

By Denmark

WHITE PAPERS
for solutions of tomorrow

HEALTH

LEADING INNOVATION TOWARDS
HEALTHIER FOODS

INSIDE THIS WHITE PAPER:

- Partnerships develop healthy food of the future
- An environment of innovative research
- Products that change the way we eat



Solutions of tomorrow
By Denmark

Health

Leading innovation towards healthier foods

Version 4.0, 2025

Photo credits

Front page photo: Food Nation

Editor in Chief

Food Nation

Technical Editor

The Danish Veterinary and Food Administration (DVFA)

- part of the Ministry of Environment and Food

Editors

The Whole Grain Partnership

Danish Agriculture & Food Council

Danish Veterinary

and Food Administration

Novonesis

Danish Industry

Arla Foods

Rikke Iben Neess, rikn@di.dk

Line Munk Damsgaard, ida@lf.dk

Bente Stærk, best@fvst.dk

Kasper Bruun Knudsen,

kabk@novonesis.com

foedevarer@di.dk

Lea Brader, lea.brader@arlafoods.com

Contributors

Arla Foods AMBA

GAIN Nordic Partnership

Novonesis

Aarhus University

SEGES

Novonesis

Skee Is

Royal Greenland A/S

Danish Crown A/S

REMA1000

The Danish Cancer Society

CP Kelco

The Council for Healthy Food

Danish Veterinary

and Food Administration

Lantmännen Schulstad A/S

www.arla.com

www.gainhealth.org

www.novonesis.com

www.international.au.dk

www.seges.dk

www.chr-hansen.com

www.skeeis.dk

www.royalgreenland.com

www.danishcrown.com

www.rema1000.dk

www.cancer.dk

www.cpkelco.com

www.raadetforsundmad.dk

www.foedevarestyrelsen.dk

www.lantmannenunibake.com

Download this white paper

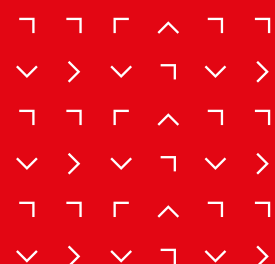
Download this white paper and other related publications at

www.foodnationdenmark.com

For more information

To order copies of this white paper or request information about other related publications, please contact Food Nation at foodnation@foodnationdenmark.dk

© Copyright Food Nation 2025



EXECUTIVE SUMMARY

Denmark's strengths within healthy food innovation are rooted in collaborative research and development. As science continues to unravel the links between diet and health, new ingredients, food products and solutions are building a platform for healthier lifestyles.

Collaboration is a source of empowerment that sets new ideas free and keeps the wheels of innovation rolling

Denmark has long led the way in developing healthier food solutions and guiding consumers towards a healthier choice. The first national dietary guidelines made their debut in the 1970s. As far back as the 1960s, Denmark began cooperating with its Nordic neighbours to develop the Nordic Nutrition Recommendations. Because creating a sustainable shift towards healthier products and diets cannot be done alone.

The Danish culture for collaboration is at the heart of the cross-sectoral partnerships that build the evidence-based knowledge that is the foundation of all nutrition-related innovation. Academic institutes, health NGOs, industry and government all play a role in shaping the solutions that are improving consumer access to healthier foods in close collaboration with Nordic partners. Danish universities are also recognised around the world for their first-class study programmes, which every year turn out highly competent health and nutrition professionals.

Within the ingredients industry, companies use the latest knowledge to develop solutions for healthier, more sustainable foods.

For food producers, the skill lies in their ability to produce foods that combine a beneficial nutritional profile with an appealing taste and texture.

But changing the eating habits of consumers takes time. In Denmark we have managed to bring competences together in a way that not only incentivises companies to continually innovate better and healthier products, but also give consumer guidelines that make selecting healthy food products easier for the consumer. To this end, government-backed initiatives such as the Keyhole label encourage consumers to make healthy choices when buying food. Such clear and continuous communication is key to raising consumer awareness.

Successive Danish governments have actively demonstrated their commitment to improve consumer access to healthier foods. This has resulted in new dietary guidelines, research and development, partnerships and innovative nutritional solutions that will continue to provide more targeted nutrition for the society at large.

INDEX

Foreword

Chapter 1 An environment of innovative research

Leading the way towards healthier foods

Chapter 2 Partnerships develop healthy food of the future

Joint expertise drives progress towards a shared goal

Chapter 3 Products that change the way we eat

Healthier products create healthier people

Chapter 4 Frontrunner in innovative food ingredients

The tailored response to global health trends

Chapter 5 The thinking behind healthy food

Food labels rely on consumer trust

Chapter 6 Future perspectives of a healthy, accessible food supply

Transforming challenges to market opportunities

Chapter 7 Denmark – a leading nation for healthy food

Explore a world of opportunities with Food Nation

Supporting the SDGs

How does Denmark contribute?

With the 17 sustainable development goals (SDGs), the UN has created a common framework for global challenges. The Danish agriculture and food sector has taken the SDGs on board, alongside many other stakeholders within the Danish food sector. Today, the SDGs serve as a guiding light for establishing best food production practices, prioritising research and development efforts and identifying innovation targets that will drive us towards a sustainable future.



An efficient and sustainable food sector will directly or indirectly contribute to all 17 goals. However, there are some goals where the strongholds of the Danish food sector are expected to make a particular impact. These include **Goal 2** *End hunger, achieve food security and improved nutrition, and promote sustainable agriculture* and **Goal 12** *Ensure sustainable consumption and production patterns*. **Goal 3** *Ensure healthy lives and pro-*

mote well-being for all at all ages and **Goal 13** *Take urgent action to combat climate change and its impacts*.

Achieving the ambitious goals of the 2030 agenda requires global support and partnerships. Extensive collaboration throughout the food value chain and between industry, academia, health NGOs and government is an outstanding characteristic of the

Danish food sector – accelerating progress with national and international initiatives and directly contributing to **Goal 17** *Strengthen the means of implementation and revitalize the global partnership for sustainable development*.

FOREWORD



Photo: Steen Brogaard

As humans, our way of life is deeply rooted in the food that we consume. Living healthy increases our life-quality, the joy of the individual and helps build a better society.

The health of the global population has evolved into one of the greatest challenges of the 21st century with an increasing number of people affected by lifestyle diseases and over 2.4 billion people not having regular access to safe, nutritious and sufficient food. Ensuring accessible healthy food is crucial for sustainable development which is why, innovation of healthy foods and solutions is key to meeting the global challenges.

As markets are emerging across the globe, it is my pride to say that Danish food companies are global leaders when it comes to providing safe, healthy food of high quality to a wide range of countries on every continent.

The Danish position is no coincidence, but a result of the unique collaborative mindset between multiple stakeholders in the Danish food production. Together with the industry, health NGOs and academia we speak with a single voice and move forward in the same direction, working towards the same agenda of creating healthier food products for Danes and for our export markets.

The close collaboration across the food value chain has been significant in developing the many partnerships that dominate the food sector today, as well as sharpened government strategies.

The close collaboration across the food value chain has been significant in developing the many partnerships that dominate the food sector today

This is seen in the Strategy for Food, Meals and Health, resulting in the creation of The Innovation Partnership, which, in close collaboration with food producers, focus on the development of healthier foods. The wide number of partnerships and guiding food labelling have changed Danish food products and solutions into a healthier direction with great impact on Danish consumer behavior.

But the vast change taking place is not only restricted to Danish food produc-

ers but is also making a difference abroad. The collaborative, sector-wide approach on public health issues has helped Denmark continually stay ahead of the curve, often being the first to set a standard later followed up by the EU, and Danish knowledge and solutions are today making differences in food productions in foreign environments, leading to healthier food production.

This white paper describes Denmark's approach to producing healthier foods and continuously innovating and developing the area for the benefit of both the Danes and the growing world population. I hope you will be inspired and join us in the revolution to ensure a wide availability of healthy and tasty foods for the future.

A handwritten signature in blue ink that reads "Jacob Jensen". The signature is fluid and cursive, with the first name "Jacob" being more prominent than the last name "Jensen".

