CORPORATE RESPONSIBILITY REPORT - SUPPLEMENT

2019

Arla Foods Ingredients

Discovering the wonders of whey

CONTENT

PLANNING AHEAD FOR OUR GREEN AMBITION

As we leave 2019 behind us, Arla Foods Ingredients is looking ahead to another good year for business. The growth forecast is positive – but with it comes a major challenge for our operations. In 2020, we will lay our initial plans for achieving Arla's new Green Ambition: to reduce emissions by 30% in 2030 and, ultimately, to become carbon neutral by 2050.

Our carbon reduction effort is already underway. At all our resource-intensive sites, there is a strong and ongoing focus on improving energy efficiency and reducing emissions. In 2019, two biogas motors went into action at our largest plant Danmark Protein, an important step in our transition to renewable energy. At the time of writing, biogas now meets more than a third of the site's energy needs, in addition to being an important energy source at our infant nutrition plant ARINCO.

Careful consideration precedes every measure we take to minimise our environmental impact. That way we ensure our strict quality and food safety standards are always upheld. However, despite our best efforts, the growing complexity of our production means we sometimes experience that our energy and water consumption increases.

Investments in sustainability

The R&D innovation centre now under construction at our Danmark Protein site will play a central role in our sustainable future – and in helping us limit our footprint, despite an increasingly sophisticated ingredient portfolio. Representing a EUR 30+ million investment, the centre's primary purpose is to develop next-generation technology for efficient production of whey and milk-based ingredients. The centre is scheduled for completion in early 2021.

Because 2050 is still three decades away, our immediate attention is focused on reaching the first stepping stone – a 30% reduction in total carbon emissions by 2030. One of our key tasks in 2020 is to establish the means by which we will get there. Although plans are not yet in place, it is safe to say that we will commit to many more major investments in the years ahead.

Maximising raw material value

Bioeconomy is becoming an increasingly relevant model for the food industry as we strive to make a meaningful contribution to the UN Sustainable Development Goals. Representing the next step up from the circular economy concept, it is about maximising the value created from renewable raw materials and their waste streams.

Throughout its existence, Arla Foods Ingredients has transformed whey – the waste stream from cheese production – into value-added whey-based ingredients for infant, sports and medical nutrition and mainstream foods. Over the past decade, we have worked with NGOs, such as the Global Alliance for Improved Nutrition and DanChurchAid, to extend our whey expertise to affordable nutrition projects aimed at overcoming malnutrition in developing countries. Together, we have developed robust models for inclusive business.

New technology is now enabling us to optimise our use of whey still further. In 2019, we established a facility for drawing whey directly from milk – a process that gives immediate access to the native nutrients in whey prior to cheese production. We see this as a game-changing opportunity to draw even more nutritional value from our raw material, while reducing processing at the same time.

Values that motivate and inspire

As with all companies, our future depends on our ability to meet the expectations of our customers, partners and regulatory authorities. Even more critical is our ability to live and breathe the values that motivate the people who carry our company forward. Today, a responsible approach to business is the foundation of an inspiring workplace. Making this foundation ever stronger is our continuing goal.

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.

In this supplement, we have highlighted activities that contribute to specific goals. Our objective in doing so is to recognise the efforts of our international colleagues to make a difference – and draw attention to the many opportunities to do even better in the future.

During 2019, we have identified contributions to nine of the 17 goals.

Stronger planet

Ensure availability and sustainable management of water and sanitation for all

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

Ensure sustainable consumption and production patterns

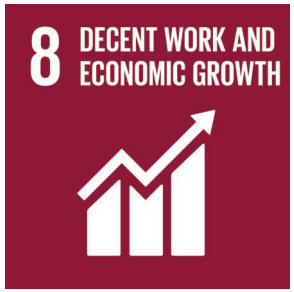
Take urgent action to combat climate change and its impacts

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

Ensure inclusive and equitable quality education and promote lifelong learning opportunities for all



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

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

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 2019
Our net revenue totalled EUR 721 million in 2019, which is 8% higher than the previous year. 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, dairy and confectionery 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 mentioned in this supplement
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 also owns and operates the AFISA plant in Argentina. Our joint venture facilities are Biolac and 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

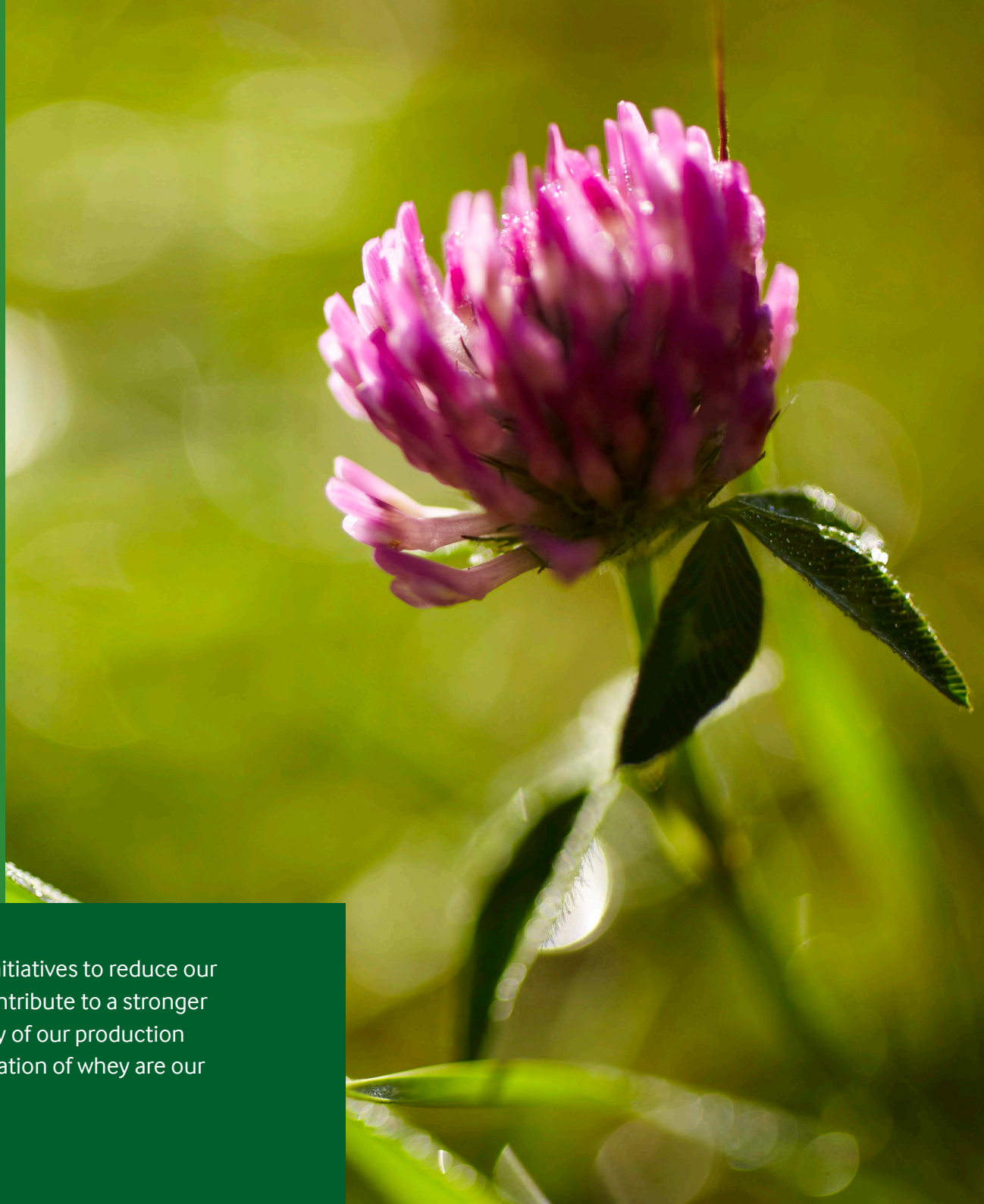
Biolac, Germany
Joint venture with MTS, producing whey protein concentrate and lactose

