



Development goals and measures (UMV) 2023–26
DTU National Food Institute

1 Summary

DTU National Food Institute conducts research into and disseminates—through advice, innovation, and teaching—sustainable and value-creating solutions in the area of food and health for the benefit of society. This is the Institute's mission.

The Institute's vision is to make a difference by generating future prosperity through food and health research. The Institute prevents disease and promotes health, develops new and better foods for the growing population, and creates sustainable technological solutions. See Figure 1.

The vision is in line with the UN Sustainable Development Goals, where the Institute's activities especially contribute to meeting the following goals: Zero Hunger (2), Good Health and Well-being (3), Quality Education (4), Industry, Innovation, and Infrastructure (9), Responsible Consumption and Production, with particular focus on circular bioeconomy (12), Climate Action (13), and Life Below Water (14). See Figure 2.

The Institute's vision therefore seeks to solve some of the biggest social challenges the world is facing, including the green transition.

DTU National Food Institute is also known for employing high academic competency in and across a wide range of disciplines, and for its interdisciplinary approach, which allows the Institute across disciplines to present research-based proposals for solutions to significant food and health challenges. The Institute delivers its outcomes through interdisciplinary collaboration in, for example, nutrition, chemistry, toxicology, microbiology, epidemiology, modelling, and technology.

DTU National Food Institute is an organization with big ambitions, and its research areas have been selected as beacons in a bid to meet the above societal challenges and support DTU's strategy. The Institute's research provides the basis for the socially relevant teaching, credible advice, and value-adding innovation. The core of all the Institute's activities is its dedicated employees who make up and support the knowledge-based organization.

In summary, the strategic research, teaching, consulting, and innovation objectives for the coming years are that DTU National Food Institute will engage in:

Ambitious research

- Creating solutions for transition to more sustainable food production
- Utilizing the opportunities offered by digitalization in food and health research
- Preventing disease and promoting health through an interdisciplinary approach to research throughout the food chain

Socially relevant teaching

- Creating strong study programmes which meet the need in society for graduates with relevant engineering competences in food science, technology, safety, and innovation
- Providing the students with a strong basis for future innovation and entrepreneurship

- Further developing a learning teaching environment with an emphasis on the lecturers' didactic competences

Credible scientific advice

- Converting research-based knowledge at the highest level into relevant advice aimed at promoting a healthy, safe, and sustainable diet and products, as well as sustainable food supply
- Disseminating research-based knowledge as credible, transparent, and value-creating advice to relevant authorities, companies, and industries, nationally and internationally
- Increasing the effect of scientific advice for employers

Value-creating innovation

- Creating innovation through new food technologies and digital solutions in circularity and sustainability
- Driving the green transition through public-private partnerships and knowledge-based alliances
- Seeking innovation opportunities through DTU's strategic partnerships.



Figure 1. The DTU National Food Institute's vision



Figure 2. The SDGs to which the Institute contributes

2 Research

The DTU National Food Institute's vision forms the basis for the strategic objectives for the Institute's research. These goals support DTU's strategic objectives that DTU will develop technologies for sustainable change and lead by example in the realization of the opportunities offered by digitalization.

The green transition of the food system affects many parts of society, as shown in Figure 3. The DTU National Food Institute conducts research within the issues of health, food safety, nutrition, and changing dietary habits, as well as food processing and biotechnology and arrives at an understanding of the economic aspects and purely climate perspectives through collaboration.

To show the interaction between the Institute's vision and DTU's strategy, the Institute's research strategy for the next four years has been divided into the below areas:

Creating solutions for transition to more sustainable food production

The food system from farm to fork—including the food loss that occurs in the production chain—has a major impact on Denmark and the global use of resources, carbon emissions, and climate change.

The Institute's vision is therefore to create sustainable technological solutions and to develop new and better (sustainable and safe) food products. The solutions—and the Institute's research—ranges from optimizing existing food production methods and processes to completely rethinking the current food industry to minimize the climate footprint of the sector.

A sustainable diet should not only be climate-friendly in terms of carbon emissions and resource consumption. It must also be nutritious, safe with a low content of harmful substances and bacteria, and of a high quality to meet consumer preferences. The Institute consequently conducts research into the creation of healthy, safe, and sustainable high-quality products that taste good.

The Institute develops mathematical models that can be used for several purposes, including to reduce the use of resources such as water and energy in food production, to avoid food waste and food loss, and to maintain and preferably increase food safety.

The Institute also develops new technologies for testing and documenting food and feed quality and safety, as well as generic processes in resource optimization. In addition, the Institute develops new sustainable food products, ingredients, and food packaging that entail new requirements for approval and protection of food safety.

Utilization of side streams in food production will be a key focus area in the coming years. In fact, the focus is on reducing waste throughout the value chain and improving the utilization of scarce resources by limiting food losses using new chemical, microbiological, and digital technologies.

The Institute also contributes to innovating sustainable production in one of the most environmentally-unfriendly sectors by, for example, conducting research in and developing brand-new, nutritious plant-based food products and beverages, using cell factories to create new ingredients and biotechnology-based food production, and using new raw materials from unutilized marine resources, invasive species, and insects, which can be used as new food products in themselves, or as a basis for extracting health-beneficial substances.

