CORPORATE RESPONSIBILITY REPORT - SUPPLEMENT

2020

Arla Foods Ingredients

Discovering the wonders of whey

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RESPONSIBILITY IS A TRUE TEAM EFFORT

It's hardly possible to report on our corporate responsibility performance in 2020 without starting with the COVID-19 pandemic. A year that began with high expectations became a year of adapting to an unprecedented situation, solving challenges in the supply chain and taking the necessary actions to ensure the wellbeing of our people.

Despite these difficult conditions, all colleagues have displayed an eminent ability to continue working as a team, driving our business and pursuing efforts to make Arla Foods Ingredients a more sustainable and responsible partner. Although a few activities were inevitably postponed, many others have moved ahead on schedule.

A new sustainability framework

During 2020, we established the framework for a consolidated sustainability programme, covering our entire organisation. This provides the backbone for our new sustainability strategy to guide our journey towards a 30% reduction in CO_2 emissions by 2030, reaching carbon net zero in 2050. We expect to launch the strategy in the year ahead.

Within the sustainability programme, we have created dedicated workstreams for energy, water, waste and other areas where we have an environmental footprint. These are, of course, already long-term focus areas and, although headway has been made through the years, we believe this strengthened approach will enable us to speed up progress towards our CO_2 targets.

Towards our green transition

Over the coming decade, our business forecast promises strong growth in our resource-intensive production. It is imperative that our footprints diminish at the same time. In Denmark, where we have our largest sites, a number of major investments are underway, such as the new technical water building that will treat wastewater for reuse. In parallel, we are investigating possibilities to replace natural gas with green electricity in our production processes.

Later in 2021, the opening of our new innovation centre will mark a sea change in our R&D capabilities – not only within ingredients for special nutrition but also within knowledge and technology development to optimise and transform our processes in a sustainable direction. We are, as always, open to collaborating in new R&D projects with research institutes, customers and other ingredient companies to support more sustainable practices in the food industry at large.

Partnerships for better nutrition

While we concentrate on reducing our footprints, in other areas we are working to optimise our positive handprints through nutrition research and affordable nutrition for low-income families. Like previous years, 2020 brought new opportunities to collaborate in clinical studies of whey proteins and other dairy ingredients with potential benefits for health and wellbeing. Studies of osteoporosis prevention in women and a special diet for people with type 2 diabetes will continue in 2021.

Although the pandemic dampened the activities of the GAIN Nordic partnership, where Arla Foods Ingredients is a member, it was possible to proceed with plans to document the partnership's affordable nutrition models. It is our hope that these models will inspire more projects to reduce malnutrition through affordable food supply chains.

A year of important lessons

As 2021 gets underway, we are confident that the lessons learned through the pandemic so far will stand us in good stead moving forward. We have seen our people pull together in challenging times and find alternative solutions where usual ways of working have not been possible. These are experiences we will use to advantage as we edge closer to our corporate responsibility goals.

Henrik Andersen
CEO

OUR CONTRIBUTION TO THE GLOBAL GOALS

The 17 UN Sustainable Development Goals are a strong tool for guiding responsible business operations and growth. At Arla Foods Ingredients, we consider the SDGs a source of inspiration and motivation in our continuous improvement work.

During 2020, we have re-evaluated how our activities may contribute to specific goals. As a result, we have identified the goals to the right as our primary focus. These are highlighted in the Ambitions & Progress Data chapter of this report, along with two additional goals where we aim to make an impact.

STRONGER PLANET

Ensure availability and sustainable management of water and sanitation for all

Ensure sustainable consumption and production patterns

Take urgent action to combat climate change and its impacts

STRONGER PEOPLE

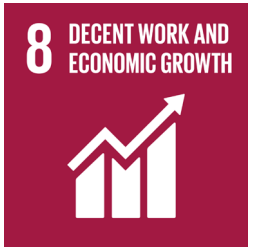
End hunger, achieve food security and improved nutrition and promote sustainable agriculture

Ensure healthy lives and promote well-being for all at all ages

Strengthen the means of implementation and revitalise the global partnership for sustainable development

Additional SDGs mentioned in this report

Ensure access to affordable, reliable, sustainable and modern energy for all



Promote inclusive and sustainable economic growth, employment and decent work for all

ABOUT ARLA FOODS INGREDIENTS

Arla Foods Ingredients is a global whey ingredients company and 100% owned subsidiary of Arla Foods. We sell our ingredients to food manufacturers in more than 100 countries.

Results 2020
Our net revenue totalled EUR 747 million in 2020, which is a 3% increase compared to 2019. More information about our financial performance is available in the Arla Foods annual report.

Market development
Arla Foods Ingredients is one of the world's leading producers of whey-based ingredients for pediatric, sports and medical nutrition, health foods and everyday foods, such as bakery and dairy products.

We have built our business around our ability to discover and deliver the components in whey that can bring value to the food industry. Our goal is to make the best possible use of our entire raw material.

Production sites
Our flagship whey processing facility is Danmark Protein, located in West Jutland, Denmark. This is where we produce the most specialised whey-based ingredients in our portfolio and the highest volumes overall. Our third-party manufacturing facility and second largest site ARINCO is located nearby.

Arla Foods Ingredients owns and operates the AFISA plant in Argentina. Our current joint venture facilities are ArNoCo in Germany and MVI in the UK.

Overview of production:

Danmark Protein, Denmark
Advanced whey protein processing facility, including dedicated plants for hydrolysate and dry-blend lactose production

ARINCO, Denmark
Third-party manufacturer of products for child nutrition and milk powder

AFISA, Argentina
Leading whey processor in MercoSur, producing whey proteins and permeate

ArNoCo, Germany
Joint venture with DMK, producing whey protein concentrate for further processing at Danmark Protein and lactose

MVI, UK
Joint venture with Volac, producing whey protein concentrate and permeate powder

STRONGER PLANET

A circular bioeconomy is about putting back as many resources as you take out – creating maximum value in the process. This is our challenging journey at Arla Foods Ingredients.

CIRCULAR BIOECONOMY – TOWARDS SUSTAINABLE GROWTH

Every production company has a responsibility to lighten its footprint by minimising resource consumption and waste and maximising the utilisation of raw materials. Across the Arla Foods Ingredients organisation, this is the continuing focus of improvement initiatives – large and small. All contribute to our goal of sustainable growth in a circular bioeconomy.

In 2020, the biggest move towards better raw material utilisation with a reduced carbon footprint was undoubtedly the launch of the new organic production line at our ARINCO plant. For the first time in our history, we now have facilities to extract native proteins directly from organic milk. Important advantages include high control over ingredient composition, less processing and waste, and reduced raw material transport.

The development of this capability has added significantly to our processing knowhow. When our new R&D innovation centre goes into operation at Danmark Protein in 2021, we will expand our potential to develop more products and processes for even better use of resources in the future.

In this chapter, you can read about some of our primary activities to reduce the environmental impact of our production in 2020. Detailed performance figures for each plant are available in the Ambitions & Progress Data chapter.

ENERGY EFFICIENCY – BY HEAT RECOVERY

At Danmark Protein, three projects with external partners have explored the possibilities for energy savings and the longer-term prospects for electrifying some production processes. Based on the findings, one investment project under consideration for 2021 is to capture heat from the plant's biogas motor emissions for redistribution throughout the factory. The new heat distribution system will be designed for water temperatures up to 90°C.