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

We prioritise investments and initiatives to reduce our environmental footprint and contribute to a stronger planet. Optimising the efficiency of our production plants and maximising the utilisation of whey are our primary focus.



MANAGING RESOURCE-INTENSIVE PRODUCTION

Back in the 1970s, Arla Foods Ingredients was founded on a vision to make the best of all dairy resources – by turning whey waste from cheese production into high-value food ingredients. This is still the philosophy we live by. Today, at our resource-intensive production plants, we strive to maximise our use of whey raw materials and minimise our environmental footprint. Energy, water and wastewater optimisation are an ongoing focus – and challenge.

In 2019, we announced our plans to invest in a new R&D innovation centre at Danmark Protein. The centre will enable us to take the next steps towards utilising our resources in ever better ways. By that, we mean developing new products to support the global food supply and new robust processes for high-level water reuse and energy efficiency. We expect the innovation centre to be ready for operation in early 2021.

OUR INVESTMENT IN A NEW INNOVATION CENTRE WILL ENABLE US TO TAKE THE NEXT STEPS TOWARDS UTILISING OUR RESOURCES IN EVER BETTER WAYS.

Efficient use of drinking water
Our involvement in the five-year DRIP Partnership has come to a close. Initiated by Innovation Fund Denmark, the partnership brought together five research institutes and 13 companies to develop pioneering technology for cutting food industry use of drinking water by 15-30%.

For us at Arla Foods Ingredients, achieving this target remains a priority. However, due to the increasing complexity of the product mix at Danmark Protein, we have seen drinking water consumption increase in 2019. One of the reasons for this is the construction of a new production facility for whey protein isolate.

Initiatives are underway. This has included employing two specialists to strengthen our effort to optimise water use for our cleaning in place (CIP) systems. We also cooperate closely with a global supplier of cleaning agents for process equipment to identify opportunities to reduce water and energy consumption during cleaning without compromising food safety. Altogether in 2019, CIP improvements resulted in daily water savings of 259m^3.

Continued rollout of optimised seal water systems, which began in 2018, enabled additional water savings in relation to the cooling, lubrication and sealing of process pumps. ARINCO has carried out a similar seal water optimisation in 2019.

DURING 2019, WE DREW UP PLANS FOR A NEW PROJECT TO UPGRADE TREATED WASTEWATER FOR REUSE. THIS IS IN THE BUDGET FOR 2020.

Wastewater reuse projects
Danmark Protein and ARINCO deliver 90% of the wastewater that enters the Arla-owned treatment plant in western Denmark. The wastewater is treated using a biological process, and all sludge is sent for biogas production. During 2019, we drew up plans for a new project to upgrade treated wastewater for reuse.

Treated wastewater is currently environmentally approved for discharge into a local stream. However, by removing the chalk content, it is possible to return it to Danmark Protein and ARINCO for technical purposes such as cooling. In this way, we expect to be able to recycle 450m^3 of wastewater a day. We are still investigating the possibility to recycle the chalk by pressing it into fertiliser pellets.

The capital investment required to implement the wastewater reuse project is in the budget for 2020.

At AFISA in Argentina, wastewater reuse is already reducing the use of drinking water. Up to 100m^3 of wastewater from the onsite treatment plant is returned to the plant every day for use in cooling towers and boilers, for example. The goal is to increase wastewater reuse at AFISA to 300m^3 daily. Around 85-90% of all water used at the production site is originally drawn from whey.

The transition to biogas
Two 35-tonne biogas motors installed at Danmark Protein went into operation in the summer of 2019, following a major construction project. This is an important step in our transition to renewable energy. The motors have sufficient capacity to meet 40% of the plant's electricity needs, which is around 124,000MWh a year.

Water used to cool the motors reaches a temperature of 90°C – heat that we either use in our lactose plant or return to our local biogas plant. This recycling of heat gives an annual energy saving of 4.5 gigawatt hours. A new drying tower is currently under construction to utilise some of this hot water.

In connection with the introduction of biogas to Danmark Protein, we have rebuilt two of our five steam boilers to run on biogas. As a result, we are now able to use biogas for a third of our steam production. A highly efficient steam boiler has also replaced the plant's old turbine, which previously generated both electricity and steam – with an annual CO_2 saving of 4,000 tonnes. The new boiler currently runs on natural gas but is prepared for connection to the biogas supply.

Biogas was introduced to our infant nutrition plant, ARINCO, in 2016.

BIOGAS MOTORS INSTALLED AT DANMARK PROTEIN HAVE SUFFICIENT CAPACITY TO MEET 40% OF THE PLANT'S ELECTRICITY NEEDS.

Improving energy efficiency
One of our biggest energy-saving investments in 2019 revolved around the installation of new, efficient compressors, which produce compressed air for many processing needs. Heat recovered from the compressors is transferred to the heating system for Danmark Protein's buildings. Energy saving: 4,500 KWh/day

Some energy optimisations are relatively simple but have a big effect, such as a 2019 initiative to move the air inlet from the bottom to the top of the boilers, where the air is warmer. The result is an annual 900,000KWh energy saving. Insulation of steam valves is another energy-saving measure initiated in 2019 and scheduled for completion in the first quarter of 2020.

Following a 2018 project to increase the dry matter content of hydrolysates prior to drying, we introduced a similar concept to two of our whey protein concentrate lines, where dry matter content was increased by 5% and 13% respectively. As with all energy optimisation projects, the objective is to save energy without compromising efficiency or product quality.

REDUCING RAW MATERIAL WASTE

Through research and development, we aim to utilise every single component in our whey raw material.

We have long been aware that the side-stream from our whey hydrolysate production contains high-quality intact proteins with a good amino acid composition. During 2020, the completion of our new spray drying tower will give us the capacity to dry these proteins for use as a food ingredient – instead of the current practice, which is to send it for use in biogas production. A new R&D project is underway to investigate possible application areas.

Our goal is to utilise the full value of the raw materials that enter our production plants. To this end, we have adjusted the particle size of some of our whey protein powders to prevent product loss in spray drying tower filters. In our alpha-lactalbumin production, we have reduced waste by 0.8% in this way.

We also work with customers to help them reduce waste by utilising side-streams in their production. One example is a solution for reworking the acid whey from Greek yoghurt processing to ensure 100% product yield from the milk.

