

A man and a woman are sitting at a table, eating a meal together. The woman is smiling and looking towards the man. The man is looking down at his plate. They are both holding forks and eating. The background is a kitchen with various items on the counter.

Knowledge- and Innovation**agenda** **2018-2021**



Foreword

The Top Sector Agri & Food has the ambition to be a world leader in successful solutions for global challenges in the fields of agriculture and food. More specifically, our knowledge and innovation agenda focuses on the following topics:

- Tasty, healthy and safe food for a growing world population
- Climate neutral and robust food systems
- Circularity and resource efficiency of chains and food systems.
- Strengthening of innovation and business earning capacity
- Valorisation in successful chains.

The new knowledge and innovation agenda defines the ambition and direction for the investments in the Dutch agricultural food sector. The agenda is perfectly in line with the Rutte III Government Coalition Agreement, which has a large focus on the agricultural food sector. The Top Sector policy, aimed at a cooperation between businesses, knowledge institutes and government, will have a larger focus on economic opportunities that offer the following three main social themes: energy transition / sustainability, agriculture / water / food and quantum / high tech / nano / photonics. The Top Sector Agri & Food contributes to all three of these social challenges.

The Top Sector organises an annual public appeal (in March) to submit projects for financing. This gives businesses in cooperation with research institutions the opportunity to define the ambitions and priorities of the knowledge and innovation agenda. For more specific and the most current information, please check the website www.topsectoragrifood.nl.

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1. Our ambitions

The world is facing enormous challenges. In the lifespan of the upcoming generation, the world population will rise by 2 billion people. On top of that, 800 million people are currently starving or are lacking proper, nutritious food. Ultimately, this means we have to produce more food than ever before.

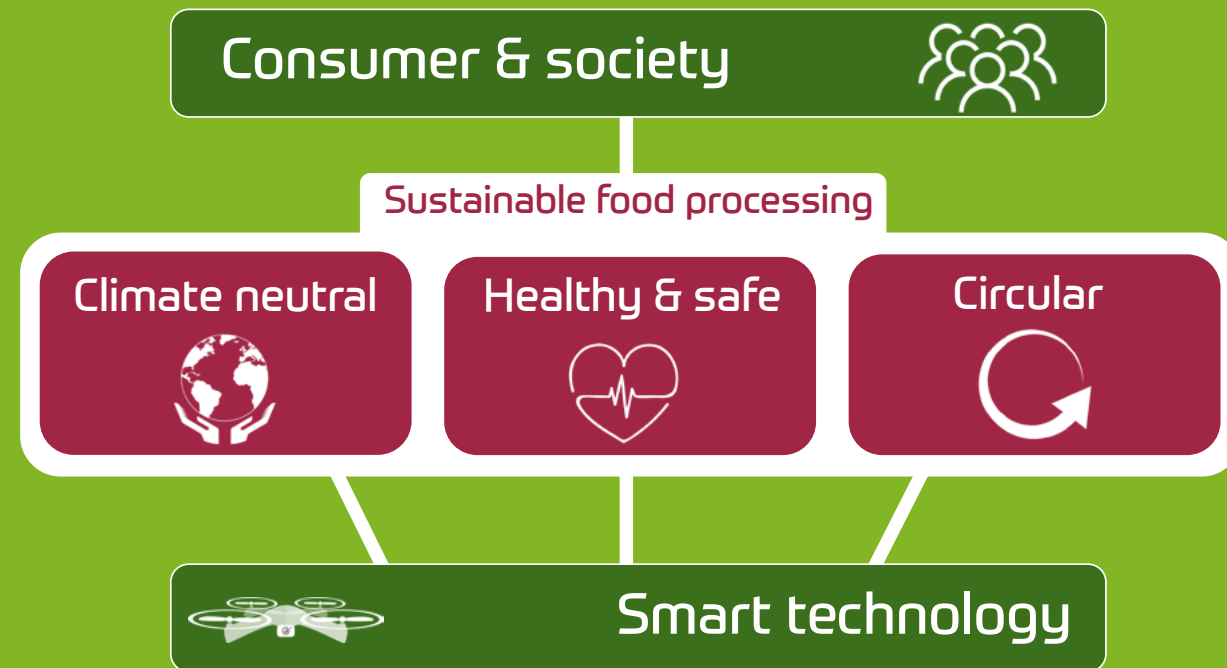
At the same time, various trends call for different kinds of food. Due to a worldwide increasing prosperity, demand for high-quality protein such as pulses, dairy and meat is growing. A growing share of the population is suffering from diet-related health problems (obesity, diabetes) and more and more consumers are consciously choosing for healthier, more sustainable food. With that, a large focus remains on the ecological sustainability of our food system. Even though the Dutch agricultural sector has the lowest impact on the environment, climate and biodiversity per kilogram of food worldwide, a further improvement is necessary and is also

possible. That is why extra attention needs to be paid to developing climate-neutral, sustainable and robust production systems, where circularity and reuse of waste and by-products are also important. Animal welfare is and will remain an important topic.

