022 but strong compared to pre-COVID. Export demand showed mixed results, with weaker casein and WMP volumes but solid cheese, butter, and SMP shipments.
- **Netherlands:** The dairy market fluctuated in 2023, facing challenges in Quarter 2 due to weak demand. Butter and skimmed milk powder prices declined but stabilized in Quarter 3, uncertain market outlook persists.

The country update also highlighted important information in terms of the countries that reported on imports and exports, nutrition, environment and sustainable development, animal welfare, food and policy developments, milk production, average milk price, retail price dairy and dairy products consumption trends.

In the discussions, it was highlighted that a report on the World Dairy Situation will be shared, while, a complimentary electronic copy was available to all registered participants of IDF WDS 2023 Chicago. This was shared through an electronic excess for the delegates who registered and attended the summit.

There was also a discussion on the Global Marketing Trends for 2024, where the goal of the survey is to identify the main drivers and barriers of the food market and especially dairy products consumption in different countries around the world to understand the changes in market trends during the period 2018-2023. What were the trends after the Covid period: back to normal? Continued increases? Continued declines?



Joint Standing Committee on Dairy Policies and Economics (SCDPE)

The main topics include the following:

- Food and particularly dairy markets recorded atypical evolutions during the year 2020 linked to changes in the economic environment, demography, food industry and distribution, and consumer expectations and habits. In 2023, the conflict in Ukraine has bogged down and prices, especially food prices, recorded a high level of inflation.
- Consumer expectations and habits may be the factor that plays the most important role in the evolution of dairy markets globally but with specificities according to the different areas of the world. And also this time, economic factors may be largely quoted.
- A new questionnaire will be constituted and distributed in 2024.

An update was further given on the plant-based food work, with South Africa being one of the countries where the stock-taking exercise of products on the market will take place. The task force agreed to look at the data on products comparing their selves to yoghurt (with a distinction between fermented and desserts), cheese, butter, cream, and powder.

In the *Standing Committee on Dairy Policies and Economics (SCDPE)*, main discussions were mainly around the reviewing of the objectives and current priorities of the Standing Committee. The discussion highlighted that the objectives of the Standing Committee on Dairy Policies and Economics are *to provide the dairy sector with value-added information, data, and analyses for the developments in dairy policies and economics that are in support of the strategic plan of IDF.* More specifically:

- To initiate projects to study developments which, in the broader sense, are likely to influence the dairy situation in the medium perspective and to monitor worldwide market conditions and trends for each dairy product category;
- To gather data and analyze the economic parameters of milk production, processing, consumption, trade, market evolution and marketing;
- To monitor developments in dairy-related policies around the world that impact the supply or demand of milk and dairy products;
- To initiate projects designed to provide economic and statistical information to the member countries of IDF and the world's dairy sector;
- To disseminate information and promote the interchange of knowledge through symposia, conferences, seminars, special addresses, and regular reports to the dairy sector;
- To maintain relations with other international bodies or associations such as the FAO, FEPALE, GDP, the

OECD, or the EDA, at intergovernmental and nongovernmental levels, on behalf of the dairy sector in the areas of dairy policies and economics;

- To collaborate with other key organizations such as Eurostat, the IFCN, Rabobank, or others in the development of economic analyses, papers, or by their participation in seminars or conferences;
- To identify the main trends and support the IDF priority work items, especially with respect to the development of socially sustainable dairy economies throughout the World;
- To prepare country reports and fact sheets twice per year;
- To actively contribute to the design and preparation as well as the presentation of the World Dairy Situation report;
- To take advantage of the synergy between dairy marketing and dairy policy and economics by holding joint meetings once a year and by preparing and producing a joint country report that covers the dairy policy, economics, and marketing areas;
- To maintain contact with other Standing Committees, for example, on Nutrition, Farm management, Environment, etc. on the policy and economic implications of their findings, more specifically:
- To collaborate on the development of the Global Marketing Trend Report with the Standing Committee on Marketing (SCM); and
- To participate in the Joint Action on Dairy Dietary Guidelines (SCM and SCNH).

The discussions further highlighted the priorities for 2024, which amongst others included the World Situation Report, Dairy Policies and Economics Conference, and the Joint Country Report. The survey on expertise and skills was also discussed, which aimed to identify the needs for mentors, determine a better picture of available expertise and identify gaps, implement in the IDF database, and for the chairs and deputy chairs to have information on the expertise available. The survey highlighted, that based on the results from the survey, there is a place to further enhance expertise on the SCDPE. Furthermore, there is a need to identify volunteers for mentors and needs for mentorship and succession planning. Other standing committees attended on an observer status were on marketing, health and nutrition, dairy science, and technology.

3 IDF WORLD DAIRY SUMMIT 2023

On 16 October 2023, the World Dairy Summit kicked off under the theme **“Be Dairy, Boundless Potential, Endless Possibilities”**. The summit also covered the conference, panel discussions, side events, poster sessions, networking, and technical tours. In terms of the WDS, there were eight main sessions and 21 break-out sessions focused on policy, scientific and technical insights, and exclusive market analysis. The sessions attended were as follows: Introduction to the United States Dairy Industry, Global Dairy Leaders Forum, Dairy Outlook: World Dairy Situation, Dairy Farming around the World: Today's Focus, and Tomorrow's Vision. Furthermore, the following presentations were attended, Dairy's credit Rating: How do we measure up in the eyes of the investor, Dairy processing around the world: Today's focus, tomorrow's vision, Dairy Science and Technology, Cell-based fermentation technology in the dairy sector.

3.1 US dairy industry, economic and market overview

In terms of the US dairy industry, economic and market overview, it was highlighted that the US has about 28 000 dairy farms which produce 11% of the global milk supply and about 3% of the world's cows. Furthermore, the US has the most productive dairy industry in the world, in 2022 about 24,000 lbs of milk per cow was the average production per cow. In terms of Agriculture, 24% of the global food production was produced by the US, with 28% of the global agrifoods exports also from the US and 50% of biodiversity. In the presentation, it further clearly came out that the US dairy industry was actively participating in international marketing and communication collaboration. The presentation also touched on the Mexico dairy market where it was highlighted that the milk production in Mexico has not stopped growing year after year. About half of the market is ready-to-drink milk and the other half is dairy products. The trend is to

decrease the consumption of fluid milk and to increase the consumption of dairy products and the consumption of dairy products with high butterfat content has strengthened. The market is supplied with 70% of domestic production and the rest is imported. The imports are mainly skim milk powder and cheese and the presentation also highlighted that exports were growing in Mexico. The main challenge is to increase the per capita consumption of milk and dairy products.

3.2 World Dairy Leaders

The objective of this session was to envision the future of the Dairy industry by listening to World Dairy Leaders' forecasts how they foresee the sector will develop and their companies' strategies to keep nourishing the world with safe, nutritious, and sustainable products. The presentation was given by Yohichi Ohnuki of the Morinaga Milk Industry CO., LTD.

The presentation covered the Japanese Dairy Situation, highlighting some of the challenges including securing dairy farmers' successors and the creation of demand. Furthermore, the expansion and growth of domestic dairy products export, mainly to SEA, and securing dairy farm income and profit. In terms of Morinaga, it was highlighted that the company has more than 100 years of history. In terms of mitigation of and adaptation to climate change, the company aims to reach carbon neutrality by 2050. This is by sustainable raw material procurement, environmental consideration, and resource recycling.

The discussions also covered presentations from Miles Hurnell who highlighted that Innovation should be key for the development of the dairy industry globally. Furthermore, animal welfare and sustainability play a critical role in the development of the dairy industry. This was also followed by a presentation from Patricia Stroup, who highlighted that the dairy industry can reach net zero, furthermore that the dairy industry must be open to change.

Jayen Mehta in his presentation gave background of Amul, highlighted the importance of Biogas in the Indian dairy industry, he also highlighted that investment in innovation plays a critical role in the Indian dairy industry. In this session's discussions other things that came out were the issues around labour shortages in the dairy industry in some parts of the world, the resilience of the dairy industry, the importance of the consumer in the dairy industry, and the importance of Artificial Intelligence.

3.3 IDF Global Trends Report

In the presentation, it was highlighted that the FAO and OCED believe that dairy will have the largest rate of consumption growth among all food categories over the next decade. The Covid crisis created a strong increase in demand for dairy products. After the period of increase, the situation is almost back to normal, but with a positive tail effect. However, some pre-COVID period consumer trends have increased after COVID-19, such as climate change concerns, animal welfare, and demand for local production. The global economic outlook slightly improved in 2023 but with regional differences: emerging markets outperform advanced economies and remain the growth engine of the global economy. In 2022 and 2023, inflation rates created a new uncertainty for the near future. Climate change and consumer demand for sustainability are becoming more urgent.

3.4 Dairy Outlook World Dairy Situation and Marketing Trends Reports

The presentation highlighted that 2022 was a year of geopolitical turmoil with a return to war on European soil, a severely disrupted global economy, record inflation, and soaring raw material prices. In terms of the report, 2022 will go down in history as a year of events impacting all business sectors. Also highlighting that the dairy industry has not been spared.

With soaring production costs (animal feed, fertilizers, etc.), environmental regulations, and extreme weather conditions, the 2022 world milk deliveries showed a lack of dynamism. The total output of dairy products showed a lower growth compared to the long-term trend for most of the product categories. Global demand for dairy products remained stable in 2022, albeit with lower import-export flows than in 2021. Prices of dairy commodities showed strong volatility and reached some unprecedented average levels. The year 2022 is divided into 2 parts: a 1st semester with limited milk collection, rising prices, and declining trade; and a 2nd semester with increasing milk supply, decreasing prices and rebound in trade.

In terms of 2023 and beyond, milk supplies should rebound in 2023 after a slowdown in 2022, with growth expected in Asia and Oceania. In terms of dairy products prices have continued to fall in 2023 but seem to have bottomed out in the fall. Dairy trade is rebounding after a decrease in 2022 even though demand on the international markets is still limited. Furthermore, the dairy sector is facing ongoing uncertainty regarding the medium and long-term impacts of geopolitical turmoil and inflation.

3.5 Agricultural Emissions Pricing in New Zealand

The presentation from the Dairy Companies Association of New Zealand highlighted the Agricultural emissions pricing legislation in New Zealand. It highlighted that in 2019, legislation was passed for agricultural emissions (methane and nitrous oxide) to enter the New Zealand Emissions Trading Scheme at the processor level in 2025 unless the Government progresses legislation for an alternative approach.

Government and industry commenced work to establish an alternative farm-level approach. In terms of the presentation, it highlighted that 96% of New Zealand dairy farms now have emissions reports. Furthermore, 55% now have a written plan to manage their emissions. The New Zealand dairy Industry continues to strengthen the foundations for farm-level reduction, by further embedding farm reporting, planning, and investment in new technologies. Industry and government engagements continue in New Zealand around the above.

3.6 Dairy in the next decade ahead

In the OECD-FAO Agricultural Outlook 2023-2032 report presentation, it was highlighted that International dairy prices reached their peak around mid-2022 and have started to decline slowly since. Milk production increased by 2.2% in 2022, with little impact on the world dairy market as India's weight in trade is marginal. Smaller import demand from China resulted in a decrease in world dairy trade in 2022. Other major importers of dairy products – Saudi Arabia, Indonesia, and Mexico – increased their imports. The United States was the main beneficiary of any additional exports. Some of the uncertainties related to the 10-year projections include plant-based replacements for dairy, environmental legislation, Russia's war against Ukraine, changes in domestic policies, and changes in the trade environment.

3.7 How will changing global demographics impact dairy demand?

The presentation highlighted that dairy demand remains resilient and stable in developed markets and growing in developing countries. Changing demographics will impact dairy demand with a greater focus on personalized nutrition in developed countries. Fluid milk consumption is expected to increase in developing countries; however, demand in developed countries is moving toward protein-dense, or purposeful-product (health & wellness), that are conveniently packaged. Dairy farmers' social license to produce milk and retain market share in developed countries will be tied to reducing the sector's carbon footprint, which is also imperative to prevent being "formulated-out" of retail Consumer Packaging Goods (CPG) products.

3.8 Dairy's credit rating: How do we measure up in the eyes of investors

In terms of the discussions, it was highlighted that Banks and investors are increasingly considering a broad set of Environmental Social, and Governance (ESG)-related risk drivers which could affect dairy companies' access to capital. Banks and investors are trying to meet a broad set of expectations and requirements from regulators, investors, board members, customers, and rating agencies.

There is significant momentum to finance and support sustainable practices, which will likely only intensify as transparency increases and metrics standardize. The ESG pressure on banks and investors creates both challenges and opportunities for dairy producers and processors – through increased availability and reduced cost of financing for sustainable practices.

The flow of capital to sustainable practices is likely to catalyze technological advances that will shape the dairy industry of the future. It was also indicated that sustainability starts with the farm, including financial and generational sustainability. Investments in farm need to have economic benefit or potential economic benefit. Sustainability expectations for dairy should consider solutions for all-sized dairy farm operations. Technology risk concerns for lenders and certain technology investments need maturing and sustainability-linked financing products will be further developed.

4 CONCLUDING REMARKS AND CONCLUSION SESSION

In terms of the overall sessions of the business meetings and WDS, the discussions were very robust, and the speakers went into detail in terms of the areas presented and discussed. The meeting and sessions also involved interacting with experts globally involved in the dairy industry, which also included economists at the FAO and OECD.

The issues around labour and the shortage of labour in the dairy industry in some countries around the world also came out. In terms of the WDS, there were eight main sessions and 21 break-out sessions focused on policy, scientific and technical insights, and exclusive market analysis. In 2022 and 2023, inflation rates created a new uncertainty for the near future.

The Covid crisis created a strong increase in demand for dairy products. After the period of increase, the situation is almost back to normal, but with a positive tail effect. Climate change and consumer demand for sustainability are becoming more urgent.

Overall, long-term prospects for the milk and dairy sector are optimistic (even though some economic and political conflicts and issues remain a big concern for the near future). Furthermore, technology risk concerns for lenders and certain technology investments need maturing and sustainability-linked financing products will be further developed.

5 ACKNOWLEDGEMENT

I would like to express my sincere appreciation to the *South African Milk Processors' Organisation (SAMPRO)* for the funding and opportunity to attend the IDF business meetings and the World Dairy Summit.



Report by: BERTUS VAN HEERDEN

1 ECONOMIC OUTLOOK ON DAIRY DRIVERS AND THE DECADE AHEAD

Speakers:

- Dr Lee-Ann Jackson (OECD, France)
- Mary Ledman (Rabo Bank)
- Will Loux (USA Dairy Export Council)
- YiFan Li (StoneX Group, Singapore)

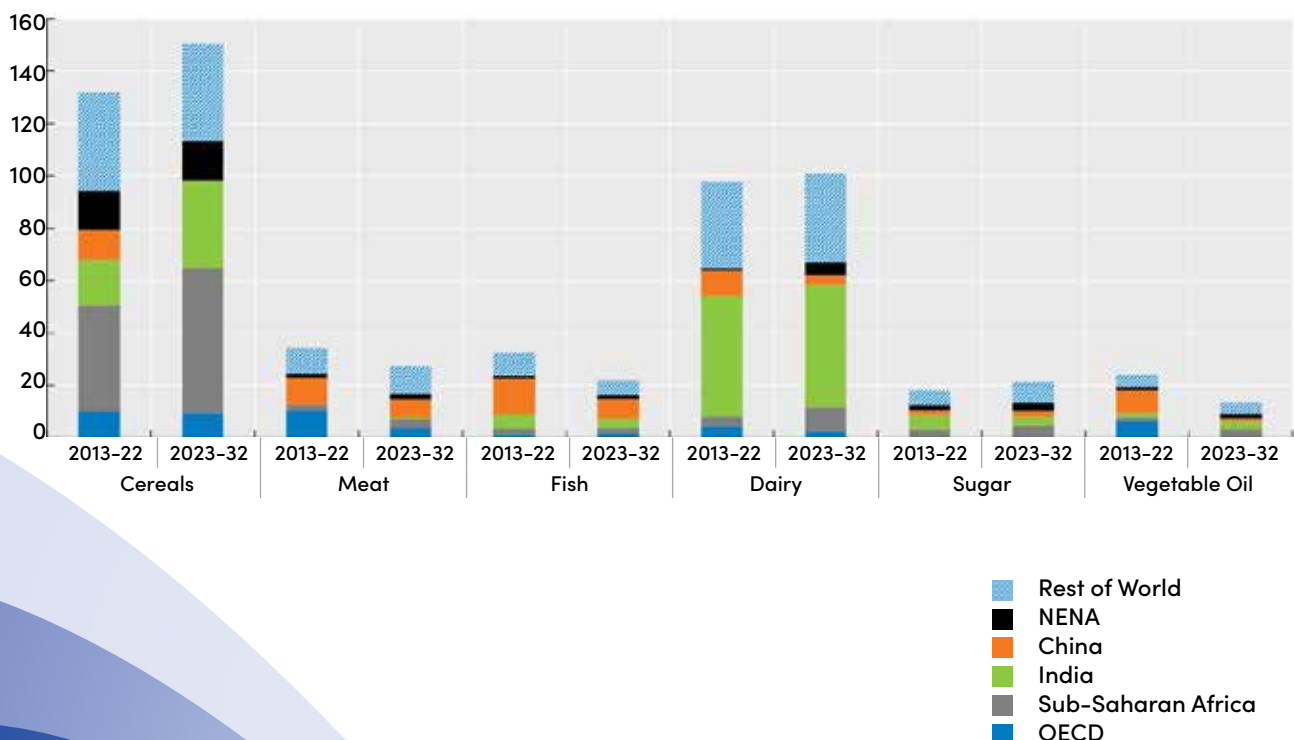
The tripple challenge to world agriculture is:

- Feed the world
- in an environmentally friendly way,
- with the focus on sustainability.