IN SEARCH OF A GREEN BALANCE AT DANMARK PROTEIN

We're busier than most when it comes to meeting our carbon goals, says Thomas Lauritsen. More innovative technology is necessary to secure a neutral environmental impact in the future.

Arla Foods Ingredients' biggest and most complex production plant is up against a massive challenge: how to expand production to meet growing customer demand without energy and water consumption going through the roof.

For Thomas Lauritsen, project leader responsible for water, energy and CIP at Danmark Protein, it's a challenge that will take numerous solutions to overcome. In some areas, the necessary technology does not yet exist.

"Production is not only growing in volume but also in complexity. So, despite all our efforts to optimise efficiency and reduce consumption, our use of water and energy per ton product is going up. It means we're busier than most if we are going to meet the Arla sustainability goals, which include being CO_2 neutral by 2050," he says.

The move to renewable energy

Meeting the CO_2 goal, however, could prove comparatively simpler than reducing the plant's burden on local water supplies to a bare minimum. In mid-2019, Danmark Protein replaced some of the natural gas in its energy mix with biogas. Renewable energy sources already deliver more than 60% of Denmark's electricity supply, according to the Danish Energy Agency, and the national goal is to be 100% fossil-free in 2050. In other words, access to sustainable electricity from the power grid will increase over time.

"Water is more complex, as we use it for cleaning. There are limits on how much drinking water we can pump up and how much we can discharge. Our water balance is a precondition for running production," Thomas explains.

Water reuse – in daily focus

Water balance is discussed by the management team every morning – how much water has been used, the amount discharged and the content of organic compounds, measured as chemical oxygen demand (COD). Reuse has been in focus since the first processing line went into operation in 1980. Today, around two-thirds of daily consumption is sourced from recycled drinking water or water extracted from whey.

"We aim to recirculate as much water as possible. At the moment, we're running a research project to upgrade water from our treatment plant to drinking water. That's our dream scenario, and it is technically possible. But, in the first instance, we are focusing on upgrading treated wastewater to technical water for use as steam and in the cooling towers."

It's possible to come a long way on existing technology. But Thomas acknowledges the need for more technological innovation before Danmark Protein can make the move towards a neutral environmental impact overall.

"This is where our involvement in cross-sector research projects such as the DRIP Partnership is important. It's our opportunity to influence industry development."

Thomas Røjkjær Lauritsen
Project Leader
Danmark Protein

STRONGER PEOPLE

Everyone has a right to safe, high quality foods that help them stay strong and healthy. We aim to play our part by focusing on ever-better standards in our ingredient production and seeking new knowledge through research.

QUALITY AND FOOD SAFETY

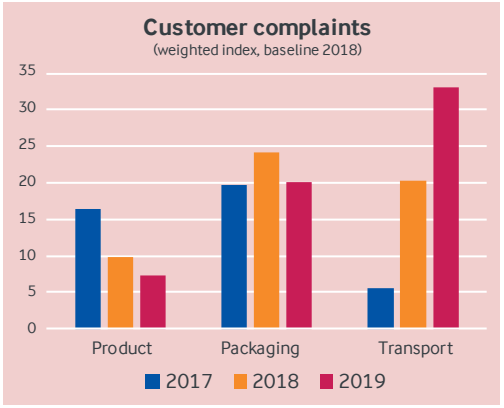
Here at Arla Foods Ingredients, the youngest, most vulnerable consumers have long defined the quality standards we apply to our whey ingredients and formulas for infant nutrition. Today, we aim to use the same approach for all our products, regardless of market sector.

Our Quality & Food Safety (Q&FS) strategy is key to maintaining, improving and harmonising standards at our production sites. The goal is to go beyond meeting the requirements of our customers and support the continuous development of standards within the food industry as a whole.

Since launching the strategy in 2017, we have worked on the first wave of implementation – to build the foundation for Q&FS excellence throughout our value chain. In 2019, this included an internal communication campaign to embed the three key messages in our organisation: raw materials you can trust, a proactive Q&FS culture and quality and food safety by design.

First wave activities have covered everything from sourcing, innovation and production to regulatory, document management and customer relations. These are now complete. The second wave implementation plan will be defined in early 2020 – the next step towards our ambition to become a trusted global Q&FS leader.

Registration of customer complaints
One example of how our Q&FS strategy is making an impact is visible in our customer complaints record. At face value, our complaints figures show a significant rise in the total number since 2017. The explanation is the introduction of a new registration policy. Previously, our system focused solely on registering complaints related to products and packaging. The new policy has extended the registration requirement to cover reported transport damage as well. In this way, the policy is part of raising internal quality awareness.



When total complaints are split into categories, the number of product-related complaints actually fell in 2019. Improved root-cause analysis of powder defects and microbiological deviations at our production sites has contributed to this positive development.

On-site Q&FS initiatives
Around our production sites, Q&FS initiatives and improvements are constantly underway. One achievement in 2019 was that customers gave ArNoCo in Germany the green light to continue planning its production of dry-blend lactose – recognising the plant's ability to deliver lactose of the required microbiological standard for mixing into infant nutrition blends without further treatment. At ARINCO, a multi-million Euro investment is in progress to introduce new hygiene zones that will meet the requirements of Chinese legislation.

Danmark Protein continues to hold training days to strengthen the in-house food safety culture. In addition to annual hygiene training for all working in production, the plant hosted a series of food safety theme days with internal and external speakers. Originally introduced for staff working with dry-blend lactose, the food safety day concept is expanding department by department every year.

Better quality control on the line
First time right is always our goal in production, but occasionally raw material or processing deviations result in off-spec products that then have to be sold for feed. Over the past year, Danmark Protein has introduced in-process sampling to the most resource-intensive lines to enable early discovery and correction when deviations arise.

In-process sampling has already proven to be an important supplement to final product quality control, ensuring more raw materials are transformed into high-quality products. It also complements the out-of-trend (OOT) system, which identifies quality norms for all products based on data from batch quality analyses, and the statistical process control (SPC) system, which monitors production data.

During 2019, Danmark Protein started working with real-time SPC monitoring of key production parameters. SPC enables a faster response to food safety issues, reduces product waste and improves delivery security for customers.

JOINT ACTION ON AFLATOXINS IN ARGENTINA

A project to track down the source of aflatoxin in raw whey delivered to AFISA marked the start of a national awareness campaign

Raw whey is subject to thorough testing on arrival at an Arla Foods Ingredients plant. A range of analyses evaluate the composition and microbiology. More often than not, the results come back normal. But, towards the end of 2018, whey analyses at AFISA revealed an increased level of aflatoxins – and the red flag was raised.

It was the beginning of a successful collaboration with Argentine whey suppliers, dairy farmers and feed producers to track down the source and spread the word about how to minimise aflatoxins in the food chain.

Matias Contato, Quality Assurance Manager at AFISA, led the project. The first priority was to develop an in-house method sensitive enough to measure aflatoxins at around 0.004 parts per billion (ppb) – equivalent to the sensitivity offered by an independent lab.