Challenges offer economic opportunities

These societal challenges offer great economic opportunities, for which the Dutch agricultural sector has important assets. We are an international market leader and have a strong, highly productive and innovative sector with very efficient processing and logistics. We have the best knowledge institutions worldwide and the public – private cooperation between businesses, knowledge institutions and government is in our genes. By joining forces, we can face societal challenges and at the same time strengthen the economic power of the sector. We do this nationally AND internationally.

5 Central themes



2. Focus on five central themes

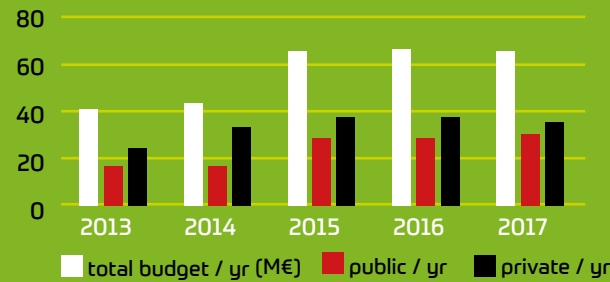
All changes we are facing – rising and ageing population, rising prosperity, urbanization, social-economic inequality and climate change – have one thing in common: in order to find actual solutions, cooperation is necessary. A cooperation between businesses, knowledge institutions and governments. Not only within the sector, but also outside of it. All this has to be done in line with national and international diaries.

The Top Sector Agri & Food has the ambition to be a world leader in successful solutions for global challenges in the fields of agriculture and food. The top sector's focus developing new knowledge and innovations is combined into five central themes:

1. **Consumer and society:** consumption of sustainable, safe and healthy products, a healthy diet, a healthy lifestyle, consumer-driven chains, information and transparency in chains, a fair price, consumer confidence.
2. **Climate neutral production systems:** ecologic and economic shelf life, reduction in emissions, efficient use of resources, reduction of greenhouse gasses, bio-diversity, good soil quality, sustainable water management, healthy plants and animals, optimal animal welfare.
3. **Healthy and safe products and production processes:** development of safe products for a healthy diet, sustainable food processing (efficient, mild conservation), aimed at the whole chain, guarantee the health and safety of food, animals and production processes.
4. **Circular systems:** resource efficiency, closing of cycles, loss limitation, adding value to side and residual flows from the agricultural food sector for food and non-food.
5. **Smart technology:** ICT/ big data, robots, drones, sensors, innovative materials and other technology that contributes to efficient, climate-neutral, circular production and even more healthy and safe food.



Budget per year (M€) in PPS



Budget
40 new public-private cooperation projects (PPS) are being started annually, a total of 223 at the end of 2017. The PPS annual budget is around 65 million Euros, 30 million from public funds and 35 million from private funds. A total of almost 300 million Euros has been invested in the last 5 years.

Number of companies
141.825
9,3% NL



**Key figures from
the Top Sector Agri
& Food (figures for
2015, CBS Monitor
Top Sectors 2017)**

Employees
662.000
9,4% NL



Output value
€ 62 mrd
14,5% NL



Production
€ 136 mrd
10,5% NL



Agri & Food
Market share
6,4%

R&D expenses
€ 0,70 mrd
9,1% NL



Added value
€ 47 mrd
7,6% NL



In line with national and international agendas.

The knowledge and innovation agenda is in line with the most important national and international policy agendas, such as

- the Top Sectors' joint agenda (chapter Agriculture and food)
- the National Science Agenda (in particular Route Sustainable production of healthy and safe food)
- the departmental Food Agenda
- the Agenda Circular Economy
- the Energy Transition, including the five transition paths that all interact with the agri food domain.
- NL Next Level, the joint investment agenda of VNO-NCW, MKB-Nederland en LTO Nederland.

On a European level, there is a close link with the ambitions of Food 2030, Agricultural Research & Innovation, the Biodiversity Strategy and the 10 priorities of the EU commission. On a global level, a link is being made with the Sustainable Development Goals of the UN: Poverty, Hunger, Inclusive society, Economic growth, Employment, Liveable cities, Sustainable consumption and production, Climate change and Protection of bio-diversity.