Utilizing the opportunities offered by digitalization in food and health research

The Institute's focus on controlling and reducing the spread of infectious diseases and antimicrobial resistance is about looking across sectors and at the correlations between animals, food, humans, and the environment (One Health). This requires complex bioinformatic models and the collection of gigantic

data volumes globally.

In addition, the Institute has a unique holistic view of food products, where the Institute looks at both health-hazardous and health-promoting effects and calculates an overall risk-benefit balance based on mathematical models. In the coming years, the Institute will increasingly collect and process complex data and exploit opportunities in AI, including machine learning.

The Institute creates or collects large volumes of data for Denmark of importance to research and advice in health, sustainability, and food safety, which are communicated to the EU. Other data are collected worldwide to create global monitoring of infections and antimicrobial resistance, and others are obtained in research projects. During the UMV period, the Institute will make several of these data volumes available and visualize them, so that other researchers and society in general can benefit more from these extensive resources collected over many years.

The Institute develops models for predicting quality, microbiological and chemical safety, degradation of bioactives, and much more to increase research in promotion of health and improve sustainable food production. The Institute will work to develop virtual models such as digital twins for food processes to conduct research in optimization of resource consumption in food production. During the UMV period, the Institute will also look at how it can interact with the many other models for, for example, prediction of microbiological food safety.

Preventing disease and promoting health through an interdisciplinary approach to research throughout the food chain

It is a global issue that there is a food crisis with food shortages due to growing populations, with malnutrition and overnutrition, and with diseases related to harmful chemical substances or microorganisms in the environment and in food. The major challenges of climate change, urbanization, and industrialization of all food systems affect the health of all people and create a risk of exposure to harmful substances.

The Institute's research adopts an interdisciplinary approach to healthy foods, food safety, toxicology, and disease prevention by conducting research in:

1. healthy nutrition and sustainable diets
2. protection of the public from exposure to harmful chemicals and allergens
3. development of new and improved methods for risk assessment of infectious diseases, antimicrobial resistance, GMOs, and chemicals
4. complex correlations between foods, health, and health-hazardous elements in interaction with the surrounding environment.

Health promotion and disease prevention require knowledge of the exposure to good or harmful chemical substances and microorganisms. It requires research in cross-border exposure, and the Institute's research in chemistry and microbiology is consequently anchored in Europe or globally via networks and collections of samples worldwide. In addition, the Institute's research in food technology can develop processes that increase the level of beneficial substances and microorganisms and inhibit the development of the harmful substances.

To understand the mechanisms behind disease development or health promotion, the Institute will strengthen its mechanistic understanding of several areas, including intestinal ecology, the effects of microorganisms on the conversion of substances, the development of food allergies, factors affecting the bioavailability of healthy substances such as vitamins, and understanding of how exposure to mixtures of chemical substances can lead to cocktail effects in the foetus.

In the development of new food products from alternative sources, it is essential that health and food safety are incorporated as factors from the outset. The Institute will work even more on this in the coming years by focusing on bioactives, circular economy, and the development of new food products and ingredients. New food products must not only be sustainable, but also promote health.

Increasing the value to society on an ongoing basis through focused research of high quality

The research must create a basis for changed legislation, changed processes in industrial food production, and changed dietary habits among consumers.

The Institute’s research objective is not to achieve a significantly higher output quantitatively. The objective is constantly to increase the quality of both projects and publications for the benefit of society as well as the students and researchers involved.