In connection with hydrolysate and dry-blend lactose production, a similar heat distribution system is planned to utilise surplus heat and reduce reliance on natural gas by 1.25% – equivalent to the annual energy consumption of 150 households. High-temperature cooling water from the biogas motors has also been diverted for use in the lactose process.

These initiatives combined are expected to reduce annual consumption of natural gas at Danmark Protein by 13,715 MWh (1.3 million m^3) once fully operational.

Not far from Danmark Protein, ARINCO has found an alternative use for surplus heat from its two biogas motors. Since 2019, the surplus has gone to the local district heating plant, where it delivered 58% of the heat supply for local community needs over the past year.

The AFISA plant in Argentina has made further progress with projects to recover hot water from evaporation and reduce energy consumption for cleaning. During 2020, work began on a natural gas pipeline. Since the pipeline's completion in February 2021, natural gas has become the main energy source, replacing fuel oil which has higher carbon emissions.

BETTER PROCESSING EFFICIENCY TURNS WASTE INTO VALUE

The Arla Foods Ingredients team in Argentina has always focused on efficiency improvements. Sebastián Burga explains how the effort led to a 10% increase in permeate processing capacity in 2020.

Every year the Arla Foods Ingredients plant in Porteña, Argentina sends surplus permeate away for land farming. Although the practice is well within legislative limits, the Porteña team is aware that it is not the best choice for the environment or the business. So, there is a continuous effort to reduce the surplus volume to a minimum.

"The bottleneck is our permeate spray dryer, particularly during the high season when we receive 3,000 tonnes of raw whey a day," says production and environment manager Sebastián Burga.

"In 2020, we have concentrated on improving the quality of our raw material and processes to increase our drying capacity."

The raw whey is the side stream of cheese production at local dairies. Just 5% is dairy solids – comprising whey permeate and protein. The remaining 95% is water, removed by filtration, evaporation and the final drying process.

Streamlining quality

Sebastián explains, "Raw material quality has a direct effect on our processes, so we work a lot with our suppliers to limit quality variations. In our nanofiltration process, we have another opportunity to streamline quality and ensure we have a uniform raw material before the evaporation process."

This year, the site has taken available nanofiltration capacity into use to remove more water and raise the level of concentration at an earlier stage of permeate production. Spray-drying capacity has gone up 10% as a result.

More in a bag

Not only does that provide more water for reuse around the site, it means more permeate ends up in a bag, ready for sale.

"The local land farming service collects our surplus permeate before drying. We continue to reduce the volume they collect by improving our processing efficiency and increasing the concentration of the permeate we are still unable to dry in the high season," Sebastián says.

As an alternative to disposal via land farming, the Porteña team has stepped up efforts to contact farmers who can use surplus permeate as a source of nutrients for animal feed. Sebastián points out that around half of this year's surplus was used for this purpose.

"Our goal is that every kilo of dry matter must be sold for food or feed."

Less sludge, fewer trucks

Investment in a sludge concentrator has significantly reduced the amount of waste collected for land farming disposal from the wastewater treatment plant at the Arla Foods Ingredients production site in Argentina. As a result, the local land farming service now picks up just one truckload of sludge a day – instead of ten.

"This has both reduced our carbon footprint and the problem of driving on dirt tracks during those times of the year when we have heavy rain," Sebastián Burga says.

The production team at the Arla Foods Ingredients plant in Argentina.
From left to right:
Enrique Montero – Fernando Montiel – Augusto Eschoyez – Mariano Garza – Mariano Dagatti Bruno Trucco – Matias Contato – German Yennerich – Javier Astesana – Sebastián Burga Carlos Avila – Gabriel Marchisone – Cristian Ceberio – Nicolás Racca.

WATER REUSE – ACROSS MULTIPLE SITES

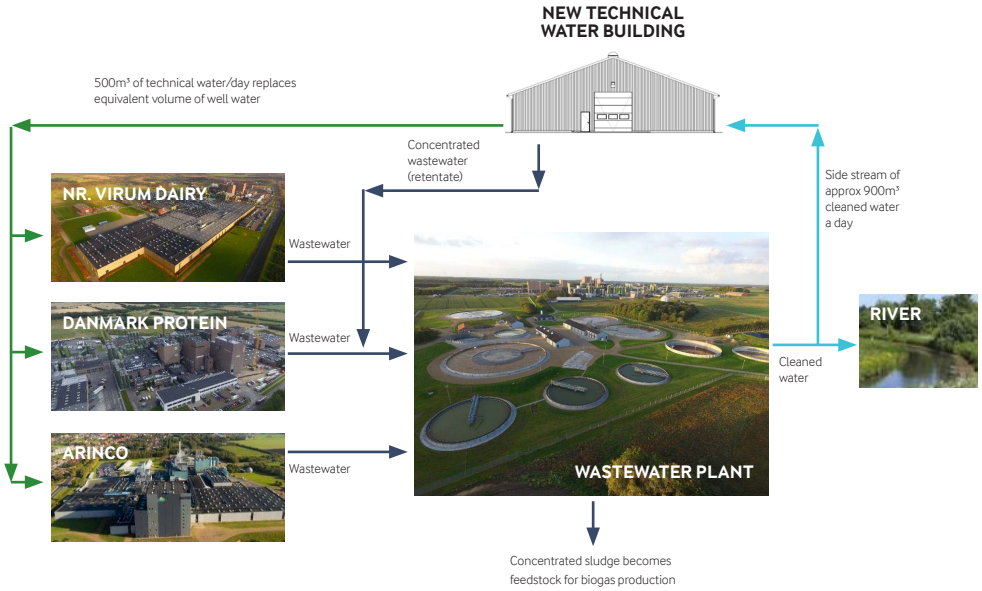
Market growth has created a burning platform for water optimisation at Danmark Protein and ARINCO, where there is a need to reduce dependence on well water and stay within the limits for permitted discharge from the shared wastewater treatment plant.

For this reason, the two plants plus the neighbouring Arla dairy have come together in the Waterfall Project to monitor and coordinate water-saving initiatives and wastewater discharge across the three sites. During 2020, a series of workshops identified new opportunities to alter processes to reduce water use without compromising product quality.

In August, the Danish Environmental Protection Agency granted permission to increase wastewater discharge by 25%. However, the goal of the Waterfall Project is to stay below the level of the previous permit granted in 2014, even as the business grows.

Construction of a new technical water building is underway to support this objective. Equipped with advanced filtration technology to upgrade wastewater for reuse in technical installations, the facility will reduce well water consumption by an initial 500m³ a day once complete in 2021. Capacity can be easily expanded to 1000m³ a day when required.

Wastewater and technical water mapping



In Argentina, our AFISA plant has continuously optimised its whey water recovery and improved water efficiency overall. As a result, the plant ended its reliance on the local water supply in October. Water extracted from the whey now meets most of the plant's water needs.

Our joint venture plant MVI in the UK also reports a significant reduction in water consumption per tonne of product, primarily due to reduced use of borehole water for cooling. At ArNoCo in Germany, water reuse facilities are built into the joint venture plant, which has been in operation since 2015. In 2020, the plant used 1000m³ of recycled whey water daily.

Whey water to the rescue

The nearest town water supply was 20 kilometres away when the Porteña fire brigade ran short of water to put out a local farm fire. After a quick call to AFISA, the plant was able to supply enough treated whey water to get the flames under control.