2.1 Central theme Consumer & Society

Ambition

The Top Sector Agri & Food aims to develop consumer-driven chains that develop, produce and market healthy, sustainable products in an innovative and efficient manner and with that contribute to general social welfare and to an economically strong chain. The focus is on the consumer who is capable of making choices and opts for a healthy diet and a healthy lifestyle.

Subthemes

Within the central theme Consumer & Society, the following sub-themes are identified:

- The consumer who is capable of making choices: personalised dietary recommendations, food and concept development for the general population and target groups, buying behaviour and preparation (product and recipe);
- Providing for a supply of healthy, safe and sustainable products; developing consumer-driven chains with particular attention for retail, food service and the care sector, new revenue models for the agri and food sector
- Social acceptability and consumer confidence: citizens committed to the food production systems, education, increase confidence

in and image of the agri and food sector, transparency in the chain.

Activities

The current activities include 20 actual PPS projects and programmes that were on the previous agenda of the roadmaps Consumer and Chain and Food and Health. Besides, there are general activities focusing on increasing knowledge of the agri and food sector and its products as well as on the connection with society. Examples of this are the Dutch AgriFood Week and the programme Jong leren eten [learning to eat at a young age].

In the coming years, the Top Sector Agri & Food specifically is aiming for a hands-on programme for consumer research together with the retail and food service sectors as well as a fundamental programme “Transitions and human dimensions/ Healthy lifestyle innovations” together with the Top Sectors Creative, Energy, Life Sciences & Health and Horticulture & Source Materials.

Examples of current projects

Trusted Source

Choosing healthy food that is being produced in a sustainable manner requires consumer awareness. The consumer needs specific knowledge and correct information at the right time. Modern information systems can help achieving that, as long as they have access to reliable sources. At this moment in time, the supply of information about food products is rather fragmented, incomplete and of insufficient quality.

This project designs a reliable, digital access to consumer information about food products. It consists of information regarding origin, composition and nutritional value as well as the certification of these products. There is a differentiation between product types (for example “beef”) and specific products the consumer buys and consumes (“this piece of beef”). FNLI, CBL, LTO, GSI and Wageningen University & Research participate in this consortium.

Personalized Nutrition & Health

In order to keep health care affordable, effective prevention programmes are a necessity. Over the past few years, life style advice through mass media campaigns have not led to significant improvements in public health.

The programme develops a method to measure someone’s nutritional intake and state of health and translates this into a personal advice. The expectation is that consumer’s healthy behaviour is likely to be continued over a longer period due to the rapid feedback on their behaviour and therefore considerably reduce the risk of diet-related diseases.

Ahold, Bayer CBS, CropScience, Danone, DSM, FrieslandCampina, Campbell Soup, Google Ireland, Jumbo, Kaiteki Institute, Migros, NIPED, Noldus Information Technology, Philips, Priva, PS In Food Service, Sense Health, SmartWithFood, Vital 10, VitalinQ, Addam, Flavourspace, the council of Rotterdam and Wageningen University & Research participate in the consortium.

2.2 Central Theme Climate Neutral

Ambition

The Top Sector plans to help develop climate neutral, efficient, durable and robust production systems, with attention to animal and plant health, animal welfare and biodiversity. Climate neutrality is the dot on the horizon indicating where the ambition lies to reduce or to compensate for the emission of greenhouse gases.

Subthemes

The following sub-themes are identified:

- Integral, more durable and robust production systems: reduce emissions, efficient use of resources, use of minerals, sustainable raw materials, bio-diversity, climate adaptation and mitigation, circularity
- Greenhouse gases: CO₂, nitrous oxide and methane reduction, efficiency and storage
- Soil and water: good soil quality, sustainable water management
- Healthy animals and people (crossover with Healthy and Safe): antibiotics reduction including reduced antibiotic resistance, manage zoonoses, resilient animals, interventions, protection and improvement of animal health, animal welfare
- Plant health (Crossover with Horticulture & Starting Materials)
- Sustainable fishing industry and aquaculture

Activities

The current activities include 48 ongoing PPS projects and programmes that were on the previous agenda of roadmaps Robust Plant-Based Production and Sustainable Livestock Farming. There is also a close cooperation with the Top Sector Horticulture & Starting Materials within the theme plant health, which includes approximately 40 PPS projects.

In the next few years, the Top Sector Agri & Food will put stronger emphasis on:

- Action plan Healthy Plants – Healthy Planet (in the context of NL Next Level, together with the Top Sector Horticulture & Starting Materials)
- A programme for climate neutral agriculture and horticulture (together with Top Sector Horticulture & Source Materials)
- A social innovation programme “Healthy Animals and People” (crossover with central theme Healthy and Safe).
- A programme called “Blue Growth”, in which the prime focus is the use of fresh and salt water for safe and healthy food.