1.1 Dairy market conditions and economic outlook

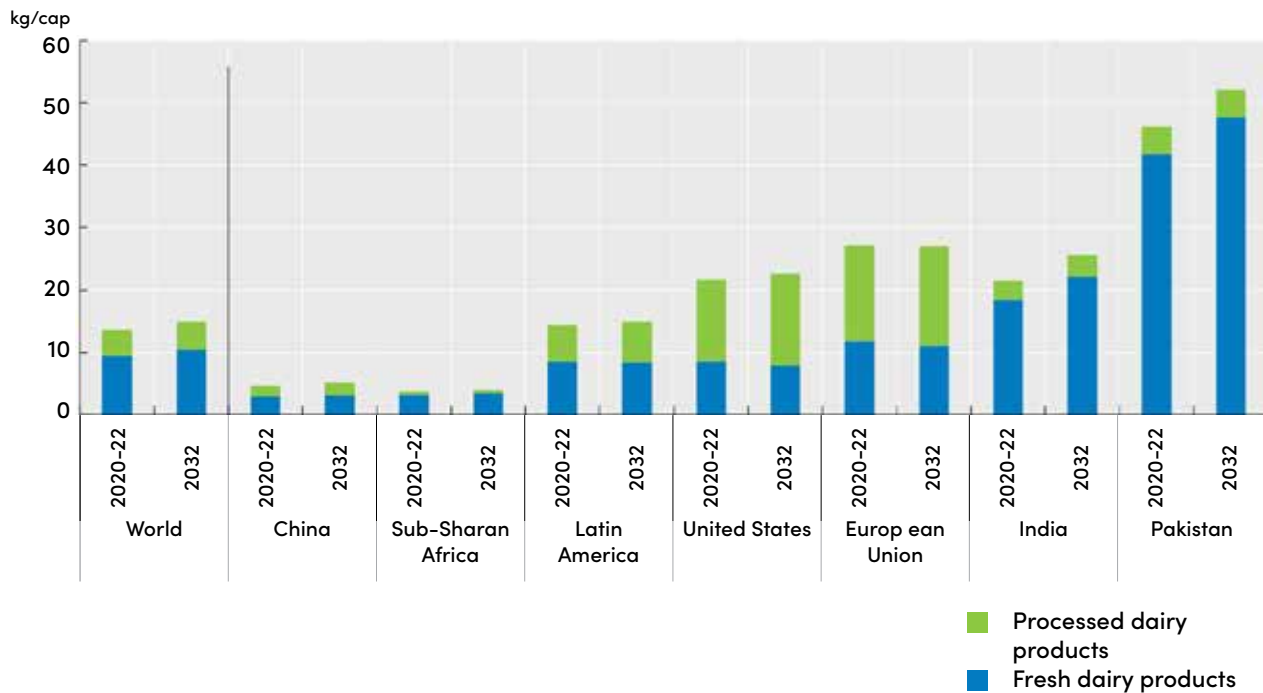
International dairy prices increased by 20% in 2022 but started to decline towards the end of 2022. Increasing input costs were one of the main drivers of price increases. Domestic prices often show a slightly different development as only a small share of milk is internationally traded. Milk production increased globally slower in 2022 than in previous years. World trade in dairy products declined, mainly due to lower imports by China. However, Saudi Arabia, Indonesia, and Mexico increased their imports with the United States of America as the main beneficiary of additional exports.

Graph 1: Table Regional contributions to food demand growth, 2013-22 and 2023-32



The demand for starch, protein, fat, and sugar in different world regions is covered in the above graph. The graph (source: OECD) indicates that for the period 2023 to 2032, dairy demand growth in India and the category Rest of the World, will remain strong, dairy demand growth in China will slow down while demand growth in Sub-Saharan Africa and the Near East and North African countries (NENA) will increase. NENA includes Algeria, Djibouti, Egypt, Jordan, Lebanon, Morocco, Somalia, Sudan, Syria, Turkey, and Yemen. Demand growth for cereals is the biggest with dairy in second place.

Graph 2: Per capita consumption of processed and fresh dairy products in milk solids



The 10-year projection to 2032 in the above graph is subject to the following uncertainties:

- Plant-based replacements for dairy
- Environmental legislation
- Russia's war against Ukraine
- Changes in domestic policies
- Changes in the trade environment

More recent developments, like the attack on Israel and the subsequent war and the now very real property market crisis in China, will add to the scope of uncertainties regarding the above projections. The world is in an uncomfortable place and some countries are playing a divisive role creating a more divergent world.

The demand for different dairy products is still a function of household income where you find households move on the demand curve from less processed dairy to more processed dairy as their income increase (population stagnates). However, there is a new trend amongst younger generations (Millennials, Gen Z, and Gen Alpha) to demand less processed foods and, a more natural/original base. It seems that income levels play a lesser role in this trend, but data are still in the early stages.

In the above graph, milk solids per capita consumption through fresh dairy products is the highest in Pakistan followed by India, while milk solids per capita consumption through processed dairy products is the highest in the EU followed by the USA and Latin America. Most dairy production is consumed in the form of fresh dairy products, which are unprocessed or only slightly processed (i.e., pasteurised or fermented), and their share

in world consumption is expected to increase over the next decade. In low- and middle-income countries, fresh dairy products comprise over two-thirds of the average per capita dairy consumption (milk solids), while consumers in high-income countries tend to consume more processed products. From this trend, the phrase “in the USA consumers now eat milk”.

Cheese is the most important processed dairy product consumed in terms of milk solids, which primarily occurs in Europe and North America and is increasing in both regions. In Asia, butter is not only the most consumed processed dairy product, accounting for almost half of all processed dairy consumption in terms of milk solids, but it also has the strongest projected growth. In Africa, cheese, and whole milk powder (WMP) account for most of the processed dairy consumption. Over the coming decade, however, skim milk powder (SMP) is expected to record the highest growth, although from a lower base.

The demand for dairy as a whole, is a function of population growth and changes in income levels of households and is an important driver of international dairy trade. Milk is traded internationally mainly in the form of processed dairy products. The People’s Republic of China is expected to remain the most important importer of milk products despite a stronger increase in domestic milk production relative to the past decade.

The projected increase in import demand for dairy products in Southeast Asian countries will be driven by population as well as income growth, which favours more livestock products in diets. However, their per capita consumption is projected to remain low relative to traditional dairy consumer markets.

Mexico and countries in the NENA, especially Saudi Arabia, will also continue to be important net importers of dairy products. Over the medium term, the European Union, New Zealand, and the United States will remain the key exporters of processed dairy products and are projected to jointly account for around 65% of cheese, 70% of WMP, 70% of butter, and 80% of SMP exports in 2032. Since 2015, the unit price of butter has been considerably higher than for SMP. This development is attributed to a stronger demand for milk fat compared to other milk solids on the international market. It is expected that this gap will persist throughout the projection period.

1.2 Significant Dairy Consumption Drivers

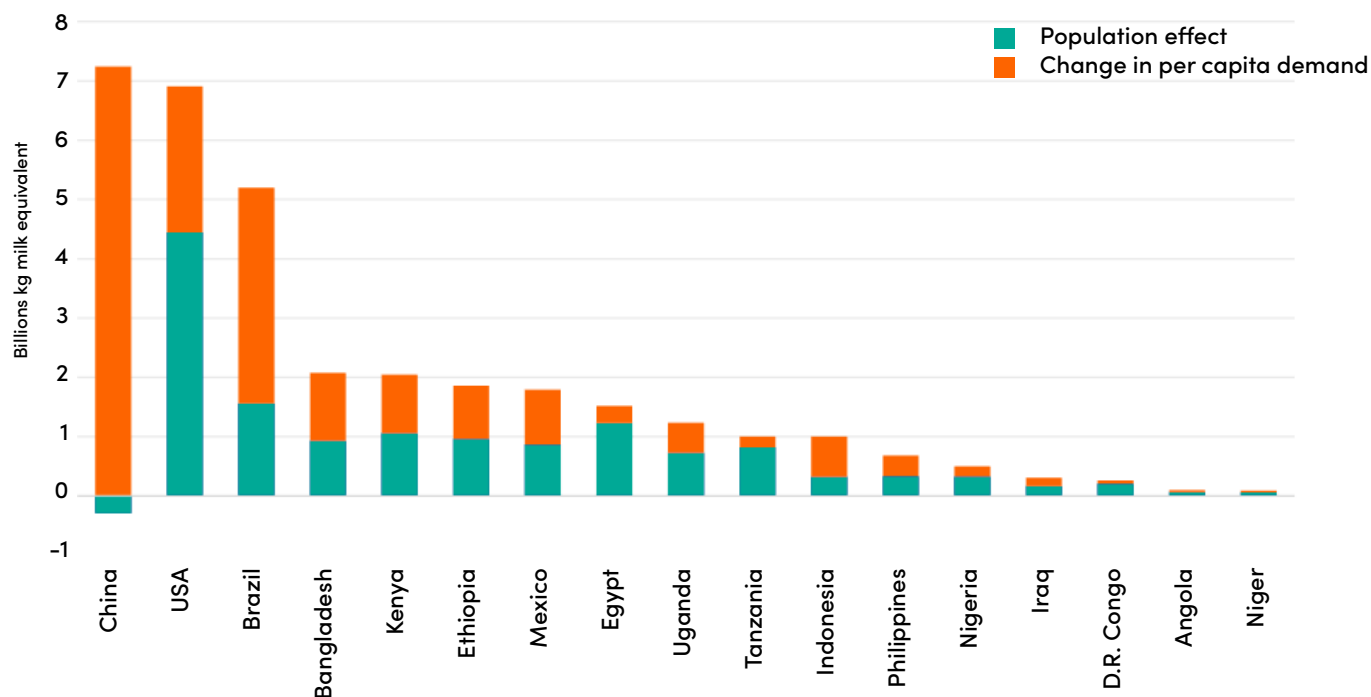
Changing demographics i.e., population growth, aging versus youthful population, and income growth are the major dairy consumption drivers. Population growth is a function of absolute population size and population growth rate. Change in per capita demand is a function of disposable income, consumer taste and preferences, expectations, and product price versus the price of substitutes also play a role.

The UN’s latest forecast indicates a population growth of 705 million people from 2020 to 2030. Over 50% of the population growth will occur in Africa, followed by India at +17%, Pakistan at +6.6%, Indonesia at +2.9%, the Philippines and Bangladesh at +2.4%, and the US at +2.3%. The top 20 countries in population growth account for about two-thirds of the world’s population growth, driving a 2.5% compounded annual growth rate (CAGR) in dairy demand. It’s noteworthy that China’s population will cease to grow in this decade and is forecasted to decline by 9.3 million during this decade.

The markets in the graph below (without India and Pakistan) represent the largest volume growth in dairy demand based on population and per capita consumption (PCC) growth. Despite the forecasted 9.3-million-person decrease in China’s population, the remaining 1.4 billion people are expected to increase dairy consumption by 1.6% due to increased income per household on the back of a 4% annual GDP growth rate over the next five years. In contrast, the US demand growth is driven by a 0.5% increase in population and a 0.25% gain in PCC – due to existing high PCC.

Thus, big market growth will be experienced in India, Pakistan, China, the USA, and Brazil totalling 119.2 billion kg milk equivalent over the next 10 years.

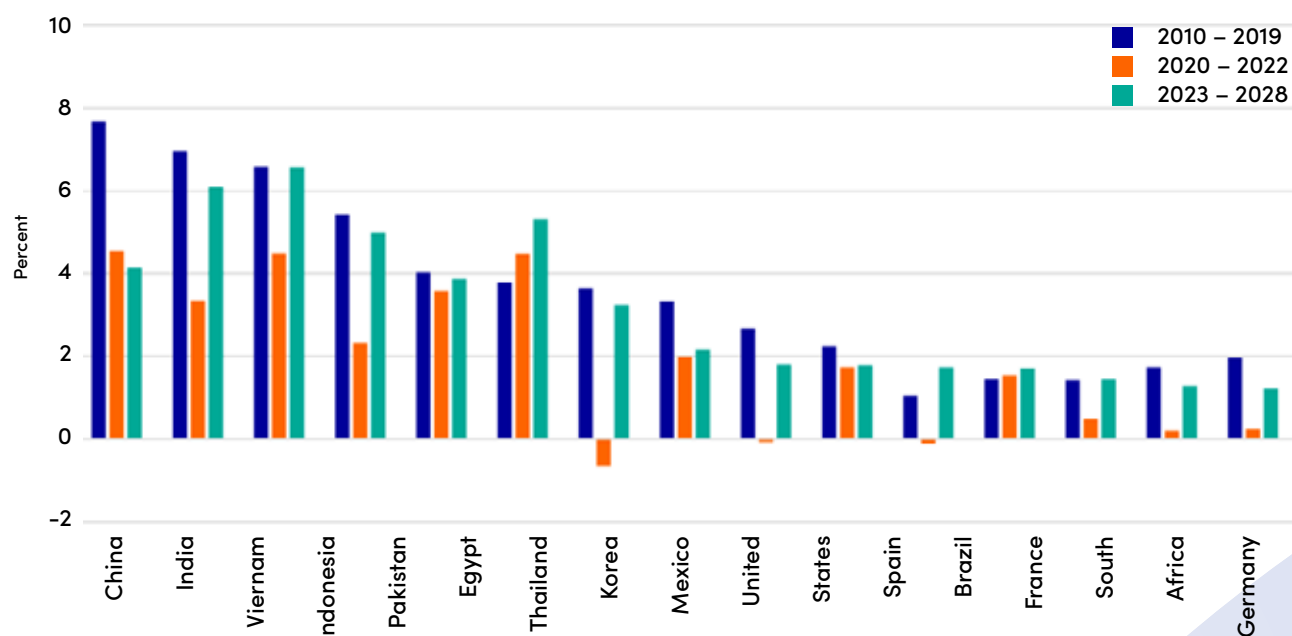
Graph 3: Forecast growth in dairy demand, 2020 to 2030



Source: UN Population Estimates, OECD, IFCN, RaboResearch, 2023.

Growth in Gross Domestic Product (GDP) is closely correlated with growth in income as it is linked to increased disposable income. GDP growth underpins the forecasts.

Graph 4: Annual Average GDP growth



Source: IMF

In the graph 4, except for China, all the countries experience a positive GDP growth rate over the next 5 years. The countries with the most vibrant GDP growth rates are India, Indonesia, Thailand, and Mexico.

Although milk is a highly perishable product and must be processed shortly after milking, most milk is consumed as fresh dairy products e.g., fermented, and pasteurised products. Strong demand growth in India and Pakistan driven by income and population growth is expected to increase the share of fresh dairy products in global consumption over the coming decade. World per capita consumption of fresh dairy products is projected to increase by 1.0% p.a. over the coming decade, slightly faster than over the past ten years, primarily driven by higher per-capita income growth. Milk consumption per capita (in terms of milk solids) will vary largely worldwide, driven by varying growth in incomes and regional preferences. In low- and lower-middle-income countries most of the production is consumed in the form of fresh dairy products.

The consumption of fresh dairy products per capita is high in India and Pakistan. In Europe and North America, overall per capita demand for fresh dairy products is stable to declining but the composition of demand has been shifting over recent years towards dairy fat such as full-fat drinking milk and cream. Plant-based dairy replacements are increasingly established and competing more with fresh dairy products than with processed dairy products.

The share of processed dairy products, especially cheese, in overall consumption of milk solids, is expected to be closely related to incomes, with variations due to local preferences, dietary constraints, and urbanisation. The largest share of total cheese consumption, the second most consumed dairy product, occurs in Europe and North America, where per capita consumption is expected to continue to increase over the projection period. Consumption of cheese will also increase in regions where it has not been traditionally part of the national diet.

In Southeast Asian countries, urbanisation and income increases have resulted in more away-from-home eating, including fast food such as burgers and pizzas.

1.3 Global dairy supply and demand outlook:

- Dairy demand remains resilient and stable in developed markets and growing in developing countries.
- Changing demographics will impact dairy demand with a greater focus on personalized nutrition in developed countries while per capita consumption in developing economies will be fuelled by both population growth and per capita consumption.
- Fluid milk consumption is expected to increase in developing countries; however, demand in developed countries is moving toward protein-dense, or a purposeful-product (health & wellness), that is conveniently packaged.
- Stagnant growth in global milk production will result in adequate farmgate milk prices, with the greatest margin expansion coming from eco-system deliverables that are both private and public sector driven.
- Dairy farmers that optimize the eco-system marketplace are reducing their dependence on the milk price. However, participating in the eco-system marketplace should be viewed as additional income and not to subsidise the farmgate price of unprocessed milk.
- The dairy value chain social license to produce milk and dairy products and retain market share in developed countries will be tied to reducing the value chain's carbon footprint, which is also imperative to prevent being "formulated-out" of retail consumer packaged goods (CPG) products.

Graph 5: International Dairy Trade Expected to Rebound: Global Dairy Trade Forecast

(Milk Solids Equivalent, rolling 12 months)



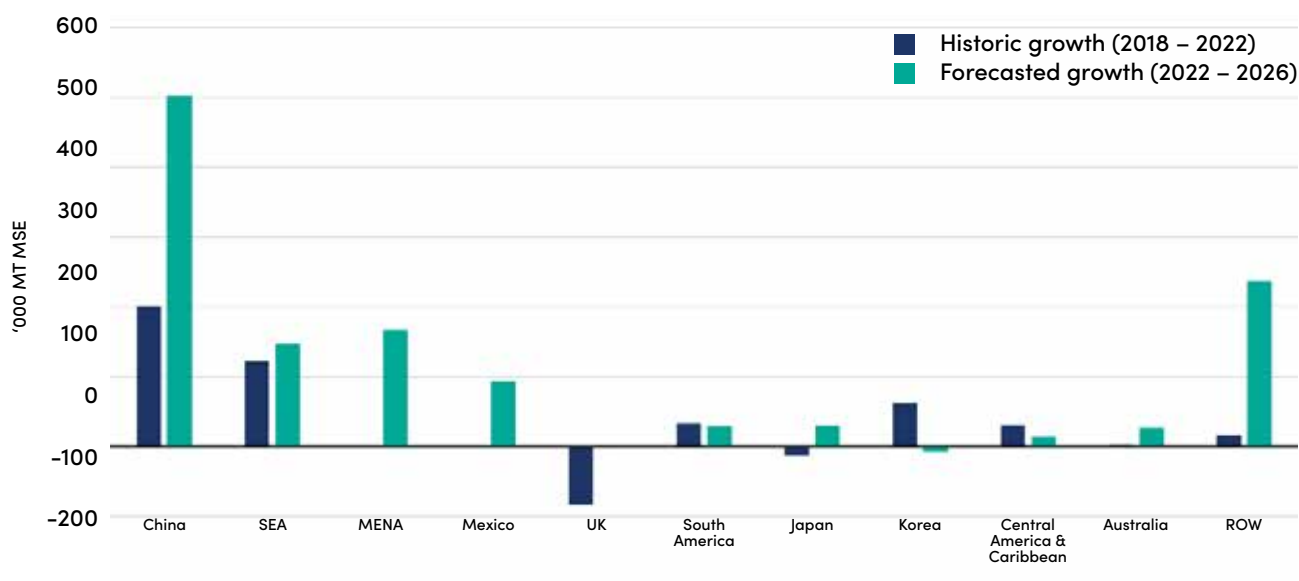
International dairy trade is expected to rebound due to improved logistical availability, more favourable freight rates, and better stock levels in the major dairy exporting countries. Only 7% of the world's unprocessed milk production is traded internationally, primarily due to its perishability and high water content (more than 85%). Over 50% of world production of WMP and SMP is traded since these products are often produced only to store and trade over a longer time period or distance.

Most of the growth will be met by increased exports from the United States, the European Union, and New Zealand. These three countries are projected to jointly account for around 65% of cheese, 70% of WMP, 70% of butter, and 80% of SMP exports in 2032. Australia has lost market share although it remains a notable exporter of cheese and SMP. In the case of WMP, Argentina is also an important exporter and is projected to account for 5% of world exports by 2032. In recent years, Belarus has become an important exporter, orienting its exports primarily to the Russian market due to the Russian embargo as of 2015 on several major dairy exporting countries.

The European Union will continue to be the main world cheese exporter, followed by the United States and New Zealand. New Zealand remains the primary source of butter and WMP on the international market, and its market shares are projected to be around 40% and 60%, respectively, by 2032.