Jacob Jensen

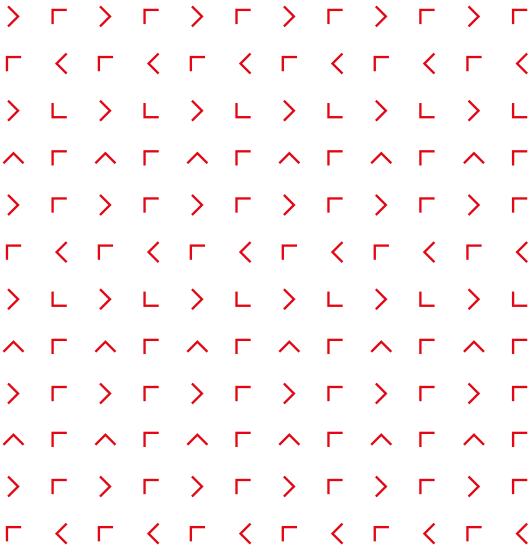
Minister for Food, Agriculture and Fisheries



CHAPTER 1

AN ENVIRONMENT OF INNOVATIVE RESEARCH

LEADING THE WAY TOWARDS HEALTHIER FOODS



In a world where 700 million people are undernourished and 2.5 billion people are overweight or obese, the need for better access to healthy foods is striking. By 2050, the global population is expected to number almost 10 billion people, who will all depend on a reliable supply of safe and nutritious food.

The Institute for Health Metrics and Evaluation (IHME) report from 2019 shows that malnutrition and unhealthy dietary patterns rank as the number one and two risk factors contributing to “loss of good health” globally. Malnutrition is especially a risk factor in less developed countries and almost nonexistent in developed countries, where it is instead the unhealthy eating habits resulting in overweight and obesity that constitute the biggest risk factor.

Developing healthy food products and solutions is thus key and a solid foundation of knowledge and research is the starting point.

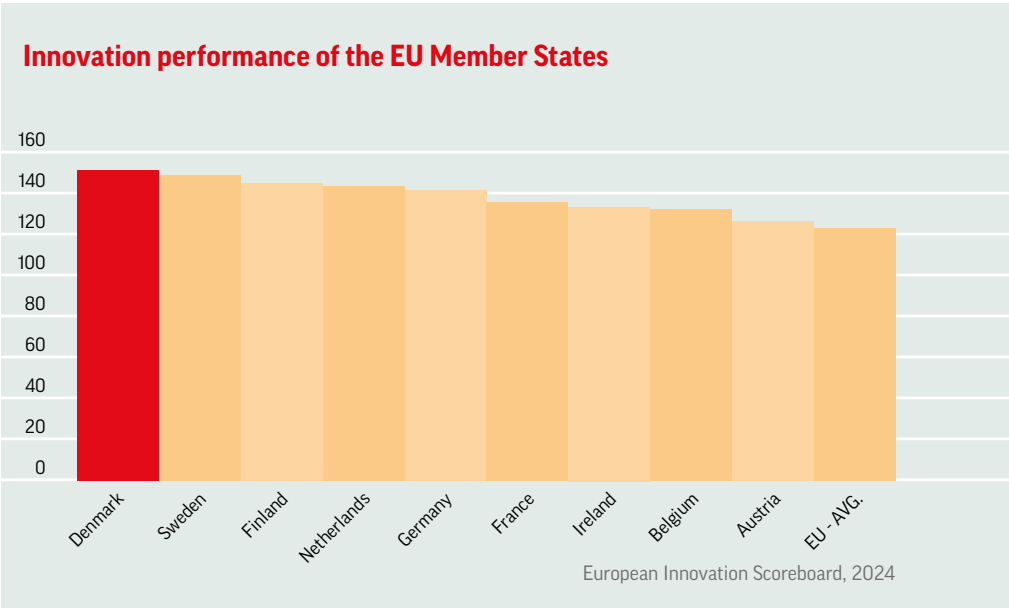
Denmark has a strong advantage when it comes to food research. Thanks to a long history of cross-sectoral cooperation throughout the value chain, Denmark has developed a rich environment for innovative research and development. Today, partnerships between industry, academia, health NGOs and authorities have driven us to the forefront of innovation within products and solutions for healthier food.

These strengths have earned international recognition. In the European Commission’s European Innovation Scoreboard, Denmark is positioned as an innovation leader, ranking highly in areas of collaboration, financial support, digitalization, environmental sustainability, and other dimensions contributing to innovation within the agrifood sector.

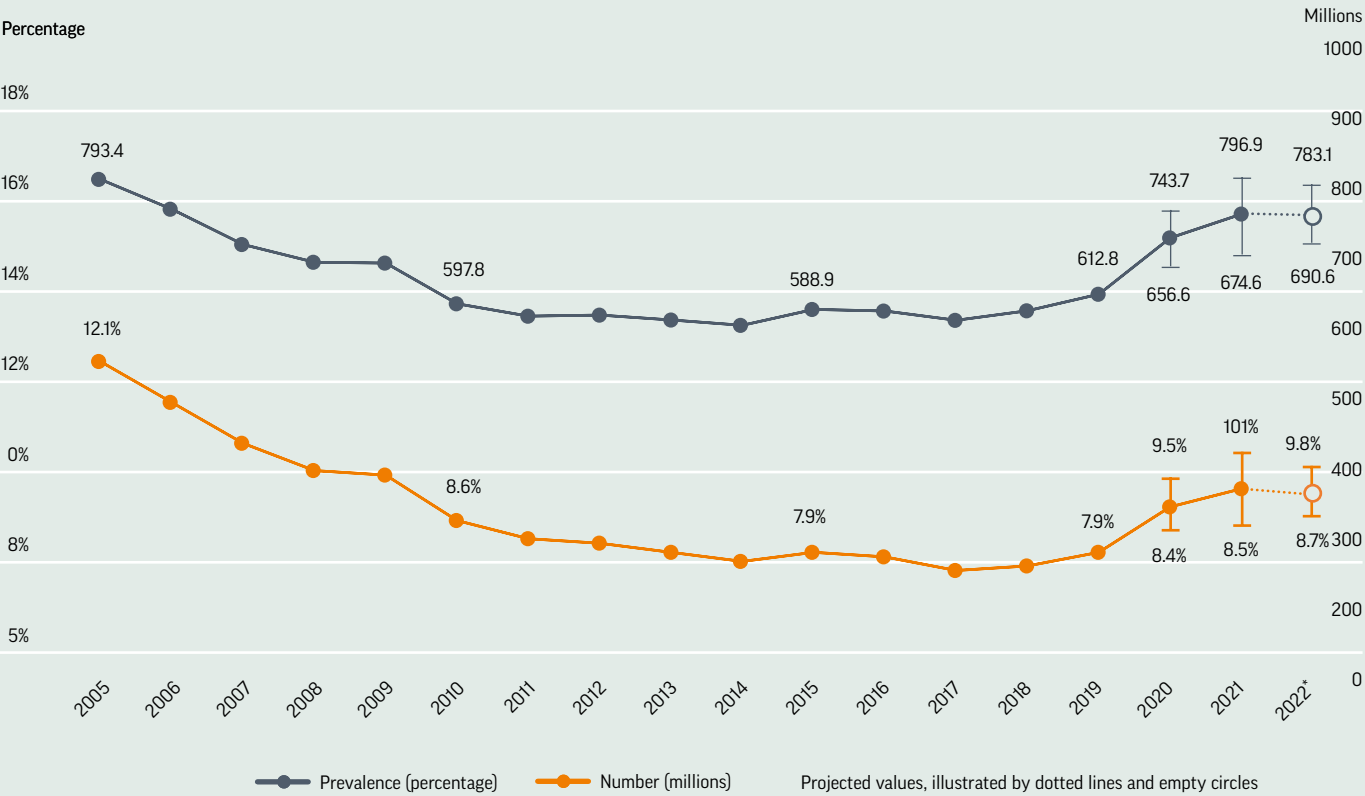
Denmark’s long history of cross-sectoral collaboration drives food innovation for healthier societies at home and abroad.