Examples of current projects

Better soil management

Healthy soil does not only contribute to higher crop yield, but is also beneficial for the climate, contributes to good water management and creates biodiversity. Soil quality is, however, under pressure worldwide.

In the project, several methods to improve soil quality are being examined. Ways to improve soil fertility, strengthen soil resilience, how integral soil management can be reinforced and what effect soil treatment has on soil structure are being investigated.

The project gives an insight into for example the effects of reduced soil treatment on several crops, how organic matter content can be raised and what climate-proof measures can be taken.

Participants are Agrifirm, AVEBE, CZAV, Royal Cosun, Stichting IRS and Wageningen University & Research.

Sustainable dairy chain 2.0

The dairy industry and dairy farmers want the Dutch dairy sector to be a frontrunner in sustainability worldwide. Through Sustainable Dairy Chain, Dutch dairy companies and dairy farmers strive towards a future-proof and responsible dairy sector.

The project develops and applies knowledge in the field of climate neutral operations, improved animal welfare, preservation of grazing and preservation of biodiversity and environment.

At the moment, a revenue model for mono fermentation is being developed as well as a calculation module for greenhouse gases, which gives dairy farmers an overview of their production and action perspective how to reduce this. The Energy Scan will give dairy farmers an insight into how to reduce their energy use.

The goal of the Sustainable Dairy Chain is for more than 90% of dairy companies to be under the SDa value for antibiotics. In 2015, this goal has been exceeded (99%). The Sustainable Dairy Chain also aims for a rise in the average retirement age of dairy cattle. The thought behind this is the improvement of hooves, health of the udder and fertility, so that forced retirement will be reduced. In order to assess animal welfare, the Welfare Monitor will be implemented into the Cow Compass. This monitor will measure animal welfare on dairy farms in a practical way.

Zuivel NL, NZO, LTO, Wageningen University & Research are involved in this programme.

2.3 Central Theme Healthy & Safe

Ambition

This central theme aims to contribute to improving public health by producing healthy, safe and tasty food. The salt, sugar and fat contents in products are reduced and the fibre content is increased. The reduction of food allergies is also part of the central theme. A sustainable, energy and water efficient way of post harvest processing with minimum waste is a clear goal for the production process. A precondition is food safety, as well as human health in relation to animal health in livestock farming (1Health).

Subthemes

The following subthemes are being identified:

- Development of products and processes for a healthier diet: redefinition, research into the relationship between products (taste, smell, texture), purchase, preparation and a healthy diet, reduction of food allergies and strengthening of the immune system.
- Sustainable food processing: efficient, mild and aimed at the entire chain, quality and safety in the chain, packaging and storage, reducing food waste.

- Health and safety of food and animals: micro-organisms, use of antibiotics, zoonoses control, safe production methods, reduced environmental pressure, pathogens and particulate matter.
- Food and health: methods for measuring the effects that food has on health (including food allergies).

Activities

The current activities include 41 ongoing PPS projects and programmes that were on the previous knowledge and innovation agenda in the roadmaps High-end Products and Food Safety. There is also a close cooperation with TiFN, which includes approximately 14 PPS projects.

In the next few years, the Top Sector Agri & Food will specifically focus on:

- The cooperation with the Sustainable Food Initiative, which is currently being developed with TiFN.
- Strengthening the One Health initiative (through NWO/ZonMW with LSH, the social innovation programme Healthy People and Animals).
- A social innovation programme called Food Safety.

Examples of current projects

To the next generation of meat substitutes

With regard to nutritional value, vegetable proteins would be very suitable to cover a part of the increasing demand for high quality proteins. And yet, only a small percentage of animal proteins is being substituted for vegetable proteins. The main causes are the different structure and taste sensation.

In this project, in which Wageningen University & Research and the TU Delft cooperate, a technology is being developed to create the next generation of better tasting meat substitutes in order to widen the market for vegetable proteins.

Partners are: Meyn Food Processing Technology, Avril SCA, Givaudan, Saturn Petcare, Nutrition et Nature SAS, De Vegetarische Slager, Unilever, Ingredion.

Sustainably frozen and tasty

Freezing is a much-used method to prevent food from going off and losing value. It therefore contributes highly to the reduction of food waste. Frozen food has a worse image than food prepared from fresh products due to energy use, quality loss, weight loss and food sticking together during storage.

The project gives an insight into the physical causes of quality loss of frozen products. With this new knowledge, improvements to the processing and distribution process can be made in order to improve product quality and reduce energy use.

Lamb Weston-Meijer, Cargill, Koninklijke Nederlandse Vereniging voor Koude, SOK, Food Process Solutions Corporation and Wageningen University & Research participate in this project.