Graph 6: Where Do We Expect Import Demand Growth?
Historic and Forecasted Global Dairy Trade by Major Market
(Milk Solids Equivalent)



Imports are spread more widely across countries, with the dominant destinations for all dairy products being the NENA, high-income countries, Southeast Asia, and China. China is expected to continue to be the world's major dairy importer, especially for WMP with imports from China projected to represent 21% of global imports in 2032. The United Kingdom, Japan, Russia, the European Union, and Saudi Arabia are projected to be the top five cheese importers in 2032.

Total dairy consumption in Africa, Southeast Asian countries, and the NENA is expected to grow faster than production, leading to an increase in dairy imports. As liquid milk is expensive to trade (high volume/value ratio), this additional demand growth is expected to be met with milk powders, where water is added for final consumption or further processing.

2 IDF BUSINESS MEETINGS

2.1 Dairy Farmers Roundtable Discussions (15th October 2023)

Moderators:

- Helen Dornom (AU)
- Carl Oskar Paulrud (SE)
- Marilyn Hersey (US),
- Joanna Shipp (US)

Approximately 50 people attended the meeting and the following were identified as the topics for discussion:

- Labour
- Climate Change/Sustainability
- Opportunities and Challenges for New Farms

The availability of farm **labour** is in most developed economies a problem. A high turnover is costly, and farmers need to be careful to create unrealistic competition in the labour market. Participants shared their thoughts and experiences on how best to recruit and how to retain skilled labour. It was obvious from the discussion that different aspects of the farms, such as the size and degree of automation influence the level and type of labour needed, at least to some extent. The discussions include the importance of work-life balance, the benefits of sharing business insights with workers that foster ownership and being part of a team, and clear communication with workers and what is expected from each worker is of cardinal importance.

It seems that **climate change and sustainability** are on a runaway rollercoaster. Concern was expressed whether new regulation included the latest scientific findings and the IDF was requested to communicate new research findings pro-actively. The increasing regulatory framework is already challenging and where new regulation is based on incomplete findings it adds to the frustration and could involvement investment at the farm level into deficient technology. Farm efficiency was mentioned as an important driver of sustainability on several occasions during the meeting. Farm efficiency was addressed in various ways, from improved genetics and data collection and decision-making systems to various ways of securing or even increasing the value of unprocessed milk. Biogas seemed to be of general interest as well as introducing alternative crops and crop rotation systems.

Investment cost to enter dairy farming was indicated as the main challenge for **New Farmers**. The Japanese participants told us about their initiative to establish a dairy farm academy. The academy is intended for young people who want to farm but have no farm background or any land. The program includes a “matchmaking” between older farmers with nobody to take over the farm, and the newly graduated potential farmers. Various farmers around the tables highlighted the importance of communicating the advantages and privileges of being a dairy farmer, the life in the countryside, and the lifestyle.

2.2 Dairy’s Environmental Impacts: Reducing pressure on resources and maximizing eco-systems (18 October 2023)

Presenter: Brian Lindsay

Highlights from the Dairy Sustainability Framework (DSF)

The world dairy sector consists of 600 million people living on 133 million farms where 37 million farms are led by women, 400 million people supported by full-time jobs created in support of dairy farming with 240 million people employed directly or indirectly up and downstream in the dairy value chain of which 80 million are women. Against this background, the dairy sector needs to illuminate the impact potential of actions in the dairy sector to advance the 17 Sustainable Development Goals of the United Nations (UN).

Background: The UN realized and embraced that solving some of the major challenges on Mother Tera will involve joint efforts by all nations and countries. In that process, the UN provided a shared blueprint for peace and prosperity for people and the planet, now and into the future. The blueprint involved 17 Sustainable Development Goals (SDGs), also known as the Global Goals, and was accepted in 2015 as a universal call to action to end poverty, protect the planet, and ensure a better future for all. The 17 SDGs feed on each other in that the action in one area will affect outcomes in others, and that development must balance social, economic, and environmental sustainability.

The risk of a more fractured world increased since 2022 with the Russian imperialistic stance. The timing of the attack of Hamas on Israel is not a coincidence and in general, there is a mood of heightened intolerance between leaders, regions, and countries. In this type of world setting it will be difficult to get a consensus on the broader issues/interests that we need to tackle as a collective. It seems that the narrow interest outweighs the broader interest to the detriment of the world. The risk of a more fractured world is now a great threat and challenge to most of the 17 SDG’s. The 17 SDG’s are:

- **No poverty:** This is one of the greatest challenges facing humanity. Rapid economic growth in countries such as China and India has lifted millions out of poverty. Economic theory suggests that efficient use of resources will increase the GDP of a country.
- **Zero hunger:** The number of undernourished people has dropped by almost half in the past two decades because of rapid economic growth and increased agricultural productivity. Many developing countries that used to suffer from famine and hunger can now meet their nutritional needs. Central and East Asia, Latin America and the Caribbean have all made huge progress in eradicating extreme hunger.
- **Good health and well-being:** Good health is essential to sustainable development and the 2030 Agenda reflects the complexity and interconnectedness of the two.
- **Quality education:** This goal ensures that all girls and boys complete free primary and secondary schooling by 2030. Can quality education be free?
- **Gender equality:** Ending all discrimination against women and girls.
- **Clean water and sanitation:** More and more countries are experiencing water stress, and increasing drought and desertification is already worsening these trends. Protecting and restoring water-related ecosystems is essential.
- **Affordable clean energy:** Investing in green energy will be key to achieving this goal.
- **Decent work and economic growth:** Sound policies and good governance can drive this goal. Government should function as an enabler in the macro economy.
- **Industry, innovation, and infrastructure:** Technological progress is key to finding lasting solutions to both economic and environmental challenges.
- **Reduced inequalities:** These widening disparities require sound policies to empower lower income earners.
- **Sustainable cities and communities:** More than half of the world's population lives in cities. By 2050, two-thirds of all humanity 6.5 billion people will be urban. Sustainable development cannot be achieved without significantly transforming the way we build and manage our urban spaces.
- **Responsible consumption:** The efficient management of our shared natural resources, and the way we dispose of toxic waste and pollutants, are important targets to achieve this goal. Reducing the per capita of global food waste at the retailer and consumer levels by 50% is also important for creating more efficient production and supply chains. This can help with food security and shift us towards a more resource-efficient economy.
- **Climate action:** Greenhouse gas emissions are more than 50 percent higher than in 1990. Global warming is causing long-lasting changes to our climate system, which threatens irreversible consequences if we do not act. Human suffering and environmental collapse will create migration that will render the less affected regions unsustainable.
- **Life below water:** This life needs to produce sustainable yields for the over three billion people who depend on marine and coastal biodiversity.
- **Life on Land:** Every year, 13 million hectares of forests are lost, while the persistent degradation of drylands has led to the desertification of 3.6 billion hectares, disproportionately affecting poor communities.
- **Peace, justice and strong institutions:** We cannot hope for sustainable development without peace, stability, human rights and effective governance, based on the rule of law.
- **Partnerships for goals:** The world is more interconnected than ever. Improving access to technology and knowledge is an important way to share ideas and foster innovation. The current risk of a fractured world will weigh against achieving this goal.

The size of the dairy industry, the way the industry is intertwined with people living on farms, and the magnitude of resources that the industry utilizes go a long way to indicate the extent to which the industry can contribute to the SDG's of the UN. The ability to improve productivity is best illustrated when realizing that only 0.3% of all dairy farms have more than 100 cows per farm.

1 BUSINESS MEETINGS

1.1 Joint meeting, Standing Committee: Dairy Policies and Economics & SC: Marketing

- Nutrition recommendations is a problem in Nordic countries, where less meat consumption is advocated for health reasons. In Germany, 10 grams of meat is recommended while dairy consumption should be halved.
- In Denmark, CO2 taxes were to be effected based on the findings of an expert group of which a report was being awaited.
- 1Processors started to introduce incentive models for CO2.
- Survey results (April 2023) on Resilience in the Global Dairy Sector: Sebastian (IDF Head Office) will send the report for comments.



1.2 Standing Committee: Dairy Policies and Economics

- A shift from left to right in the EU politics was expected to influence aspects such as the “Green Deal”.
- The SC looks at socio-economic sustainability.
- The current objectives of the SCDPE were found to be in order still. An important objective is to monitor policies that impact the supply and demand of dairy products; and initiate projects to provide economic and statistical information.
- France was concerned about a shortage of labour in their country and requested that this be added as a collective issue. South Africa said that a shortage of scarce skills was an important collective issue to consider.

1.3 Joint meeting, Standing Committee on Marketing and Standing Committee on Animal Health and Welfare

- An annual report was available from Pierre Cornier.
- An MoU was signed with IICA as well as with ICAR.
- Big concern about governments / schools that started to exclude milk from school milk programmes.
- There will be soon 10 countries that joined the European Milk Forum. The Forum now pays attention to nutrition as well. 80% of its funding comes from the European Commission.
- The Strategic Task Force of the European Milk Forum pays attention to sustainability, nutrition, heritage and climate. (Ida Berg).
- There is a video on the milk matrix.
- A country update was presented, wherein South Africa featured prominently.
- The programme in France for 2024 include:
 - Exploring the diverse approached of sustainability communication to consumers through the different social media platforms
 - How to reach the youth, Gen Z and Gen Alfa
 - The role of artificial intelligence in marketing and communication.

1.4 Joint meeting, Standing Committee: Nutrition and Health and SC: Marketing

- More than 200 articles have been scrutinized, all of which were positive about the dairy matrix.
- “Old fashioned” scientists needed to be converted via the dairy matrix publications.
- The three pillars of the matrix are:
 - Nutrition: positives and negatives;
 - ii. The whole food effect; and
 - iii. The environment.
- Fermented products are the golden bullet when it comes to health.
- The environment is now a big factor in considering school meals, while governments lean towards plant based meals at the expense of dairy.

1.5 Standing Committee: Nutrition and Health

- For 2025 or 2026, it was planned to have a Food Microstructure and Nutrition Symposium in Europe, with topics: Food microstructure, processing, oral breakdown, digestion, biodigestability, bio-availability. It aims to align with the plan to increase knowledge about the nutritional value of the dairy matrix.
- Only some 200 scientific reports / articles make mention of the food matrix and/or dairy matrix, although they are part of the daily jargon. Therefore, definitions were developed and will soon be published in a fact sheet by the end of 2023. The following will be included: cheese matrix and yogurt matrix. Due to the health concerns about fat in milk, consensus could not be reached about a definition for milk matrix.
- Dairy contains fatty acids and salts and therefore, the public is sensitive to the health aspects of dairy. Therefore, the matrixes must define dairy products as a whole food.
- Regarding the Health and Nutrition Symposium planned for 2024:
 - School milk is a priority item of the IDF and a position paper was developed by the SCM. Maretha Vermaak was involved.
 - An Action Team was investigating whether dairy was indeed affordable foodstuffs to the consumers at large.
 - The Organisation for Economic Co-operation and Development (**OECD**), working with over 100 countries, propagated the phasing out of milk and meat from school meals, whilst promoting plant based diets and diets that consider the environment.
- The Conference of the Parties (CoP28) of the United Nations will take place from 30 November until 12 December 2023 and was expected to further advocate plant based diets. The IDF was going to present scientific input.
- In a presentation by Stephan Peters, he mentioned that an Action Team would further study functional units for expression, such as Life Cycle Assessment per kilogramme of food. Guidelines would then follow, on how a functional unit of expression should look like.
- The name of Dr Marco Springmann was mentioned quite a number of times, who apparently influences the programmes of the WHO and UN. He is a senior researcher on the Environment at the Oxford University and an influencer in favour of plant based diets. He is also involved in the Environmental Change Institute.
- A person from Sweden said, it is argued by professionals in their country, that milk was relevant many years ago, but that there were many friendlier alternatives nowadays.
- J Gerritsen from the Netherlands mentioned a special Codex paper that was published on probiotics in infants from 6 to 24 months.
- The Japanese dairy industry has published a fact book to spread information about milk to the consumers. This book includes information about the milk matrix.
- The Norwegian dietary guidelines were to be launched in August 2024. 350–500 grams of low fat dairy was recommended in the Nordic Nutrition Recommendations of 2023. Norwegian consumers were being engaged via social media, regarding the facts around the “ultra-processing” (versus traditional processing) of foods, as some doubts started to emerge

regarding the health and safety aspects. A new public Health Notice in this country draws attention to aspects such as the marketing of unhealthy and healthy foods to children.

- Ultra-processed foods are also in question in France, as a scientific expert report by ANSES (the French Food Agency) was in progress, expected to be published by the end of 2024. The purpose of the report is to characterize and evaluate the health impact of the consumption of ultra-processed foods. Interestingly, ANSES started with scientific work in 2019, to establish dietary guidelines for different types of vegetarians.
- In Canada, front-of-pack labelling exemptions were granted for sodium and saturated fat, based on 5% daily value calcium threshold, regardless of reference amount. This applies to almost all cheeses, yogurt, kefir and buttermilk. Health Canada has increased the amount of products that may be fortified with vitamin D. Although dairy products are exempt from recycled content requirements, labelling rules regarding recyclability apply to all dairy products.
- Food Standards Scotland collaborated with the Edinburgh University to analyze the current consumption of meat and dairy products and micronutrient intake and the health outcomes under various scenarios, of reducing meat and dairy intake by 20%.

2 THE WORLD DAIRY SUMMIT SESSIONS

2.1 WDS Opening

- Ex EU Commissioner Phil Hogan said that the Healthy Living Agenda was the backdrop against which everyone should operate. There was a growing negativity against agricultural food sectors, which needed to be addressed – including the soil and water quality.
- The European Green Deal, approved in 2020, is a set of policy initiatives by the European Commission with the overarching aim of making the European Union (EU) climate neutral in 2050. The plan is to review each existing law on its climate merits, and also introduce new legislation on the circular economy, building renovation, biodiversity, farming and innovation. The dairy industry and especially producers of unprocessed milk, should be able to benefit from their effort to improve the environment, such as through mitigation, said Hogan.
- For Tom Vilsack, the two critical issues currently were the impact of climate and the concentration of income. Tom is an American politician serving as Secretary of Agriculture in the Biden Administration. There were 428 000 US farms less since 1981 and increasingly mega farms, while the number of secondary operations decreased with 230 000 over the same time. Positively, producers embraced research & development and climate smart farming. He also emphasized that the results from smart farming should be verified and that tradable credits should be promoted. Consumers must be sensitized about the producers' efforts to farm sustainably, he said.
- Will Loux emphasized the constant growth in the US production of unprocessed milk which was 1, % on average over the past ten years, while one out of five milk tankers are exported. Loux currently serves as the Vice President of Global Economic Affairs for NMPF and the U.S. Dairy Export Council. In 1992, there were some 131 000 licenced (commercial) dairy farms, against the current ±28 000. More than 50% of the farms have less than 50 cows, although there was a growth in production in most of the states. The US has seen an increased consumption of fermented products and a decrease in drinking milk consumption.

2.2 Leaders Forum

- Mr Miles Hurrell of Fonterra said that data ownership will become increasingly invaluable over the next ten years.
- Nestlé's product prices increased substantially since after 2020 while consumption also surged. It was said that dairy products responded the best of all to consumer needs.

- According to Mr Jean-Marc Chaumet of CNIEL, the international milk production increase was lower than average for 2022 due to the effects of Covid and adverse weather conditions in Oceania and other regions. The share of buffalo milk has increased on an annual basis. Asia was responsible for an increase of 65% of the international milk production during 2022. About 50% of milk was consumed in the informal market globally.

2.3 Plenary session 5: Dairy farming around the world: Today's focus, tomorrow's vision

Steen Nørgaard Madsen (Chair, Danish Dairy Board, Denmark) said that producers were remunerated by Arla Foods for amongst others, the mitigation of greenhouse gases. He said that it was necessary to document carbon emissions precisely. He mentioned the actions that had the most positive impact on sustainability and which lead to the most points, namely:

The Big 5 (49 points):

- Feed efficiency (13 points)
- Fertilizer use (11 points)
- Land use (9 points)
- Protein efficiency (8 points)
- Animal robustness (5 points)

Sub-actions

- Feed monitoring (2 points)
- Aspiration plan (1 point)
- Sustainable feed (11 points)
- Biodiversity & Carbon farming (8 points)
- Grazing (2 points)
- Continuous plant cover (2 points)
- Perennial crops (1 point)
- Permanent grassland (1 point)
- Soil sampling (1 point)
- Biodiversity & Soil health check submission (1 point)
- Manure handling (6 points)
- Biogas / In house acidification (4 points)
- Band spreader (1 point)
- Other 1 point)
- Renewable electricity (5 points)
- Participation in knowledge building events (1 point)

Simon vander Woude, Chair, California Dairies, Inc., United States said that their farming operations run on green energy. They put up a solar system generating 3 megawatts solar energy and buy in natural gas from other producers of unprocessed milk. They also invested in a biodigester and manages water quality and quantity efficiently. A quote from their website reads as follows: "We begin every day acknowledging that what we have is not our own, it's a gift from the Lord, and we have to be good stewards of the gifts that He's blessed us with," Vander Woude said. "We've been very blessed here."

2.4 Session: Economic outlook on dairy drivers and the decade ahead

Dr. Lee Ann Jackson, Head of the Agro-food Trade and Markets Division, Organisation for Economic Co-operation and Development, France said that expectations for increased cheese consumption in the USA and the EU remained high, as per OECD-FAO Agricultural Outlook for 2023 to 2032. She said that the most important uncertainties for the next ten years were plant based replacements, environmental legislation,

the Russian war in Ukraine, change in domestic policies and changes in the trade environment.

Mary Ledman, Global Sector Strategist, Rabo AgriFinance, Global said the main drivers of dairy consumption was population growth in developing countries and increased income in especially developed countries. Population growth was the highest in Africa and India. The change in the per capita demand of dairy products in China was the highest, while the expected population growth up to 2030 was low in this country. The main challenge in Africa with its high population growth, was affordability, she emphasized.

Will Loux, Vice President, Global Economic Affairs, National Milk Producers Federation, U.S. Dairy Export Council, United States : International dairy trade was expected to rebound up to 2024, Mr Loux said. On average, 5,7% of the American household income was spent on food. Taste, price, health and wellness, convenience, and the environment were the purchase drivers in this country.

YiFan Li, Head of Dairy - Asia, StoneX Group, Singapore said that in China, dairy consumption has increased from 28 400 000 t milk equivalent to 3 100 000 t milk equivalent from 2017 to 2022. Liquid milk consumption was still increasing. In this country, an alcohol infused latte, Moutai, is extremely popular. Year-on-year, the production of unprocessed milk in China increased by 7,5%, 7,1% and 6,8% in 2020, 2021 and 2022 respectively.

2.5 Session: Dairy's environmental impacts: reducing pressure on resources and maximizing eco-systems services

Richard Allen, President Americas and Europe, Fonterra, New Zealand said that his company was partnering with customers and the industry to tackle system improvements on the farm, such as:

- Optimize nutrients from fertilizer use
- Improved herd performance
- Deliver optimal nutrition to cows
- Minimize energy use on farm

Furthermore, Fonterra saw the biggest opportunity in reducing methane from cows in the pasture-based system, through innovating technologies such as:

- Feed-based inhibitors
- Kowbucha
- Vaccines
- Non-biological technologies that capture methane after it's been emitted
- Investing in research and innovation

Fonterra supports producers with forest restoration, riparian tree planting and increased vegetation on farm to sequester carbon.