"If we send whey samples off to an external lab for aflatoxin testing, we have to wait more than 20 days for the results. So we found a method in the USA which we validated for monitoring our whey intake at AFISA. Legislation on permitted aflatoxin levels varies around the world. In Argentina and Mercosur, the maximum level is 0.5ppb in raw milk. But, because any aflatoxin in the milk becomes more concentrated during our production process, this level is too high to meet stricter requirements in other markets for maximum 0.5ppm in our final products. So we need a super-low level of detection that goes beyond legislative demands."

Identifying the source

Using the new method, Matias and his team identified where the aflatoxins were coming from. Meetings were then held with the relevant whey suppliers. With their cooperation, it was possible to locate the dairy farms where aflatoxins were getting into the milk.

"It was just a few but typical for all of them was that they were bigger farms from one particular area where they fed their cows with concentrated feed rather than grass."

It turned out that the source of the aflatoxins was specific ingredients in the feed. In collaboration with the farmers, these ingredients were replaced.

"Argentina is a big country, so feed crops vary depending on where they are grown. In 2018, corn and soya were critically affected by aflatoxin due to dry weather. But the problem is dynamic. Risks in cattle feed change from year to year," Matias explains.

National campaign

The AFISA investigation resulted in a training and awareness contract with the National Agricultural Technology Institute (INTA) in Argentina. This includes publishing a series of newsletters in 2019 and 2020 to inform farmers about aflatoxins and how to avoid them. AFISA also helped organise two conferences in 2019 for feed producers, farmers and dairies.

"It's about raising awareness that aflatoxins are an issue that we must all take care of. It's not just about whey. It's also about the milk that our children are drinking."

Due to the prompt actions of all involved in the supply chain, Matias is happy to report that aflatoxin levels were soon back to normal in the whey intake at AFISA.

What are aflatoxins?

Aflatoxins are known carcinogens produced by fungi on agricultural crops. According to WHO, drought stress, insect damage and poor storage can lead to higher concentrations. Aflatoxins can also be found in milk and milk products, when contaminated crops are used for animal feed.

Matias Contato
Quality Assurance Manager
AFISA

HEALTH & NUTRITION RESEARCH

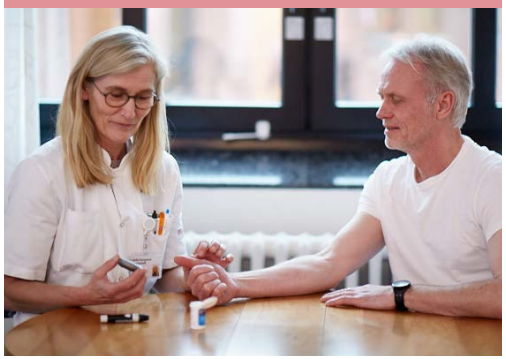
Whey is a rich source of nutrients. Collaborative research is building knowledge about the potential benefits for human health.

Through our continuous search for new and better knowledge, we are proactively involved in collaborative research that explores opportunities for whey components to improve health and nutrition. This includes studies focused on all stages of an individual's life and specific contexts where optimum nutrition is not readily available.

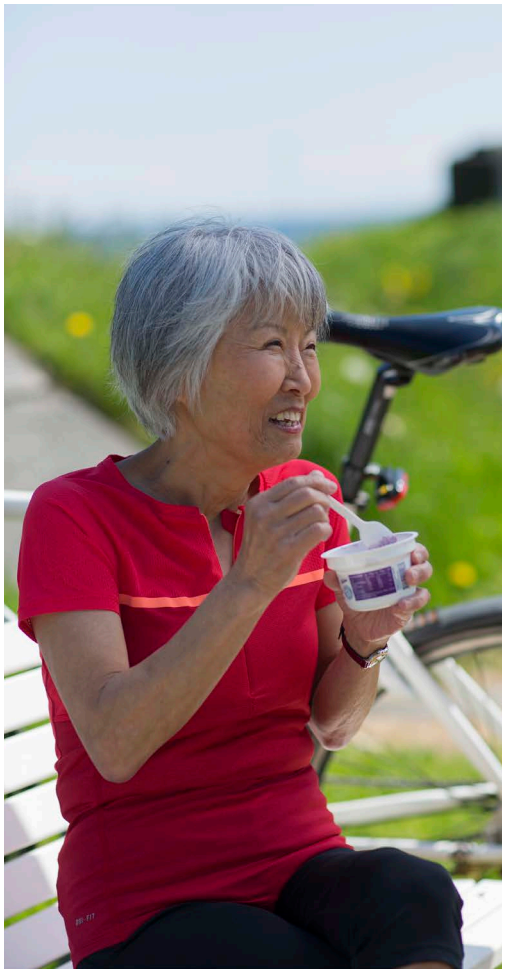
Arla Foods Ingredients is also a partner in the Arla Foods for Health consortium along with Arla Foods, University of Copenhagen and Aarhus University. The consortium was founded in 2015 to facilitate best-in-class research into the health effects of dairy foods and ingredients.

New findings from type 2 diabetes research
In 2019, one of the research projects funded by Arla Foods for Health – CutDM – published findings from a study of type 2 diabetes patients. These showed that blood sugar control improved when patients consumed a diet low in carbohydrates and high in protein, with a moderate fat content – quite the opposite of the typical recommendation for a diet low in fat and high in carbohydrates with a low glycaemic index.

Previous clinical studies have found that whey proteins may improve blood sugar control in type 2 diabetics.



A STUDY OF TYPE 2 DIABETES PATIENTS SHOWED THAT BLOOD SUGAR CONTROL IMPROVED WHEN PATIENTS CONSUMED A DIET LOW IN CARBOHYDRATES AND HIGH IN PROTEIN, WITH A MODERATE FAT CONTENT.



Collaborative study on lipids for elderly cognitive health
June 2019 marked the start-up of a joint research project to extract a lipid fraction from milk by advanced filtration and investigate a potential effect on cognitive health in the elderly. Called DAIRY-SMART, the project's ultimate aim is to develop a new ingredient for yoghurt, milk drinks and energy bars that can help prevent memory loss.

The ingredient will be based on organic milk and climate-friendly technology. For this reason, DAIRY-SMART has won financial support from the Danish Ministry for Environment & Food under the Green Development & Demonstration Programme.

Once developed, the ingredient will be tested for absorption and bioavailability prior to clinical trials.

The project will run until the end of 2022 and is a collaboration between Arla Foods Ingredients, University of Southern Denmark, Aarhus University, University of Copenhagen and Rigshospitalet in Copenhagen.

Valuable knowledge about breast milk variations
Arla Foods Ingredients supports the WHO breastfeeding recommendation, but recognises there are infants who need an alternative to breast milk to obtain the nutrition they need. For this reason, it has been of great interest to us to co-fund a three-year industrial PhD study of breast milk along with Odense University Hospital.

In 2019, the study drew to a close with significant findings that have expanded knowledge about natural variations in breast milk composition.

In addition to highlighting variations from one mother to another and between geographical regions, the study found that breast milk has in part a gender-specific composition for male and female infants. It also gave insights into components relevant to blood pressure and satiety.

During 2020, we plan to support a further study of breast milk from the mothers of babies that are overweight. The objective is to identify variations in composition compared to breast milk from mothers of normal weight infants.