Photo: Danish Industry

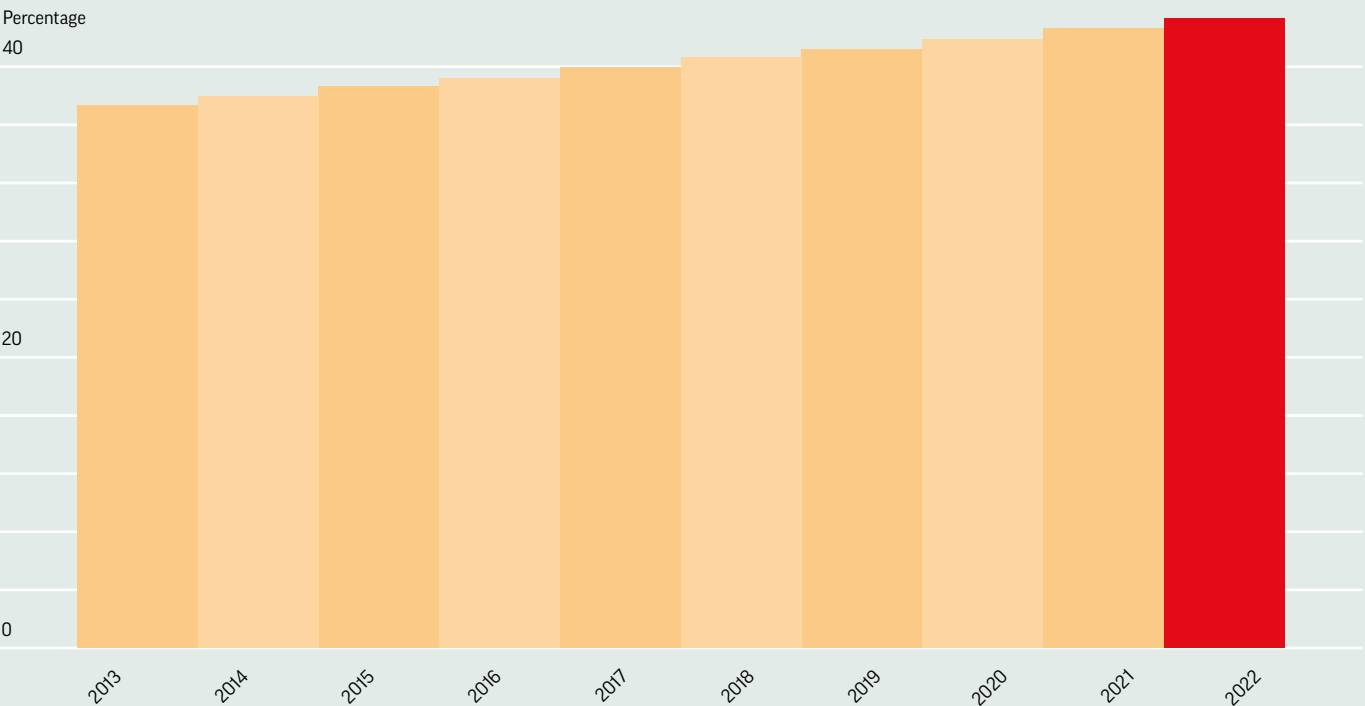


Between 691 and 783 million people faced hunger in 2022



Source: FAO, 2024. The State of Food Security and Nutrition in the World, 2023.

Global prevalence of overweight among both sexes, 18+, BMI ≥ 25



Source: WHO (2024), Global Health Observatory data repository

A fertile ground for knowledge building

By working together in cross-sectoral partnerships, Danish academic institutes, health NGOs, industry and government continue to create a fertile ground for building new knowledge, developing new products and founding knowledge-based governmental guidelines. Such partnerships enable easier access to funding and set the direction for targeted research – essential to stimulating future business growth for the healthy food sector and meeting national goals for improved public health.

Close collaboration ensures that knowledge, data and know-how are constantly exchanged and expanded. It also means the technology employed and products developed by the Danish food sector are based on the most up-to-date research combined with a thorough understanding of nutrition and how it affects our health.

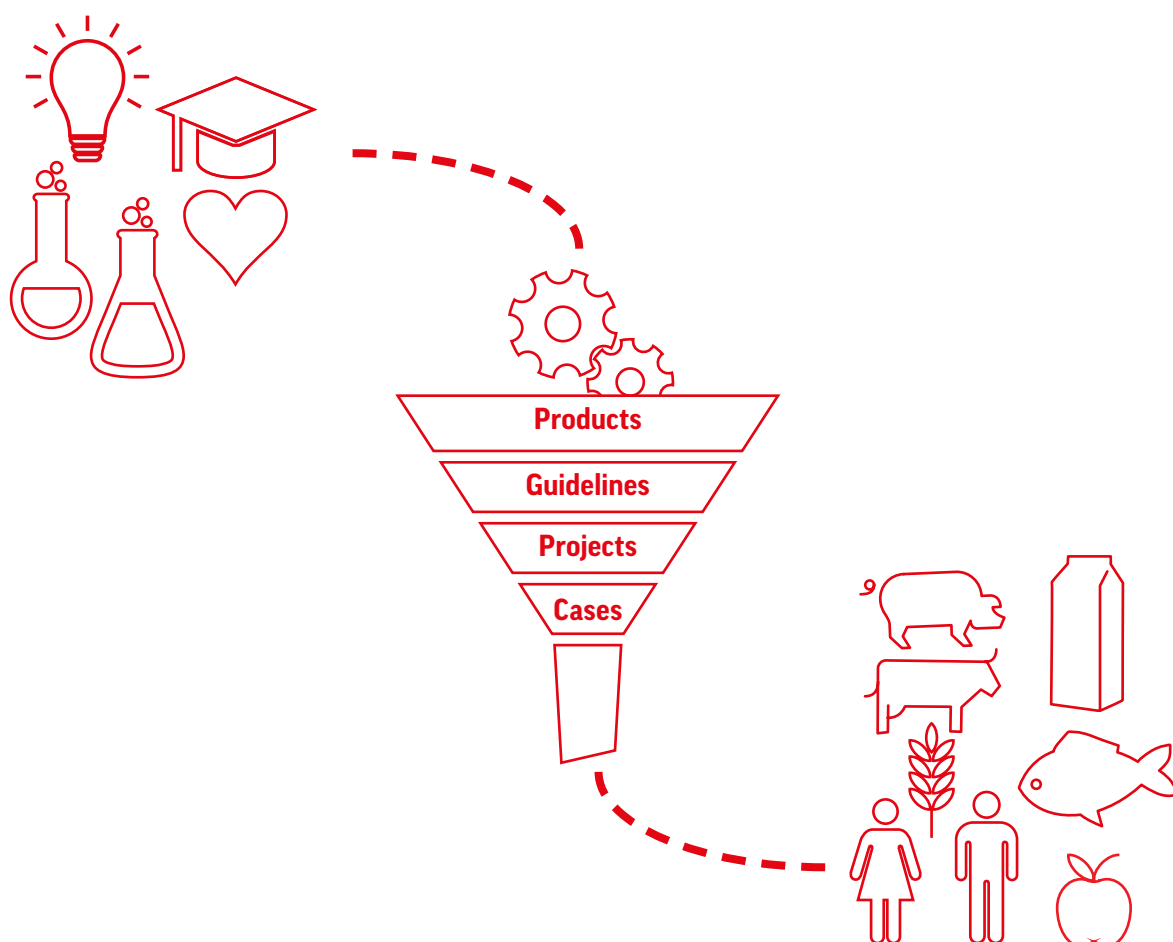
The Danish universities play a definitive role in this. For example, Aarhus University funded the New Foods for Physical and Mental WellBeing (NFORM) research network, which includes partners from Denmark, Canada, France and New Zealand. The network's specific aim is to research and innovate new sustainable foods for improved wellbeing at all stages of life – contributing to the UN Sustainable Development Goals (SDGs).

University study programmes are acknowledged for their major contribution to knowledge development and product innovation. Year after year, they turn out highly competent health and nutrition professionals.