2.4 Central Theme Circular

Ambition

The main focus of the central theme Circular is the closing of cycles, limiting loss and adding value to side and residual flows from the agricultural food sector. The whole chain is being involved, from primary production to processing and end products.

The following subthemes are being identified:

- Development of new and adjusted raw materials (green raw materials)
- Valorisation of proteins, carbohydrates, oils and fats
- Integrated (small-scale) biorefinery
- Processing and valorisation of animal manure

Activities

The current activities include 16 PPS projects and programmes that were placed in the roadmap Biobased Economy. This roadmap is part of the knowledge and innovation agenda of the TKI-BBE (BioBased Economy) (a crossover between the Top Sectors Agriculture & Food, Chemistry and Energy). The TKI-BBE distinguishes the following themes, each of them very relevant to the agri and food sector:

- (Micro) biological conversion
- Chemical-catalytic conversion
- Thermal conversion
- Solar capturing (directly converting CO₂ into raw materials and fuels by using sunlight)

In the next few years, the Top Sector Agri & Food will specifically focus on:

- Valorisation of animal manure: NL Next-Level initiative and NWO-programme with Carbohydrate Competence Centre (CCC)
- Biomass and food (with Transition Team Circular economy)
- High-end valorisation option for biomass and residual flows (with Transition Team plastics)
- Making raw materials more sustainable/ Raw Materials Agreement
- Development of new, more circular chains through integrated bio refinery concepts and adding value to side flows.

Examples of current projects

Sustainable packaging materials from agri side flows.

Side flows from the agricultural industry contain valuable components that can be used in non-food applications amongst others. Sugar beet pulp for example contains saccharic acid that can be used for the production of PET-materials. However, very often there are no technologies available to extract these components in a cost-effective way.

This PPS-project, with Refresco, Corbion, Wageningen University & Research as partners, develops technologies to extract these components in a cost-effective way. This has 2 benefits: added value to a raw material as well as reduced dependency on fossil raw materials.

Bio-refinery for raw material availability and flexibility

Processing agricultural residual and side flows for non-food applications is very desirable in order to become less dependent on fossil raw materials and add value to crops. In the past few years, some bio-refinery processes have proven to be economically viable, for example extraction of fibre from potato pulp and processing mixed protein into high quality applications. In this project, technologies are being developed up to the demo phase. This creates opportunities for extracting proteins from side flows from the potato-, vegetable- and egg industry, environmental friendly processing technologies for sugars for the chemical sector.

Participants are Teboza, Provalor, EMsland Stärke GmbH, Egga Food, Lutèce and Wageningen University & Research.

2.5 Central Theme Smart Technology

Ambition

In all central themes, technology is of great importance. In particular it concerns a smarter and more precise way of producing and processing, for example by using sensors and drones, raw material-saving technologies, application opportunities of the internet-of-things, block chains, the deployment of data-analysis and system architecture and system integration.

In this central theme, there is cooperation with the Top Sector High-Tech Systems & Materials (HTSM) and the Top Sector Horticulture & Source Materials which all operate under the umbrella of High Tech to Feed the World (HT2FtW). The following themes are being distinguished:

- Data collection: sensors, detection, vision-systems
- Analysis and use of data: ICT, Big Data, interpretation (from data to information)
- Automation and monitoring: activation, manipulation, handling, robotics
- Materials and processing: nanomaterials, soft matter, smart surface

Activities

The current activities include projects and programmes that were placed in several roadmaps in the previous knowledge and innovation agenda.

In the next few years, the Top Sector Agri & Food will focus on:

- Digitalisation agricultural food sector (NL Next Level) and collaboration with the cooperative DataHub
- Arranging joint calls with HTSM and Horticulture & Source Materials for HT2FtW
- Development of a fundamental programme HT2FtW (through NWO)



Examples of current projects

On the road to precision agriculture 2.0

Precision agriculture in The Netherlands is still very much based on location technologies and linear systems. By gathering and analysing GEO- and sensor information, a big step can be made. Cultivation measures can then be planned optimally in terms of time and location. To make all this possible, a considerable R&D effort is necessary. Integration of several components, like sensors, data, models, ICT and mechanisation (implements) will lead to effective and sustainable applications.

Aerovision, Agrico, Agrifirm Plant, Agrometius, Avular, Bayer CropScience, BO akkerbouw, Cosun / Suikerunie, Dacom / Crop-R, HZPC, Kverneland Group Nieuw-Vennep, several avenue tree growers (7 companies) and flower bulb growers (1 company), LTO Noord, NAK, Neo, Phenovation, Stichting HWodKa, TerraSphere Imaging & GIS, ZLTO and Wageningen University & Research participate in this programme.