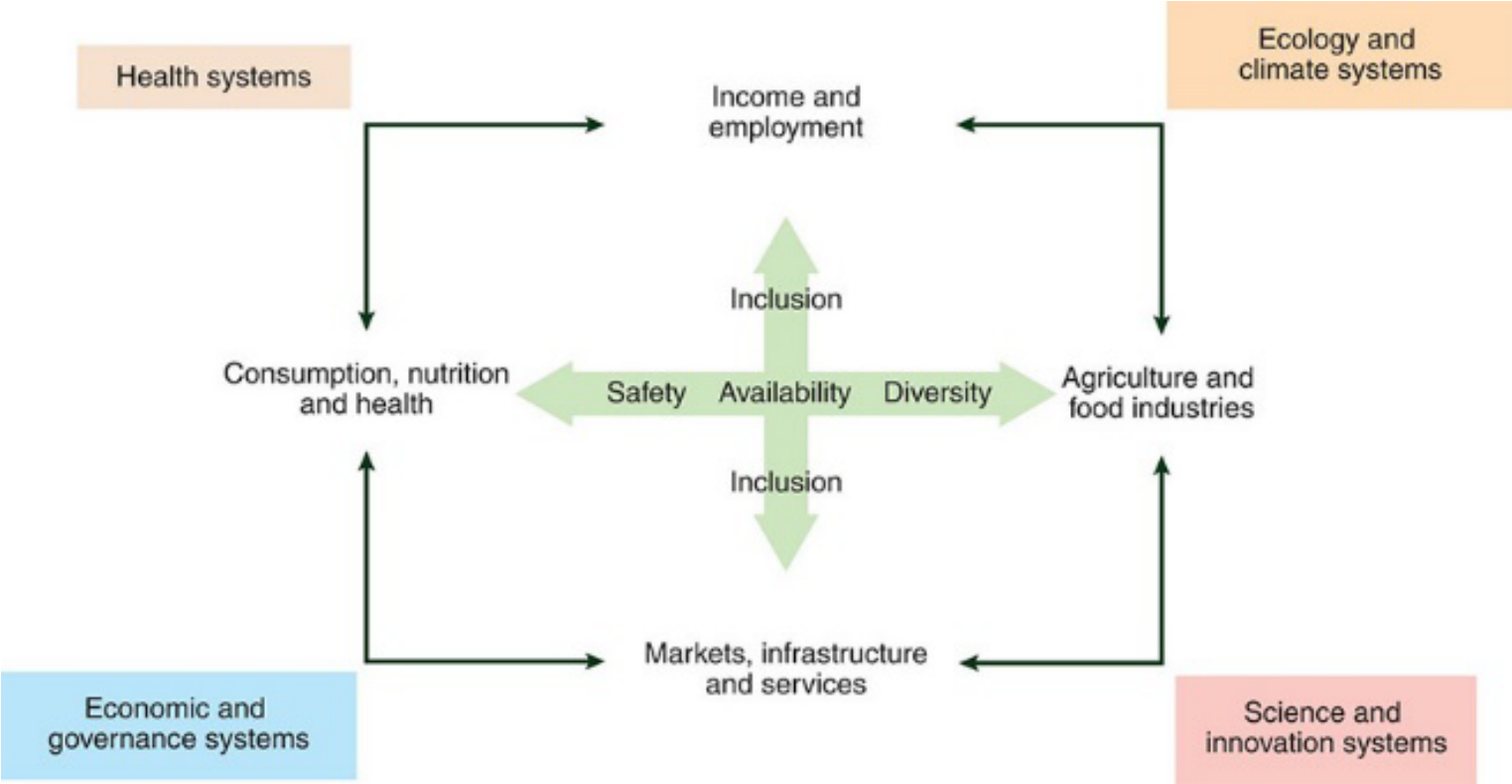


Figure 3. Effects of the green transition on society (Joachim von Braun, Nature Food, 2021)

3 Study programmes

The DTU National Food Institute wants to meet the need for highly qualified staff in the food industry and related sectors. Graduates are characterized by having high professional and relevant engineering competences as well as a curious, innovative, and creative mindset that will strengthen their occupational readiness and their ability to meet future national and global challenges.

The DTU National Food Institute will ensure that study programmes and courses are offered in food science, technology, and safety, including risk assessment, as well as food innovation. The Institute contributes to the new BSc Life Science Technology initiative and will involve several of the Institute's researchers, PhD students, and advisers in ordinary teaching and especially project and internship guidance and supervision.

The supply of courses is planned based on an objective of increasing the number of students on the individual courses, strengthening the students' general competences, and ensuring that they are given an actual choice and opportunity for specialization.

The strategic objectives for the UMV period are that the Institute will engage in:

Creating strong study programmes which meet the need in society for graduates with relevant engineering competences in food science, technology, safety, and innovation

It is an ongoing task to clearly profile DTU's food study programmes, update graduates' competences to keep up with the needs of society, and foster links between the study programmes and the Institute's strong research areas.

DTU's strategy will be directional for the development of the courses. The Institute's courses in—among other fields—technologies for sustainable transition, development of new safe food products, and circular economy and bioeconomy must have clear learning objectives for sustainability, risk assessment, and digitalization. New engineers must be able to identify and implement technological solutions that reduce the climate footprint of the food sector, promote sustainability, maintain a high level of food safety, and strengthen the profitability of the sector.

Providing the students with a strong basis for future innovation and entrepreneurship

With food products as the foundation, the Institute has a unique platform for combining practical learning that is based on actual societal challenges with in-depth academic studies and innovation. The Institute focuses on including learning objectives on innovation and entrepreneurship in relevant courses, and on creating courses that support student innovation through both intra-curricular and extra-curricular activities. The Institute also focuses on ensuring that the students experience interdisciplinary and inspiring collaboration between companies and the University's researchers during their studies.

Further developing a learning teaching environment with an emphasis on the lecturers' didactic competences

DTU National Food Institute will continue to develop high-quality, academically challenging courses based on a strong pedagogical culture among lecturers, and by working towards peer supervision and the development of pedagogical and didactic methods.

The closure of the DTU campus during the coronavirus lockdown has resulted in a quantum leap in the use of digital methods for teaching, supervision, and feedback. The experience from this will be included in the assessment of how the students' physical time with the lecturers is utilized optimally. The Institute wants to contribute to the new virtual Eurotech university collaboration.

The Institute works with rejuvenation of Faculty and development of its lecturers' didactic methods. The focus is on recognizing development in the field of teaching and on the 'scholarship of teaching'.

3.1 PhD programme

More externally funded projects will increase the number of PhD students who will later transfer research-based knowledge to society. In the coming years, the Institute will improve the PhD students' well-being, as this is regarded as essential to a well-performed project, and increase the number of students who complete a research stay abroad.