In Denmark, a critical mass of knowledge and expertise is always in easy reach. And, when knowledge and research are pushed to the forefront, innovation follows.

A solid foundation of knowledge and research is the starting point for innovation

HEALTHY FOOD INNOVATION THROUGH KNOWLEDGE EXCHANGE



RESEARCH PARTNERSHIP EXPLORES DAIRY BENEFITS FOR GLOBAL HEALTH



Due to the close ties between business and research institutes, research findings can be quickly put to use in the development of innovative nutritional solutions

Nutritional needs vary through life and are influenced by lifestyle and social circumstances. Established in 2015, Arla Food for Health is a public-private partnership with the vision to investigate the health effects of dairy and dairy ingredients by performing world class research to support the sustainability agenda. In the partnership, Arla Foods collaborates with Aarhus University and University of Copenhagen to enable stakeholders to carry out best-in-class dairy

and nutritional research, along with becoming a platform for knowledge sharing, training and education.

By creating partnerships such as this, funding for research into healthy foods are more easily available than it would otherwise be. The close ties between business and research also ensures that new knowledge is applied further into the development and innovation of healthy food products in Arla Foods.

Due to the close ties between business and research institutes, the research findings can be quickly put to use in the development of innovative nutritional solutions of benefit to global health. A valuable contribution to UN Sustainable Development Goal number 3 – good health and wellbeing – by discovering new health effects of dairy and dairy ingredients and exploring how to keep developing healthier products for consumers to minimise e.g. lifestyle diseases.

Case by Arla Foods

BREEDING HOLDS THE KEY TO HEALTHIER DAIRY FAT

Fatty acids in milk vary from cow to cow. So, for the past few years, Aarhus University and agricultural knowledge centre SEGES have worked on the SOBcows project to track and register those variations. Today, they have mapped the milk fat composition of all cows in Denmark – a total of 15 million samples, which is uniquely for Denmark. The research shows that the cow's genes largely determine the content of various fatty acids in the milk, which allows to "control" the fatty acid composition in the milk by breeding.

Fatty acid measurements are currently available on all cows corresponding to 15 million samples, which is uniquely for Denmark



Photo: Food Nation

In the long term, the research project might enable Danish companies to produce dairy products – from milk to cheese – with a higher content of healthy fatty acids. The Danish organic dairy company Naturmælk sees perspectives in innovating cheeses with a higher proportion of unsaturated fatty acids to a market that increasingly demands organic and healthy products. Therefore, the company has, as part of the research project, developed the first cheeses with a

higher content of unsaturated fatty acids on a test basis and the preliminary results look promising without significant taste differences between this and traditional cheese. The project is a perfect example of how health and taste can go hand-in-hand.

**Case by Aarhus University,
SEGES and Naturmælk**

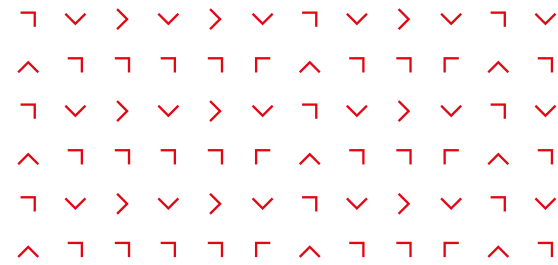


CHAPTER 2

PARTNERSHIPS DEVELOP HEALTHY FOOD OF THE FUTURE

JOINT EXPERTISE DRIVES PROGRESS
TOWARDS A SHARED GOAL





Denmark has had a set of dietary guidelines for more than half a century. Public-private partnerships put them into practice.

Back in the 1970s, Denmark was one of the first European countries to publish evidence-based national dietary guidelines. A decade before that, we partnered with our Nordic neighbours to establish recommendations for balancing dietary habits with physical activity to reduce the prevalence of diet-related diseases. The Nordic Nutrition Recommendations are the foundation of the Danish dietary guidelines today. Regular updates reflect the latest knowledge about nutrition and health.

By joining forces, all stakeholders develop a mutual understanding that ensures the fruits of their work are greater than what they can achieve alone

Public-private partnerships between industry, academia, government and health NGOs draw on these guidelines to set the direction for new product development and consumer outreach. Examples include the Danish Wholegrain Partnership and the new Innovation Partnership for Healthier Food. The Danish Veterinary and Food Administration, part of the Ministry of Environment and Food, has an active role in both.

Fruits of a mutual understanding

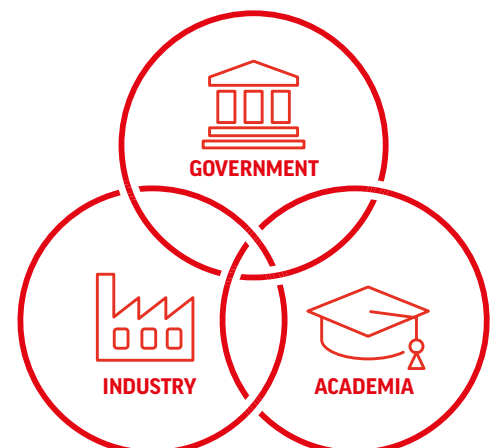
Within such partnerships for better nutrition, research institutes provide the knowledge foundation, which food companies use to develop new or improved healthy products. Health NGOs and government authorities develop consumer guidelines and communicate the benefits.

By joining forces, all stakeholders develop a mutual understanding that ensures the fruits of their work are greater than what they can achieve alone. They also ensure a consistent message to consumers in a constantly shifting food landscape. In this way, food research and innovation can drive meaningful progress towards national health goals.



Photo: Food Nation

KNOWLEDGE SHARING BETWEEN INDUSTRY, ACADEMIA AND AUTHORITIES



DANISH WHOLE GRAIN PARTNERSHIP STRENGTHENS HEALTH AND BUSINESS

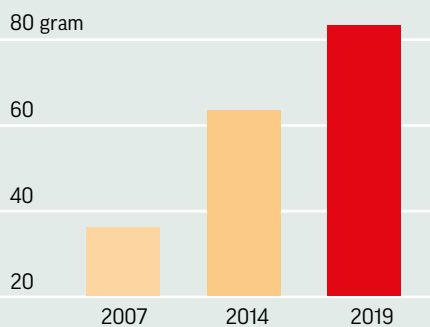


Photo: Food Nation

Danish consumers have increased their whole grain intake considerably since 31 partners representing food authorities, health NGOs and the food industry got together and formed The Danish Whole Grain Partnership in 2009. Today, the Danes eat 82 grams of whole grain a day, compared to just 36 grams in 2004. This has only been possible due to the large support from the industry to increase their whole grain product range and develop healthier products and meals with more whole grains in, along with a concerted communications effort and research by the authorities and NGOs.

In 2022, the partnership's long-term effort won further international recognition, when the OECD appointed a number of "best practice" initiatives that have made a particular contribution to promoting public health. But the partnership not only contributes to better public health. For food producers, it has created a new opportunity to expand their product range within whole grain products. In other words, the partners have successfully combined health and business objectives. An inspiration for other organisations to pursue the partnership option.

Development in the Danes' daily intake of whole grains



WhoEUGrain A European Action on Whole Grain Partnerships

From 2020 to 2023, Denmark coordinated a project that facilitated the transfer of the Danish best practice model for a Whole Grain Partnership to three other European countries. More countries get the opportunity to follow the project that are funded by EU.

Case by The Danish Whole Grain Partnership

DANISH DAIRY TECHNOLOGY PARTNERING FOR SUSTAINABLE AND NUTRITIOUS SOLUTIONS IN ETHIOPIA

A significant issue in many developing countries is the lack of access to healthy, affordable nutrition, especially for mothers and children. Ethiopia exemplifies this challenge, with nearly 40% of children under the age of five experiencing stunting, impaired growth and development due to malnutrition.

The Sustainable Food Partnership, funded by P4G and led by DanChurchAid in collaboration with a list of international partners hereunder Arla Foods Ingredients and Novonosis, is working to address the challenge of malnutrition.