Improved knowledge about breast milk supports the ongoing work to provide the best alternative nutrition for infants who are unable to rely on breast milk as a sole source of nutrition.

IN 2019, A PHD STUDY OF BREAST MILK DREW TO A CLOSE WITH SIGNIFICANT FINDINGS THAT HAVE EXPANDED KNOWLEDGE ABOUT NATURAL VARIA -TIONS IN BREAST MILK COMPOSITION.

Effect of protein quality in malnutrition treatment
Protein is recognised as the most important nutrient in the treatment of moderate acute malnutrition (MAM), which primarily affects children in South Asia and Sub-Saharan Africa. Over a number of years, Arla Foods Ingredients has supplied ingredients for use in research to investigate the effect of whey protein and other whey components in ready-to-use supplementary foods (RUSF).

Early in 2019, scientists from the Washington University School of Medicine presented the initial findings from a clinical study, which has investigated the effect of optimising the quality of the proteins in RUSF. Around 1800 malnourished children from rural Malawi took part.

Previous studies have already established that child recovery from MAM is improved when RUSF contains whey protein and permeate. The aim of this study was to investigate whether the addition of skimmed milk powder – with a higher content of digestible amino acids – would lead to a further improvement in recovery rate and weight gain. The full study results are now pending publication.

Tuberculosis research in Guinea-Bissau
Aarhus University is continuing a clinical study to investigate the effect of whey protein concentrate on weight gain and recovery in tuberculosis patients in Guinea-Bissau. Due to the political situation in the country, the study has been slightly delayed and is now expected to be complete by end 2020.

Lactose and dairy protein – important to gut health?
We are now supplying ingredients for a follow-on clinical study in Sierra Leone to investigate the effect of lactose and dairy protein on MAM recovery. Planned to run from 2020 to 2021, this study has a specific focus on gut health, due to the high tendency of malnourished children to develop leaky guts, leading to nutrient malabsorption.

MODELS FOR INCLUSIVE BUSINESS

Our commitment to sustainable business includes entering partnerships to develop local supply chains in developing countries. Reducing malnutrition is a primary goal.

We have experienced a steep learning curve since becoming a founder member of the GAIN Nordic Partnership in 2014. Along with our partners, we have gained valuable knowledge about building sustainable supply chains in countries with a high rate of malnutrition among children and young women. Two projects in Ethiopia and Zambia have been the primary focus.

In 2019, the two-year project in Zambia drew to a close. Carried out with funding from the UK Department for International Development, the goal was to develop a nutritious and affordable long-life drink based on locally produced milk. The Zambian Good Food logo, a joint initiative by the government of Zambia and the SUN Business Network, will support the launch of the drink in 2020 and ongoing marketing towards target consumers.

The 'Access to better dairy' project in Ethiopia is also progressing according to plan. Since September 2016, the GAIN Nordic partners have worked with smallholder farmers and a local dairy to facilitate production of a nutritious yoghurt for Ethiopian children and their mothers. Yoghurt production is expected to start in early 2020. The final phase is a school feeding programme, which will be implemented from the end of the coming year.

The Zambian and Ethiopian business models are both well described and readily available for transfer to other developing markets via the SUN Business Network. We are regularly invited to share our experiences from the field and do so readily. In 2019, five master students were inspired to write theses about our work with sustainable partnerships.

gain®
Global Alliance for Improved Nutrition

Scaling Up NUTRITION
Business Network
ENGAGE • INSPIRE • INVEST

What are inclusive partnerships?
'Inclusive partnerships between NGOs and companies ... start from a concrete opportunity to improve the lives of low-income and marginalised people, and then address this opportunity with a financially viable business model that helps ensure sustainable impact.'

Definition by the independent research and consulting institute Endeva, which included a case story about the Ethiopia project in its 2019 publication 'NGO and company partnerships for inclusive business'

Sustainable Food Platform Initiative
Our partnership with DanChurchAid continues to focus on the Sustainable Food Platform Initiative, with funding from the global network for green economic growth P4G. The current focus is on developing the business model for local production of an affordable protein-rich biscuit in Ethiopia, based on chickpeas grown by local farmers.

Funding for papaya project
The Danish International Development Agency (Danida) has granted funds for a new GAIN Nordic Partnership project to develop a business case for a nutritious dried papaya snack in Ethiopia.

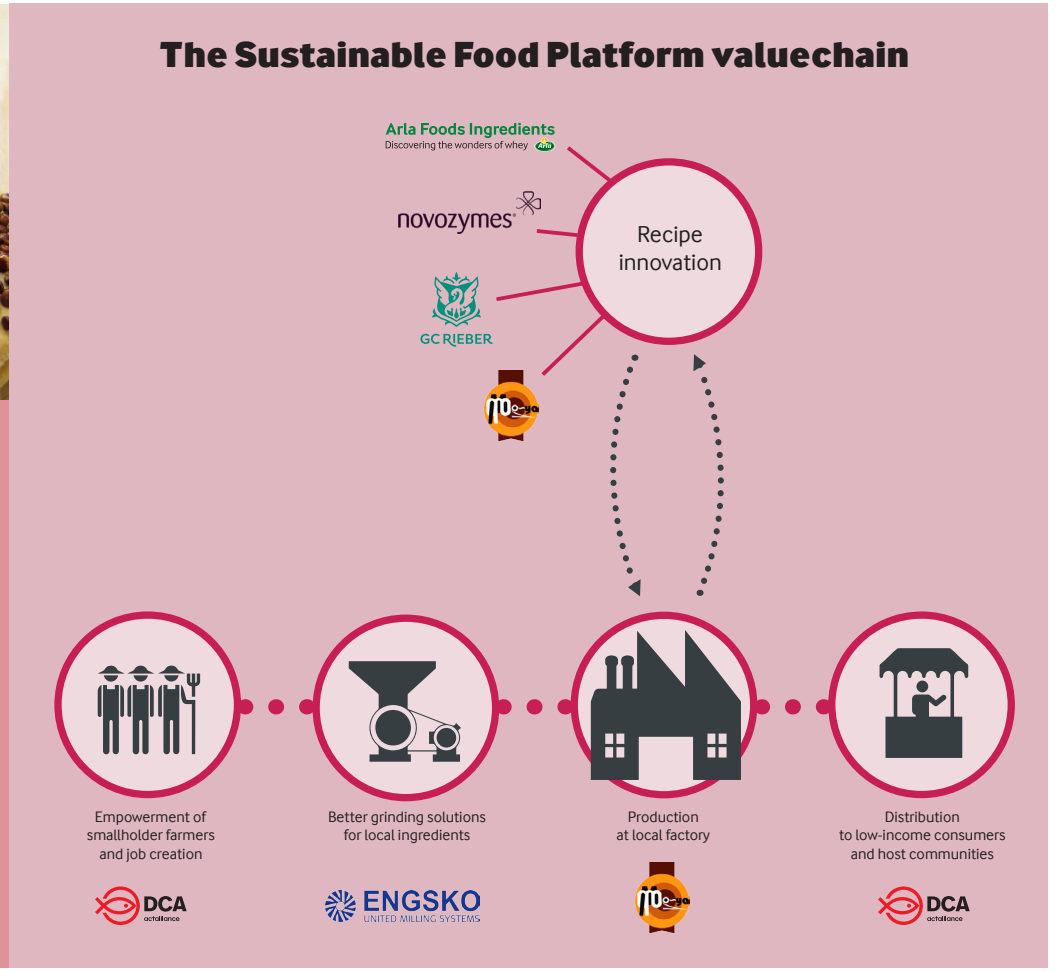
Grown by more than 890,000 Ethiopian farmers, many papayas go to waste after harvesting due to rotting. The project's objective is to reduce waste by developing affordable dried snacks that are enriched with vitamins and minerals. Lactose-rich whey permeate will be used as an alternative to sugar.