Data intensive smart agri food chains

Data-intensive land cultivation management, storing and processing of potatoes, grains and roughage can contribute considerably to making agri food chains more sustainable.

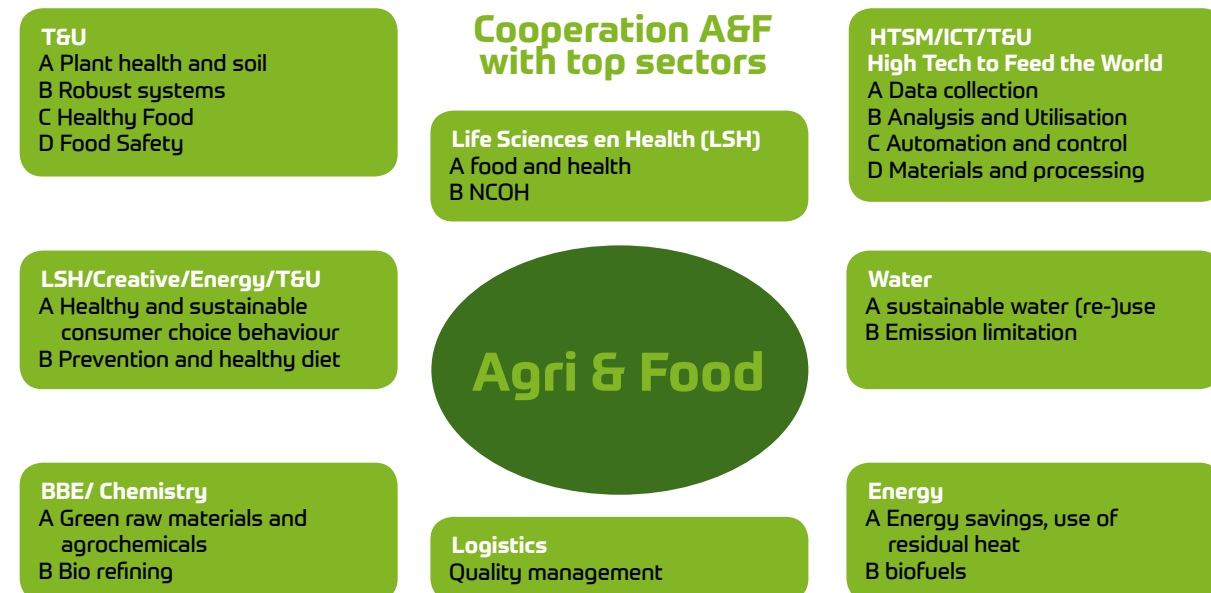
In this project, three practical case studies, in which data from sensors, machines and internet data platforms are being combined, are being drawn up. These data are being analysed and subsequently used to make cultivation decisions. Data on nutrients, relevant environmental factors, substances and quality are being converted into concrete management advice for man, animal and machine. The data are collected real-time and location- and object-specific as much as possible.

Participants are Agrifirm, Cumela, BO-Akkerbouw, Meijer Breeding, McCain, LTO Noord, ZLTO, Cosun/Suiker Unie, FME, TU-E, NLR and Wageningen University & Research.

3. Crossovers

The aim for the 2018-2020 period is to strengthen the cooperation with the other sectors. This will be done in accordance with current developments in policy and politics as lined out in the Government Coalition Agreement.

In the past years, several crossovers with other top sectors have been made. With the Top Sector Horticulture & Source Materials in the field of soil and plant health and in the programme High Tech to Feed the World. The Top Sector High Tech Systems & Materials is also closely involved in this programme.



The priorities in the cooperation with other top sectors are:

- Horticulture & Source Materials: sustainable plant-based production systems, Plant Health, Soil, Food and health, food safety
- High Tech Systems & Materials/ ICT and Horticulture & Source Materials: as part of High Tech to Feed the World (HT2FtW), cooperation in the field of high tech sensor technology and vision, ICT and big data, automation and robotisation, smart materials and process technology
- Life Sciences & Health, Creative, Energy, Horticulture & Source Materials: transitions and the human dimension. In the programme, the top sectors cooperate towards healthy and sustainable consumer choice behaviour (consumer capable of making choices)
- Chemistry, Energy, Biobased Economy: circular and biobased economy concerns the development of technology and production processes for “green” raw materials and substances, the development of high quality biobased plastics and improved bio refining processes (total value creation)
- Life Sciences and Health: relationship between food and health (TNO), Netherlands Centre for One Health (NCOH)

In the next few years, the cooperation is being intensified:

- On the social theme “energy transition/ sustainability”, there is a cooperation with the Top Sector Energy on the subjects of bioenergy, heat (use of residual heat), reduction of energy use and greenhouse gas emissions. The cooperation with TKI-BBE is being intensified in this area. With the Top Sector Logistics, solutions for circular networks are being developed.
- On the social theme “agriculture/ water/ food”, there is a cooperation with the Top Sector Water on the subjects of sustainable water management and water use and emission reduction in agriculture, horticulture and processing. Optimisations for quality management of (fresh) food products are being developed with the Top Sector Logistics.