The partnership focuses on the entire value chain, from small-scale farmers to consumers, building on a collaborative model that links an Ethiopian biscuit manufacturer with global leaders in food tech and production. By combining knowledge to produce a new nutritious, accessible and affordable biscuit, the partnership aims to develop a replicable model to ensure sustainable food for all.

The overall ambition is to promote better nutrition for base-of-the-pyramid consumers in Ethiopia, strengthen smallholder farmers' access to commercial value chains and demonstrate an innovative SDG2 solution with sustainable impact and a solid business case

Case by The Sustainable Food Partnership

The Sustainable Food Partnership combines knowledge to produce a new nutritious, accessible and affordable biscuit to ensure sustainable food for all





CHAPTER 3

PRODUCTS THAT CHANGE THE WAY WE EAT

HEALTHIER PRODUCTS CREATE HEALTHIER PEOPLE

Denmark has often been one of the first movers when it comes to tackling health and food related challenges and agendas. As lifestyle diseases pose a greater challenge, the Danish food sector has risen to the challenge of helping to solve these problems with healthier products and solutions.

The growing need for nutritious food products is top of mind for the Danish food sector and a core aspect of the UN Sustainable Development Goals. Specific goals for better health have been set in SDG 2 and 3, but health and nutrition are linked to all 17 Sustainable Development Goals and each one plays an important role in driving sustainable development.

As more consumers realise the importance of good nutrition for their health, Danish food companies use their nutritional expertise and innovation knowledge to explore the opportunities on international markets. Developing healthier products has thus become top-of-mind for the Danish food industry.

Enabling healthier living

A healthy ingredient list is no substitute for appeal. In other words, when making a healthier alternative to an existing prod-

uct, manufacturers must make sure that it tastes, looks and feels like the original. This is why Danish companies and research institutes work together to come up with solutions for producing healthy alternatives to standard foods that do not fall down on sensory quality.

Health and nutrition are linked to all 17 SDG's and each one plays an important role in driving sustainable development

Salt reduction is one area of focus. As most of a consumer's sodium intake comes from processed foods, this is where the biggest potential for reduction lies – and where an ingredient producer such as Novonesis can make a difference. To tackle the salt in cheese, for example, Novonesis has devel-

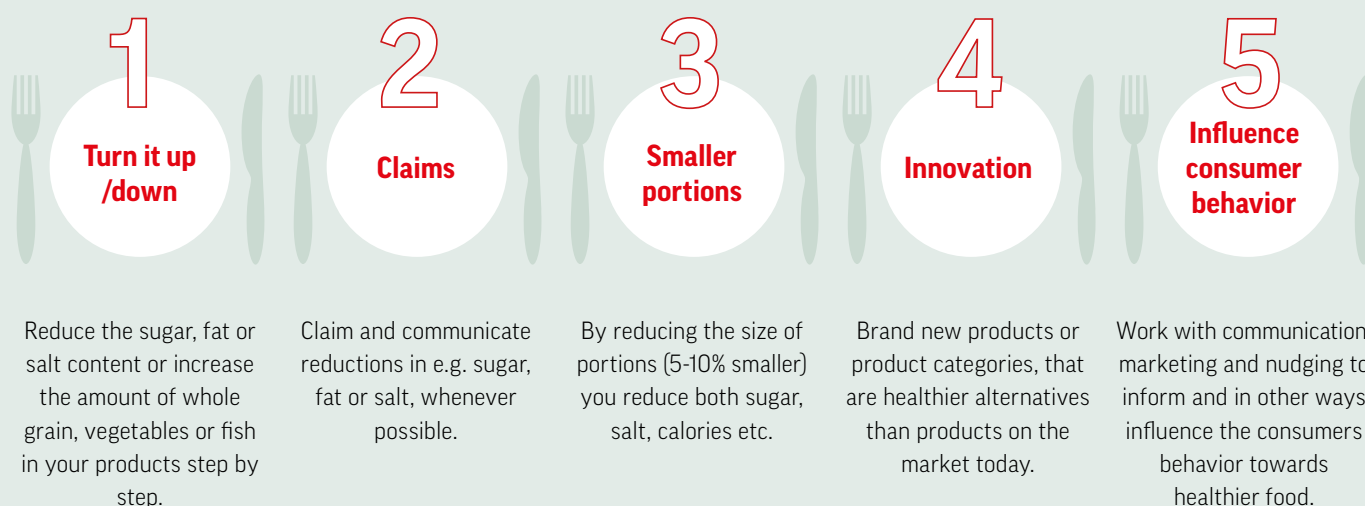
oped a solution called SaltLite that can cut sodium by up to 50% while maintaining the good taste and high quality.

Reduction or enrichment

Products or solutions for taking out sugar, salt or fat or enriching with protein, fibre and other nutrients are growing in popularity among consumers. E.g. has the Danish company Skee Is achieved success with a protein-rich ice cream that helps people get the essential nourishment needed to fully recover after illness. Another example is the spice blend Salt of Hearts from Mill and Mortar that is an organic natural flavour enhancer seeking to substitute table salt with an alternative, containing only 15% plain salt. The Danish food industry is already well-positioned to respond to this global trend. New solutions are always under development to meet emerging consumer demands.

The Innovation Partnership for Healthier Food

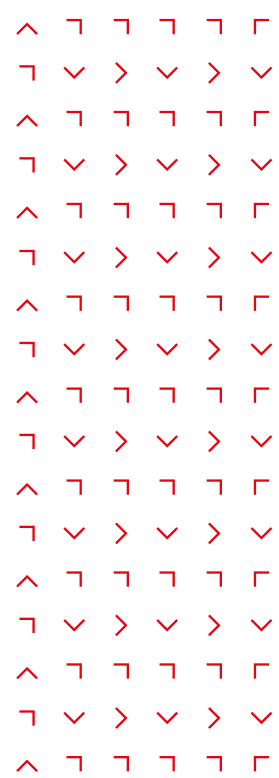
Five ways to work for healthier products and meals



NUTRITION IS ESSENTIAL TO ACHIEVE THE SUSTAINABLE DEVELOPMENT GOALS



REDUCED SALT IN READY-TO-EAT SEAFOOD PRODUCTS



Through research and dedicated product development, Royal Greenland has managed to reduce the content of salt for a broad range of ready-to-eat (RTE) seafood including brined prawns, smoked and gravad fish as well as lumpfish roe products. This initiative has made it possible to label more than 35 RTE seafood products with the Keyhole label guiding the consumers to a healthier choice.

For brined prawns alone, Royal Greenland has managed to take out eight tons of salt in a year's production alone. To reduce the salt content Royal Greenland has used new innovative mathematical tools to predict the potential growth of hazardous microorganisms in RTE seafood including *Clostridium botulinum* and *Listeria monocytogenes*. Using these tools, it has become possible to lower the content of salt in RTE seafood by up to 50% without compromising the food safety.

By being at the forefront of research and innovation, companies like Royal Greenland can now present consumers with better and healthier alternatives when shopping.

Case by Royal Greenland



Photo: Royal Greenland

In the production of brined prawns alone, Royal Greenland has cut out eight tons of salt a year

HIGH QUALITY PROCESSED MEAT WITH A LOWER FAT CONTENT



Photo: Danish Crown

Back in the 1990s, two enthusiastic butchers got an idea of replacing fat in processed meat products with vegetable fiber. They were both educated butchers and nutritionists, so they did not want to compromise on either the quality of the meat nor the nutritional health. Their idea was so innovative that they got a patent on it and with that, Danish Crown's concept "The Green Butcher" was invented.

The concept "The Green Butcher" has very special principles. They cut away all the excess fat and use only lean meat. They always select the best ingredients and, where possible, add vegetable fiber instead of fat. With it you get cold cuts and processed meat products that contain less fat and higher quality meat. Because of the healthy composition all the products are labelled with the official nutrition brand the Keyhole label that shows that the products meet the requirements for many dietary fibers and less fat, saturated fat, sugar and salt.

Case by Danish Crown

With the concept you get cold cuts and processed meat products that contain less fat and higher quality meat

BREAD INNOVATION DRIVES WHOLE GRAIN HABITS

The Danish bakery Lantmännen Schulstad have an ambition to improve and renew the Danish bread culture. A part of that ambition has to do with innovation and product development that changes consumers eating habits towards more healthy diets.