Brian Lindsay, Director, Dairy Sustainability Framework, United Kingdom said that in 2022, for the first time, Animal Care was the number one priority for DSF members, closely followed by GHG emissions. DSF represents 30% of total global milk production, which equates to over 50% of the global formal milk market. DSF initiated the reporting of gender data for employment at both farm and processing level to better quantify the role of dairy in providing support for both women and men. The role of animal health in national climate commitments is crucial. Sixty per cent of the world population was not consuming food with correct nutritional content. Global protein consumption needed to grow by 90 MMT in the next ten years, which is 50% more than in the last 10 years.

2.6 Plenary session: dairy processing around the world: Today's focus, tomorrow's vision

Mike Durkin, President and Chief Executive Officer, Leprino Foods, United States said that his company was a family business which started in 1950. It has over 4,500 employees in the USA in six states including California, Colorado, New Mexico, Michigan, Pennsylvania, and New York. Leprino is the largest purchaser of milk in the United States supporting over 1,000 dairy farms. They are the world's largest producer of mozzarella cheese, and a leading supplier of dairy nutrition products, including lactose and whey. Their primary sustainability focus was heat recovery and reuse.

Leprino's 2030 goals include:

- Reduce absolute emissions from direct operations by 30%
- Reduce emission intensity by 30% for milk and non-milk suppliers
- Reduce water intensity by 20% in gallons of water per 1000 pounds of milk

Dr Zhanyou Yun, Vice President, Yili Group, China – Yili is an early entrant in health sector. In recent years, Yili has launched functional pro-health nutrition products. This year it launched the world's first functional milk product capable of blood sugar regulation, and the world's first room-temperature organic pure milk with active lactoferrin. Yili was the first to break the technological barriers and increase the retention rate of lactoferrin in room-temperature pure milk from 10% to more than 90%. In addition, Yili has started with construction of its lactoferrin factory in New Zealand. Active lactoferrin was also used in UHT milk.

AMX, a brand under Yili Group, introduced the industry's first room-temperature active probiotic yogurt, once again setting a new benchmark for the next generation of healthy yogurt. To ensure the vitality of the probiotics, this new product contains billions of probiotic strains, including *Lactobacillus rhamnosus* GG, which provides significant benefits for gastrointestinal system, immune system, and oral health. AMX's probiotic yogurt retains only the necessary sugar content for fermentation, strictly controlling the sucrose addition to 0.7%. Furthermore, the protein content is 35% higher than the minimum requirement of the national standards for flavoured yogurt.

Aiming to build a "Dairy Silicon Valley," the Yili Future Intelligence and Health Valley in Mongolia stimulates holistic development across the entire industry chain. The Valley is now also home to the National Centre of Technology Innovation for Dairy and the National Metrology and Testing Centre for Dairy Products.

Claudio Rodriguez, Executive Director and Chairman of the Board, Gloria Group, Peru – Mr Rodriguez said that the greater part of their market in the South Americas did not know what nutrition meant, while only about 15% of the consumers had refrigeration and per capita consumption of dairy was very low. Infrastructure was also extremely poor. Therefore, this company focused on communication – also to the regulators so that the message of nutritious food could stand out.

Heike Steiling, PhD, Head of Nestlé Product Technology Centers Dairy, Nestlé, Switzerland said that Nestlé's ambition was to make 100 per cent of its packaging, including plastics, recyclable or reusable by 2025, as it moves to ensure that none of them end up in landfills or as litter.

2.7 Plenary session: Dairy's contribution to evolving food systems

Nick Gardner, Senior Vice President, Sustainability and Multilateral Affairs, U.S. Dairy Export Council, United States said that it was important to demonstrate the role of dairy in the sustainable food system. He emphasized that trade was an important activity to address the fact that $\pm 37\%$ of the international community could not afford nutritious food. Also, the IDF linked science to trade. He also reiterated that producers of unprocessed milk should not see trade as a threat.

2.8 Session: technologies and opportunities for increasing water efficiency and reuse for dairy farmers and processors

The worldwide climate change has resulted in many traditional dairy producing areas substantially reducing water usage and/or capturing, treating, and reusing water for dairy farming and dairy processing operations. With the World Health Organization as well as the UN Codex Alimentarius Commission focusing on these issues, it is important to identify opportunities for the international dairy industry for water use reduction and reuse.

This session's speakers shared their experiences and practical recommendations on how to reduce water usage as well as how to capture, treat and reuse water on dairy farms and dairy processing operations in order to increase sustainability, sustain operations and reduce impact on the surrounding environment.

Leon Gorris, PhD, Food Safety Expert, FAO/WHO Expert Meetings on Microbiological Risk Assessment, The Netherlands:

At its 48th session in November 2016, the Codex Committee on Food Hygiene noted the importance of water quality in food production and requested the Food and Agriculture Organization of the United Nations (FAO) and the World Health Organization (WHO) to provide guidance for scenarios where the use of "clean water" was indicated in Codex texts – in particular, for irrigation water and clean seawater – and on the safe reuse of processing water. In addition, guidance was sought on where it is appropriate to use "clean water".

The first meeting of Experts was held in Bilthoven, The Netherlands, in 2017, to address this request and decided that future work should focus on amongst others the development of a fit-for-purpose concept, taking into consideration the context of water uses along the food chain and a practical guidance provided through the use of decision support system (DSS) tools, such as a decision tree (DT), incorporating assessment of risks and use of monitoring to ensure safe quality of the water. A second meeting of Experts was held at FAO in Rome, Italy, in 2018, to address the work recommended and a summary of the 2018 meeting is provided in this report.

Some primary producers (farmers), food handlers and food processors do not have access to safe water while for others, safe water access and waste discharge are becoming increasingly expensive, with the result that minimizing water use and waste, and reusing water are highly desirable.

The safest option in food production might be the use of water of potable or drinking water quality. However, this is often not a feasible solution, while other types of water could be fit for some purposes provided they do not compromise the safety of the final product for the consumer.

Risk factors to be considered include occupational safety for workers, need for special expertise, investments, cost-benefit analyses and management of consumer perceptions.

DSS tools such as decision trees, were considered to be useful risk management tools to assist stakeholders in making decisions on the water's fitness for purpose and the required quality (potable water or other suitable quality) for use or reuse at a given step in the supply chain. Importantly, such DSS tools should be based on an assessment of final health risks of the food at consumption and address the context for water use at a particular step and location.

The above are fully covered in the FAO's Microbiological Risk Assessment Series No 33 of the "Safety and Quality of Water Used in Food Production and Processing", which is a meeting report.

In his presentation, Dr Gorris sketched the key factors concerning the safety of the food being produced or processed in the operation, reusing water, namely:

- Nature of the food product and its consumers;
- The reusable water source deployed and its reconditioning;

- The point at which the reuse of water is used; and
- The impact of all hazard control measures until consumption.

A fit for purpose water reuse decision tree should provide a risk-based framework, including fit-for-purpose water usage as well as decisions on whether food products could be in contact or not, with reused water.

It was emphasized that the source of reusable water should be inspected for microorganisms:

- Check for food safety related pathogens: Pathogens occur at very low levels and therefore, detection may require qualitative tests.
- Check for indicator microorganisms: Indicator organisms may typically occur at moderate to higher levels under “normal / in control” situations.

The Joint FAO/WHO Expert Meetings on Microbiological Risk Assessment (JEMRA) lists the following technologies:

- Water recovery technology
 - Recovery by condensation
 - Recovery by sedimentation, coagulation and centrifugation
- Water purification technologies
 - Reverse osmosis or Reverse osmosis polishing
 - Ultrafiltration
 - Activated carbon water filtration
 - Aerobic digester technologies
 - Membrane bioreactors technology
- Microbiological treatments
 - UV treatment
 - Heat treatment
 - Chemical treatment (disinfection)

Readers are encouraged to read the following report:

MRA 41 Safety and quality of water used in the production and processing of dairy products. <https://www.fao.org/documents/card/en/c/cb7678en/>

Allen Saylor, Managing Partner, Center for Food Safety and Regulatory Solutions, United States of America

Developing countries will increase their water usage by 50% by year 2025, which will probably result in 1,8 billion people living in a state of water scarcity.

The Codex Alimentarius Commission, jointly created by the FAO and the World Health Organisation in 1963, is the most important international body in the field of food standards. Since that time. Codex has developed hundreds of internationally recognized standards, guidelines and codes of practice. It has defined acceptable levels for tens of thousands of food additives and maximum limits for potential food contaminants to contribute to safe food for everyone.

David Ahlhem, President and Chief Executive Officer, Hilmar Cheese Company, United States of America

In 1984, twelve dairy farming families – farming with Jersey cows – started a manufacturing company with a view to do a better job of creating value for everyone in the supply chain, from dairy farmers to plant workers to consumers.

Hilmar Cheese Company and its division, Hilmar Ingredients, serves customers in more than 50 countries. State-of-the art production facilities in California and Texas convert an abundance of high-quality milk



into a variety of nutritious cheeses, whey protein and lactose.

The company has 1 500 employees, 200 dairy suppliers, more than 50 cheese varieties and exports to more than 50 countries.

Hilmar's sustainability beliefs include the following:

- The Carbon Cycle is a naturally sustainable process and dairying will be part of the GHG solution.
- Animal agriculture is fundamental to responsibly and sustainably feeding our planet.
- Water is a precious resource and must be treated as such.
- Healthy cows, productive farms, and efficient production are the levers within our control that can help us achieve our sustainability goals.
- Dairy products provide superior nutrition and are beneficial through all life stages
- In being leaders in safety, quality and food security.
- In positively impacting our suppliers, customers, community and employees.
- Farmers should get the credit for making sustainability improvements on the farm.

Hilmar Cheese Company, Inc.'s Headquarters and Innovation Center is a LEED¹ Platinum, 55,000 square foot building that meets the needs of its employees and its growing domestic and global business. Core to the Headquarters is their Innovation Center with the latest pilot plant and application equipment. The Innovation Center delivers greater service and knowledge to its customers. Hilmar helps customers find success incorporating dairy into healthy foods and beverages.

The Headquarters and Innovation Center is adjacent to the cheese and whey manufacturing facility in Hilmar, California. This proximity allowed architects to incorporate unique conservation features. The Heating, Ventilation, and Air Condition (HVAC) system saves energy. The HVAC is a closed-loop water cooling process that utilizes one of the water reclamation ponds from food processing. The building's landscaping

1

Leadership in Energy and Environmental Design



reduces water use through irrigation with water reclaimed from food processing.

Solar energy provides about 25% of the overall building energy demand. The building design maximizes energy efficiency with the use of natural lighting along with light fixtures that self-adjust based on daylight and occupant sensors. An electric vehicle charging station, fuel efficient and vanpool parking, and bicycle security racks reduce transportation energy.

Office space for 200 employees features interior finishes and furnishing that are ergonomically designed and use environmentally responsible, recycled and Forest Stewardship Council certified material. Employees enjoy the quarter mile walking trail around the building's exterior along with patios, a spacious break room, and features designed to make the work place comfortable and productive.

Hilmar Cheese Company completed a boiler project that reduced water use and was more energy efficient. They switched from a conventional boiler water treatment to one that reduces blowdown, a process to remove the concentration of impurities formed during evaporation. This new treatment saves more than five million gallons of water per year. The energy efficiency also reduced natural gas use and decreased GHG generation. The water recycling process continues to improve. Hilmar uses more reclaimed water in its boilers and cooling towers.

Water Use and Quality

Water polishers allow the factories to capture almost 100% of the water that was originally part of the milk. This recycled, polished water is used to wash facilities and equipment. Facilities in California and Texas have complex multistage water reclamation systems consisting of several steps including equalization, anaerobic and aerobic digestion and storage. After the water goes through the water reclamation processes, it is used in a variety of ways:

- Recycled water to wash facilities and equipment
- Recycled water for facility landscaping
- Recycled water for non-food uses
- Recycled water to irrigate crops, many used to feed the cows

Biogas Digester

Hilmar's California and Texas water reclamation systems have biogas (methane) digesters. During anaerobic digestion, biomass (good bacteria) consumes organic material in the water and transforms it into methane. The methane is processed and used to fuel on-site boilers, reducing overall greenhouse gas emissions.

Recycled Water for Steam

The California site water reclamation process added a third loop with the ability to use recycled water for steam in boilers.

Sixty per cent of Hilmar's water use is with recycled water. It has achieved an increase of 35% in water use efficiency in the last four years.

1 BUSINESS MEETINGS AND WDS SESSIONS ATTENDED

The author attended and/or participated in the following business meetings and conference sessions:

- Action Team Meeting on Ecosystem Services from Livestock – (Friday, 13th October 2023) – AT member.
- Environment Programme Planning Meeting for WDS 2024 – (Saturday, 14th October 2023)
- Standing Committee for Environment Meeting (Saturday, 14th October 2023) – Deputy Chair
- Standing Committee for Nutrition and Health jointly with Standing Committee Standards and Labelling (Saturday, 14th October 2023) – Observer
- Standing Committee on Animal Health and Welfare (Saturday, 14th October 2023) – Observer
- Standing Committee on Farm Management (Saturday, 14th October 2023) – Observer
- Action Team Meeting on Solid Waste (Sunday, 15th October 2023) – AT Leader
- Standing Committee Meeting Dairy Science and Technology (Sunday, 15th October 2023) – Observer
- Conference Sessions Attended:
 - IDF World Dairy Summit 2023 Kick-Off (Monday, 16th October 2023)
 - Plenary Session 1: From the United States to the World: Tapping the Boundless Potential and Endless Possibilities of the Dairy Sector (Monday, 16th October 2023)
 - Plenary Session 2: Global Leaders Forum (Monday, 16th October 2023)
 - Plenary Session 3: IDF Forum – Today's Focus, Tomorrow's Vision (Monday, 16th October 2023)
 - Plenary Session 4: Dairy Outlook – World Dairy Situation and Marketing Trends Reports (Monday, 16th October 2023)
 - IDF Dairy Innovation Awards (Monday, 16th October 2023)
 - Plenary Session 5: Dairy Farming Around the World – Today's Focus, Tomorrow's Vision (Tuesday, 17th October 2023)
 - Upcycle-Processing of Dairy Co-Products – Closing the Loop (Concurrent Session. Tuesday, 17th October 2023)
 - Dairy's Environmental Impacts: Reducing pressure on Resources and Maximising Ecosystem Services (Tuesday, 17th October 2023)
 - The Intersection of Animal Health and One Health (Tuesday, 17th October 2023)
 - Plenary Session 7: Dairy Processing Around the World – Today's Focus, Tomorrow's Vision (Wednesday, 18th October 2023)
 - Earning Trust for Dairy's Sustainability with Today's Global Consumer (Wednesday, 18th October 2023)
 - Accelerating Profitable Sustainability for Farmers – Session Moderator (Wednesday, 18th October 2023)
 - Cell-Based Fermentation Technologies and the Dairy Sector (Wednesday, 18th October 2023)



2 BUSINESS MEETINGS: OBSERVATIONS AND KEY DISCUSSION POINTS

The on-going work of the various Standing Committees and Actions Teams within the IDF structures remained focussed on the fundamental notion that dairy will continue to play a crucial role in providing sustainable nutrition to the global population. Within the context of limited planetary resources, it was emphasized that milk production remains a solution to feed populations and should not be viewed as a challenge.

From an environmental perspective, we will likely see further emphasis on the role of biodiversity in the dairy sector. There has been discussion in the past around developing our understanding of the relationship between 'dairy' and 'biodiversity', while the current focus seems to be shifting towards methods which could be used to measure or quantify biodiversity on dairy farms.

There is interest in the on-going work of the Food and Agriculture Organization (FAO) of the United Nations and the Livestock Environmental and Performance Partnership (LEAP) around the development of a guideline to enable the assessment of ecosystem services from livestock production systems. The challenge is to develop indicators which are specific to dairy production. The IDF has an Action Team on Ecosystem Services which is providing valuable inputs into this work and a draft guide is expected to be available for review within the next few months.

Discussions around the topic of 'methane' were prevalent in the Standing Committees. It was noted that there is currently no dedicated Action Team focussed specifically on the topic, although the group working on the updated LCA guidelines does cover methane in detail. An interesting discussion point was raised around the current finance mechanism available in the state of California, where farmers are encouraged to implement emission-reducing practices and technologies through, for example, introducing appropriate manure management or biogas conversion systems.

This is also linked to a broader conference theme which emerged regarding 'Carbon', where there is still some debate as to a relevant, globally accepted methodology for its accounting and verification. There were also discussions around the establishment of Carbon markets which could have an influence on the uptake of sustainable practices as an additional source of income for livestock farmers. In Europe, Arla Foods has introduced a sustainability incentive model which rewards farmers for their commitments to reduce climate impacts.

The points-based scoring system rewards farmers up to 3 Euro cents per kilogram of milk produced with factors such as feed efficiency, biodiversity protection, low Carbon farming and use of renewable energy some of the key metrics. Amongst roundtable discussions, dealing with food loss and waste remains a priority across participating countries while many European countries are under pressure to achieve their GHG reduction targets, largely due to their respective bold climate change commitments, governmental Carbon taxing and associated regulatory restrictions.

3 CONFERENCE SESSIONS: NOTABLE THEMES AND FUTURE DEVELOPMENTS

Sustainability and environmental impact proved to be central themes in many of the sessions attended throughout the summit. From a political perspective, it was evident that future policy direction will be strongly influenced by health, nutrition, and sustainability. The European Green Deal, which sets to achieve climate neutrality for the EU by 2050, is under immense pressure largely due to it pushing progress too quickly.

This has manifested into much negative sentiment from farmers, whom are effectively being flooded with policy changes and the debate around food sovereignty which has introduced elements of confusion. The consensus is that more should be done to stimulate productive agricultural conditions while farmers should be introduced to proposed change incrementally. There is a need for sound advisory services which can



Members of the IDF Standing Committee on Environment.

guide farmers to better embrace technology while improving the link between responsible production and consumption.

The need to embrace science-based approaches is greater than ever and it is vital that this can be consolidated through commonly agreed methodologies. It was noted from the plenary sessions that European farmers prefer a voluntary system, where the implementation of measures is specific to each individual production system and where the associated verification process is in accordance with a consolidated method.

In Europe and the US, there is a definite shift towards the development of circular economy opportunities, predominantly through climate smart agriculture. This ties in strongly with the view that farmers be rewarded for sustainably produced products. The emphasis on the opportunities linked to agricultural waste products and residues indicates that establishing income streams from on-farm waste will be a strong driver for developing the sector in future.

The food system will become more resilient if we can harness waste more effectively while unlocking the entrepreneurial opportunities which this presents. One of the precautions is that the secondary benefits of income streams must be harnessed by farmers and that any government incentives in this regard should be farmer centric. As has been evident globally in recent years, commodities are highly volatile and secondary incomes could be positioned as a more stable revenue source. Another barrier to the implementation of climate smart technologies is the access to capital, while the availability of technology is also recognised as an obstacle in some parts of the world.