Work on the project will start in 2020. If successfully implemented, the business model should provide significant opportunities for farmers, processors, distributors and retailers – including jobs for women and young people in particular.

As lead commercial partner, our role at Arla Foods Ingredients is to support the design of the product, business modelling and development, and quality assurance.

DCA actalliance

P4G Partnering for Green Growth and the Global Goals 2030



COMMUNITY PROJECTS IN ARGENTINA

Our colleagues at AFISA make a difference in their local community every year.
Through their efforts, they influence Sustainable Development Goal 4: Quality Education.

Local community projects that support underprivileged children are an area of special attention for our AFISA plant in Argentina, where one in three children live in poverty. During 2019, AFISA sponsored Pequeños Pasos (Small Steps), an NGO that works to improve the lives of families at social risk through education, health and nutrition, employment and social inclusion. In addition to making a donation, the plant invited 12 teenagers on a visit to the ice cream pilot plant, where they made ice cream, talked about their dreams and found out about working life at AFISA.

Since 2018, AFISA has also sponsored the Global Goals World Cup tournament. Held in countries around the world, the tournament objective is to promote gender equality and the UN Sustainable Development Goals through women's football. The Argentine event gathers girls from social clubs in underprivileged areas of Buenos Aires.

THE BUSINESS OF AFFORDABLE NUTRITION – TEN YEARS IN

After a decade of dialogue and development, the first affordable nutrition concepts are in place. The business development models can now be transferred to other markets.

We have long since recognised at Arla Foods Ingredients that we cannot make a meaningful contribution to the UN's zero hunger goal alone. This is why partnerships with the Global Alliance for Improved Nutrition (GAIN), DanChurchAid, the Scaling Up Nutrition (SUN) Business Network and other businesses are at the core of our work with affordable nutrition. Together, we work to develop local supply chains that can deliver safe and nutritious food products to people on the lowest incomes.

Business Development Manager Charlotte Sørensen has driven the affordable nutrition effort since 2010, when Arla Foods Ingredients first became involved in clinical studies of malnourished children and their recovery. Three years later, she organised an international food aid seminar to share the knowledge gained.

"We had started to produce larger volumes of whey permeate, which we thought could be used to improve the nutritional content of low-cost foods. Then we met GAIN, which has a vision to fight malnutrition, and we decided to establish a project together.

"That was the start of the GAIN Nordic Partnership – and our first official partnership with an NGO," Charlotte says.

New business models

Although the initial studies focused on the nutritional content of food aid, the primary objective of these and other affordable nutrition projects is to establish new models for business-to-business development. In other words, it's not about philanthropy or simply selling nutritious ingredients to well-meaning manufacturers. It's about helping local industry to develop, as Charlotte explains:

"We have some competences but by no means all. By working in partnerships, we can ensure all the right competences come together and make a longer lasting impact. So, by the time a project is complete, a sustainable value chain is in place that continues to be active."

The first GAIN Nordic projects have built models for dairy business development in Ethiopia and Zambia. These tried and tested models can now be transferred to other markets – creating more impact and more business.

Transferral of knowledge and expertise

Arla Foods Ingredients' role has been to work with local dairy manufacturers to help them develop a low-cost, nutritionally enhanced dairy product that appeals to consumers. This includes supplying whey permeate to make maximum use of the local milk supply and transferring processing expertise.

Charlotte looks back on the first 10 years of working with affordable nutrition.

"Today, we have three proven concepts for affordable, nutritious foods for low-income people. Our ambition is to scale these concepts to other countries. But, as we have learned, it takes time and hard work to produce results. That can be difficult in a busy, result-oriented world where timelines are often short. We cope with that by being transparent about the process and our progress."

Charlotte Sørensen
Business Development Manager
Affordable Nutrition

IN THE WORKPLACE

We want our colleagues to thrive in a safe and friendly working environment where they can develop their personal skills – an area where we can always improve.

Development for all
Continuous competence development is as important to individual colleagues as it is to the growth and agility of our business. In 2019, our commercial department piloted a new 'Development for all' concept, which focuses on ensuring everyone in the company, regardless of position, has the opportunity to build and strengthen their personal skills. Based on the initial positive experiences, we plan to implement the concept across the rest of our organisation during 2020.

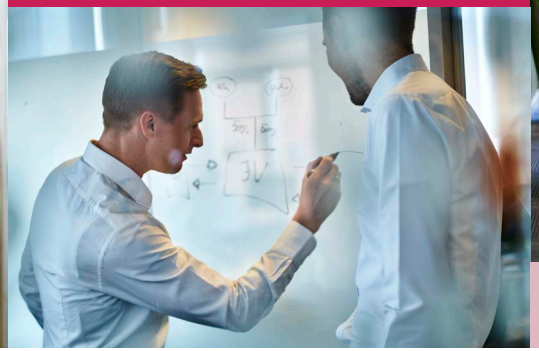
Safer global workplace
Implementation of the Arla Cornerstones behavioural safety programme has continued at our production plants throughout 2019. Aimed at driving behavioural change, the global initiative is part of our effort to ensure the safest possible workplace for all colleagues.

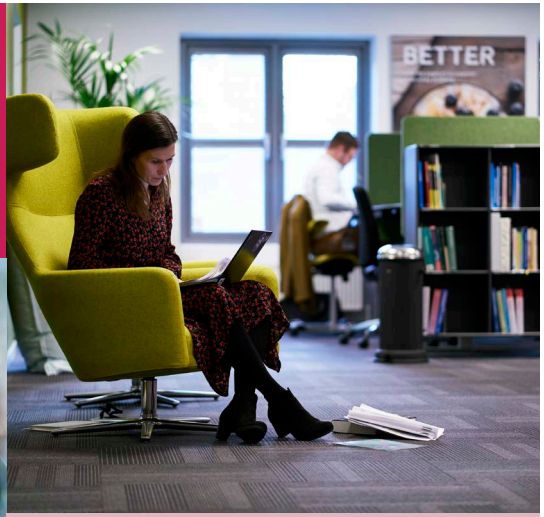
The increased safety awareness is now starting to show in site accident figures. At the same time, Danmark Protein reports a dramatic rise in the number of risk observations since 2017, when colleagues were given the opportunity to report risks via a mobile app.

Following the Cornerstones rollout at Danmark Protein and ARINCO in 2018, AFISA came on board in the spring of this year. This has included training workshops and third-party audits of working conditions on site.

All three plants are on schedule to move to the next Cornerstones level in 2020.