Lantmännen Schulstad have been part of the Danish Whole Grain Partnership since its beginning in 2009 and today, more than half of Lantmännen Schulstads products are labelled with the whole grain logo, making whole grain products easily accessible for consumers through many different breads.

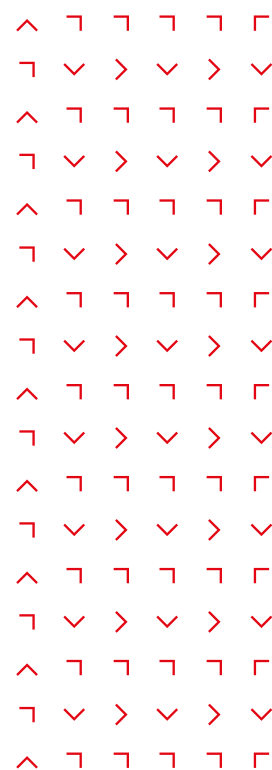
It all started with the “Levebrød” brand – a brand that is high in whole grain and fibers, and with a limited amount of fat, salt and sugar. All products in the Levebrød series contain a minimum of 8% fibers and meets both the Keyhole label and The Whole Grain label's requirements. The portfolio has changed a lot over the years, but the breakthrough was the first whole grain wheat products, produced with a special wheat (white wheat), that has a light bran that makes it possible to bake breads high in whole grain but looking and tasting as the traditional white ones. With this, it was possible to get everyone from kids, teenagers to adults to eat more whole grain.

Case by Lantmännen Schulstad

More than half of Lantmännen Schulstad's products are labelled with the whole grain logo, making whole grain products easily accessible to all Danish consumers



Photo: Lantmännen Schulstad

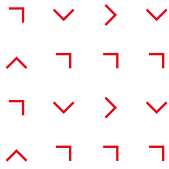


A full-page photograph of a worker in a white protective suit and goggles, operating industrial machinery. The worker is positioned on the right side of the frame, looking intently at a large, shiny, metallic cylindrical component. The background is filled with a complex network of stainless steel pipes, valves, and mechanical parts, suggesting a food processing or pharmaceutical manufacturing environment. The lighting is bright and even, highlighting the metallic surfaces and the worker's attire. The overall composition is professional and technical.

CHAPTER 4

FRONTRUNNER IN INNOVATIVE FOOD INGREDIENTS

THE TAILORED RESPONSE TO GLOBAL
HEALTH TRENDS



The Danish ingredients sector are taking an innovative approach when developing healthy and nutritional solutions for food products.

A long history of agricultural production and food processing has driven innovative ingredients to a central position in the Danish food sector. Nutritional and functional solutions are in high demand to make healthy, safe and appealing foods easily accessible to consumers at large. Through the efforts to meet this demand, the Danish ingredients industry has become a world leader.

Working in state-of-the-art laboratories and facilities, ingredient professionals are at the forefront of developing the newest enzymes, microorganisms, probiotics and ingredients in the pursuit of healthier, more sustainable products.

Better ingredients enable healthier food

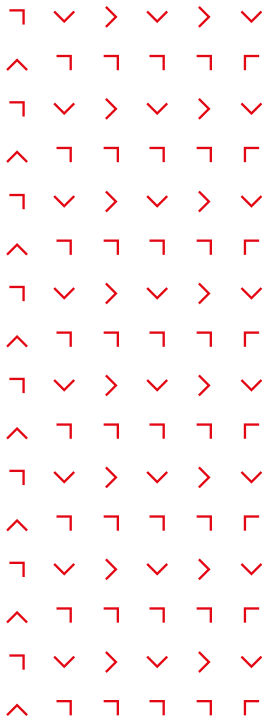
The ingredients industry holds some of the keys to unlocking the challenges of the future. Questions about health and sustainability have inspired global trends towards alternative protein sources to meat, for example, or to foods free from trans fats or with a lower content of sugar or salt. At the same time, more consumers are seeking foods that are enriched with nutrients that can improve health and wellbeing throughout life.

The Danish ingredient companies continually innovate to meet the ongoing food challenges without compromising the good taste and texture that consumers enjoy. Using innovative ingredient technologies, food manufacturers can both meet the demands of health-conscious consumers and maintain the efficiency of their production processes. And they can reach new international markets with the help of ingredients that push back the boundaries for safe and nutritious food production.



Photo: Thorbjørn Hansen

Denmark's ingredient companies hold the key to solving many ongoing food challenges



ENZYMES HELP PRODUCE HEALTHIER OILS WITHOUT TRANS FATS

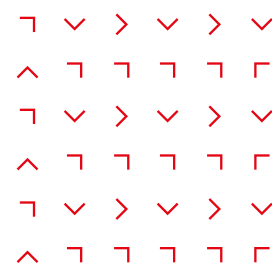


Industrialised trans fat has long been linked to cardiovascular diseases. They are found in processed products such as margarine, cakes, icing, fried foods, salad dressings, commercially-prepared popcorn and much more. The World Health Organization estimates that half a million deaths from heart disease could be prevented a year by reducing trans fats in food. The Danish company Novonesis is always looking for ways to help make better products, and has developed a ground-breaking, safe and environmentally friendly enzyme to eliminate trans fat in products.

Novonesis has developed a lipase (an enzyme), Lipozyme® TL IM, that produces higher-quality oils with no colour changes, low diglycerides, and fewer by-products. The enzymatic process eliminates the need for chemicals, washing or post-bleaching and produces no wastewater. This has, among other things, allowed companies to keep pace with increasing regulatory oversight, seeking to limit trans fat in products around the world. And by staying ahead of the curve and finding solutions to tomorrow's challenges, Novonesis has made it easier for food producers to minimise the use of industrialised trans fat in their production.

The enzymatic process eliminates the need for chemicals, washing or post-bleaching and produces no wastewater

Case by Novonesis



REDUCING SUGAR CONTENT IN FRUIT-FLAVOURED DRINKS



By using pectin, a nature-based ingredient derived from citrus peels, CP Kelco can deliver a fruit-flavored drink with a lower sugar content

The consumption of sugar-sweetened beverages has been suggested as a contributory factor to the rising levels of childhood obesity in many countries worldwide.

CP Kelco, a global nature-based ingredient solutions company with operations in Denmark, has found, that, by using pectin, a nature-based ingredient derived from sustainable sources citrus peels, they could deliver a fruit-flavored drink with a lower sugar content without sacrificing the feel and taste consumers expect.

Reformulating products can be difficult, because while consumers are increasingly looking for healthier alternatives, they still expect a product profile that matches what they are used to. By analyzing the sensory profile of fruit-flavored drinks, CP Kelco figured out the key sensory aspects of such drinks that consumers expected, and from there could work to create an alternative formulation of the drinks that provided the properties of sugar – without having to use the same amount of sugar as before.

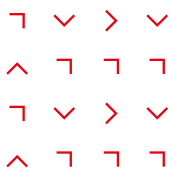
Case by CP Kelco



CHAPTER 5

THE THINKING BEHIND HEALTHY FOOD

FOOD LABELS RELY ON CONSUMER TRUST



It takes good communication to encourage lasting change in consumers food habits. Denmark's commitment to clear nutrition labelling at retail stores and on products is a supporting help.

Changing behaviour is difficult, particularly when it comes to changing how people eat. To create significant, lasting change, there must be a broad commitment across society, and this can only come about if actors work together across sectors. If done correctly, and with the right focus on accessibility and clear food labelling, evidence has shown that consumers can be nudged in new and more healthy directions.

The traditional Danish focus on food quality and safety provides a solid platform for continuous nutritional improvement. Consumers generally trust that the food products they buy are of a certain quality, and that is important when encouraging a change in dietary behaviour. Without trust, consumers are more wary of taking new habits on board.

Governmental guidance towards health
Choosing what to eat to become healthier is not an easy proposition. To make healthier food choices, consumers need a helping hand. In Denmark, this help comes from the many different partnerships, but also from the authorities, which have worked with food businesses to launch a series of easily decoded nutrition labels on food packaging.