Sentiments around the current global trade situation indicate that tensions exist between the EU and the US on the topic of sustainability, which has become a trade barrier. The lack of a 'common approach' to science makes it increasingly challenging for these regions to reach a trade consensus. With COP28 taking place in November 2023, it was clear that the US will emphasise the role of innovation and technology towards relieving the environmental burden of its food system. The EU, in contrast, will continue to promote its Green Deal despite the pressures it has been under.

A summary of the US dairy market was provided by Will Loux of the US Dairy Export Council. It was stated that the sector is dynamic and growing, with exports having grown by 5% per year over the past decade. The fact that 1 in 5 tankers of milk produced in the US is destined for international consumption is testament to that growth. The number of milking cows in the country fluctuates although production output continues to increase. At present, the US produces around 11% of global milk supply with California being the largest milk production state.

The US also claim to have the lowest greenhouse gas emission (GHG) emission score per litre of milk produced per cow in the world. Interestingly, it was noted that the consumption of fluid milk is declining with industry growth



Left: Dr Ohlhoff, moderating the session “Accelerating Profitable Sustainability for Farmers”, 18th October 2023.

being driven largely by cheese consumption while whey, as a protein source, is also contributing to the evolution of the industry.

From a consumer perspective it was mentioned that we are only beginning to unlock the real value of milk. While there has been significant progress, consumers do not yet understand the full potential of dairy's role in not only securing nutrition, but also in addressing climate change challenges. Dairy can, and should, be positioned as a credible environmental solution. Dairy must be directing the narrative around all the good that is being done rather than focussing on what is being done to address the negative impacts.

There was a feeling that the dairy sector can sometimes be too defensive in its communication strategies and that communication can often be too broad. It is perhaps more valuable to select priority topics, focus on those and deliver the messages with accuracy and in a meaningful way. Consumers are increasingly prepared to pay a 'green premium' although this is strongly connected to their trust in the product and its producer. Jeffery Simmons (Elanco) emphatically mentioned that “dairy has never been more relevant, but dairy has never had to be more responsible” suggesting that the next decade has the potential to be the greatest ever for the sector if we are able to harness sustainability as the next generation of profitability.

We have seen in recent years that precision fermentation has been touted as a potential disruptor to animal-sourced protein which could impact the way protein is produced in the future. With advances in genome-based technologies, coupled to traditional fermentation methods, this is an ever-evolving field of science.

Dr John Lucey indicated that this technology is not new to dairy effectively using the example of chymosin (rennet in cheese manufacturing) which has been produced by recombinant methods since the early 1990s. It is unlikely that precision fermentation can create complex proteins, such as casein, where the biosynthesis required is far more intricate. Future development in this space would likely focus on the production of simple proteins, although typical low yields coupled with high development costs and scalability challenges impact its potential for commercial applications.

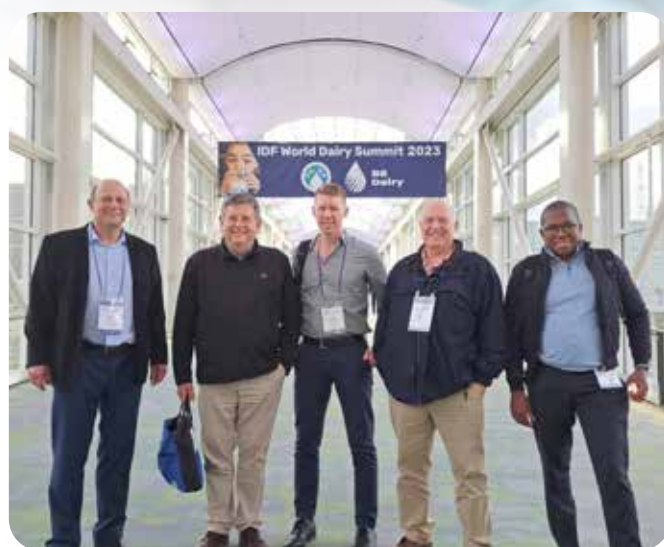
A notable development is the emergence of international platforms for the trading of Carbon. It was evident that the market for Carbon trading, although still in relative infancy, will progress at a rapid rate as uptake increases. In the USA for example, a marketplace has been developed by an organisation named Athian, where they benchmark, validate, and certify GHG reductions as well as Carbon capture and energy production. The platform then creates GHG credits and provides a marketplace to monetize them for the livestock industry.

Looking forward, increasing pressure around achieving Net Zero goals related to GHG emissions as well as evolving Carbon markets, is likely to impact strategic capital investment on farms. This is where a universally accepted means of validation will be of critical importance as businesses and farmers that are prepared to invest in change, would need reassurance that the commercial benefits will ultimately justify the costs.



One of the potential pitfalls is that the demand for Carbon offsets could be stimulated by large multinational corporates committing to various GHG reduction initiatives, thereby requiring credits to counter the emissions from their own operations. This could result in a scenario where it is less expensive to buy credits generated by livestock agriculture, than to undertake your own emission reduction initiatives.

It was privilege to experience a global dairy event of this magnitude. The sessions attended, general organisation of proceedings and scientific information disseminated, were of a very high standard. Much inspiration and learnings were gained through the opportunity to interact and engage with colleagues and dairy experts from around the world.



Above: (From left) Nico Fouché, Jompie Burger, Dr Colin Ohlhoff, Dr Mark Chimes, Dr Ndumiso Mazibuko at McCormick Place, Chicago - Venue for the IDF World Dairy Summit 2023

4 ACKNOWLEDGEMENT

The author would like to express sincere gratitude to the South African National Committee of the IDF for the opportunity and funding to attend this prestigious symposium in Chicago.



Report by: DR MARK CHIMES

1 OVERALL COMMENTS FROM THE IDF PRESENTATIONS

The changes in the dairy industry over the past 10 to 15 years was unexpected and rapid. Lead by terms such as dairy nutritional matrix, carbon footprint and sustainability being unfamiliar 15 years ago. The future is unpredictable. *Where will dairy be by 2040?* Animal welfare will develop dramatically in the next 10 years.

There are 133 million dairy farms in the world of which *less than 0,3% have 100 cows or more*. The question was posed whether we are designing for small dairy farms since the focus seems to be on large dairy farms only. Amul dairy in India has successfully developed small scale dairy farmer co-operatives by focusing on the farmer. Their approach is that 25c out of every dollar must benefit the farmer directly.

The nutritional value of milk was highlighted throughout the conference. Miles Huddle, the CEO of Fonterra New Zealand, mentioned that one in six people over 60 years old need dairy nutrition. Healthcare worldwide, in its current form, is neither affordable nor sustainable. Nutrition seems to be the solution. Several medical conditions are avoidable with good nutrition and dairy is the easiest way to supply quality nutrition to the masses. Nestle is working on supplying micro-nutrient enriched milk to poorer countries. Milk processors are experimenting with whey-based sport nutritional rehydration drinks due to the nutritional and mineral content of whey. Higher rates of disease among livestock is associated with higher levels of undernourishment and food insecurity among the world population. By improving the health of animals slightly, the production of animal protein increases dramatically.

Globally, every 2 cattle vaccinated is associated with 1 less person suffering from hunger. A 60% global vaccination rate for beef cattle is associated with a 52,6% rise in production. Equivalent to the beef consumption needs of 3,1 billion people.

A common theme that was mentioned by several speakers is that the consumption of fresh milk worldwide is reducing. In Mexico the consumption of fresh milk has dropped by 49% from 2012 to 2022. Yet milk production is stable or even increasing. The consumption of dairy products in total has not dropped either. The increase is due to people eating more cheese, butter, yoghurt and various other dairy products instead of drinking milk. *Consumers are now eating their dairy and not drinking it anymore.* A record amount of animal protein was consumed in 2022 despite the public narrative to the contrary.

What was very noticeable during the conference is that any lecture that had the term sustainability within the title had extremely good attendance with standing room only. It seemed to be the buzzword of the conference. *The world is better off with cows than without cows.* The carbon footprint of the dairy industry has improved dramatically over the past 20 years. In Chile and the Netherlands, the milk price is paid partially on carbon footprint. Farm clients need to know the farm's carbon footprint to determine their own carbon footprints. It is most likely that the dairy industry will be the first to reach nett-zero carbon footprint of all industries. Farms are expected to restore nature and biodiversity.

Dairy farmers in New Zealand have the lowest carbon footprint in the world with 80% of their energy needs coming from renewables. Jeffery Simmons, the CEO of Elanco USA,



Crandall Farm

stated that: *"The knowledge to reduce the carbon footprint is in the room. Our job is to assist in extracting it. We must set the outcomes, not the how. Tell the farmers what you want to achieve and leave them to find the solutions"*. A 10% decrease in livestock disease is associated with an 800-million-ton reduction in greenhouse gasses. Equivalent to the average annual emissions of 117 million Europeans.

An interesting topic is the fact that healthy animals reduce the carbon footprint of the world. Animal health affects production and therefore the carbon footprint per unit of production. If 60% of the beef cattle are vaccinated, production will increase by 52,6%. Losses due to health are up to 80% in some countries and as low as 2% in others. Due to improved genetics and nutrition leading to higher production levels per animal, the carbon footprint per unit of milk produced has also been reduced.

There is a massive reduction in the antibiotic use in animals over the past years. Global animal antibiotic use has declined by 13% over the past 3 years alone. Antibiotic sales for animal use have dropped by 38% in the USA since 2015, by 43% in the EU since 2011, by 52% in the UK since 2014 and by a massive 65% in Germany since 2011. As vaccination and biosecurity of cattle has improved, so has the use of antibiotics dropped. Antimicrobial resistance is not an animal health problem. Lancet estimated that there are 1,27 million deaths from AMR annually. Less than 1% can directly be linked to food borne illness. A 14-year review of E coli in the EU found that resistance to critically important antibiotics was generally "absent or very low" in animals.

The use of biodegradable packaging is also being questioned since some of them break down into chemical contaminants such as chlorate, microplastics, perchlorate, mycotoxins and PFAS. The question raised is whether these biodegradable products are fermentable to produce methane gas. And are they able to be broken down into compost? In contrast, tests are being run to upscale whey permeate to manufacture environmentally safer biodegradable chemicals for treating wood.

Heat stress in dairy cattle was also quite a hot topic (pun intended) due to global warming fears and the resultant increase in number of hot days per annum. The talks focused on the effects of heat stress on the animals and the consequent production losses. The solution lies first in breeding cattle that are more heat tolerant. Secondly feed strategies need to be implemented to minimise metabolic heat production. Several heat abatement systems were also discussed of which fans/ventilation and water vapour is still the most effective and practical solutions.

The Temperature Heat Index (THI) is also being revised with the consensus that heat stress sets in at a THI of 65 rather than at 72 as previously accepted. Even minimal heat abatement is incredibly impactful due to the fact that high producing cows suffer the most from heat stress.

Overall, the consensus was that there should be less fearmongering about the impact of dairy cows on the environment. Dairy has a good story to tell.

"Dairy is the hottest spot to be in right now!" – Jeffery Simmons, CEO, Elanco

2 IDF ANIMAL WELFARE FORUM MEETING (14 OCTOBER 2023)

At this meeting I had to present a report on the efforts that South Africa are making in improving the welfare of dairy calves, as well as feedback on our quality assurance programme through the Daily Standard Agency. Our quality assurance programme compares very well with other countries and in fact, is even superior to some countries. It was generally found that problems experienced by the various countries are quite universal in terms of labour, low milk price and the mental welfare of farmers and veterinarians.

The following, in terms of calf rearing, are the topics that are gaining more traction:

- Cow calf contact
- Group housing for calves
- Pain management for painful conditions and procedures
- Colostrum intake to be increased to 20 % of body weight
- SOP for euthanasia and downer cows
- To use teats instead of bucket systems to satisfy suckling behaviour of calves



The consensus was that dairy parlour audits are a quality assurance program and not a system to detect abuse and neglect. We should move away from preventing the negative and rather promote the positive steps to comply – more carrots and less sticks?

3 IDF JOINT SUBCOMMITTEES ON FARM MANAGEMENT AND ANIMAL HEALTH AND WELFARE MEETING (14 OCTOBER 2023)

I reported to the meeting the problems that South African farmers face in terms of a depreciating Rand, high oil prices, severe drought that we suffered in one part of the country with floods in other parts of the country and the constant threat of land expropriation without compensation. In addition, we had an outbreak of foot and mouth disease, bird flu and swine fever. This was to put into perspective the relative importance of animal welfare when farmers have all these other problems to contend with.

Guidelines for responsible antibiotic use by farmers to reduce chances of anti-microbial resistance was also proposed.

4 IDF SUBCOMMITTEE ON ANIMAL HEALTH AND WELFARE MEETING (14 OCTOBER 2023)

Feedback was given on a sustainability survey that the SCHAW had commissioned. It would be interesting to see a similar survey done in SA. Members were referred to the IDF website to access various documents and reports on animal welfare and health.

5 IDF NEW EXPERTS MEETING (14 OCTOBER 2023)

This meeting was primarily to explain what/who the IDF experts were and how it will function.

6 IDF EXPERTS ROUNDTABLE (15 OCTOBER 2023)

We were told that we are the experts that represent not only our countries but also our field of expertise. They want to get all members to register their fields of expertise for future use.

7 SUMMIT SESSIONS ATTENDED

16 October 2023

- Plenary session 1 Dairy's role in nourishing the world and the impact of policy
- Plenary session 2 Global leaders' forum
- Plenary Session 3 IDF forum Today's Focus Tomorrow's vision
- Plenary Session 4 Dairy Outlook World Dairy Situation and Marketing Trains reports

17 October 2023

- Plenary Session 5 Dairy Farming. Around the world. Today's focus. Tomorrow's vision. Methods of analysis Microbiological
- Plenary Session 6 Successes in Global Standards, a celebration of IDF's collaboration with international standard setting bodies. Managing heat stress in dairy cattle. The intersection of animal health and one health
- Plenary Session 7 Dairy Processing around the world. Today's focused Tomorrow's Vision. Methods of analysis, chemistry, and composition. Dairy's environmental impacts, reducing pressure on resources and maximising ecosystems services. Dairy science and technology

18 October 2023

- Plenary Session 8 Dairy's Contribution to Evolving Food Systems. Technologies and opportunities for increasing water efficiency and reuse for dairy farmers and processors

8 IDF WORLD DAIRY SUMMIT TECHNICAL TOUR²

8.1 Crandall Dairy Farm Tour

Visited a 5th generation family dairy farm that has received 6 consecutive National Dairy Quality Awards. The farm has a herd of 350 cows. It's a TMR system. Cows are housed indoors throughout the year due to extreme cold temperatures in winter. They have some permanent personnel that milk the cows and they also use temporary staff from the local community to assist with milking.

8.2 Vanderploeg Holstein Farm Tour

A 72-unit Rotary parlour that milks 3500 cows. They also have a separate parlour where only the fresh cows are milked. Their expansive operation features direct load tankers where the cows are milked directly into the milk tanker and a sand recycler for cow bedding.

2 This tour was paid for by Dr Chimes himself and not by SANCIDF.



8.3 Neogen corporation

Neogen is one of the largest food and animal safety companies committed to global food security. The company's food safety segment markets dehydrated culture media and diagnostic test kits to detect food-borne bacteria, natural toxins, food allergens, drug residues, plant diseases and sanitation concerns. They are also leaders in the development of genomic solutions, along with manufacturing and distribution of a range of animal healthcare products, diagnostics, pharmaceuticals, veterinary instruments, wound care, disinfectants and rodent and insect control solutions.

8.4 Proliant Dairy Ingredients

This is a state-of-the-art whey permeate processing facility in Minnesota next to Land o' lakes cheese plant. They produce whey permeate while developing demand for permeate food applications by demonstrating the value and functionality of a whey byproduct, once considered to be only a feed ingredient. They manufacture a high quality, cost effective soluble dairy product solid (whey permeate) using advanced technologies. The product naturally agglomerates and is non hygroscopic, non-caking, non-bridging and free flowing. They produce 65,000 metric tonnes in their facility per year and exports to over 30 countries.

8.5 MWC large scale whey protein and cheese manufacturing facility

MWC processes over 1,3 billion kilogrammes of milk and will produce over 136 million kilogrammes of superior block cheese and 9,1 million kilogrammes of value-added whey protein powders each year. The whey is piped over to Proliant Dairy Ingredients next door, who processes the whey into value added soluble whey powder. The water that is extracted from the whey is recycled and then pumped back to the MWC plant for use in the cleaning of the plant.

1 REPORT ON IDF BUSINESS MEETINGS ATTENDED

1.1 Standing Committee on Food Additives (12 October 2023)

The meeting could unfortunately not be attended in person due to loss of my luggage by the airline and which could only be retrieved the next day.

Matters of importance discussed relating to the programme of work included:



1.2 Preparation for the next Codex Committee on Food Additives: 22-26 April 2024

Alignment of the food additive provisions of commodity standards:

- Remaining work for the alignment focuses on Fermented milks (CXS 243) and Creams and Prepared Creams (CXS 288) in the preparation of the CCFA54, 22 – 26 April 2024 in China. The US delegation is co-chair of the eWG, with A van Niekerk (ZA), C Carvalho (FR) volunteered to support the IDF Head Office and the SCFA Chairmanship regarding the alignment work in preparation of CCFA54.
- General Standard for Food Additives (GSFA) were discussed and according to IDF observers report, not much work is to be expected except for a few additives.
- CCFA outcome 2023 for adoption by CAC: The use of trisodium citrate in FC 01.1.1 "Fluid milk (plain)" – A Dubois (IDF). CC Africa amongst other counties do not favour the approval of the use of trisodium citrate in plain fluid milk and it is expected that this controversial issue could be brought up again at the CAC. IDF will do its best to remain neutral and remain silent, but as IDF potentially will be asked for its position at the CAC, it is important to prepare the IDF delegation beforehand.
- Nitrates: Methods for determination of nitrates.

An initiative from CCFA considers having maximum limits for both the added amount and the residual amount of nitrates in foods, including ripened cheeses. However, the initiative is depending on the availability of analytical methods being able of detecting nitrates in the food matrixes.

1.3 IDF Standing Committee on Residues and Chemical Contaminants (13 October 2023)

The meeting was attended as observer.

1.4 IDF Standing Committee on Standards of Identity and Labelling (14 October 2023)

The following matters served as programme of work:

Protection of dairy terms

It was noted that the implementation of GSUDT in countries are at different levels. Many countries operate with clear guidance and some without, therefore the IDF needs to provide guidance for national committees to assist with the implementation of GSUDT based on national context and to support the GSUDT in Codex.

Bulletins have been developed, which provide background information for IDF members on the content of the GSUDT and implementation around the world as well as a position paper that accompanies the bulletins and deals with the lab grown products. All documents are available on the IDF website.

Given potential to undermine the GSUDT in the current environment, there was agreement that SCSIL would not recommend updating the GSUDT at this time.