The Institute has participated in the steering committee for DTU's future organization and requirements for the PhD programme and is looking forward to greater focus on the individual student's research development and talent care. The Institute sees it as a cornerstone of the new PhD structure to focus more time on the scientific project, which is in line with recommendations from the research evaluation from December 2019.

On the Institute's mandatory internal PhD course, the students are presented with several important support functions at DTU, including the research librarians, innovation partners, and DTU Skylab. This supports the innovation potential of their projects, the effect of the project on 'technology for people', as well as their career opportunities and talent development.

The PhD students must all have direct teaching as an agreed part of their study plan. The PhD students assist in the teaching at other DTU departments to an appropriate extent and have an important role in relation to practical co-supervision of BSc and MSc students in their final laboratory projects. Several PhD students will also be involved in the Institute's advisory tasks.

3.2 Lifelong learning

The DTU National Food Institute will contribute to the development of the area of continuing and further education (CFE) and has established collaboration with DTU Learn for Life. The Institute's strategy focuses on food safety, where the Institute has extensive experience in training and conducts extensive research activities.

A 'Master in Safe and Sustainable Food Production' has been launched in collaboration with the University of Copenhagen with a small class of students in spring 2022. The study programme has an international aim, is offered in English, and is based on e-learning combined with an annual on-campus conference. During the UMV period, the Institute will disseminate awareness of the study programme, increase the number of enrolled students, and make it financially sustainable.

In continuation of the Institute's collaboration with the EFSA, the Institute contributes to international continuing and further education on risk assessment (the EU-FORA programme and establishment of 'The European Excellence Label in Food Safety Risk Assessment'). The Institute expects that this will strengthen the profiling and marketing of DTU as a global provider of CFE in food risk assessment. Correspondingly, it may be relevant to clarify whether the new collaboration on a virtual Eurotech university can include CFE.

The Institute offers most of its ordinary courses as open education, which can contribute strategically to meeting the needs of the industry and public authorities for CFE. The Institute will also hold individual seminars, webinars, and workshops where relevant, and develop the Institute's portfolio of MOOCs.

4 Scientific advice

One of the Institute's strengths is its ability to create strong holistic scientific advice through close collaboration between the academic focus areas: chemical food safety, chemical product safety and GMOs, microbiological food safety, and nutrition. Data from studies of the Danes' diets are thus central to nutrition, sustainability, and health promotion, as well as to chemical and toxicological risk assessments, and in risk-benefit analyses. In addition, there is potential for close interaction between food technology and modelling for use in evaluation of microbiological and chemical food safety. This is a unique national position of strength, which is also internationally recognized.

The strategic objectives for scientific advice are that the Institute will engage in:

Converting research-based knowledge at the highest level into relevant advice aimed at promoting a healthy, safe, and sustainable diet and products as well as sustainable food supply

The DTU National Food Institute will still convert research-based knowledge into advice on health and sustainable diet and food supply. The Institute will also maintain its position as the preferred supplier of scientific advice on food safety and nutrition to Danish authorities and concurrently expand its position as the preferred Danish partner for both national and international companies and authorities in food technology and innovation as well as food safety and nutrition. The Institute also contributes with scientific advice on chemical product safety with a view to protecting consumers and the environment from exposure to undesirable chemical substances.

The Institute undertakes international advisory assignments—especially for the EU, WHO, FAO, and the OECD—but also for the Nordic Council of Ministers as well as many national authorities in other countries. Many assignments are also performed under the auspices of the European Food Safety Authority (EFSA), and the close partnership means that the Institute's research and expertise influence the European food safety agenda. The Institute leads the way in, for example, risk assessment of endocrine-disrupting substances and new methods for testing chemicals, which provides a wide footprint across risk assessment of chemicals. The Institute also handles the EU reference laboratory function in four areas and contributes to international capacity building, especially in Africa and Asia. The close contact with the Institute's sister organizations in Germany and France means that the latest knowledge and thinking about food safety in Europe can be made available to those receiving scientific advice from the Institute.

Disseminating research-based knowledge as credible, transparent, and value-creating advice to relevant authorities, companies, and industries, nationally and internationally

The Institute will, among other measures, realize the goal by communicating the scientific basis for the Institute's advice to authorities, and, where possible,

also create the basis for commercial advisory services to industries and companies. The Institute focuses on updating its quality assurance for advice and implementing recommendations from both DTU's code and guidelines on research-based advice as well as Universities Denmark's principles and recommendations for research-based collaboration and advice with a view to strengthening the quality and impartiality of the Institute's advice.

The Institute has cooperation agreements with sister organizations in countries that are important export markets for Danish food companies. Through these agreements, the Institute will help increase the capacity in food safety, risk assessment, and monitoring in the countries concerned. The Institute expects this to benefit Danish companies indirectly. Correspondingly, the Institute's continuing and further education activities will contribute to bringing Danish experience and results in food safety into play in a global context.