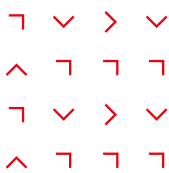
Supported by the high level of trust in Danish food products, nutrition labels make an important difference to consumers when navigating the vast jungle of more or less healthy products. Combined with a high level of transparency in the production and development of food products, as well as strict requirements for product labelling and information, Danish consumers are hand-held when trying to navigate in the large number of available products.

There are many examples of this, including the Keyhole label, which indicates when products live up to specific nutritional criteria, and the '6-a-day' guideline, which follows The Danish Veterinary and Food Administration's recommendation to consume at least 600 grams fruit and vegetables a day. All such labels are clearly visible in the retail stores where consumers do their shopping, and they are therefore easily guided to make the healthy choice.

The traditional Danish focus on food quality and safety provides a solid platform for continuous nutritional improvement



Photo: Kim Wyon, VisitDenmark



THE KEYHOLE LABEL MAKES HEALTHY CHOICES EASY



Keyhole lay down criteria for fat, sugar, salt, dietary fibre, whole grain, fruit and vegetables and energy. The criteria vary depending on the food category. The Keyhole is a nutrition claim and therefore subject to the Nutrition and Health claim regulation in EU.

Today, 95% of Danes know the Keyhole, and by substituting other products with products marked with the Keyhole label consumers can achieve a significant improvement in nutrient intake. The Technical University of Denmark has calculated the effect on key nutrient parameters of replacing all 4-75 year-old Danes normal diet with Keyhole-labelled products on the market in 2017, in areas where it is possible and realistic. The results published in 2019 show a significant improvement in nutrient intake: For example, whole grain intake would increase by 36 g/day (62%), saturated fat would decrease by 25% and the sodium intake would decrease by 443 mg sodium per day (12%), corresponding to just over 1 g of salt per day.

Because the Keyhole encourages companies to develop products that meet its criteria, there are now no less than 4,000 Keyhole products on Danish store shelves. That makes healthy foods ever easier to find.

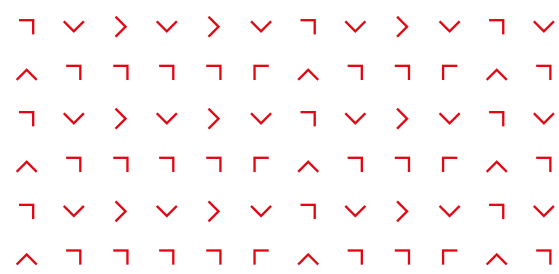
There are now no less than 4,000 Keyhole products on Danish store shelves. That makes healthy foods ever easier to find

The Keyhole label is a Nordic nutrition label which was launched in Denmark in 2009. The Keyhole has one overall mission: Making it easier for consumers to make the healthier choice. It has gained rapid success with substantial support from Danish food producers and retailers on the market.

The Keyhole is obtainable for food products complying with the criteria laid down for the use of the label. The provisions for the



Case by Danish Veterinary and Food Administration



RETAIL CHAINS AS AN IMPORTANT STAKEHOLDER AGAINST OVERWEIGHT

The number of overweight people continues to rise, and retail chains have a huge responsibility to help consumers make healthy choices and reduce the number of excess calories. The chains can e.g. make it easier for consumers to avoid overweight by selling fewer calories. That is what the recently completed project “Let Indkøbet” (Easy Purchasing) between the University of Copenhagen, the Danish Cancer Society and the retail chain REMA 1000 examined.

To achieve this, REMA 1000 went in and changed the ingredients (whole grain, sugar, fat and salt) in a large variety of their private-label products, all to make them healthier and contain less calories. In addition, they adjusted the positioning of healthier food products in stores and focused on the healthier choice in their catalogue.

By developing new products by adding or reducing ingredients without changing the products taste, REMA 1000 not only managed to lower the calories, but they did it without the consumers noticing it. The results were outstanding: In 2019 alone, REMA 1000 saved consumers 15.7 billion calories corresponding to the calorie content of 4.1 million kilo sugar or 2.200 tons of butter without affecting the sales.



REMA 1000 changed the ingredients in a wide range of its private label products to make them healthier and lower calories

Case by University of Copenhagen, the Danish Cancer Society and REMA 1000



CHAPTER 6

FUTURE PERSPECTIVES OF A HEALTHIER, ACCESSIBLE FOOD SUPPLY

**TRANSFORMING CHALLENGES TO MARKET
OPPORTUNITIES**

Denmark is committed to improving universal access to healthier foods. New initiatives are constantly underway in support of ongoing research, innovation and consumer engagement.

Diets around the world must not only become healthier, they also must become more sustainable and accessible.

There is still much to be done to improve access to healthy food and encourage consumers to reduce their risk of lifestyle disease by making the best possible dietary choices. This is why Danish businesses, health NGOs, academia and authorities remain committed to developing new guidelines and launching new initiatives and partnerships.

To support this ongoing effort, the Danish government launched a new strategy for food, meals and health in 2018. The primary aim is to provide Danes with the information they need to take life-long care of themselves through healthy nutrition. Initiated in 2019, the Innovation Partnership for Healthier Food is one outcome of the strategy so far. Shortly after its founding, 135 partners had already signed up, representing everything from retail and food service to food producers to trade unions, health organisations and academic and research institutions.

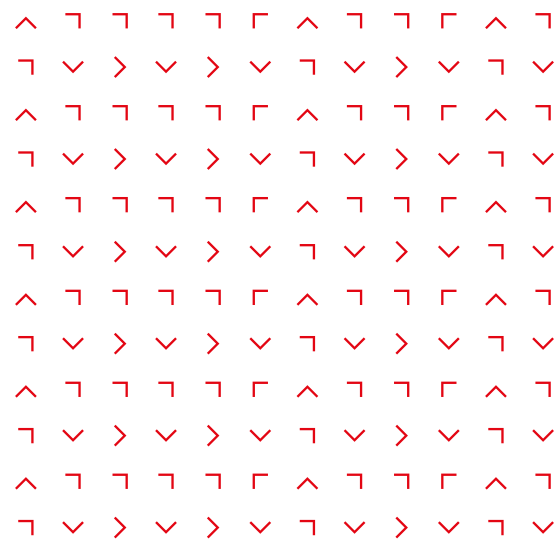
A constant focus on innovation

Denmark also participates actively in European projects to promote better health through nutrition. Under the EU's FIT4FOOD2030 initiative, for instance, the department of food science at Aarhus University has been appointed to coordinate the new Aarhus Food Lab for citizen engagement. Other partners are the City of Aarhus, Agro Food Park and Central Region Denmark. The objective is to connect local communities around the need to prepare future food systems through research and innovation.

Thanks to the wealth of scientific knowledge already available, there is no question that good nutrition is the essence of a long and healthy life. The task ahead is to deepen that understanding for more targeted responses to individual nutritional needs.



Diets around the world must not only become healthier, they also need to be more sustainable and accessible



INNOVATION PARTNERSHIP REACHES OUT TO CONSUMERS



Photo: Food Nation

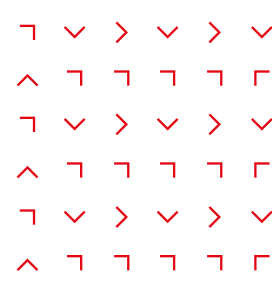
The Innovation Partnership for Healthier Food originated from the Danish government Strategy for Food, Meals and Health with representatives from food companies, retail, foodservice, industry, organisations and NGOs with a clear vision: Increasing the supply of healthy food products and meals and making these products more accessible for the consumers. The partnership was formed in 2019.

By making the healthy choice the easy choice, the Innovation Partnership for Healthier Food aims to support the development and availability of products with an increased content of vegetables, fruit, whole grain and fish and a lower content of salt, saturated fat and added sugar.

The partnership also has a focused communications and marketing strategy aiming to increase focus on healthier products and to inform Danes of the benefits of eating a healthier diet. By working together to develop and promote healthier foods, the partnership hopes to play a role in lowering the impact of lifestyle diseases such as overweight, diabetes, cardiovascular disease and cancer.