WATER EFFICIENCY – INITIATIVES AND INVESTIGATIONS

The technical water investment is a spin-off from Arla Foods Ingredients' involvement in the cross-sector DRIP partnership – a five-year project initiated by Innovation Fund Denmark to develop pioneering technology that will cut food industry use of drinking water by up to 30%. Since it began, DRIP has provided considerable inspiration for water efficiency improvements.

This includes the effort to optimise CIP – cleaning in place – systems, which use extensive volumes of water to ensure the high food safety standards of the entire product range. How to reduce water use for cleaning without compromising quality and food safety is an area of particular interest.

One of the CIP initiatives introduced in 2020 concerns the removal of riboflavin from dry-blend lactose production at Danmark Protein. Although the maximum limit for riboflavin is 0.2mg per 100g lactose, the advanced CIP process was initially designed to reduce the yellow-coloured component to a much lower, non-detectable level. As this level was unnecessarily low, a project was launched to allow 0.1mg riboflavin per 100g in the final product and, in this way, cut the consumption of water, energy and cleaning agents for this particular CIP process by at least 30%. The project is due for completion in early 2021.

Similar investigations are exploring water-saving opportunities in the production of whey protein isolate – again with a strong focus on maintaining product quality. The test and analysis phase will end in 2021 and is expected to pave the way for considerable water reductions on this high-volume processing line.

OPTIMISING RAW MATERIALS – THROUGH RESEARCH AND DEVELOPMENT

The spring inauguration of a new spray tower at Danmark Protein has provided sufficient extra capacity to dry the side stream of whey protein hydrolysate production. Previously used as feedstock for biogas production, the side stream is high in large peptide molecules and intact proteins and shows potential as a value-adding ingredient for food applications. Further research and development is expected to discover additional possibilities to maximise its use.

In-depth raw material knowledge is essential to extract the highest value from all components and minimise waste. To gain even better understanding of raw material quality, the R&D team at Arla Foods Ingredients is developing tools to characterise and quantify more than 95% of the proteins in the whey supplied by cheese-producing dairies. With this knowledge, it will be possible to chart the influence of processing on the final composition of ingredients. It will also enable more qualified feedback to the dairies about how to optimise the quality of the whey they supply.

In connection with these efforts, Arla Foods Ingredients and the University of Copenhagen initiated a three-year PhD project under the title MilkStreamValue in March 2020. The objective is to develop new methods for analysing and quantifying small components in milk and whey products. This will include identifying all the components that make up the non-protein nitrogen fraction in lactose – currently a difficult challenge.

GREEN INVESTMENTS AHEAD TO POWER A GROWING BUSINESS

Production is going up at Arla Foods Ingredients. Uffe Stephansen is part of the team working on the transition to renewable energy sources.

How can an energy-intensive company like Arla Foods Ingredients become carbon net zero by 2050? Senior environment, health & safety specialist Uffe Stephansen has calculated future energy consumption based on an estimated 10% growth in production over the next 10 years. He agrees the 2050 goal is a major challenge.

"The markets for whey-based ingredients and organic child nutrition are growing, which means we will have to expand our production to meet demand. Although we aim to improve our energy efficiency by 2% a year, there is no escaping the fact that our energy consumption will go up."

Most of that production increase will be delivered by Arla Foods Ingredients' largest plants Danmark Protein and ARINCO. So it is naturally also the focus of attention in current discussions about renewable energy sources.

Making site performance visible

Since he joined Arla Foods Ingredients in 2017, one of Uffe's roles has been to consolidate sustainability goals from all sites and make each site's performance more visible in the organisation. Efforts to reduce resource consumption in general – both energy and water – have intensified during that time.

In 2019, an investment in two biogas motors introduced biogas to Danmark Protein's energy mix, reducing the need for natural gas. But, although biogas is a good starting point, it is only part of the solution.

Emerging green technology

Over the past year, several projects with external partners have investigated opportunities to harvest surplus energy for redistribution and introduce new green energy sources. One of them – in collaboration with the Technical University of Denmark, Confederation of Danish Industry, Danish Agriculture & Food Council and other stakeholders – looked at emerging possibilities for electrifying food manufacturing processes.

Wind and solar energy already fuels half of Denmark's electricity needs – a figure expected to rise to 60% over the next few years, reaching almost 100% in 2030. That makes the national electricity supply an increasingly renewable choice.

Uffe explains, "As the Danish electricity supply turns greener, we will replace more natural gas with electricity in the coming years. This will include the use of heat pumps producing up to 90°C hot water. We are also considering high-temperature heat pumps, a developing technology that can produce steam at 120°C or even higher. At the moment, they are not yet ready for use in our large-scale production, but they may become an attractive technology for us after 2025."

Another possibility for CO_2 reduction lies in the capacity of biogas plants to upgrade biogas to natural gas. Waste streams from Danmark Protein and ARINCO contribute feedstock to this production.

Uffe Stephansen
Senior EHS Specialist
Global QEHS

"In Denmark, natural gas already contains a small amount of upgraded biogas. With subsidies, it will be possible to produce even more biogas for upgrading. This proportion is likely to increase as more companies move to electricity and use less natural gas," Uffe says. "The greening forecast for natural gas will also help us move towards greener production, as it is unlikely that all gas consumption can be converted to electricity over the next 10 years".

Roadmap for 2030

In 2021, Arla Foods Ingredients will lay out a new sustainability strategy, including a roadmap for reaching the first objective on the journey to carbon net zero – a 30% reduction in CO_2 emissions by 2030, compared to 2015.

Looking ahead, Uffe remarks: "I am both an optimist and a realist. And I absolutely see opportunities to achieve that goal."

STRONGER PEOPLE

Our business growth relies on the production of safe, high quality ingredients and the development of strong partnerships for improved nutrition. It all starts with providing a good workplace for our people.

QUALITY AND FOOD SAFETY – THE FOUNDATIONS OF TRUST

We have an ambition at Arla Foods Ingredients to be the most trusted partner for delivering safe ingredients. Since the launch of our Quality & Food Safety (Q&FS) strategy in 2017, we have worked to lay the foundations for achieving this goal. The strategy's second wave of activities began in 2020 with the aim to take our Q&FS capabilities to the next level.

Excellent standards are fundamental in a business like ours that supplies ingredients for some of the world's most vulnerable consumers – infants, the elderly and those with a nutrition-related health challenge. In our production of ingredients for the infant nutrition sector, we have collaborated with customers to ensure we meet the stringent requirements for 'pharmaceutical-like' quality – a standard we are bringing to all infant product lines.

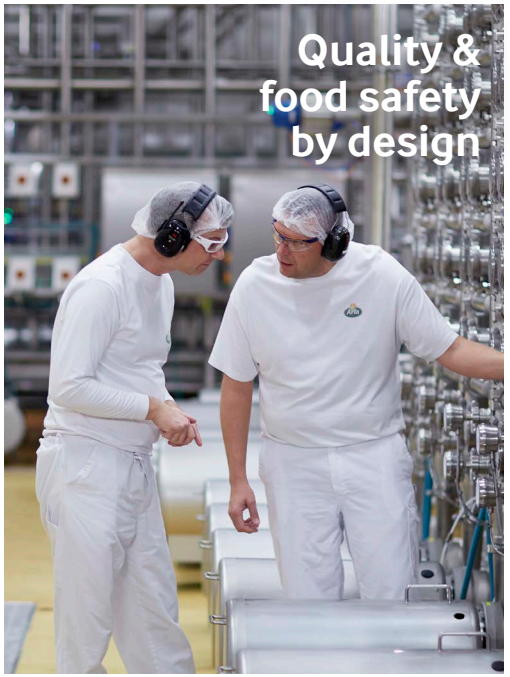
This is only possible if the people responsible for our production have the right tools, procedures and mindset. To secure that, current Q&FS activities build on our three key messages: raw materials you can trust, a proactive Q&FS culture and Q&FS by design.