In collaboration with EFSA, the Institute focuses on working with methods in gene sequencing for use in monitoring of antimicrobial resistance and food-borne pathogens, expanding One Health collaborations, disseminating knowledge of risk-benefit assessment methods, and extending the collaboration with EFSA in the field of QSAR. Under Nordic auspices, the Institute contributes to the revision of Nordic Nutrition Recommendations (NNR) under the Nordic Council of Ministers, where the focus is on integrating environmental sustainability in the future recommendations.

Increasing the effect of scientific advice for employers

The Institute will meet the goal of increasing the effect of scientific advice for employers by developing its advisory services, effect measures, and decision-making support systems in several areas. In this connection, the Institute will:

- assess the significance of combining chemical substances to better advise on the potential risk to human health
- drive the development of integration of data from new testing methods into risk assessment of chemicals
- include sustainability aspects in risk-benefit analyses and develop models for these
- further develop methods that include different sustainability aspects in nutrient and dietary recommendations and implement them in different arenas
- create value through recycling and upcycling of low-value flows from primary production and food production into sustainable and high-value products
- develop alternative protein sources and assess their role in a plant-based diet
- develop predictive models in microbiology and food technology for the benefit of both public and private employers
- strengthen the One Health-based approach to addressing food safety issues to ensure the best possible societal effect of initiatives
- assess new foods (processes and products) from nutrition, sustainability, and food safety perspectives
- strengthen monitoring of antimicrobial resistance and related capacity build-up in the EU and third world countries
- promote significant parts of the public availability of monitoring data in more real time than previously.

The Institute participates in the Horizon Europe project 'European Partnership for the Assessment of Risks from Chemicals' (PARC), 2021-2028, where the co-funding comes from research projects under the performance agreement. The project looks at new approach methodologies (NAMs), QSAR, combination effects of chemical substances, endocrine-disrupting substances, and risk-benefit analyses.

5 Innovation

Development in science and new technology is essential to our ability to adapt to a future warmer climate and the rapid changes in the food system. Innovation occurs across research, education, and scientific advice. The DTU National Food Institute's innovation activities therefore focus on contributing to the green transition by creating the foundation for a healthy population through healthy, safe, and sustainable food products.

These initiatives require cooperation, and the strategic objectives for innovation are therefore that the Institute will engage in:

Creating innovation through new food technologies and digital solutions within circularity and sustainability

The Institute will achieve this through strategic build-up of our research capacity and infrastructure within selected areas. This includes strategic build-up of our pilot plant facilities around a learning platform for digital twins.

Furthermore, the Institute will strengthen the students' learning by integrating green transition in the theoretical context of circularity and sustainability. The students acquire a practical understanding in connection with internships and projects with companies and organizations. The Institute thus forges even closer ties with the important partners in the companies.

Driving the green transition through public-private partnerships and knowledge-based alliances

The Institute will achieve this by being an active partner in the business promotion organisation Food and Bio Cluster Denmark and will, through this partnership, work to increase the innovation capacity of the sector. A maturation of the partnership is in process.

The Institute will also work with other companies, partners, and specific programmes to create knowledge transfer to industrial development and innovation centres. Scaling is necessary, and acceleration is the challenge. At DTU, DTU Skylab is a natural partner, also when it comes to internationalization.

Seeking innovation opportunities through DTU's strategic partnerships

The Institute will promote innovation opportunities by actively seeking the possibilities for collaboration offered by DTU's strategic partnerships, including Nordic Five Tech, EUROTOCH, collaboration with Greenland Self-Government, and the Institute's partners BfR and ANSES.

The Institute also works determinedly to contribute to making DTU Industrial Partnerships an activity that provides value for the Institute's partners. This is done through joint study programmes, PhD projects, and research and development projects. The Institute has special strength in the marine area, which gives strong Nordic relations.

6 Partnerships

DTU National Food Institute has a large network among national and international research institutions, companies, and authorities.

The Institute enjoys good cooperation with the large research environments at the University of Copenhagen (UCPH) and Aarhus University (AU) on—for example—research projects, infrastructure, and educational activities. All eight Danish universities have joined forces in the START centre, where the purpose is to form the scientific interdisciplinary basis for implementing the green transition of the agricultural and food system. In 2022, the Institute will chair the START steering committee and will work to ensure that the centre gets off to a good start and boosts the Danish research system in this field.

On behalf of DTU, the Institute participates in the business promotion organisation Food & Bio Cluster Denmark (FBCD) to increase DTU's visibility and cooperation with—in particular—SMEs in Denmark.

The Institute has several joint PhD projects with DTU's international strategic partners and a strategic partnership with the two main independent food organisations in Europe—BfR in Germany and ANSES in France—with which the Department will continue to launch joint projects. The American Centers for Disease Control and Prevention (CDC) and the Food and Drug Administration (FDA), the European Food Safety Authority (EFSA), the European Centre for Disease Prevention and Control (ECDC), and the Dutch National Institute for Public Health and the Environment (RIVM) are also strategically important partners.

The Institute participates in Med-Vet-Net, a network among 13 European countries with focus on zoonoses, and the Institute will continue its involvement in the Global Centre for Food Safety and Quality (DISH) in partnership with The Hong Kong Polytechnic University in China, Lund University in Sweden, and the University of Bologna in Italy. The centre will potentially lead to greater cooperation with and access to the Chinese market in particular, as well as student exchanges. In addition, the Institute is involved in many networks and forums in the EU in the fields of health, food, and sustainability.