Workshops on mental health
Our joint venture plant in the UK, MVI has renewed its focus on mental health in 2019. A trained in-house specialist has held regular canteen workshops throughout the year on a range of subjects related to work-life balance. Stress and depression are among the topics covered. The initiative has caught on and is now spreading to other parts of the company.





A SAFE WORKPLACE IS A GOOD PLACE TO WORK

"We want people to leave work with a bigger smile on their faces than when they arrive. Not because they are going home. But because they have had a good day in a safe working environment."

Mogens Bøgh Pedersen sees a strong connection between job satisfaction and safety in the workplace. In all his 10 years as senior site director at ARINCO, building a strong safety culture has been a top priority.

The year he arrived, the plant recorded 16 lost-time accidents (LTAs), resulting in 554 days of absence. Nothing to be proud of, everyone agreed. Since then, efforts have been refocused to cut LTAs to zero – and keep them there.

It's a difficult task. Although the accident rate has fallen, most years there have still been one or two accidents that have caused injuries requiring absence.

So there was reason to celebrate when, in November 2019, the plant was able to celebrate a full 12 months of being LTA-free.

Dialogues to change behaviour

"All colleagues at ARINCO have participated in a behaviour-based safety workshop. Following that, we have appointed behaviour-based safety ambassadors to maintain attention on the working environment. Each ambassador is required to hold 10 dialogues a year. This is where colleagues can talk about where they see risks and how they take care of themselves and those around them," Mogens says.

Every dialogue results in a report which is brought to the plant's daily whiteboard meetings.

"The dialogues are important to changing behaviour. It's about uncovering as many risk areas as possible."

Everybody's responsible

To keep safety top of mind, the plant has a strategic goal to identify at least 1,000 safety hazards a year – right down to a sharp corner on a table or a door that needs to be tugged open. Each employee has a personal hazard identification target, which they are expected to meet and, ideally, exceed.

During 2018, the rollout of the Arla Cornerstones global behavioural safety programme has placed an even sharper spotlight on behaviour and the factors that influence behavioural change. Two working environment coordinators have also been trained to instruct and supervise employees from external building contractors when working on site. This has had a positive impact on the contractors' safety record, too.

Mogens sums up the safety philosophy: "One of the house rules listed on every employee ID card is about taking responsibility. For all of us at ARINCO, ensuring a safe working environment is simply part of the job."

Mogens Bøgh Pedersen
Site Director

2019 was a year of renewed ambition at Arla Foods Ingredients, as the launch of the Arla 2050 carbon-neutral ambition set our future direction. We are currently developing a new sustainability strategy, which will outline the initial milestones to be reached by 2030.

This chapter gives an overview of our sustainability performance in 2019 and priorities for 2020. Information about overall policies and key performance indicators that apply to the entire Arla Foods group is available in the Arla corporate responsibility report.

AMBITIONS & PROGRESS DATA

ENERGY AND CLIMATE

AMBITION

Arla Foods has an ambition that 50% of all energy consumption should be derived from fossil-free sources by 2020. 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 challenge in this respect is the increasingly advanced nature of our ingredient portfolio. This requires us to map and optimise our use of resources at each processing step.

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.

IMPACT 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.

PRIORITY ACTIONS

A new action plan will set the path towards a 30% reduction in carbon emissions by 2030, with 2015 as baseline. From 2020, we will report on major activities to reduce our emissions along with our emissions performance overall.

Actions to optimise water and energy utilisation are ongoing. Planned projects for 2020 include:

- **Danmark Protein**
  Startup of wastewater recycling. Treated wastewater will be returned to the plants for cooling and other technical purposes. The expectation is to recycle 450m^3 of water a day.
- **ArNoCo**
  A new storage and mixing facility for cleaning agents will be installed for cleaning in place systems. This will enable more efficient use of chemicals at the plant and improve traceability and safety.

PROGRESS

The two biogas motors installed at Danmark Protein went into operation in early summer 2019 and today produce around 35% of electricity consumed at the site. Various initiatives have been made to maximise utilisation of the continuous biogas flow from local suppliers. As a result, biogas-fuelled boilers now meet 30% of the plant's steam needs. At ARINCO, which also partially relies on biogas, investments have improved the stability of biogas flow into the plant.

At Danmark Protein, insufficient storage capacity for recycled water had led to an increase in water consumption. This was resolved by building a new tank system, which went into operation in November.

In Germany, ArNoCo attained IS0 50001 certification when an external audit recognised the plant's systematic energy management.

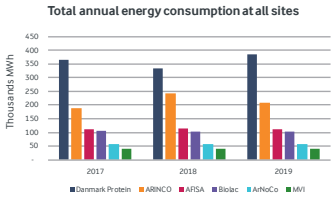
Energy efficiency

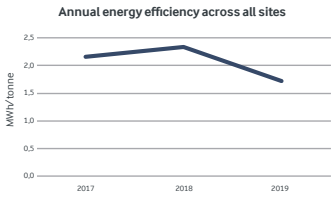
The energy needs of individual sites are heavily dependent on the mix of products they produce. Efforts are strongly focused on stabilising and reducing energy consumption despite the increasing complexity of our product range. This work is largely responsible for a 27% improvement in overall energy efficiency in 2019.

Energy consumption at Danmark Protein, our largest and most specialised plant, increased by 15%. However, due to even higher growth in production, energy efficiency improved. Energy efficiency at ARINCO also improved significantly.

The overall goal for Arla is to improve energy efficiency by 3% a year.

Biogas accounted for 31% of Arla Foods Ingredient's energy consumption in 2019.





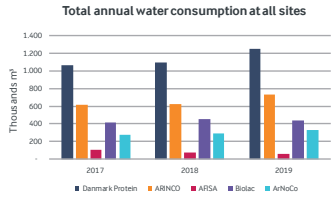
Water efficiency

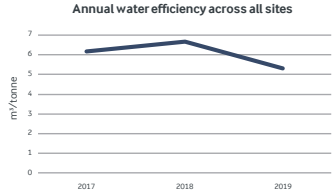
Although water consumption increased by 11% in 2019, we recorded an overall 20% improvement in water efficiency. As with energy, our water requirements grow with the increasing complexity of our products.

However, due to the focus on treating and reusing water extracted from whey during processing, for example, it has been possible to limit the amount of water drawn from drinking water supplies.

At individual sites, water optimisation projects have resulted in further drinking water savings. Danmark Protein, for example, has saved 530m^3 a day.

MVI installed water metres in May 2019, so the first full year of water consumption data will be available from 2020.





IMPACT ON SUSTAINABLE DEVELOPMENT GOALS

6.3.1 Proportion of wastewater safely treated

6.4.1 Change in water-use efficiency over time

7.2 By 2030, increase substantially the share of renewable energy in the global energy mix

7.3 By 2030, double the global rate of improvement in energy efficiency

12.2 By 2030, achieve the sustainable management and efficient use of natural resources

12.5 By 2030, substantially reduce water generation through prevention, reduction, recycling and reuse

13 Take urgent action to combat climate change and its impacts

FOOD SAFETY

AMBITION

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

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.

IMPACT 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 that involve inefficient production and raw material waste.