Despite the impact of the COVID-19 pandemic on ways of working, which have limited physical interactions between colleagues, customers and suppliers, we have maintained the pace of our action plan. Ahead of us lies a project roadmap for 2021, with a focus on supplier approval, the digitalisation of quality processes and the continuous development of a proactive mindset to support our Q&FS journey.

The Quality & Food Safety project roadmap 2021

Including:
Packaging materials
Supplier approval
Logistics

Including:
People development
Process digitalisation & documentation
Microbiological performance & criteria



Including:
Calibration & maintenance
Process control
Sampling

QUALITY AND FOOD SAFETY – THE FOUNDATIONS OF TRUST (CONTINUED)

Quality control strategy ready for rollout
Thorough Q&FS documentation is a must before products are dispatched to customers. In 2020, we developed a new strategy to optimise our quality control procedures and ensure alignment between sites. These efforts will keep us a step ahead of emerging quality risks and ensure that we continue to use the most recognised and trusted methods for chemical, microbiological and physical analyses.

The first improvement initiatives will be rolled out in 2021. One of the initial priorities is to review laboratory processes, so valid analytical results are obtained as fast as possible to allow efficient product release.

Quality control is also a theme in our quality partnerships with customers. Here, the overall aims are to improve transparency in the food value chain and enable a more agile response to quality and food safety incidents.

Shorter handling time for complaints
Our goal is to deliver our products on time and without fault. However, when something does go wrong, we want to deal with customer complaints as smoothly and efficiently as possible. Over the past year, we have stepped up our focus on our complaints procedure in an attempt to reduce handling time to less than 20 working days for 85% of cases. In 2020, the average handling time was 10 days, a considerably better performance compared to 2017, when the average peaked at 50 days.

The improvement can be attributed to better allocation of responsibility in our organisation and improved root cause analysis. Today, customers can expect detailed feedback from our complaint investigation. In cases where we do not accept a complaint as justified, we can sometimes help customers locate the source of the problem in their own production.

LIFE-LONG NUTRITION – BUILDING CLINICAL EVIDENCE

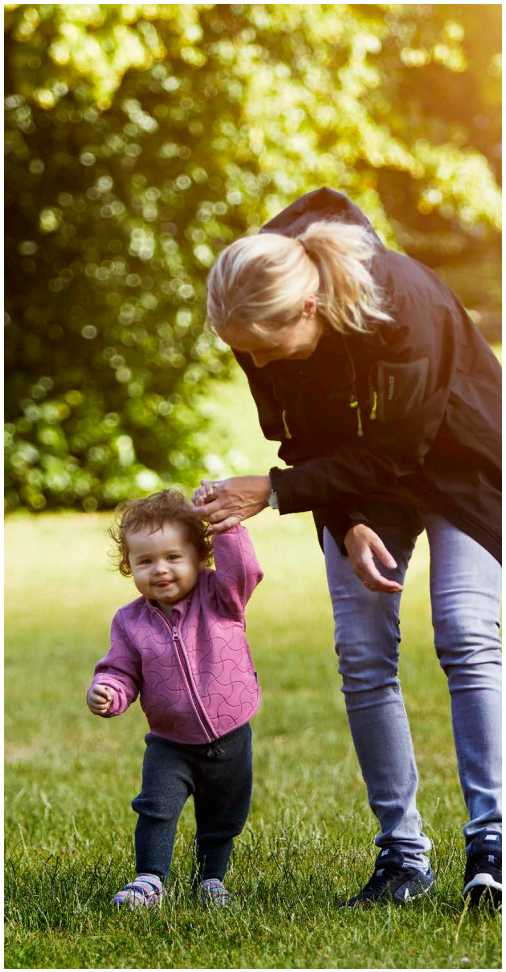
In our nutrition research, we investigate and document the potential of whey components to improve the nutritional status of specific consumer groups through each life stage – from formula-fed infants to elderly who need help with maintaining muscle strength. Almost all studies are conducted in collaboration with university partners.

Infant follow-up studies

Our research activities in 2020 included two long-term, follow-up studies – our first in this category – which involved revisiting the cohorts from previous clinical studies of early life nutrition supplemented with milk fat globule membrane (MFGM). The Swedish and Peruvian children who participated in the original studies were aged six and 14 respectively at the time of the follow-up.

In collaboration with infant nutrition manufacturer Semper, the original Swedish study looked at growth parameters in infants up to the age of 12 months. The findings showed that the infants who received the MFGM-supplemented formula had a similar growth status and cognitive score to breast-fed infants – and a significantly higher cognitive score than the standard infant formula group.

Around 70% of the cohort were re-recruited for the follow-up study. No cognitive differences were observed between the study groups five years later. More importantly, there were no differences in anthropometric measurements, such as weight, and medical history between the formula-fed groups, a finding that contributes to the long-term safety documentation of infant nutrition ingredients.



More than ten years have gone by since the first clinical study in Peru. Nevertheless, it was possible to re-recruit almost 98% of the cohort for the follow-up, which is investigating anthropometric outcomes such as height, weight, body fat and microbiota. The results of this study will be published in 2021.

Osteoporosis prevention in older women

Calcium is universally recognised for its importance in bone health. But can the combination of milk calcium, lactose and fibre improve calcium absorption in women after the menopause? This is the focus of a clinical study of 400 women over the age of 50, which will begin in 2021.

Researchers from Aarhus University, University of Copenhagen, the National Centre for Bone Health at Zealand University Hospital and USDA Davis, California will work with the Arla Foods Ingredients team to develop the ingredient concept for the study.

If successful, the concept will both represent a new approach to osteoporosis prevention in the ageing population and an opportunity to maximise the value of the milk mineral and lactose side streams of whey protein production.

Innovation Fund Denmark is providing around two-thirds of the DKK 22 million budget for the five-year project.

Diabetes type 2 mealbox

A study of type 2 diabetes patients published breakthrough results in 2019, which showed a significant improvement in blood sugar control when patients consumed a carbohydrate-reduced high-protein (CRHP) diet – which is the opposite of current nutritional guidelines.

In extension of these findings, a new project – CutDM Mealbox – started up in 2020 to examine the long-term effects of a CRHP diet in practice. To support compliance, the study will start with consumer-driven development of breakfast and dinner boxes that satisfy sensory expectations while delivering a tailored nutrient mix.

CutDM Mealbox is funded by the Arla Food for Health partnership, which supports research into the health effects of dairy and dairy ingredients. Arla Foods Ingredients is one of the partners.

THE SCIENCE OF DOCUMENTING NUTRITIONAL IMPACTS ON HEALTH

"We've come a long way in the last ten years – and built a good reputation in the scientific community," says Pernille Dorthea Frederiksen, head of health & performance nutrition science

Arla Foods Ingredients has stepped on the accelerator in its health & performance nutrition research over the past decade. During that time, the department's nutrition science team has played a part in numerous clinical trials and research articles. A good share of the research explores the role of whey proteins in human health and opportunities for improved physical performance and wellbeing.