7 Human resources

7.1 Organization

The DTU National Food Institute's strategy supports its ambition to be a leading institution with strong groups which are rooted in excellent research and contribute to teaching, advisory services, and innovation.

Following an organizational change on 1 January 2022, the DTU National Food Institute consists of 14 research groups, Academic Support, Institute Secretariat, and Service Unit (see Figure 4). On the research side, the organizational change must support strong and focused research areas and interdisciplinary synergy between these. The academic and administrative support is anchored in the Institute's secretariats, which contribute to ensuring the Institute's day-to-day operations and support the research groups in their focus on research, teaching, innovation, and advice. The Academic Secretariat provides strategic and administrative assistance to researchers in connection with, for example, project applications and administration, implementation of authority agreements, and study administration, while the Institute Secretariat assists with, among other tasks, administrative system support, onboarding and offboarding, building/local issues, IT coordination, procurement coordination, communication externally and internally, and events.

Interdisciplinary coordination of research, teaching, advice, innovation, administration, and finance processes is embedded in the Institute's management. The coordinating leadership tasks extend across the Institute and clearly defines responsibility both internally and externally. The leadership task is thus located both in the line organization (staff) and across (academic) disciplines in a matrix.

In all its activities, the Institute consistently promotes collaboration internally in the Institute and across DTU in various working groups.

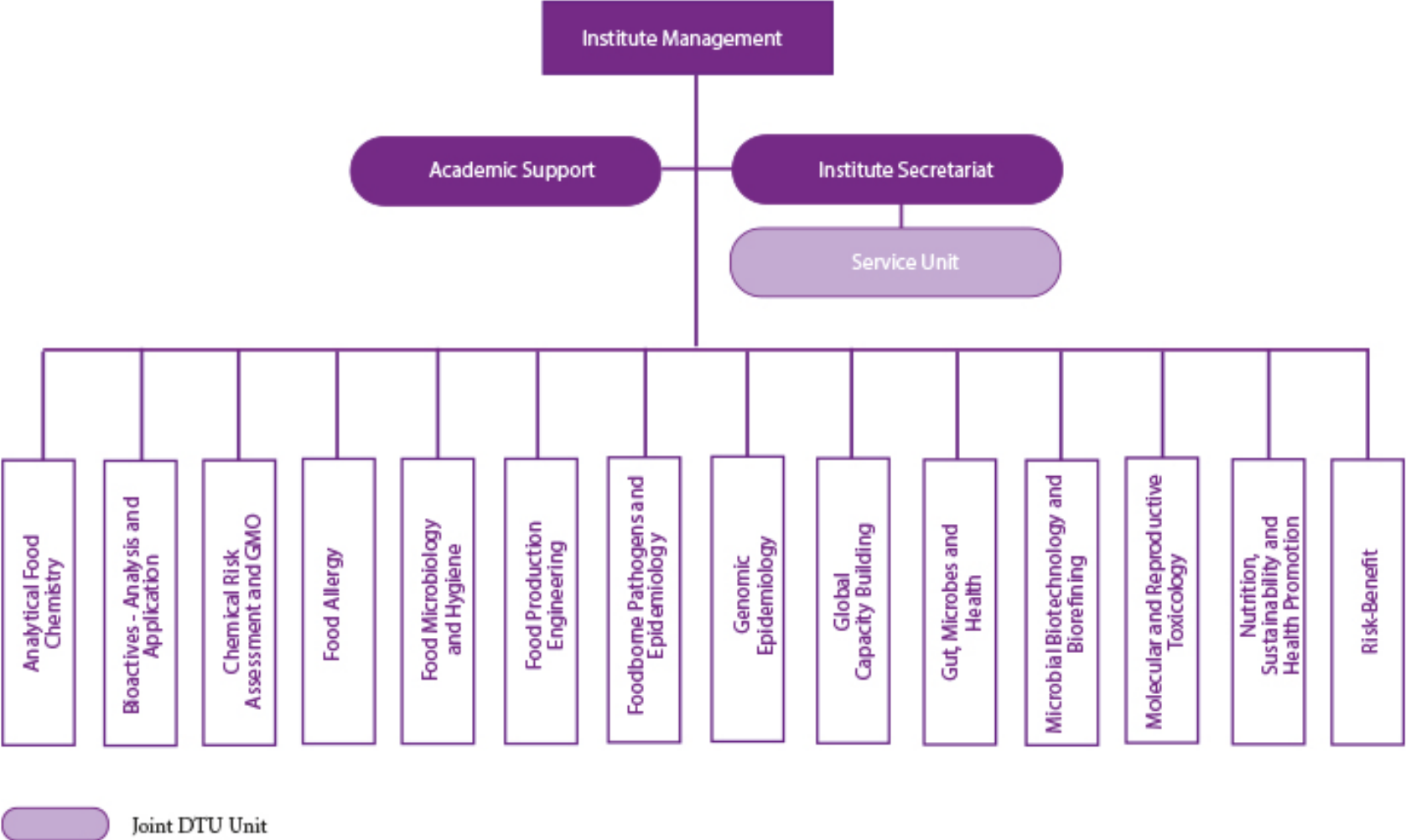


Figure 4. The DTU National Food Institute’s organization

7.2 Management and leadership development

In the coming UMV period, the focus will still be on implementing the recommendations in the international research evaluation from autumn 2019 and on talent development.