PRIORITY ACTIONS

The goal of the Arla Foods Ingredients Quality & Food Safety strategy is to be the trusted and leading partner for safe ingredients. In the coming year, key performance indicators will be established for second wave initiatives in the strategy's implementation.

We will focus on the continuous journey to develop a strong quality and food safety foundation, anchored in our quality management system. A number of projects with people, products and processes are also planned for execution, supporting our three key messages within quality and food safety:

- Raw materials you can trust
- A proactive quality and food safety culture
- Quality and food safety by design

PROGRESS

The first wave of the Arla Foods Ingredients Quality & Food Safety strategy is complete. During 2019, an internal communication campaign was launched to embed core messages for the second wave in the organisation.

At Danmark Protein, a series of six food safety days through 2019 renewed the focus on the food safety culture. The food safety days concept is gradually expanding from the dry-blend lactose department to cover protein production.

All colleagues in production have participated in annual hygiene and food safety refresher training.

IMPACT ON SUSTAINABLE DEVELOPMENT GOALS

2.1 By 2030, end hunger and ensure access by all people, in particular the poor and people in vulnerable situations, including infants, to safe, nutritious and sufficient food all year round

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.

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.

IMPACT 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.

PRIORITY ACTIONS

The GAIN Nordic Partnership project to establish a dairy value chain for affordable food in Ethiopia is now in its final phase following a slight delay. Completion is scheduled for 2021. We will continue to support this project by transferring processing expertise to the local dairy company responsible for production of a low-cost, nutritious yoghurt.

In 2020, work will begin on a new GAIN Nordic project to develop local production of affordable dried fruit snacks in Ethiopia, using papaya which otherwise goes to waste.

We are also committed to establishing a business network that will service GAIN Nordic projects and others after their completion. The aim is to secure their long-term success.

PROGRESS

We remain involved with GAIN Nordic and DanChurchAid to combat malnutrition in developing countries through the development of inclusive business models. During 2019, the GAIN Nordic project in Zambia drew to a close – commercialisation of the locally produced dairy drink is now in the hands of another project partner.

We have continued to co-fund and collaborate in clinical studies that investigate the effect of whey components on specific aspects of human health. These studies are summarised on pages 15-16.

IMPACT ON SUSTAINABLE DEVELOPMENT GOALS

2.2 By 2030, end all forms of malnutrition, including achieving, by 2025, the internationally agreed targets on stunting and wasting in children under 5 years of age, and address the nutritional needs of adolescent girls, pregnant and lactating women and older persons

3.4 By 2030, reduce by one third premature mortality from non-communicable diseases through prevention and treatment and promote mental health and well-being

17.9 Enhance international support for implementing effective and targeted capacity-building in developing countries to support national plans to implement all the sustainable development goals, including through North-South, South-South and triangular cooperation

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 never compromises the physical or mental health of any colleague.

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.

IMPACT ON ARLA FOODS INGREDIENTS

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

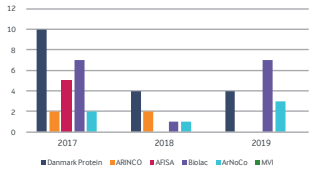
PROGRESS

We experienced a 75% increase in the number of accidents at our sites in 2019, following a significant drop in 2018. Although, at 7.0, accident frequency is relatively low compared to industry in general, it is still far above our target of 3.5 for the year.

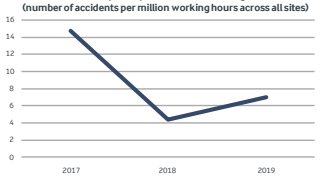
Rollout of the Arla behavioural safety training programme continued in 2019. Individual site reports reveal that the higher accident rate was limited to sites where the programme is not yet implemented. ARINCO, AFISA and MVI recorded zero lost-time accidents for the year.

At Danmark Protein, the number of accidents was unchanged compared to 2019. However, due to an increase in staff and, thereby, hours worked at the site, accident frequency dropped slightly from 5.7 to 4.7 per million working hours.

Lost time accidents (more than one day of absence)



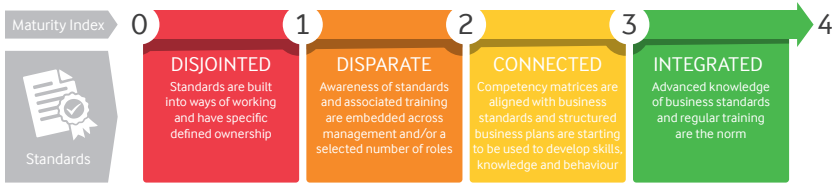
Accident frequency at Arla Foods Ingredients
(number of accidents per million working hours across all sites)



PRIORITY ACTIONS

In 2020, the Arla Cornerstones behavioural safety programme will continue to drive our efforts to minimise accidents at our sites. ArNoCo is the next site scheduled for rollout in the coming year. Danmark Protein, ARINCO and AFISA are on target to move to level two, approaching the final Cornerstones target where safety training and competences are fully integrated with business standards. MVI is expected to move to level four.

Behavioural safety programme (BSP) – Cornerstones maturity index



IMPACT ON SUSTAINABLE DEVELOPMENT GOALS

8.8 Protect labour rights and promote safe and secure working environments for all workers, including migrant workers, in particular women migrants, and those in precarious employment

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.

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.

IMPACT 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.

PRIORITY ACTIONS

Feedback from the annual colleague engagement survey shows that our people are motivated for the change that is an everyday part of life at Arla Foods Ingredients. However, the downward trend in our agility score indicates a need to pay more attention to how we communicate about necessary changes. This will be a focus area in 2020.

We are committed to being a value-driven employer of choice within our industry. During 2020, we will incorporate our responsible business values in the development of a new Arla Foods Ingredients employer branding strategy.

PROGRESS

Our annual colleague engagement survey is a vital tool in keeping our organisation on target, recording our performance in relation to key ambitions set in 2015 as part of our strategy for 2020.

The number of colleagues who responded to the 2019 survey increased by 9%, reflecting the increase in people employed. Overall, 92% of colleagues participated, compared to 97% in 2018. The scores are the best achieved so far, with performance almost unchanged compared to the previous year. This status quo is an encouraging sign that we are on track to achieve our 2020 goals.

The table shows the development of key performance figures from 2017 to 2019.

Category	AFI target range	2019	2018	2017	Development	Status
Employee engagement	85-90%	89%	89%	87%	0	Top of range
Strategic alignment	80-85%	92%	93%	85%	-1	Above range
Agility	75-80%	66%	67%	81%	-1	Below range
Overall leadership	70-75%	80%	80%	75%	0	Above range
My manager	75-80%	76%	77%	77%	-1	In range
Unacceptable behaviour	0%	6%	5%	7%	+1	Not in range yet

IMPACT ON SUSTAINABLE DEVELOPMENT GOALS

8.5 By 2030, achieve full and productive employment and decent work for all women and men, including for young people and persons with disabilities, and equal pay for work of equal value

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.

Arla Foods Ingredients Group P/S
Sønderhøj 10-12, 8260 Viby J, Denmark
Office: + 45 89 38 10 00
Email: ingredients@arlafoods.com
www.arlafoodsingredients.com

Arla Foods Ingredients

Discovering the wonders of whey

02-2020