"We've come a long way in the last ten years," says Pernille Dorthea Frederiksen, head of health & performance nutrition science. "We have focused on driving high quality research with the best people and, as a result, we have built a good reputation in the scientific community."

Protein quality on the agenda
All clinical research is carried out in collaboration with external research partners – leading universities, research institutes and key customers. Within health & performance, some of the most important results include documentation of whey protein's beneficial influence on blood sugar control in type 2 diabetes.

Another is a noteworthy contribution to the scientific literature that highlights the great potential for using the specialised milk peptide casein glycomacropeptide (CGMP) in safe and better-tasting foods for people with phenylketonuria (PKU) – an inborn error of metabolism that requires lifelong adherence to a strict diet.

Over the past decade, the scientific community has focused increasingly on the nutritional quality of the proteins in human diets. This becomes especially important when consumers substitute regular whole foods with meal replacements.

"While previous EU law only specified the amount of protein that meal replacement products should contain, the revised law now specifies that the protein must be high quality. Together with industry peers, we have been part of creating the awareness about protein quality in human diets. We will continue to do so in the years ahead," Pernille explains.

A wide research focus
Current research includes a large clinical study to document the safe and effective use of CGMP in specialised nutrition products for people with PKU – in collaboration with academic partners and a large medical nutrition company.

In another joint clinical study with Aarhus University Hospital in Denmark, whey hydrolysates are under scrutiny to identify the potential benefits of dietary supplementation for people with short bowel syndrome.

Recently, the health & performance nutrition science team signed contracts for three PhD-related clinical studies at the University of Nottingham in the UK. The overall objective is to explore the muscle stimulatory effect of a whey protein isolate rich in beta-lactoglobulin in healthy young adults and elderly subjects. The findings will help document a new ingredient that is currently under development.

Objectivity through partnerships
There are times when Pernille meets scepticism about the integrity of company-funded research. This is where high research ethics and a preference for entering balanced partnerships with academia are a good safeguard of objectivity.

"Many of the studies and research activities we support are conducted as part of PhD programmes and only partially financed by us. Innovation Fund Denmark, Steno Diabetes Centre, the British Medical Research Council's Industrial Collaborative Awards and the European Union are examples of other funding sources. Some of our research partners are from competing industries with a mutual interest in strengthening knowledge about whey and dairy proteins or developing new analytical methods."

As she also points out, not all published studies produce results that are easily commercialised. "We acknowledge this as part of the risk when investing in science. Fortunately, we gain valuable knowledge every time that can lead to new discoveries or research hypotheses," she adds.

Since Pernille joined Arla Foods Ingredients in 2011, the number of people working with nutrition science in the organisation has doubled. The objective, however, is unchanged: to discover how whey proteins and other milk nutrients can relieve nutrition-related health challenges throughout life and to deliver the science that documents those benefits.

Pernille Dorthea Frederiksen
Head of Health & Performance Nutrition Science

AFFORDABLE NUTRITION – SCALING UP KNOWLEDGE

All our affordable nutrition work involves collaborating with our NGO partners – GAIN Nordic, DanChurchAid and the SUN Business Network – on projects that aim to prevent malnutrition in low-income families.

The GAIN Nordic Partnership project to develop a sustainable dairy supply chain in Ethiopia is among our major commitments. As lead business partner, Arla Foods Ingredients has supported the development of a locally produced fortified yoghurt. In January, one of our Arla farmers travelled to Ethiopia to take part in training around 400 local dairy farmers in how to improve animal welfare and milk yields.

The project's final main delivery for 2020 was to conduct a school feeding study to evaluate the nutritional impact of the yoghurt among schoolchildren. Due to the pandemic, the study will now take place in 2021.

In another collaborative project with GAIN, we have played a leading role in developing a nutritious long-life drink to address malnutrition among children and women in Zambia. The product, which is made from locally produced milk and includes our whey permeate, was scheduled for market introduction in 2020, but was also postponed.

Instead, the GAIN Nordic partners have channelled efforts into documenting all knowledge and experience related to these affordable nutrition models. By developing open source manuals, we aim to inspire the development of more sustainable supply chains for affordable nutrition in developing countries. Our partners at the Scaling Up Nutrition (SUN) Business Network will share all this knowledge via a new platform in 2021.

Protein-enriched biscuit for Ethiopia

Arla Foods Ingredients is founder member of a partnership with DanChurchAid, Novozymes and other companies to develop new affordable nutrition concepts and share related knowledge and expertise.

In 2020, a two-year project to develop a protein-enriched biscuit in Ethiopia gained funding from P4G – a global forum that supports public-private partnerships focused on accelerating sustainable development.

Produced by a manufacturer in Addis Ababa, the biscuit will contain protein from locally grown chickpeas and, later, quinoa, with whey protein as a source of dairy nutrients. Market launch is planned for 2022.

P4G has previously funded the partnership's Sustainable Food Platform initiative to promote local production of nutritious food for people living in or around refugee camps.

Milk matters in malnutrition

Arla Food Ingredients supports the research of Project Peanut Butter and Washington University in St. Louis to identify the most impactful ingredients in ready-to-use supplementary foods (RUSF) for malnourished children.

2020 marked the rollout of a new study to investigate the effect of lactose and dairy protein on recovery from moderate acute malnutrition (MAM), gut permeability and the intestinal microbiome. The study will recruit 900 children aged six months to nearly five years at feeding clinics in Sierra Leone.

Previous research has established that RUSF with whey protein and permeate improves child recovery from MAM. In this study, tests of four RUSF formulations will help determine which milk ingredients have the greatest effect.

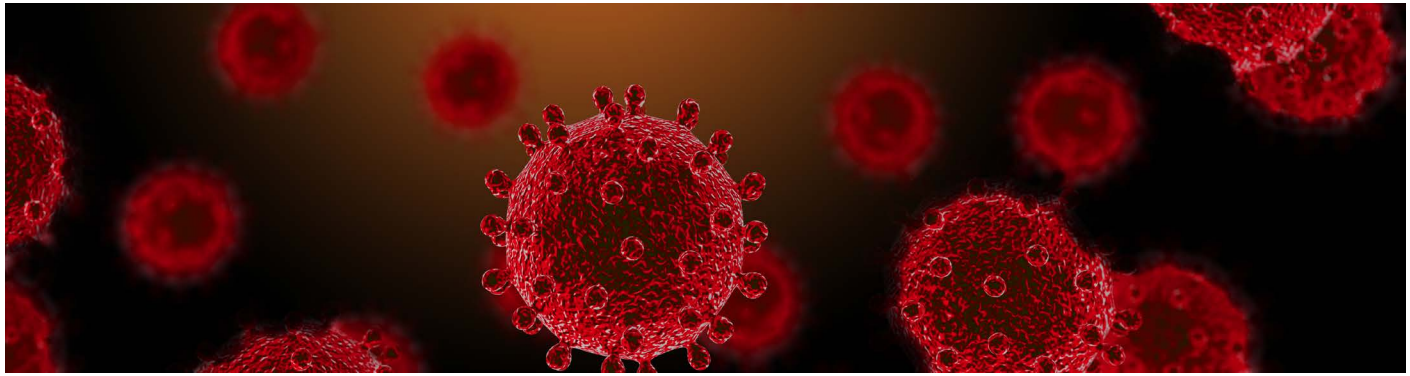
SUPPORT FOR COLLEAGUES AND COMMUNITIES – IN CHALLENGING TIMES

2020 has been a challenging year all over the globe. At Arla Foods Ingredients, we have made efforts to ensure the wellbeing of colleagues and to support vulnerable households in Argentina, where the pandemic led to a sharp rise in poverty.