A point was made related to the descriptors used in association with dairy terms. The terminology “Alternative” is getting traction in some countries. As are other terms noted by the SC, including substitute, imitation, and simulation. Using descriptors should not be seen as a possibility to use dairy terms, however they are being used, by legislators or plant-based companies to work around protection of dairy terms. The committee discussed the following:

- It's not only about misleading consumers, using these terms is inconsistent with the GSUDT and should be prohibited in countries that have adopted the GSUDT into law. Concern was also noted that consumers understand the plant source but not nutrient content differences between dairy products and the plant-based product.

The matter regarding lab grown product was well discussed and the conclusion reached by the SC in its May 2023 meeting was reiterated: It is not the role of IDF or the SC to determine the nomenclature of the plant-based product, only to defend and protect the use of dairy terms.

The Codex work on new food sources and production methods is a concerning area. IDF's role was reiterated and confirmed: To protect the GSUDT and remind members of its existence in the context of any new foods or production methods.



ISO work on plant-based products

The IDF engagement has always aimed to protect dairy terms. The ISO group has worked on 2 concepts:

- A = no use of animal derived ingredients
- B = limited use of animal derived ingredients

There were concerns that including animal-derived ingredients would seem a change of scope, not following ISO procedures. Therefore, a ballot was launched to change the scope (inclusion of both concepts). IDF position was not supportive of the change of scope, so only supporting concept A because the terms weren't specified and unclear direction. The result of the ballot was the approval of the scope change (20 votes in favour and 10 against, 8 abstentions due to lack of consensus and 19 abstentions due to no interest).

Continuation of work on this matter is considered as important as concerns remain regarding the endorsement on products that could be confused with dairy. In this regard the recognition of the GSUDT remains a priority and Codex will be informed accordingly.

The following actions of the Codex Committee on Food Labelling were noted:

- Sustainability claims
- Allergen labelling
- Internet sales
- Innovation-use of technology in food labelling

Advocacy work beyond Codex: A brief update was provided during the meeting

• **United Nations Food Systems Summit (UNFSS)**

The stated goal of the UNFSS is to transform the way the world produces, consumes and thinks about foods within the context of the 2030 Agenda for Sustainable Development and to meet the challenges of poverty, food security, malnutrition, population growth, climate change, and natural resource degradation. Appropriate characterization of the role of livestock in sustainable food systems and the agenda of climate smart school meals whereby no meat and dairy but mainly plant base meals school meals are to be considered is a major concern.

• **State of Food Insecurity**

Yearly report produced by UN agencies linked to food security. This year's theme was looking at the megatrend of urban living and the impact it has on food systems. Impact of climate and conflict in food insecurity. We need nutrient dense dairy available around the world.

• **WHO Guidance on Marketing to Children**

A policy was released in July 2023 relating to the marketing of unhealthy foods. This is the WHO effort to continue to apply the tobacco association policy to food with a playbook characterizing healthy / unhealthy, food with the collateral damage for dairy products.

The WHO Guidance publication relating to digital marketing of breast milk substitute provides for a very wide scope. It was noted that these publications misuse dairy terms.

• **FAO Global conference on sustainable livestock transformation**

The very first FAO event on the role of livestock was noted with strong IDF participation.

1.5 IDF joint Standing Committee on Nutrition and Health and Standing Committee on Standards of Identity and Labelling (14 October 2023)

The meeting was attended as observer.

1.6 Standing Committee on Animal Health and Welfare and Standing Committee on Farm Management (14 October 2023)

Work items that were discussed:

- AT-AHW-3 – Animal Health Report – report on calf rearing available here
- AT-AHW-07 – Reproductive technologies for dairy cattle
- AT-AHW-12 – Heat stress in dairy cattle

1.7 Standing Committee on Farm Management (14 October 2023)

The joint meeting was attended as observer.

New work item: Guidelines for novel approach to manage milk quality on farm

It is the view of members of the action team that this initiative will help with the different protocols that exist worldwide as there is a lack of a guideline how to conduct better troubleshooting and how to support dairy farmers more constructively.

Also, that it would help to prioritise and interpret the findings, during support to dairy farmers. The approach is inspired by the work with the sensor-based mastitis management and now the metabolic disease management. The project considers the goals, values, motivation, and available material for working with milk quality important as well as that it is an interdisciplinary approach which at first will be subjected to a desktop study to identify most important areas and risk factors for milk quality and udder health.

South Africa is a member of the action team and already presented all relevant guideline documentation published by the Dairy Standard Agency.

1.8 Standing Committee on Microbiological Hygiene (15 October 2023)

Programme of Work

THE surveillance of relevant information and reporting of emerging hazards associated with milk and milk products were done by Japan, France, United States, Canada, Switzerland, South Africa, Ireland, Denmark and China.

Items covered by the agenda

CCFH on Guidelines for The Control of Shiga Toxin-Producing E. coli (STEC) in Beef Meat, Leafy Greens, Raw Milk and Cheese Produced from Raw Milk, and Sprouts.

The dairy annex is expected to be accepted for publication during the next CAC Commission in November 2023 and the *action team will be closed after the CAC*.

Guidelines on the use and reuse of water

The document is considered priority topic in the agenda of the IDF and the master document is likely to be adopted in November 2023 in the CAC. IDF is focusing its work on the Dairy annex, based on the work done by JEMRA. It was noted that the document only addresses microbiological challenges and not all the challenges of concern for the IDF that will be addressed later.

Guidelines on Probiotics

The draft position has been ongoing since 2018 and is still not on the agenda of CCNFSDU. IDF maintains a neutral position on the topic but if the work is accepted, IDF will highlight the importance to put health claims out of the scope of these guidelines.

IDF publications on significant microbiological hazards and topics

The meeting noted the following ongoing publications:

- *Staphylococcus aureus* and toxins (Thomas Berger, CH; Ghazal Nemati, CH)
- *Listeria* spp. and *Listeria monocytogenes* (François Bourdichon, FR)
- *Campylobacter* and raw milk (Olivia McAuliffe, IE and Declan Bolton, IR)

Inventory of Microorganisms with a Documented History of Use in Food

Guidance on Processing Environment Monitoring for microbiological contamination

Practical guidance on representative sampling on processing line

The bulletin has been published, an IDF webinar is scheduled on November 6.

<https://shop.fil-idf.org/collections/publications/products/bulletin-of-the-idf-n-525-2023-practical-considerations-of-sampling-when-monitoring-dairy-food-production>

Food cultures and gut health

The action team has been closed and the work on definition is maintained through the update of ISO 17205|IDF 149 as horizontal standard by ISO/TC 34/SC9.

Communication – Fact Sheets

The meeting agreed that the “Use by” and “best before” fact sheet revision need to be considered (work linked to CCFL, hence SCSIL) and to be investigated considering the work already done already by EDA (European Dairy Association) by Sandra Leperche (FR) and Christian Kastrup (DK).

Consideration of new work included

- *Cell based food and Precision fermentation:*
- *Food Safety Culture (Code of Food Hygiene, EU Regulation, Certification Standards)*

Review of objectives and current priorities of the SCMh for 2023/24

The proposed priorities for 2023 – 2024 are:

- Guidelines on the use and reuse of water (*Priority defined by the SPCC*)
- Processing Environment Monitoring
- Food Cultures: Regulatory Status

2 REPORT ON THE IDF WORLD DAIRY SUMMIT

An immersive program was put together for more than 1200 dairy leaders, processing experts, dairy farmers, suppliers to the dairy industry, academics, government representatives, and others. The theme, “BE DAIRY BOUNDLESS POTENTIAL, ENDLESS POSSIBILITIES” was most appropriate and a good reflection of what was offered for the duration of the summit.

The summit delivered four days of programs, including eight main sessions and 21 break-out sessions that focused on a spectrum of topics. One of the most outstanding experiences was the exchange of knowledge between countries of the South and North, also discussions on practical experiences regarding chemical residue control, testing regimes and analytical methods, disease control, labelling of dairy products (use of dairy terms) animal welfare and import/export.

The sessions covered many relevant topics of the global dairy industry but surprisingly was not overwhelmed by obsessive drives towards the topics of sustainability and the UN 2030 Sustainable development goals. A strong agenda was however driven towards the implementation of regional symposiums and to obtain member countries involved in actively participating and assist with organising these events.

The summit left adequate time for interaction, the venue was state of the art and all arrangements to make the summit a great success were well executed.

The following sessions were attended:

17 October 2023	10:30 – 12:00	Concurrent Sessions 1 Methods of Analysis: Microbiological
17 October 2023	13:15 – 14:15	Plenary Session 6 Successes in Global Standards: A Celebration of IDF's Collaboration with International Standard Setting Bodies
17 October 2023	14:30 – 16:00	Concurrent Sessions 2 Managing Heat Stress in Dairy Cattle
18 October 2023	10:30 – 12:00	Concurrent Sessions 4 Methods of Analysis: Chemistry and Composition
18 October 2023	13:30 – 15:00	Concurrent Sessions 5 Accelerating Profitable Sustainability for Farmers
18 October 2023	15:30 – 17:00	Concurrent Sessions 6 Emerging Chemical Contaminants: Impacts and Solutions for the Dairy Industry
19 October 2023	08:30 – 10:00	Plenary Session 8 Dairy's Contribution to Evolving Food Systems

I wish to express my gratitude towards Milk SA for making the attendance of the summit possible. The Dairy Standard Agency is a progressive entity within the Milk SA dispensation seeking new opportunities to serve the industry. Attending the WDS provide many opportunities to advance on current and new work withing its planned projects.



1 IDF BUSINESS MEETINGS AND WDS SUMMIT SESSIONS ATTENDED

1.1 Business meetings attended

- Task Force on Plant Based beverages (Friday, 13 October 2023)
- International Milk Promotion Group (Friday, 13 October 2023)
- Joint SC on Dairy Policies and Economics and SC on Marketing (14 October 2023)
- Joint SC Nutrition and Health and SC Standard Identity and Labelling (observer: 14 October 2023)
- SC Marketing (14 October 2023)
- Joint SC Nutrition and Health and SC Marketing (14 October 2023)



1.2 Conference sessions attended

- **16 October 2023**
 - Plenary 1: From the United States to the World: Introducing the summit by welcoming delegates and giving a snap-shot of the economic outlook about the host country's market dynamics and optimisms.
 - Plenary 2: Global Leaders Forum
 - Plenary 4: Dairy Outlook: World dairy situation and Marketing trends (This session was moderated by Ms Christine Leighton)
 - Dairy innovation awards
- **17 October 2023**
 - Plenary 5: Dairy farming around the world: Today's focus, Tomorrow's vision
 - Economic outlook on dairy drivers and the decade ahead
 - Upcycle -processing of dairy co-products, closing the look
 - Yves Boutonnat International Milk Promotion Trophy finalists
 - Plenary 6: Successes in Global Standards
 - Dairy's role in precision nutrition
 - Dairy Science and Technology: Cell Based Fermentation Technologies and the Dairy Sector
 - Food based dietary guidelines; science, trends and impacts
- **18 October 2023**
 - Plenary 7: Dairy processing around the world: today's focus, tomorrows vision
 - Earning trust for dairy's sustainability with today's global consumer
 - Dairy's building blocks for nourishing prenatal Brain development: Helping children reach their full potential
 - Dairy science and technology: Cell based fermentation technologies and the dairy sector
- **19 October 2023**
 - Plenary 8: Dairy's contribution to evolving food systems



Standing Committee – Marketing

2 IDF BUSINESS MEETINGS - EXECUTIVE SUMMARY

Observations and important discussions from the business meetings

The need for joint meetings between different standing committees has become apparent, as many topics receive attention across the various standing committees. The Standing Committee on Marketing (SCM) is positioned to assist other standing committees in identifying potential communication messages that need to be disseminated to different target audiences. For example, the SCM developed a communication framework for plant-based beverages in 2020, and currently, extensive work is being done on other plant-based products such as gels (yogurt) and amalgamates (cheese). The SCM provided a literature review on existing papers concerning these products to the Task Force on Plant-Based Products.

The SCM also liaises with the Standing Committee on Animal Health and Welfare to identify common issues regarding animal welfare in different countries that could be of importance for communication messages. This is still a work in progress.

The joint meeting with the Standing Committee on Dairy Politics and Economics highlighted the importance of country reports and the examination of the World Dairy situation. Other issues discussed in the meeting include the IDF Resilience of the Dairy Project and the results of the survey. The Global Marketing Trends Survey will be repeated in 2024. The latter is of utmost importance to the IDF as it follows the progress in the global dairy market.

The joint meeting with the Standing Committee on Nutrition and Health discussed topics that have research results that can be used in communication messages. The first discussion was on the Dairy Matrix. Although a lot of work has been done on this subject matter, including fact sheets for each product, more work is needed to have the food/dairy matrix concept accepted by the scientific community. This aspect of the work will aim to have the definitions considered for Food-Based Dietary Guidelines (FBDG). For instance, at present, WHO guidelines on trans fats and saturated fats are outdated and have been challenged by several academics.

Another important matter discussed at this meeting was the School Milk Programmes. This is a priority item for the IDF and is ongoing, supporting a renewed effort to provide information and campaigns to include milk in schools. During the meeting, it became clear that in some countries, milk may be removed from school meal programs, and this is a matter of concern. Especially in Denmark, the issue of declining milk consumption is related to sustainability aspects, and this could be a growing issue for other countries.

J. Giddens (US) updated the group on developments of a Climate-Friendly School Meals initiative developed by the London School of Hygiene and Tropical Medicine (LSHTM). The initiative is led by modelling work developed by Marco Springmann (a vegan advocate who developed the EAT Lancet modelling). The initiative would feature at COP 28 (Nov 2023) and calls for a 20% decrease in Animal-Sourced Foods (ASF) served in

schools and an increase in intakes of vegetables and whole grains. Some aspects around the nutrition outcomes are not clear at this stage, but it appears to be modelled on a vegan diet with the environment, as opposed to nutrition, at the core of its values.

The members recommended putting pressure on national governments and briefing the sector on arguments to include dairy in children's diets. From a communication perspective, the SCM will look at the SMP and identify communication messages and a possible framework that can assist different countries in communicating the importance of milk in growing children.

3 WORLD DAIRY SUMMIT PRESENTATIONS

The World Dairy Summit 2023, coinciding with the 120th celebration of the International Dairy Federation (IDF), showcased a resolute commitment from the global dairy sector towards addressing climate change. This commitment was evident throughout the summit's sessions, emphasizing the reduction of greenhouse gas (GHG) emissions, optimizing soil health, and ensuring the sustainability of ecosystems. Companies are actively engaged in data collection to calculate their carbon footprint, and various technological solutions for mitigating environmental impact were presented.

3.1 Economic Outlook on Dairy Drivers and the Decade Ahead

The summit featured a presentation highlighting the economic outlook for the dairy sector. Key points included a peak in international dairy prices around mid-2022, followed by a gradual decline. Milk production increased by 2.2% in 2022, with the United States being the main beneficiary of additional exports. However, uncertainties for the coming decade were identified, such as plant-based replacements for dairy, environmental legislation, geopolitical conflicts (e.g., Russia's war against Ukraine), changes in domestic policies, and shifts in the trade environment.

3.2 Demographic Trends and Market Opportunities

A focus on demographic trends revealed that population and income growth in developing countries, particularly those with a dairy-consumption culture, are significant drivers of greater dairy consumption. The top 20 countries in population growth are expected to drive a 2.5% compound annual growth rate (CAGR) in dairy demand. Despite a forecasted decrease in China's population, continued dairy consumption growth is anticipated. Market opportunities were identified in countries like China, the USA, Brazil, and Bangladesh, with potential for significant upside due to low per capita consumption compared to advanced Asian economies.

3.3 Marketing Session and Consumer Trust

A marketing session explored strategies for earning trust in dairy sustainability. Consumer research from Ireland indicated positive attitudes toward dairy, viewing it as part of a healthy and sustainable diet. Concerns from the Irish study included weight issues, allergies, skin problems, and digestibility. Organizations, including Starbucks, showcased their sustainability initiatives, emphasizing the importance of consumer trust.

3.4 Precision Nutrition and Emerging Technologies

The summit delved into precision nutrition, exploring individualized dietary recommendations based on genetics, microbiome, and lifestyle factors. A presentation on cell-based fermentation technologies high-



lighted their potential impact on the dairy sector. Discussions focused on the production of high-value proteins through precision fermentation, emphasizing sustainability and consumer preferences.

3.5 Health Benefits of Dairy

Several presentations explored the health benefits of dairy consumption. Cheese was linked to improved cardiovascular function, while the potential role of dairy in preventing Type 2 diabetes was discussed. The diversity of bioactives in milk, supporting various health aspects, was emphasized.

3.6 Plenary on Dairy's Contribution to Evolving Food Systems

The plenary session highlighted the importance of sustainable practices in food systems, emphasizing the need for nutrient recycling and the role of both plant and animal-sourced foods. Micronutrient inadequacies globally were addressed, with a call for diverse diets to improve health outcomes.

3.7 Trajectories towards Sustainable and Healthy Diets

The summit concluded with a presentation on trajectories towards sustainable and healthy diets. Considerations for small changes in dietary habits impacting health and the environment were discussed. The iEatBetter mobile app and the Health Nutrition Index (HENI) were introduced for monitoring individual dietary intake. The presentation emphasized the significance of setting ambitious targets and studying disruptive changes to stay within planetary boundaries.

3.8 In summary

The World Dairy Summit 2023 provided comprehensive insights into the dairy sector's multifaceted approach, encompassing sustainability commitments, economic perspectives, demographic influences, consumer perceptions, technological advancements, precision nutrition, and emerging technologies. The summit showcased a collective determination to navigate challenges and shape a sustainable and prosperous future for the dairy industry.

4 NOTES AND DETAILS FROM SELECTED PRESENTATIONS TO GIVE MORE CONTEXT TO THE ABOVE SUMMARY

- 17 October 2023

4.1 The presentation on Economic outlook on dairy drivers and the decade ahead gave interesting insights. Some points are highlighted here from the presentation:

Lee Ann Jackson Trade and Agriculture Directorate, OECD

- International dairy prices reached their peak around mid-2022 and have started to decline slowly since.
- Milk production increased by 2.2% in 2022, with little impact on world dairy market as India's weight in trade is marginal.
- Smaller import demand from China resulted in a decrease in world dairy trade in 2022.
- Other major importers of dairy products – Saudi Arabia, Indonesia and Mexico – increased their imports.
- The United States was the main beneficiary of any additional exports.

Uncertainties related to 10 Year projections:

- Plant-based replacements for dairy
- Environmental legislation
- Russia's war against Ukraine
- Changes in domestic policies
- Changes in the trade environment

4.2 Banking for food

Rabobank, the leading bank for the global food sector gave a presentation on *Banking for food*.

Changing demographics will impact dairy demand:

The most significant driver of greater dairy consumption is population and income growth in developing countries, especially those with a dairy-consumption culture and regions with government-supported dairy consumption programs. For example, but not limited to, India, Pakistan, China, Brazil, Mexico.

Followed by maintaining existing high per capita consumption of dairy in populous developed countries/ regions: Europe/US.