Commitment and motivation are driven by academically exciting projects aimed at meeting societal challenges. The work is meaningful and takes place in an environment in which individual employees can enter into a dialogue with management and are involved in the strategic work which is relevant to their day-to-day activities.

With the new organization, the role of group leader has been strengthened, giving a competence boost to the group leaders, who will fill the four management areas of the leadership role to a greater extent—see DTU's Leadership Foundation: academic management, resource management, personnel management, and strategic management. The Institute will initiate leadership development based on the different management competences of DTU Leadership Role and DTU Leadership Foundation.

There will be special focus on inclusive leadership, so that the Institute will be optimally equipped to maintain its leading position in innovation and research by bringing differences into play in an accommodating environment where there is room for new attitudes and ideas as well as for thinking differently. A strong management focus and designed processes are to support the work for even better complementary recruitment with special priority being given to a succession process and international staff.

Development of group leadership and institute management as well as well-being must also be based on management dialogues that provide managers with individual development points and support a manager-employee dialogue in everyday life.

7.3 Employee development

In the future, employees at DTU National Food Institute are to talk and work even more together across disciplines, academic competences, and cultures to create an inspiring working environment. In a developing working life, employees continuously assess their own work performance, so that they constantly work to improve in their field, while also thriving. Therefore, the Institute wishes to preserve a stimulating working environment with competent and helpful colleagues who support diversity, mutual respect, and recognition of each other as a natural part of their work culture.

With continued focus on essential criteria in research publications, attracting funding, providing original ideas, research/innovation at international level, establishing national and international networks, and the ability to teach and communicate research and innovation, DTU National Food Institute will maintain the DTU Tenure Track programme so that recruitment and retention of young talents support a strategic career development aim. DTU Tenure Track must also contribute to DTU National Food Institute's proactive work with career planning.

All employee development will be based on the good dialogue between employee and manager.

During the coming UMV period, an objective will still be Faculty rejuvenation and development of the lecturers' didactic methods. Correspondingly, the Institute will support and maintain the advisers' ability to act with academic and professional competence, impartiality, and credibility in the intersection between research, advice, policy, and the exercise of authority.

7.4 Attracting and recruiting staff

In general, DTU National Food Institute will increase its focus on attracting the best talents through the Institute's research level and visibility in the research world. The Institute believes that diversity in perspectives and ways of thinking leads to better performing teams and greater innovation, and the focus will therefore be on recruiting staff for entire teams and thus supplementing already strong teams. With the implementation of the Tenure Track programme, the Institute also aims to attract international talents.

The research evaluation in 2019 pointed out that the Institute needs to revitalize its recruitment strategy with focus on a future succession process. Therefore, the Institute will still draw inspiration from the Tenure Track programme in relation to position analysis, qualification of job advertisements with use of inclusive terminology, choice of advertising channels, and the further recruitment process to ensure that all job advertisements support the Institute's strategy and reach a field of applicants who are as qualified as possible. Also in this area, training in inclusive leadership will become a discipline to support the work.

7.5 Working environment

The coronavirus pandemic and the periods with restrictions and partial sending home of employees have forced the Institute's employees to work under other forms. The aim is still to use this experience to acquire greater flexibility in relation to working from home and ensure reduced environmental impact.

The focus will be on the employees' well-being and performance based on a differentiated approach, which also considers that a number of tasks require presence on campus and use of colleagues as sounding boards. In future, the exercise will be to learn from the experience in balancing motivation and work performance in a changing culture, while ensuring social cohesion at the Institute.

8 Material resources

8.1 Research infrastructure and laboratories

DTU National Food Institute's research infrastructure has been developed to supply and maintain data about foods, health, and production processes, and it is a key hub for all the Institute's activities, including participation in international partnerships, and attraction of competent researchers from Denmark and abroad.

The Institute was one of the main applicants behind the national research platform FOODHAY in 2019. Therefore, the Institute's investments are particularly affected by this grant until 2023. The investments are made in collaboration with the food science and technology environments at UCPH and AU.

In addition, DTU National Food Institute prioritizes annually to invest in continuous renewal of research infrastructure, both by replacing obsolete equipment and purchasing new equipment.

The DTU National Food Institute's growth in research grants and number of students requires investment in more and more new equipment. This creates the need for more special laboratories, and generally for more space for equipment and more people in the laboratories. In addition, the facilities must increasingly be open and presentable for external people, so that there is sufficient space to visit them and for external parties to have analyses and parts of their own projects performed via cooperation agreements. For example, it must be possible to make equipment purchased via the FOODHAY grant available to companies and others in the event of unutilized capacity. In future, the same is also expected to apply among the Eurotech partners. The specific needs are described under premises.