AFISA is one of many in the private sector that have supported the #SeamusUno initiative to counter the negative effects of COVID-19. The objective was to deliver a box of food and basic hygiene products to a million households that were struggling to make ends meet. This was achieved by the end of September, with AFISA contributing the equivalent of a thousand boxes.

Within our own global organisation, clear channels of communication have been more important than ever, with many colleagues working from home. We have carried out regular pulse surveys to monitor the wellbeing of our people and, in our supply chain, have introduced COVID-19 update meetings to keep everyone informed about the rapidly changing situation.

During the year, a project group started work on sharing insights and inspiration on employee and manager best practice under the new circumstances imposed by the pandemic. This provides an additional support for maintaining individual wellbeing as the COVID-19 restrictions extend into 2021.



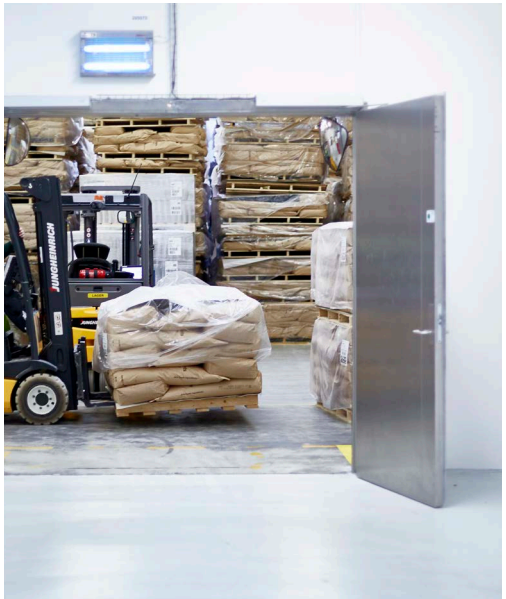
WORKING ENVIRONMENT – SAFETY AND WELLBEING

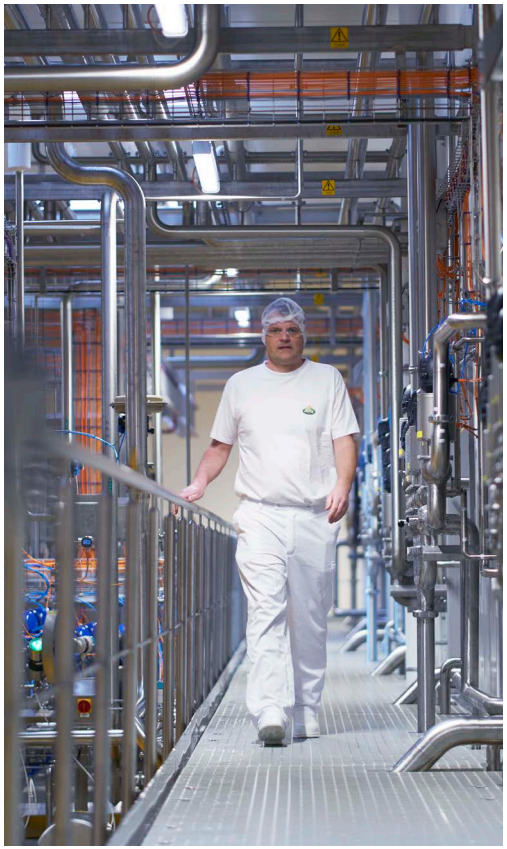
Efforts to ensure the safest possible working conditions have continued with little interruption during 2020. At our production sites, implementation of the Arla Cornerstones behavioural safety programme is well underway. This has included safe behaviour workshops and the introduction of a new company-wide procedure for taking machines safely out of operation for maintenance and cleaning. At our head office in Denmark, all colleagues were introduced to key safe behaviours following training of behavioural safety ambassadors.

Danmark Protein has both maintained its training programme for work environment representatives and introduced new initiatives that highlight the responsibility of each individual for safety and wellbeing at work. This includes a monthly reward scheme for colleagues who demonstrate particular awareness of safety risks.

At ARINCO and AFISA, further initiatives have focused on improving safety in connection with deliveries, dispatch and palletisation.

It is important to us that everyone who visits our sites experiences a strong culture for safety at work. To ensure this, we have rolled out a global standard for environmental health and safety for external contractors involved in building and maintenance. At ARINCO, this has included training operators in how to conduct daily safety inspections of the construction site for our new spray drying tower. Our best practice training is now mandatory for all.





MAKING THE BLUEPRINT FOR MOVING SUSTAINABILITY FORWARD

'Sustainability is close to my heart,' says Arla F15® graduate Janique Koopman. In 2020, she helped lay the foundations for a company-wide strategy.

Arla Foods Ingredients has long worked with initiatives to make its operations more sustainable. One of the ambitions for 2020 was to map all initiatives throughout the organisation – to gain an overview and identify gaps. The outcome is a consolidated sustainability programme for the entire business.

Janique Koopman took on the challenging task during the second placement of her Arla F15® graduate programme.

"Until now, most sustainability initiatives have been the responsibility of individual sites, functions and departments. We found a need for more overall structure to anchor this work and gain more momentum in line with our ambition to be carbon net zero by 2050" she explains.

Mapping the focus areas

After carrying out countless interviews with colleagues, Janique mapped all her findings in one big document to understand existing initiatives and future ambitions.

The main focus areas for future efforts were then agreed with the Arla Foods Ingredients sustainability steering committee – including energy, water, packaging and supply chain waste. A workstream has now been established for each one.

"This is the foundation for Arla Foods Ingredients' company-wide sustainability programme targeting footprints. The next step in 2021 will be to firm up our ambitions towards our 2026 strategy and build a roadmap for meeting them," she says.

More internal communication ahead

One of the things that Janique found through her talks with people in the organisation was a high interest in more internal communication about how the company performs on sustainability. This will be another consideration for 2021.

For Janique herself, her second F15® placement has certainly been a ride with a steep learning curve. At first, she was a little surprised to be asked to drive such a big project. But, due to her previous involvement in NGOs that work with the UN sustainable development goals, she quickly found her feet.

"Sustainability is close to my heart and definitely something I would always like to have as a core component of my everyday work to create a positive impact," Janique remarks.

She won't have to wait long for the next opportunity. Her final placement as a F15® graduate will take her to the Arla Foods office in Stockholm, where she will work as sustainability project manager.

Active sustainability network for Arla colleagues

Janique was one of the first members of the Arla Sustainability Network. Founded in late 2019, the network is largely driven by Arla employees as an internal forum where colleagues can meet, be inspired and drive initiatives for sustainable change – inside and outside the company. One of this year's initiatives was to participate in World Cleanup Day by arranging a litter pickup event in Aarhus municipality, Denmark. When this was prevented by the COVID-19 pandemic, the network organised a digital clean-up across the global Arla organisation to reduce the carbon footprint of emails and cloud storage.

Janique Koopman
F15® graduate

AMBITIONS & PROGRESS DATA

The past year has been a true test of our agility and adaptability at Arla Foods Ingredients. Despite the COVID-19 pandemic, we have maintained our global operations and, by and large, continued our efforts to reduce our environmental footprint, provide our people with a safe and inspiring workplace, and contribute to the production of sustainable and nutritious foods for global consumers.