The different top sectors’ shared agenda is organised through the “Social challenges and Key technologies”. The core of the knowledge and innovation agenda has been included in the Social challenge Agriculture and Food. Also of importance are: Health and Care, Climate and Water and Circular Economy.

4 Organisation, procedures and budget

Organisation

The Top Sector Agri & Food is structured in seven working areas: Knowledge and Innovation, Internationalisation, Human Capital Agenda, Market & Society, SME & Region, Sustainability and Start-ups. TKI Agri & Food executes Knowledge and Innovation. The aim is to improve the interaction between knowledge and innovation and the other working areas.

The TKI organises an extensive network of companies, knowledge institutions and governments that cooperate on innovation, organised through TKI management, TKI bureau, roadmap commissions and PPS consortiums. An overview of this network can be found in appendix 1. In the new Knowledge and Innovation Agenda, the current roadmaps are clustered into five central themes. The TKI organisation will be adjusted accordingly. Per central theme, teams are being formed consisting of one leader assisted by a core team of experts (max. five people) from the golden triangle government, business world and knowledge institutions. Around that core group, wider groups who act as sounding board are being formed (including the current roadmap commissions). Depending on the theme, this could be either one or more groups.

The execution of research and innovation projects lies with the PPSs. Per PPS, there is a steering group and a project team.

The steering group consists of at least the coordinator of the PPS, mostly a private party, and a representative of the knowledge institution involved. In a few PPSs, governmental representatives are also involved.

Procedures

TKI Agri & Food organises and supports the development of public-private cooperation projects through the following procedures and instruments (for further notes, see appendix 2)

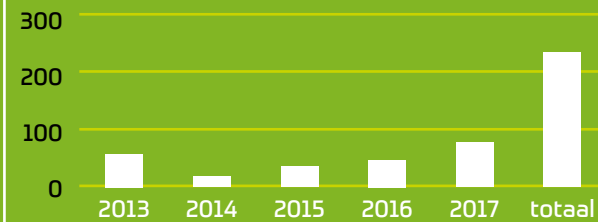
1. Appeal for PPS projects co-financed by Wageningen University & Research capacity or TKI allowance.
2. Application and use of TKI allowance
3. Appeal for Seed Money Projects Internationalisation
4. Development of Strategic and Social Innovation Programmes
5. Co-financing of EU projects at Wageningen University & Research
6. Setting up calls for academic research in cooperation with NWO
7. Deployment of innovation brokers
8. Organising network activities
9. Setting the agenda with the EU and regional



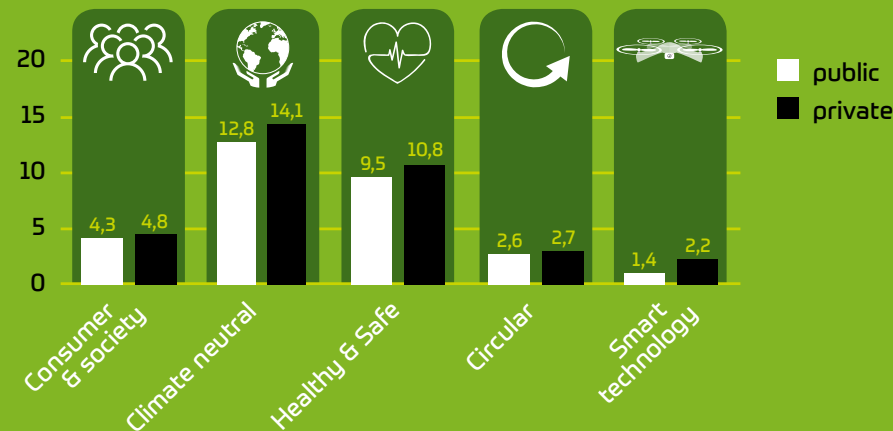
The budget for the instruments (especially numbers 1-5 as well as the agreements with NWO) is being defined in the Knowledge & Innovation Contract (KIC), which is concluded with the government based on the knowledge and innovation agenda.