Population growth: Impact on dairy sector with the population growth of 705 million people

- The UN's latest forecast indicates a population growth of 705 million people from 2020 to 2030. Over 50% of the population growth will occur in Africa, followed by India +17%, Pakistan +6.6%, Indonesia +2.9%, the Philippines and Bangladesh +2.4%, and the US +2.3%.
- The top 20 countries in population growth account for about two-thirds of the world population growth, driving a 2.5% CAGR in dairy demand.
- It's noteworthy that China's population is forecast to decline by 9.3 million during this decade.

Market Opportunities

- These markets represent the largest volume growth in dairy demand based on population and per capita consumption (PCC) growth (China, USA, Brazil, Bangladesh...)
- Despite the forecasted 9.3-million person decrease in China's population, the remaining 1.4 billion people are expected to increase dairy consumption by 1.6%.

In contrast, the US demand growth is driven by 0.5% increase in population and 0.25% gain in PCC – due to existing high PCC

Long term opportunities remain

- Low per capita consumption compared to advanced Asian economies, provides significant upside for category volume and value-added product expansion.
- Large populations, increasing urbanization, a growing middle class with purchasing power
- Continuing development of integrated supply chains
- Private/public investment to boost consumer awareness around the health and nutrition benefits of dairy
- Government initiatives supporting local dairy/food processing as a driver of economic activity

Other important points

- An aging population changes the type of dairy consumed.
- Impact over the next 10 years:
 - Dairy demand remains resilient and stable in developed markets and growing in developing countries. Changing demographics will impact dairy demand with a greater focus on personalized nutrition in developed countries.
 - Fluid milk consumption is expected to increase in developing countries; however, demand in developed countries is moving toward protein-dense, or a purposeful-product (health & wellness), that is conveniently packaged.
 - Stagnant growth in global milk production will result in adequate farmgate milk prices, with greatest margin expansion coming from eco-system deliverables that are both private and public sector driven. Dairy farmers that optimize the eco-system marketplace are reducing their dependence on the milk price.
 - Dairy farmers social license to produce milk and retain market share in developed countries will be tied to reducing the sectors carbon footprint, which is also imperative to prevent being “formulated-out” of retail CPG products.



4.3 Drivers of Global Dairy Consumption and Growth

The last presentation in this session looked at the Drivers of Global dairy Consumption and growth by NMPF/US DEC.

Dairy taste and health and wellness is still driving consumer towards dairy. Top drivers are:

Taste (80%); price (68%); healthfulness (60%); convenience (56%); environmental sustainability (39%)

Nutrition remains a key advantage for dairy.

Associated benefits of protein

- Healthy Diet 50%
- Healthy Lifestyle 46%
- Generally Healthy 41%
- General Muscle 41%
- Health Increased Energy Levels 39%
- Boost Immunity 37%
- Bone and Joint Health 36%
- Weight Management 36%
- Healthy Aging 34%
- Support a Workout/Activity 33%
- Source of Vitamins and Minerals 32%
- Good Digestive and Gut Health 30%
- Muscle Building or Weight Gain 30%
- **18 October 2023**

4.4 Marketing session: Earning trust for dairy's sustainability with today's global consumer

This session was in the format of a debate and different organisations shared their sustainability initiatives. The session was opened by Zoe Kavanah from Ireland and she shared consumer research on the core attitudes of Irish consumers towards dairy.

These attitudes indicated that Irish consumers value dairy, sees it as part of a healthy diet while also being part of a sustainable diet. They also trust Irish farmers to care for the environment. Concerns about dairy was weight issues; allergies; skin issues; difficult to digest.

During the presentation Star-bucks shared their organisational video that showcased their commitment to sustainability. This can be viewed at <https://www.youtube.com/watch?v=QNv9PRDIhes>

4.5 Precision Nutrition

Sharon M. Donovan PhD, RD Professor and Director, Personalized Nutrition Initiative sdonovan@Illinois.edu

The presentation looked at what precision nutrition encompasses and how it can impact on nutrition recommendations; is demonstrated evidence for personalised responses to diet and showed opportunities to better understand responses to dairy ad health outcomes.

What is precision nutrition?

- The goal of developing individualized, actionable dietary recommendations that help us all decide what, when, why, and how to eat to optimize our health and quality of life (NIH 2020–

2030 Strategic Plan).

- The goal of developing individualized, actionable dietary recommendations that help us all decide what, when, why, and how to eat to optimize our health and quality of life (NIH 2020–2030 Strategic Plan)
- Recognizes that humans are inherently different from one another and can respond differently to similar dietary inputs
- Personalized nutrition encompasses a wide array of features
 - Genetics, epigenetics, microbiome, metabolomics
 - Circadian rhythms, dietary habits, eating patterns, health status
 - Socioeconomic and psychosocial characteristics, food environments, and physical activity

Precision nutrition is the unifying vision of 2020–2023 NIH strategic plan for nutrition research.

- Spur discovery and innovation through foundational research: What do we eat and how does it affect us?
- Investigate the role of dietary patterns and behaviours for optimal health: what and when should we eat?
- Define the role of nutrition across the lifespan: How does what we eat promote health across the lifespan?
- Reduce the burden of disease in clinical settings: How can we improve the use of food as medicine?

4.6 Dairy Science and Technology: Cell Based Fermentation Technologies and the Dairy Sector

The IDF has a statement regarding cell-based ingredients, dairy protein analogues and plant-based imitations. The term 'Precision fermentation' is viewed as more 'consumer friendly' than recombinant DNA. Fermentation technologies have been used for many years. However, this is science worth taking note of as much work has been done in this field. Remarks from the presentation by Professor John Lucey, Director, Wisconsin Center for Dairy Research, and Owen R. Fennema, Professor in Food Chemistry, University of Wisconsin–Madison.

- Simple proteins or enzymes can be successfully made using the precision fermentation approach, e.g., rennet and β -LG
- Complex proteins, like casein, require critical post-translational modifications, unclear how these modifications can be done outside the mammary cells? Or if modified by a m/o then it's a GMO
- Unclear how bio-assembly of complex proteins structures like casein micelles can be done without the post-translation modification (and without the mammary cells/enzymes to do it)
- What is the functionality of these non-cow derived casein proteins? [better than plant proteins but not identical to cow-derived]
- Suggest precision fermentation focus should be on high-value proteins present in milk at low concentrations (e.g., lactoferrin).

This session ended with a fascinating presentation by a female farmer in New Zealand that demonstrated the importance of considering plant-based products; plant molecular farming; precision fermentation and cellular agriculture in order to manage emissions and stay in business. A quote from the presentation: "Emissions from our direct operation, known as Scope 1 (emitted directly) and Scope 2 (emitted indirectly) accounted for just 5% of our emissions. The vast majority of GHG emissions (95% come from the activities of in the supply chain. As a result, this is where the focus of our efforts should be".

4.7 Health benefits of dairy

Cheese and cardiovascular function: By Lacy Alexander, PhD. From the presentation – summary

Epidemiological studies and prospective human trials indicate that consuming 3–4 servings of dairy per day lower blood pressure, improves indices of vascular function, and insulin resistance.

The potential mechanisms include micronutrient content (Ca⁺, Mg²⁺, and K⁺), and bioactive proteins with ACE-inhibitor and antioxidant effects, GI effects on inflammation.

In healthy older adults, in single meal and short-term controlled feeding dairy cheese consumption ameliorated sodium-induced microvascular dysfunction through oxidant stress mechanisms

Dairy product consumption vs Type 2 diabetes by Jean-Philippe Drouin-Chartier, RD PhD Assistant professor Université Laval, Québec, Canada

Dairy Bioactives: Potential for Innovation in the Era of Precision Nutrition by Kasper Hettinga, PhD Professor Dairy Processing and Functionality Department of Agrotechnology and Food Sciences

Take home message from his presentation:

- Milk contains many bioactives for healthy development of infants
- These and other bioactives also support specific groups of adults
- Large variation in bioactives among species: look beyond the cow
- Heating milk leads to loss of function of many bioactives

• 19 October 2023

4.8 Plenary 8: Dairy's contribution to evolving food systems

Stephan Van Vliet, PhD, Assistant Professor, Nutrition Science, College of Agriculture and Applied Sciences, Utah State University, United States

Productivity and sustainability:

"Simplified systems may be productive in the short run, but they make it difficult for food systems to recycle nutrients and be sustainable in the long-run". Five principles for sustainable food and agriculture (FAO, 2019):

- Improving efficiency in the use of resources;
- Conserving, protecting, and enhancing natural ecosystems;
- Protecting and improving rural livelihoods, equity, and social well-being;
- Enhancing the resilience of people, communities and ecosystems;
- Promoting good governance of both natural and human systems

Take-home messages

- Micronutrient inadequacies (≥ 1 micronutrient) are widespread globally (>40% of population)
 - High income nations: poor diet quality
 - Developing nations: low dietary diversity (including low animal food intake)
- Plant and animal sourced foods can be used in complementary and synergistic ways to improve micronutrient status.
- Some nutrients found exclusively/more readily in animal sourced foods (DHA/EPA, zinc, heme iron, retinol/vitamin A, D, and B12).

- Others more readily found in plant foods (Vitamin E, K1 , high levels of phytochemical antioxidants).
- A danger in simplifying foods to “protein” and “fat” and focusing only on a handful of micronutrients. Need to consider the complexity of the whole food matrix.
- Focus on agroecology and improving diet quality (greater shift to minimally-processed plant foods with some animal sourced foods).

S.K Kronberg, S. van Vliet et al. Closing nutrient cycles for animal production – Current and future agro-ecological and socio-economic issues. J. Animal Sci. 2021. doi: <https://doi.org/10.1016/j.animal.2021.100285>

4.9 Trajectories towards sustainable and healthy diets

We can quantify dietary impact on both human health and the environment. This presentation presented considerations for making small changes in dietary habits that can impact on health and the environment. The mobile app: iEatBetter was developed to monitor individual intake. The Health Nutrition Index (HENI).

HENI provides flexibility for comparing a wide variety of foods in a consistent way.

- Multiple limitations and progress in front of us: how to differentiate apples from bananas.
- Big data offer very interesting perspectives, coupled with e.g. Random Forest Algorithm.
- Small targeted changes can make a substantial difference (beef & processed meat substituted by a mix of healthy foods).
- What is good enough: we need to set much more ambitious target and study disruptive changes not to exceed planetary boundaries!



1 IDF BUSINESS MEETINGS AND WDS SESSIONS ATTENDED

1.1 IDF Business meetings attended

- IDF National Committees (13th October 2023)
- IDF New Experts (14th October 2023) Did a presentation on my journey in IDF as part of SCNH and SPCC
- IDF Standing Committee Nutrition and Health (15th October 2023)
- IDF Standing Committee Nutrition and Health joint meeting with SC Marketing (15th October 2023)
- IDF TF on Women in Dairy (15th October 2023)
- IDF Experts Roundtable (15th October 2023)



1.2 Conference sessions attended

- Plenary Session 1: From the United States to the World: Tapping the Boundless Potential and Endless Possibilities of the Dairy Sector
- Plenary Session 2: Global Leaders Forum
- Plenary Session 3: IDF Forum: Today's Focus, Tomorrow's Vision
- Plenary Session 4: Dairy Outlook: World Dairy Situation and Marketing Trends Reports
- Concurrent Session: Tuesday 17th October 2023.
- Session 2a: Dairy's Role in the Era of Precision Nutrition
- Session 3c: Food-Based Dietary Guidelines – Science, Trends, and Impacts
- Plenary Session 7: Wednesday 18th October 2025
 - Dairy Processing Around the World: Today's Focus, Tomorrow's Vision
 - Concurrent session 4a: Earning Trust for Dairy's Sustainability with Today's Global Consumer
 - Concurrent session 6a: Dairy's Building Blocks for Nourishing Prenatal Brain Development: Helping Children Reach Their Full Potential
- Plenary Session 8: Thursday 19th October
 - Dairy's Contribution to Evolving Food Systems Session
 - Concurrent session 7c: Food Systems Transformation Essentials: A Holistic Approach that Supports Human and Planetary Health

2 REPORT AND FEEDBACK ON BUSINESS MEETINGS

The business meetings that preceded the WDS in Chicago were characterised by great networking opportunities and productive goalsetting and discussion of work items.

As dietitian of the CEP, I attended the normal SC meetings applicable to my role as representative of South Africa, as well as some meetings that serve as integration between several SCs and action teams.

2.1 Standing Committee: Nutrition and Health meeting

The following points are highlighted:

- **Update from the SPCC representative**
M Vermaak (ZA) announced that her term as the SPCC representative for Nutrition and Health has come to an end, with I Neiderer (CA) stepping in for the next term. She also highlights that two of the current five IDF priority work items now relate to nutrition and health, underscoring the sector's focus on these areas.
- **Taskforce on Protein from a dairy perspective**
The TF's work on protein conversion factors concluded, with a new NWI proposed due to the continued significance of protein in the sector.
- **Taskforce on Food Systems**
Advocacy efforts ensured dairy's recognition in food and nutrition security discussions, with IDF participating in external events to highlight dairy's role.
- **Taskforce on Plant-Based foods**
As a post-plant-based drinks analysis, the TF explores broader food aspects, with forthcoming key messages on nutrition, technology, and environmental impacts.
- **SC of Dairy Standards and Technology Symposium**
Discussion on the upcoming symposium focused on the dairy matrix, aligning with SCNH objectives. Members volunteered to contribute to the program's development.
- **Current Programme of Work**
 - **Dairy Matrix**
Updates on dairy matrix research and forthcoming publications were shared. Discussions included the role of dairy ingredients and the need for a comprehensive communication strategy.
 - **Nutrition & Health Symposium 2024**
Plans for the virtual symposium centred on nutritionally adequate FBDGs and protein transition. Success strategies from past events were highlighted for broader outreach. The symposium will once again be presented online and in two different time zone brackets to accommodate all countries. The symposium will be held in May 2024 and will be part of the IDF events calendar.
 - **School milk programmes**
As action team leader of the SMP, the dietitian on the project reported on progress and work done as part of this IDF priority item. Ongoing efforts to promote school milk programs were discussed, including publications, surveys, and upcoming white papers.
 - **Goals achieved for 2023**
 - A position paper was published on the benefits of school milk. This was discussed in a joint SCNH & SCM meeting and is available on the intranet for members to use at country level.
 - Keeping the School Milk Knowledge Hub up to date. This form part of the IDF website includes various case studies. New case studies added in 2023 were from Denmark, Morocco, UK and China. To access these case studies please visit the IDF website on <https://fil-idf.org/dairys-global-impact/school-milk-knowledge-hub/school-milk-case-studies/>
 - During the World School Milk Day celebrations, the AT ran various campaigns and outreaches which included presentations at the FAO global conference and for the Ukraine Dairy Industry, as well as a blog, a social media campaign on LinkedIn, Facebook, Instagram, and X (formally Twitter)
 - The Action Team presented a technical webinar on the affordability of dairy in SMP
 - **Work in progress**
 - A subgroup work on the affordability of dairy nutrients which aims to cover affordability in 4 different continents (US, Asia, Europe & Africa) and will be part of the next bulletin.
 - School Milk Survey – was launched on WSMD. The survey was circulated to National Secretaries or representatives to gather information on milk in schools (including specific

school milk programmes as well as milk in general feeding programmes). The results will be published as part of the SMP Bulletin on WSMD 2024.

- Sustainable and healthy diets, new indicators
- Discussions focused on developing guiding principles for nLCAs, considering dairy's role in nutrient intakes and environmental impacts.
- **Codex Nutrition Matters**
 - Updates on NRVs for infants and probiotics were provided, with IDF actively participating in related working groups.
- **IDF WDS 2024 Paris, France**
 - Promotional details and themes for the Paris Summit were shared, emphasizing dairy's role in meeting global demands sustainably.
- **Dietary Guidelines**
 - New work items were approved, focusing on FBDG and dairy's inclusion, with plans for a comprehensive toolkit.

Next meeting of the Standing Committee: Nutrition and Health: June 2024 – Utrecht, Netherlands

2.2 IDF New Experts Meeting

The dietitian of the CEP of Milk SA was invited to be part of a panel discussion as part of the New Expert meeting. The purpose of the meeting was to introduce new members and experts to the world of IDF. This gathering offered invaluable insights for new experts and served as an opportunity for existing experts to reconnect with the organization and colleagues.

This aim was to familiarize new members with IDF's work and the impact on the sector that they will be contributing to.

The panel consisted of three speakers: Allen Sayler (US), Maretha Vermaak (SA) and Philippe Trossat (FR), each representing a different discipline in the IDF and with collectively more than 60 years of experience working within the IDF. These speakers shared with the new members their experience in IDF by providing a description of when they joined IDF and how they have been involved in different activities and, or roles they have undertaken in the IDF since they joined. They shared the impact of how their work/involvement in IDF added value to their professional career and how to make the most of IDF.

Useful links have been shared with the attendees to help them navigate the IDF world:

- Guidance for experts of IDF working bodies <https://intranet.fil-idf.org/document/download/50025>
- Rules of Order 2023: <https://intranet.fil-idf.org/document/download/49764>
- Standing committees objectives and liaisons: <https://intranet.fil-idf.org/document/download/48289>
- Guidelines for virtual meetings of IDF bodies: <https://intranet.fil-idf.org/public/document/download/47156>
- IDF Strategy 2022-2025: <https://intranet.fil-idf.org/document/list/12128>
- Programme of Work of the present and past years: <https://intranet.fil-idf.org/document/list/9655>
- New work items of the present and past years: <https://intranet.fil-idf.org/document/list/9644>
- New work item proposal template: <https://intranet.fil-idf.org/document/download/46841>
- IDF Corporate slides, see the template for internal audience (<https://intranet.fil-idf.org/document/download/47554>) and template for external audience (<https://intranet.fil-idf.org/document/download/47553>) and guidelines (<https://intranet.fil-idf.org/document/download/47556>).
- Agenda and minutes templates <https://intranet.fil-idf.org/document/list/12289>
- Guidance and template for IDF bulletins <https://intranet.fil-idf.org/document/download/49825>

- Guidance and template for IDF factsheets <https://intranet.fil-idf.org/document/download/49889>
- Procedure for the development of IDF-ISO Standards for Methods of Analysis and Sampling of Milk and Milk Products: <https://intranet.fil-idf.org/document/download/31832> and template for IDF/ISO standard <https://intranet.fil-idf.org/document/download/30755>

2.3 IDF Task Force on Women in Dairy

Under the leadership of Dr Judith Bryans and Ms Lynda McDonald the dietitian of the project was an invited attendee of the first IDF roundtable discussion on women in dairy. There was strong participation covering all regions of the world as well as all levels of the dairy value chain. The theme of the roundtable was “How can technology and innovation help women in the dairy sector”.