On the following pages, you can read about our overall performance in 2020 and priorities for 2021. Information about policies and key performance indicators that apply to the entire Arla Foods group is available in the Arla corporate responsibility report.

ENERGY AND CLIMATE

Ambition

The shift from fossil to renewable energy sources is a central element in achieving the Arla Foods climate ambition. At Arla Foods Ingredients, we work hard to contribute to this goal and to improve the efficiency of our resource-intensive production in general. Our greatest challenges in this respect are the increasingly advanced nature of our ingredient portfolio and business growth. This requires us to map and optimise our use of resources at each processing step.

Priority actions

The goal is to reduce CO_2 emissions by 25% in 2025 and 30% in 2030, with 2015 as baseline. As we expect to expand our production considerably in the coming years, energy efficiency projects, new technologies and process electrification are necessary to achieve these targets.

Restrictions on wastewater discharge in Denmark are also a burning platform that we are addressing with continuous investments.

The following major projects are underway or planned for 2021:

- **Danmark Protein**
  Investment in a heat distribution system and flue gas boiler to utilise exhaust heat from the biogas motors. CO_2 emissions reduction target: 3,300 tonnes/year
  Construction of a technical water building to upgrade wastewater for re-use in technical installations. Water reduction target: 160,000 m^3/year
- **AFISA**
  Construction of a natural gas line to replace fuel oil as the plant's main energy source. CO_2 emissions reduction target: 7,000 tonnes/year
- **ArNoCo**
  Commissioning of a new, efficient cleaning agent storage and mixing facility for cleaning in place systems

Progress

Carbon emissions

Carbon emissions have declined across all sites since 2018. This is primarily due to the introduction of biogas at Danmark Protein and ARINCO, which has reduced consumption of fossil-based natural gas. The increased contribution of renewable power sources to the Danish electricity network has also made an impact.

Energy efficiency

Total energy consumption increased by 3%. At Danmark Protein alone, where we commissioned our new spray drying tower, energy consumption went up 10%.

Energy consumption is related to the product mix and volumes produced.

During 2020, we identified further projects aimed at increasing energy efficiency. Energy savings from completed projects totalled 14 GWh/year.

Biogas accounted for 22% of energy consumption, including joint venture sites.

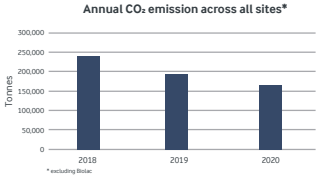
Water efficiency

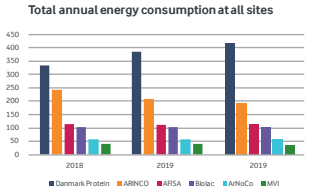
Total water consumption increased by 2% in 2020. Changes in the product mix, cleaning processes and the commissioning of new plants contributed to lower water efficiency at Danmark Protein and ARINCO.

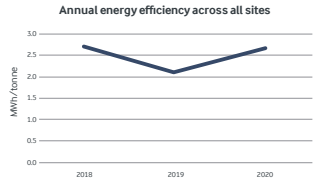
Project are in the pipeline to reduce water consumption by the end of 2021. This is an ongoing focus area and includes the reuse of water extracted from our whey raw materials and optimisation of cleaning processes.

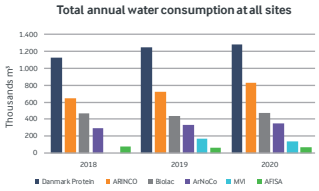
At Danmark Protein, the site with the highest water consumption, annual water savings from efficiency projects in 2020 totalled just short of 132,000m^3 – equivalent to the water consumption of 942 households.

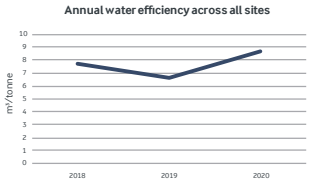
AFISA ceased drawing on its local water supply in October – a major achievement that follows years of water efficiency and recovery initiatives











Impact

On society

We recognise our responsibility to make the most of our whey-based raw materials, minimise waste and to limit our impact on our surroundings. Through our consumption of energy, water and other materials, we risk contributing to climate change and to depleting non-renewable resources.

On Arla Foods Ingredients

Environmental changes that impact the supply and cost of raw materials, energy and clean water to our sites constitute a substantial business risk. Any failure on our side to address our potential impact on the environment and climate also represents a threat to our reputation.

On Sustainable Development Goals and Targets

FOOD SAFETY

Ambition

We aim to deliver quality and food safety above and beyond the expectations of customers, consumers and the authorities at all times. As a supplier to infant nutrition producers, the youngest, most vulnerable consumers define the quality of all our products for the food industry.

Priority actions

Our road map for 2021 includes several new projects within value chain transparency, microbiological documentation, process performance and criteria, and line calibration and maintenance. At the same time, we will continue to work with suppliers and supplier approval, the digitalisation of our quality processes, and the development of a proactive quality culture and food safety mindset.

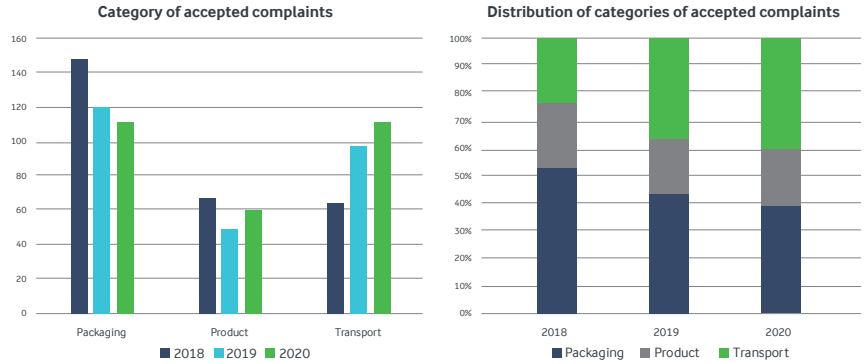
These activities are next steps in the implementation of the Arla Foods Ingredients Quality & Food Safety (Q&FS) strategy.

Progress

In 2020, we entered the second wave of initiatives in our Q&FS strategy, which focuses on the development of differentiating capabilities towards our goal to become the most trusted partner for safe ingredients. Efforts also continue to improve our fundamental Q&FS performance. Our complaints record reflects our progress from a customer perspective, showing a continuous decline in overall accepted complaints over the past three years. Investments in an improved logistics system and order to delivery process at Danmark Protein contributed to this improvement over the past year.

Our Quality & Food Safety strategy

Complaint performance



Impact

On society
Any food safety issue with our ingredients is a risk to consumer health – including the health of infants, the elderly and those on special clinical diets.

On Arla Foods Ingredients
It only takes one food safety incident to damage our reputation and lose the trust of our customers. At the same time, we are keen to avoid quality issues caused by inefficient production and which lead to raw material waste.

On Sustainable Development Goals and Targets

NUTRITION

Ambition

We are committed to mapping the full nutritional potential of the proteins and other components in whey and developing commercial products that bring these nutritional benefits to consumers. Partnerships with research institutes are essential to achieving this goal. Using our ingredients and knowhow, we want to play an ongoing active role in projects to reduce and prevent malnutrition among children and young women in developing countries.