In addition, DTU National Food Institute expects increased external funding, especially regarding the green transition, which further increases the need for investment in new equipment and thus laboratory facilities that can accommodate this.

8.2 Premises

In particular, the activities in the chemical and biotechnological laboratories in building 202 are cramped, not least because of the concentration of the activities resulting from the relocation from building 221. The Institute's food technology facilities for research and teaching in building 227 also need upgrading, and it might be an advantage to locate them closer to the other activities in building 202. The same applies to the algae laboratory in the basement in building 221.

In addition, the Institute needs more space for new freezers to be able to store materials for new research trials and teaching purposes, research results from tests, and valuable collections such as strain collections and histology samples.

The DTU National Food Institute also needs more space for more elements in the microbiological areas, but hopes to be able to find solutions internally in the Institute when DTU Bioengineering vacates building 204. The institute would also like to take into use the BSL3* classified laboratory in building 205B.

Finally, more single-course students and the food-related study programmes generally create a need for extra space in both the specialist laboratories—where students need to get their hands on advanced research equipment—and in the teaching laboratories.

DTU National Food Institute collaborates with Campus Service on finding solutions to the most urgent needs, and actively contributes to analysing the needs in the second quadrant—together with the life science departments—where the long-term objective is to expand the area to meet the increasing space requirements

8.3 IT and GDPR

The Institute's databases contain considerable research capital. It is therefore important to safeguard data management and accessibility at all times. The Institute collaborates with—among other partners—DTU Compute on databases for global monitoring of infections and antimicrobial resistance, as well as with the WHO and the European Food Safety Authority (EFSA) on dietary and food data. The aim is to ensure better coherence between data across the Institute's disciplines and to increase digitalization by making more data available and visualizing them. The result will be increased utilization of data for the benefit of the Institute and other researchers as well as better presentation of data for the general public. The Institute also works to find the most suitable and secure infrastructure for collection, sharing, and quality assurance of data. A strategic IT project is to contribute to achieving parts of these goals in relation to selected data during 2022 and 2023.

A large part of the Institute's IT infrastructure is found in the laboratory environment. The objective is for data and instruments to be accessible from all workplaces, and for raw data and metadata to be captured centrally in the Institute's database environment. The Institute collaborates with other DTU departments on specialist software—for example regarding SAS, Origin Pro, and ACD.

DTU National Food Institute participates in a pilot project on IT organization at DTU and expects it to create greater synergy across DTU with better communication paths and more business-oriented solutions.

The changed organization is expected to result in a greater focus on compliance in relation to IT security, GDPR, and data management. The Institute will also continue its work to ensure an overview of greater strategic use of both data and systems as follow-up on an IT landscape analysis that AIT has contributed to performing.

9 Communication

The Institute's overall communication objective is to support DTU's basic narrative on the development of sustainable technology for people. As some communication tasks are centralized at DTU, the Institute will show nationally and internationally how especially the scientific advice and related research results make a difference by preventing disease and promoting health, producing sustainable technological solutions, and developing new and improved foods for the growing world population—thereby contributing to meeting several of the UN Sustainable Development Goals.

The Institute will thus continue to focus on news coverage and press work as well as dissemination and communication through the Institute's website, food.dtu.dk, and the Institute's Twitter and LinkedIn profiles. The Institute would like to make more extensive use of video and image animations.

DTU National Food Institute has several special dissemination and communication obligations—for example in connection with the research infrastructure platform FOODHAY and cooperation agreement with Food & Bio Cluster Denmark—which includes conducting events and providing information about new knowledge of relevance to the food industry. The Institute also coordinates the continued communication of messages of importance to food safety and nutritional health in Denmark to the authorities and disseminates results of risk assessments and other news from the EFSA, which forms part of the task of being an EFSA cooperation centre in Denmark.

A separate communication objective is to contribute to the recruitment of students for a new master's programme in sustainable and safe food production.

Another communication objective is to support internal communication at the Institute. This will especially be done via DTU Inside, which the Institute uses as the primary internal communication channel for essential employee information.

10 Process and employee involvement

The DTU National Food Institute's development goals and measures (UMV) have been prepared as part of a lengthy process, in which the Institute's employees have been involved in many ways.

In connection with the UMV process, all research groups have updated the strategy plans for their own group, including with descriptions of their strategic ambition and development to support DTU's strategy and the Institute's vision. At a meeting with research group leaders and the Institute's management, input has also been given to the Institute's research strategy with focus on being a driving force for digital and sustainable change in a global world.

The Institute's Heads of Studies have contributed to the preparation of Chapter 3 on study programmes, and the Institute's group leaders and advisers have also provided input on Chapter 4 on scientific advice. The employee side of the Collaboration Committee has provided input on Chapter 7 on human resources. The overall UMV has also been submitted to all research group leaders and the Institute's Advisory Board for consultation.

A coordinator from the Institute's management has prepared the individual parts of the UMV, and the Institute's management has discussed the Institute's development goals and measures. The final draft of the overall UMV has been prepared by the Institute's secretariat and approved by the Director of the Institute.

Following the presentation of the UMV to the Executive Board of DTU, the Director of the Institute will present an outline to the employees during autumn 2022.