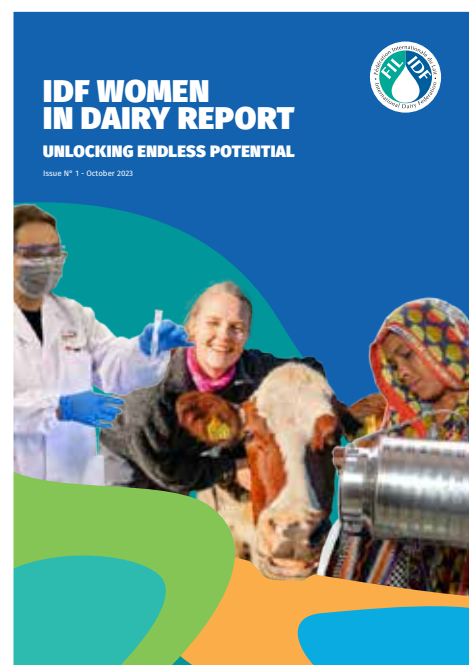
Some background on the task force: Generations have witnessed the dairy sector’s remarkable contribution to the empowerment of women through various avenues. Looking into the role of women in the dairy industry, it becomes apparent that milk and dairy products play a significant role in improving the nutrition of girls and women across diverse stages of life. Moreover, milk production has been pivotal in supporting the livelihood of millions of women and their families, generating essential socio-economic value for rural communities. Notably, dairy farming has played a crucial role in diversifying family incomes, particularly in developing countries, while simultaneously enhancing the understanding of food choice and the importance of food availability through educational efforts, such as school milk programs.

The global dairy sector is strongly committed to furthering the UN Sustainable Development Goals, with a specific focus on SDG5 – achieving gender equality and empowering all women and girls. The sector has demonstrated proactive and dynamic efforts toward realizing this goal, as highlighted by the establishment of the Task Force on Women in Dairy by IDF in 2022. The primary goals of this task force were to bridge the information gap around the role of women in the dairy value chain, showcase inspiring stories of women’s contributions to science, agriculture, and the food sector, and provide a rich, worldwide network for the support and development of women’s expertise and careers in the dairy industry.

During the meeting at the WDS was the keynote given by Mrs Krysta Harden, president and CEO of US-DEC. This was then followed by an interactive session where the attendees, divided into specific groups representing different parts of the world reflected on the following questions:

- Which innovation & technology do you think could assist women in the dairy sector?
- Which actors could help to leverage these innovations & technologies?
- What resources would be needed to make these innovations & technologies more accessible to more women?

It was a lively discussion and many practical testimonies and experiences were shared. The session was a great success and a testament to the positive and substantial contributions made by women in the sustainable dairy sector. Through the dissemination of these empowering stories and case studies, it is the Task Force’s collective aim to foster a deeper understanding and appreciation for the critical role women play in advancing the global dairy industry, ultimately contributing to sustainable development goals.



2.4 All Experts meeting

At this meeting the IDF President Piercristiano Brazzale gave an update on behalf of the Board of Directors, the Science and Programme Coordination Committee Chair, Dr Jamie Jonker provided a summary of all the work done across all standing committees and task forces within the IDF. Lastly, the IDF Director General, Caroline Emond updated the experts on all IDF business including sharing the news of her resignation from the IDF. She stated that she would still be available for support and a proper handover till the end of March 2023.

For the year 2023, 43 new items were added to the IDF Programme of Work while 37 items were removed, including 19 work items completed and 18 cancelled that were not needed anymore or could not continue due to lack of expert lead or support.

A new Task Force on Processing was launched in 2023 and is conducting two actions: a review of the current IDF programme of work to identify any gap and the drafting of a factsheet or position paper to clarify what processing means for the dairy sector.

There are now 5 IDF Task Forces within the IDF. A complete list of work done can be found on the IDF website.

3 REPORT AND FEEDBACK ON THE SUMMIT PRESENTATIONS:

The IDF World Dairy Summit 2023 under the theme “BE Dairy: Boundless Potential. Endless Possibilities” was held in Chicago, US, and started on the 16th of October 2023. The US is considered the world’s second-largest milk producer and was hosting four days of sessions exploring the latest developments in dairy science, technology, knowledge, and innovation from all over the world.

The 2023 IDF WDS started by celebrating the beginning of its 120th anniversary by emphasizing the importance of collaboration and empowering the next generation of leaders in the global dairy sector. The IDF’s General Assembly highlighted the commitment of the dairy industry to support improved nutritional outcomes and contribute to a more sustainable future.

The dairy industry is dedicated to promoting healthy diets, investing in production innovation, and providing critical nutrition for various populations. Moreover, it aims to reduce greenhouse gas emissions, champion animal welfare, and contribute to sustainable food systems. The global dairy sector also plays a significant role in supporting farmer livelihoods, providing employment, and generating valuable revenues for communities worldwide.

The IDF calls on governments, global organizations, and the food and beverage sector to recognize the crucial role of dairy, promote sustainable agriculture, support trade, and engage in transparent and inclusive policy-making. Additionally, the IDF advocates for the expansion of career pathways and leadership opportunities, particularly for women and youth in the dairy sector.

3.1 Dairy’s Building Blocks for Nourishing Prenatal Brain Development: Helping Children Reach Their Full Potential

The first speaker in this session was Prof Mark Manary. He is a Professor of Pediatrics at the School of Medicine, Washington University, United States.

This presentation focuses on *the role of milk in school meal programs*, particularly in the context of two clinical trials conducted in Ghana. The presentation emphasizes the importance of integrating African populations into the global economy and highlights the need for advancements in education to create sustainable livelihoods. It also underscores the impact of school meals on attendance and participation,

noting that meals in sub-Saharan Africa are often infrequent and sporadic, mainly consisting of boiled cereal, maize, or rice.

The Ghana School Feeding Study revealed that adding milk protein to school meals improved cognition test scores and led to the accretion of more lean body mass. Additionally, the study found that the intake of a supplement corresponding to one glass of milk stimulated IGF-1 in prepubertal children, which was associated with cognitive tests and growth parameters. This suggests that dietary interventions, specifically milk intake, may be used to improve cognition among school children in low-income countries.

In the second presentation 'Maternal and Child Nutrition Fueling Baby's Brain Development' was discussed by Dr. Liska Robb, from the Freestate University in South Africa.

She discussed the following key points:

- The crucial role of *nutrition in brain development* during the first 1000 days of a child's life, emphasizing the significance of maternal and child nutrition during this critical period.
- The discussion also addressed the *nutritional status among pregnant women*, focusing on the importance of a well-balanced diet and understanding the specific nutritional needs during pregnancy for both the mother and the developing baby.
- Lastly, the presentation highlighted the essential nutrients found in dairy and emphasized the *importance of consuming dairy products during pregnancy* for the overall health and development of the child, likely focusing on the role of dairy in providing essential nutrients such as calcium, protein, and other vital components.

The first 1000 days of life are a unique opportunity for optimum health and development, enabling growth, learning, and the potential to rise out of poverty. All nutrients are essential for brain growth and function, but certain nutrients have significantly influential effects during early development.

Key nutrients for brain development include choline, DHA, vitamin D, iron, folate, and iodine. Deficiencies in these nutrients during sensitive periods of early life can lead to long-term dysfunction. The presentation emphasized the significance of these nutrients during preconception, highlighting specific milestones such as neural tube closure within the first 28 days after conception and the impact of maternal vitamin D deficiency on fetal development.

The significance of choline intake during pregnancy and its potential effects on infant processing speed, visuospatial memory, and neurological damage associated with alcohol exposure were also highlighted.

Overall, the presentation shed light on the critical role of maternal nutrition and the specific role dairy nutrients may have on optimal brain development during the first 1000 days, emphasizing the need for adequate intake of essential nutrients to support healthy brain function and development in offspring.

The third presentation was presented by Dr Elizabeth N. Pearce from Boston University in the US.

The presentation discussed the *importance of maternal and infant iodine in baby's brain development*. It covered the role of iodine in thyroid hormone synthesis, recommended intakes and assessments, consequences of iodine deficiency, global iodine status, and dietary sources.

It also mentioned current recommendations for iodine intake, the spectrum of iodine deficiency disorders, and the effects of iodine deficiency on cognitive development. The importance of iodized salt, dairy, seafood, eggs, and prenatal supplements in meeting iodine needs was emphasized.

The presentation concluded by highlighting the vulnerability of women and fetuses to iodine deficiency disorders and the need for adequate iodine intake through various dietary sources.

3.2 Food-Based Dietary Guidelines – Science, Trends, and Impacts

Ms Erica Hocking started the discussion by giving an overview of Food-based dietary guidelines (FBDGs). The discussion reinforces that FBDGs are defined by the FAO as guidelines that “are intended to establish a basis for public food and nutrition, health and agricultural policies and nutrition education programmes to foster healthy eating habits and lifestyles. They provide advice on foods, food groups, and dietary patterns to provide the required nutrients to the general public to promote overall health and prevent chronic diseases.” They are science-based and adapted to each country’s specific circumstances, cultural habits, and preferences for the purpose of promoting health and well-being, reducing the risk of chronic disease, and reducing the risk of diet-related disease. Of 106 dietary guidelines registered on the FAO website, 83% include dairy-specific guidelines.

This presentation was followed by case studies presented by Mexico, Denmark, and the US illustrating how dietary guidelines are also tools with potential impact on the transformation of healthy and sustainable food environments.

The world is experiencing important changes in the context of food environments and sustainability is a development objective for human and planetary health. The growing trend of plant-based diets focuses on sustainable food systems and therefore the reduction in consumption of foods from animal sources will be a crucial point in the consumption trends of milk and dairy products. The effect of this can already be seen in changes made to the Mexico FBDGs.

In Mexico, milk and dairy are considered not to be good for the environment and are grouped with animal-sourced foods that are recommended not to be consumed daily. The updated Mexico guidelines lack consumption and serving size recommendations for milk and dairy. The Nordic countries are also an example of a growing awareness of including environmental aspects as part of food-based dietary guidelines.

The Nordic 2023 nutrition recommendations placed a negative focus on animal-based foods, based on both climate and health. In general, the beneficial effects of animal-based foods were overlooked due to their nutrients, local food supply, and environmental impact. They consider plant-based foods as the only ‘right’ solution.

In Denmark, the main focus is on increasing vegetables, fruits, grains, legumes, nuts and reducing meat intake. However, dairy products are still recommended.

In the US The 2020 – 2025 dietary guidelines notes that dairy:

- Contributes to healthy dietary patterns linked with positive health outcomes
- Offers key nutrient contributions, especially for nutrients of public health concern
- Remains its own food group and continues to be recommended at three servings per day

These presentations emphasise the importance of taking a balanced evidence-based approach to reviewing FDDGs, including all stakeholders and nutritional experts.

3.3 Dairy’s Role in the Era of Precision Nutrition

Dr Sharon M. Donovan from the University of Illinois presented why personalised dietary recommendations are an essential part of the future. The goal of developing individualised, actionable dietary recommendations that help us all decide what, when, why, and how to eat to optimize our health and quality of life. It underscores that humans are inherently different from one another and can respond differently to similar dietary inputs. She explained that personalised nutrition encompasses a wide array of features such as:

- Genetics, epigenetics, microbiome, metabolomics
- Circadian rhythms, dietary habits, eating patterns, health status
- Socioeconomic and psychosocial characteristics, food environments, and physical activity

The advantage of PN for dairy can be seen by the possible provision of lactose-reduced products for individuals with lactose intolerance is already personalized nutrition, the advantage of single nucleotide polymorphisms that could influence individualised responses to dairy components such as vitamin D receptors and calcium absorption or transport, as well as the benefits of fermented foods and the gut microbiome.

The next two presentations focussed specifically on the role of dairy in cardiovascular health and type II Diabetes. Dr Lacy M. Alexander summarised that epidemiological studies and prospective human trials indicated that consuming 3–4 servings of dairy per day lowers blood pressure, and improves indices of vascular function, and insulin resistance, while Dr Jean-Philippe Drouin-Chartier reconfirmed that epidemiological data showed beneficial relationship between dairy product consumption and type 2 diabetes risk, especially yogurt. The presentations concluded that dairy bioactives are the key to the potential for innovation in the era of precision nutrition.

3.4 Food Systems Transformation Essentials: A Holistic Approach that Supports Human and Planetary Health

On the last day of the WDS, the presentations from this session were the highlight of the nutrition presentations. The session included presentations from some of the most renowned researchers in the field of nutrition, namely Dr. Stephan Van Vliet, Assistant Professor in Nutrition Science from the University of Utah, Dr Olivier Jolliet from the University of Denmark and Prof Adam Drewknowski, from the University of Washington, United States.

Dr van der Vliet highlighted that micronutrient deficiencies affect more than 40% of the global population, with high-income nations often facing issues due to poor diet quality, while developing nations struggle with low dietary diversity and limited intake of animal foods. The combination of plant and animal sourced foods can work together synergistically to enhance micronutrient levels.

Certain nutrients, such as DHA/EPA, zinc, heme iron, retinol/vitamin A, D, and B12, are mainly found in animal-sourced foods, while plant foods are rich in vitamin E, K1, and phytochemical antioxidants. Simply categorizing foods as “protein” and “fat” overlooks the complexity of the nutrient profile within the whole food matrix.

He emphasises that it is essential to prioritize agroecology and enhance diet quality by incorporating more minimally processed plant foods and some animal-sourced foods. This approach will help address micronutrient inadequacies and promote overall health and well-being.

Dr Olivier Jolliet addressed the topic of Trajectories towards sustainable and healthy diets and emphasised that science needs to acknowledge that we cannot account for health impacts only in the functional unit (the basis for comparison) because food functionality is very rarely mono-dimensional or mono-functional. The food complexity and function cannot therefore be forced into a single functional unit. He also stressed that human health and dietary or nutrition impact should be accounted for in a separate life cycle impact category, considering both impacts and benefits. This will provide much more flexibility for comparing a wide variety of foods in a consistent way.

He highlighted the impact of diets on both human health and the environment which can be measured with the Health and Environmental Nutritional Impact (HENI) tool providing a framework for consistently comparing different foods. However, challenges lie ahead in accurately distinguishing between various foods, such as apples and bananas, especially with children being excluded from the Global Burden of Disease studies. Utilizing big data, especially in conjunction with advanced algorithms, offers valuable insights. Implementing small, targeted modifications, such as swapping out beef and processed meats for a mix of healthier alternatives, can yield significant results. It is imperative to set more ambitious goals and explore radical changes to prevent surpassing planetary boundaries.

Lastly, Prof Adamdrewnoski addressed the audience on sustainability, the dimensions and metrics used, and their trade-offs. His presentation emphasises the issue of looking at only two dimensions of sustainability namely nutrition and the environment. It is very important to ensure science focuses on the fact that in reality, there are four dimensions:

- Nutrition and health
- Economics
- Society
- Environment

Foods need to be nutrient-rich, affordable, socially fair and culturally acceptable – and with low impact on the environment. He demonstrated how the nutrient density of foods is captured with nutrient profiling and that these models need to be adjusted for protein quality and bioavailability of minerals. He finally suggested that future studies ought to explore protein transition(s) and global food demand.



*Carline Emond,
Director-General of the IDF,
handing Maretha Vermaak
the IDF Leader
Recognition Award*

3.5 Conclusion

The gala dinner of the WDS was as usual a highlight. During the proceedings, the dietitian of the Consumer Education Project of Milk SA (Maretha Vermaak) received an IDF Award of Excellence in recognition of an outstanding contribution as Nutrition representative on the Science and Programme Coordination Committee.

The dietitian of the CEP of Milk SA, I would like to express my sincere appreciation to the South African National Committee of the IDF and Milk SA for the opportunity to once again attend this symposium. Not only is the knowledge gained of tremendous value, but also the ability to meet and network with peers in the international arena.

- **Standing Committee Leader Recognition**

The Standing Committee Leader Recognition highlights exemplary achievements among the committees' leadership and rewards exceptionally good handling of the Standing Committee and Task Force (SC/TF) processes: keeping the SC/TF focused and productive, providing constructive and high-quality contributions, working well together with IDF staff. As the latter criterion is only observable to the IDF staff, they review the nominations made by SC/TF members and IDF staff and decides on awarding the Recognition.

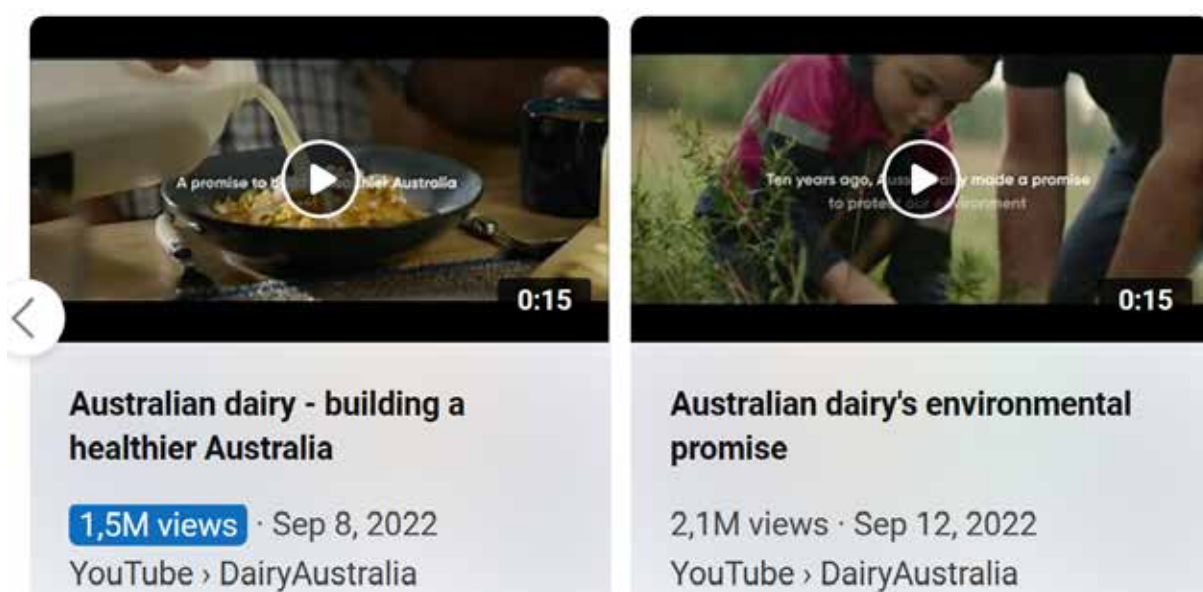
This year the SC Leader Recognition is awarded to **Maretha Vermaak** in recognition of an outstanding contribution as Nutrition representative on the Science and Programme Coordination Committee.

The annual Yves Boutonnat International Milk Promotion Trophy competition was initiated in 1989 by the IMP Group. IMP is a permanent action team of the IDF Standing Committee on Marketing, it is a means of showcasing, to dairy farming and industry delegates attending the annual IDF World Dairy Summit, the best generic advertising campaigns created recently amongst the group in the key areas of innovation, nutri-marketing, and marketing communication. The Yves Boutonnat International Milk Promotion Trophy this year went to Australia with their campaign “Our Dairy Promise”.

The **Australian dairy industry** has made a **commitment** known as “**Our Dairy Promise**”. This promise outlines their sustainability commitments to various stakeholders, including customers, communities, investors, and their own people.

The Consumer Education Programme of Milk South Africa won the trophy in 2008 and 2015.

Videos of “Our Dairy Promise: Australia







South Africa
National Committee