Priority actions

As a member of the GAIN Nordic Partnership, Arla Foods Ingredients will contribute to the following in 2021:

- Complete the GAIN Nordic Access to Better Dairy project in Ethiopia with the launch of an affordable, fortified yoghurt for children
- Start up GAIN Nordic project to build Ethiopian production of affordable dried fruit snacks from surplus papaya

Plans are on schedule to test the production of a protein-enriched biscuit in Ethiopia during 2021 – facilitated by the partnership between Arla Foods Ingredients, DanChurchAid, Novozymes and other companies, with funding from the global sustainable development forum P4G. Market launch is expected in 2022.

As part of the commitment to providing ingredient solutions that support 'nutrition for life', Arla Foods Ingredients will also collaborate on two new clinical studies of osteoporosis and type 2 diabetes.

Progress

- With GAIN Nordic, Arla Foods Ingredients has contributed to the development of affordable nutrition models for publication on a new Scaling Up Nutrition (SUN) Business Network platform.
- Arla Foods Ingredients is supporting a clinical study to investigate the effect of lactose and dairy protein in ready-to-use supplementary food for malnourished children in Sierra Leone.
- Two long-term, follow-up clinical studies of early life nutrition supplemented with milk fat globule membrane have been completed.

Impact

On society

People's nutritional needs change from birth through childhood to adulthood and the senior years – and they vary from one person to the next, depending on expectations for personal performance and general health. Arla Foods Ingredients contributes to nutrition for life.

On Arla Foods Ingredients

The future of our company depends on our ability to operate and grow in a sustainable, responsible manner in line with the expectations of internal and external stakeholders.

On Sustainable Development Goals and Targets

HEALTH AND SAFETY

Ambition

The health and safety of the people who work at or visit the Arla Foods Ingredients sites is a top priority. Our target is zero work accidents and a working environment that empowers, engages and never compromises the physical or mental health of any colleague.

Progress

Workplace accidents

We are now seeing the results of the Cornerstones behavioural safety programme, launched in 2018. Lost time accidents (LTAs) in 2020 were the lowest ever, totalling six across all sites – two more than our target of maximum four LTAs for the year. For the first time, we were also able to celebrate three consecutive months without LTAs. AFISA, MVI and Biolac all recorded zero lost-time accidents.

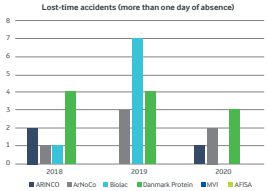
Overall accident frequency (number of lost-time accidents per million working hours) fell from seven in 2019 to 2.4 in 2020.

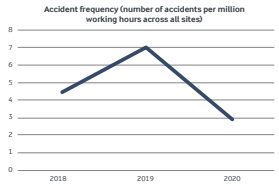
Near miss/accident ratio

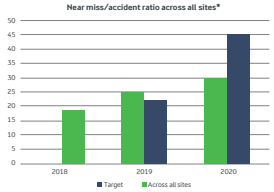
In 2019, we introduced the near miss/accident ratio as a key performance indicator of our proactive approach to improving workplace safety.

This reflects our focus on observing – and then removing – conditions, actions and behaviours that may cause an accident or injury.

In 2020, we exceeded the 30:1 target for our near miss/accident ratio by a significant margin. The target for 2021 is 40:1.







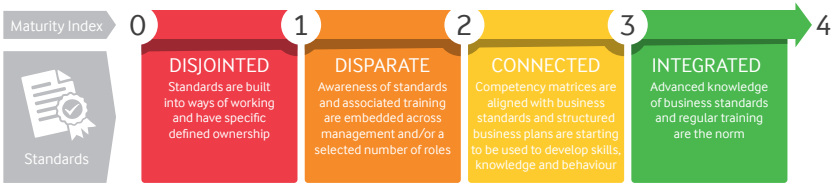
* The joint venture sites ArNoCo and Biolac are not included in the near miss/accident ratio figures

Priority actions

Efforts continue to embed the behavioural safety culture in our sites, based on the Arla Cornerstones programme. During 2021, Danmark Protein, ARINCO and AFISA are expected to reach level 2.5 in the maturity index, while MVI aims to reach level 3.5. ArNoCo will follow the behavioural safety programme of our joint venture partner DMK.

During 2021, managers will be introduced to another layer of the Cornerstones programme – Visual Felt Leadership, which focuses on driving the behavioural safety culture by Leading by example, Enabling the team, Acting as a coach and Driving performance (LEAD).

Cornerstones behavioural safety programme - maturity index



Visual Felt Leadership

Impact

On society

There are many risks to health and safety in a company like ours that operates large processing plants and relies on transportation of raw materials and finished products. Our licence to operate is dependent on our ability to minimise those risks and provide healthy and safe working conditions.

On Arla Foods Ingredients

Every health and safety incident in or around our sites threatens our ability to attract competent colleagues and represents a business risk in terms of lost efficiency and profitability and reputational damage.

On Sustainable Development Goals and Targets

DECENT WORK

Ambition

We want to be a workplace that tolerates and respects all people regardless of gender, ethnic origin, religious or other beliefs and sexual orientation and which provides equal opportunities for everyone to reach their potential.

Priority actions

Efforts will continue to ensure the well-being of colleagues through the COVID-19 pandemic. Best practices and learnings from 2020 will be carried forward into 2021.

Our focus on competence development will continue. Using learnings from the 'Development for all' pilot project in our commercial department, we will adapt further organisational rollout of competence development activities to the needs of individual departments.

Progress

Our annual colleague engagement survey records our performance in relation to key targets set in 2015. The results of the 2020 survey show positive development within all areas, including agility which declined slightly in 2019. This is pleasing feedback in a year when office workers in particular often had to work from home and many meetings – internal and external – were held online. Responses to the survey's COVID-19 questions indicate that people have generally felt safe and well informed.

Unacceptable behaviour is an area where we can still improve, although we have seen a slight decrease in incidents in 2020. In May, Danmark Protein introduced a new activity that focuses on discussing desirable behaviour in the workplace in connection with ongoing work environment dialogues – a proactive initiative welcomed by colleagues.

The response rate to our 2020 survey was 92%, which is the same as in 2019.

Category	AFI target range	2020	2019	2018	Development	Status
Employee engagement	85-90%	91%	89%	89%	+2	Above range
Strategic alignment	80-85%	92%	92%	93%	0	Above range
Agility	75-80%	71%	66%	67%	+5	Below range
Overall leadership	70-75%	81%	80%	80%	+1	Above range
My manager	75-80%	78%	76%	77%	+2	In range
Unacceptable behaviour	0%	5%	6%	5%	-1	Not in range yet

Impact

On society
Proactive efforts to secure human rights in the workplace contribute to sustainable and prosperous societies and a good quality of life for citizens.

On Arla Foods Ingredients
People are our most important resource. Failure to provide a positive working environment would reduce our ability to attract new colleagues and risk the future of our business.

On Sustainable Development Goals and Targets

Arla Foods Ingredients is a global leader in value-added whey solutions. We discover and deliver premium ingredients derived from whey, supporting the food industry with the development and efficient processing of natural, functional and nutritious foods.

Using our specialist knowledge of food products and production, we serve global manufacturers of early life nutrition, medical nutrition, sports nutrition, health foods and other food and beverage products.

Arla Foods Ingredients is a 100% owned subsidiary of the dairy company Arla Foods.

ABOUT THIS CORPORATE RESPONSIBILITY SUPPLEMENT

This supplement to the annual Arla Foods corporate responsibility report provides insights into relevant corporate responsibility matters specific to Arla Foods Ingredients.

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Arla Foods Ingredients

Discovering the wonders of whey

02-2021