Apart from the current instruments, attention will be paid to the connection with the Top Sector's other working areas, for example the Human Capital Agenda and the involvement of educational institutions (through the PPS appeal, through the Stichting Innovatie Alliantie and the graduate schools). More opportunities for application of already acquired knowledge (valorisation) and innovation support through for example SBIR, Start-up- and Scale-up funds, living labs and demo arrangements are also being looked at. These instruments are particularly important for the working areas SME & Region, Internationalisation, Sustainability and Start-ups.

Number of new PPS-projects



Budget (M€) per central theme in 2017



5 Final word

With the five new central themes in the knowledge and innovation agenda, the Top Sector Agri & Food wants to sharpen the focus on subjects that play a major role in the agricultural food sector, the Dutch economy and society. These subjects are in perfect line with the Rutte III Government Coalition Agreement, in which the top sector policy is strongly focussed on the social themes energy transition/ sustainability, agriculture/ water/ food and quantum/high tech/nano/ photonics. The extra investments pledged in the Government Coalition Agreement are of major



importance to solve social issues through innovations and turn these into economic opportunities.

The knowledge and innovation agenda pays more attention to the development of smart technology. Within all central

themes, new, smart technologies can make a major contribution to solving the challenges.

The Top Sector organises an innovation ecosystem in which companies and knowledge institutions look up and find each other and cooperate in a public-private partnership. Setting this up takes time. After the start in 2011, a significant network has been developed in which 400 companies (roughly half of these are classed as SME) and 30 knowledge

institutions are involved in 223 PPSs. Apart from that, a large number of MIT projects have been started.

In the next few years, the coherence between the several PPSs will receive more attention. The Top Sector will go for more for integral programming; the content will be leading and as many instruments as possible will be used to contribute to that. The execution of PPSs will also be followed more closely and adjusted where needed.

Two more points deserve special attention. Since 2011, the annual governmental contribution to knowledge and innovation has been reduced significantly due to the withdrawal of FES funds, policy funds and transition funds. At the same time, the product boards have been cancelled, which means that the possibility of research funding from the primary sector has virtually been stopped. In this context, the Top Sector has set up new PPSs with the remaining product board resources and financing by chain parties. In order to reach the ambition 2018 2021, a financial impulse for the agri food sector from the government is necessary. The investments pledged in the Government Coalition Agreement create new opportunities. Apart from that, it is important for trade organisations and producer organisations to be able to raise resources from agricultural businesses for knowledge and innovation at relatively short notice. It is only with an impulse from both sides that the present knowledge and innovation agenda can be put into practise.

Appendix 1: Organisation and participants Top Sector (01/12/2017)

The Top Sector Agri & Food consists of a network of companies that cooperate with knowledge institutions and governments.

The **topteam** consists of:

Aalt Dijkhuizen (chairman)
Joris Baecke (farmer, LTO Nederland)
Raoul Bino (Wageningen University & Research)
Frans Keurentjes (dairy farmer, FrieslandCampina)
Marit van Egmond (Albert Heijn, CBL)
Ruud Huirne (Rabobank)
Bert Jansen (Avebe, FNLI)
Jan van Rijsingen (entrepreneur, SME)
Marjolijn Sonnema (Ministry of Economic Affairs)

The TKI Agri & Food **management** consists of:

Aalt Dijkhuizen (chairman)
Raoul Bino (Wageningen University & Research)
Marian Geluk (FNLI)
Rob Hamer (Unilever)
Leo den Hartog (Nutreco)
Kees Romijn (LTO Nederland)
Bas Rüter (Stichting Ekokeur)
Anita Scholte op Reimer (Ahold)
Niek Snoeij (TNO)

In attendance from the government are Michel Berkelmans (Ministry of Economic Affairs) and Charles Wijnker (Ministry of VWS).

The **TKI-bureau** consist of:

Kees de Gooijer (director)
Wijnie van Eck (deputy-director)
Steven Angelino (secretary)
Marleen Scholte (management assistant)
Ineke de Boer (controller)
Michiel Sytsma (finances)
Bert van Rees (communication)
Cor Wever (contact LNV)
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Input for the Knowledge and Innovation Agenda has been given by:

Businesses: Agrifirm, Agroconnect, Ahold, Avebe, Avined, Bionext, BO Akkerbouw, Breed4Food, CBL, Cosun, COV, Danone, De Heus, DSM, Euroma, Flynth, FME, FNLI, Foodworkx, Friesland Campina, GroentenFruithuis, Heinz, Hutten catering, HZPC, KDV De Hoeve, LTO Glaskracht, LTO Nederland, Mars, Nevedi, Newtricious, Noldus, POV, Scelta Mushrooms, Suikerunie, TiFN, Triodos, Unilever, Van Drie Groep, VDN, ZLTO

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Participants in **PPSs** are numerous.

400 companies (half of these are classed as SME), 30 knowledge institutions



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