**Case by Danish Veterinary
and Food Administration**

By working together to promote healthier foods, the partnership wants to help reduce the incidence of lifestyle diseases



NATIONAL ACTION FOR HEALTHIER FOOD AND MEALS

The Danish Healthy Food Council is a partnership formed in 2018 which currently consists of 28 member organisations consisting of public authorities, private companies, universities and research institutions, health NGOs, unions and other organisations that will make a difference to healthy food in Denmark.

The mission of the council is to mobilise all relevant partners in a national action for healthier food and meals. The council originated from The Meal Partnership, which has been the initiator and catalyst to make it easier to eat meals in Denmark since it was established in 2012.

The Council is set to succeed in something that its members cannot do on their own: bringing together all relevant stakeholders and efforts for healthy food and healthier meals across sectors, so that through a joint coordinated effort we can realise the vision that everyone eats healthier.

In the period 2019-2021, the Danish Healthy Food Council gathered stakeholders to collaborate on initiatives within three programs: Generation Healthy, Danes' Food Habits and Meals as Welfare. The Council's efforts under



Photo: Niclas Jessen , VisitDenmark

the three programs aim to help all Danes eat healthier and reduce food waste so that the Danes' health profile is improved in relation to overweight. Furthermore, more Danes come to eat in greater compliance with the official dietary recommendations and thus contribute to the Danes getting healthier dietary habits. The Council has a particular focus on citizens living with social inequality.

Case by The Danish Healthy Food Council

The council has five key goals:

- 1 Creating large scale projects and efforts
- 2 Push the agenda about how healthy dietary habits are a key ingredient for healthier lives
- 3 Create a platform for collaboration across the many different projects and actors
- 4 Create a movement for healthier food and healthier meals across Denmark
- 5 Making it easier for consumers to make the healthy choice



CHAPTER 7

DENMARK – A LEADING NATION FOR HEALTHY FOOD

EXPLORE A WORLD OF OPPORTUNITIES
WITH FOOD NATION

Consumers all over the world have the right to safe and nutritious food. Today, the entire food and agriculture sector continues to develop healthy food products and solutions to our home market and to business partners abroad.

Food Nation is a non-profit partnership established by the Danish government and leading private organisations and companies. It is your gateway to information about the Danish food cluster and know-how that can accelerate the growth of international businesses through better solutions, innovative products and trusting cooperation. The Danish food cluster encompasses everything from primary production in agriculture and the fishing industry to the food products consumers buy in stores and online. Companies, universities, research institutes, local and national authorities and other private and public organisations belong to the extensive, collaborative network. Together, they work hand-in-hand with international partners to maintain and improve food quality and safety along the value chain.

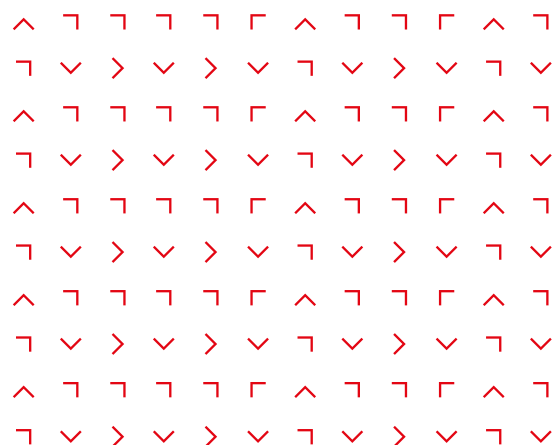
Take an interactive tour

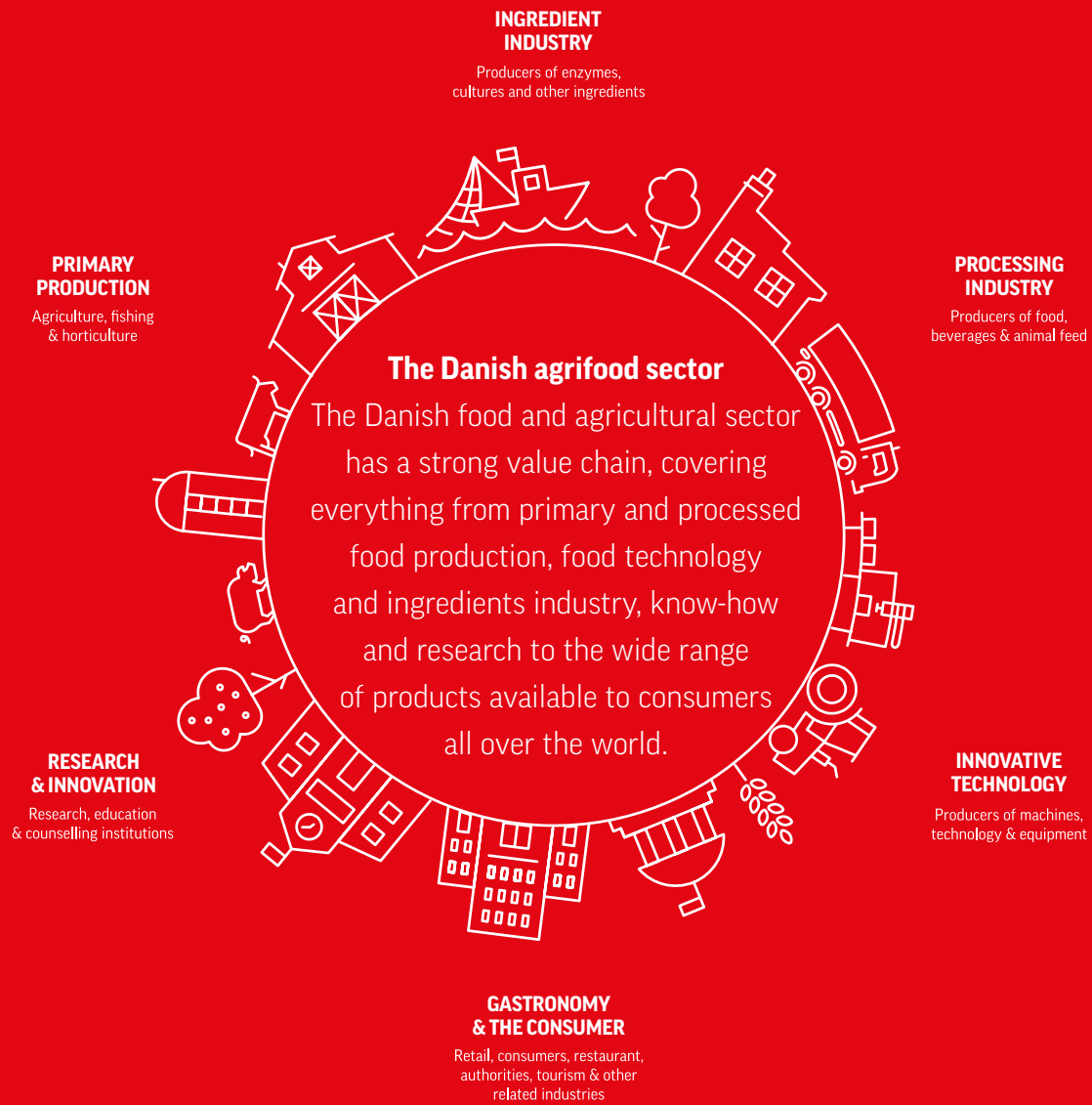
Food Nation's Visitor Centres in central Copenhagen and Århus welcomes international delegations, providing them with an introduction to Danish capabilities within

food. An interactive installation at the centre gives visitors an up-to-date overview of the food value chain based on their individual interests. It is the ideal starting point before visiting Danish food producers and production facilities. Food Nation is a great place to start learning about how Denmark can support a sustainable development within healthy food products and solutions. Find out more about our services that include our Virtual Universe and toolbox, and arrange a visit to the Food Nation Visitor Centre at www.foodnationdenmark.com.



The Danish tradition of a commitment to food quality and safety provide a solid platform for continual improvements to healthy food





READ MORE
FOODNATIONDENMARK.COM

