

**Applied research**  
as a knowledge accelerator

Strategic Research Agenda for  
Universities of Applied Sciences (HBO)  
2022-2025

**Vereniging Hogescholen**

# Applied research as a knowledge accelerator

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# Foreword

How do we counter the energy poverty that has arisen in the private rental sector? How do you strengthen the cyber resilience of SMEs? And how can we repurpose scrapped wind turbines as new building material? These are just three of the countless examples of current, applied research going on at universities of applied sciences. This research is connected to great social challenges in the areas of energy, climate, technologisation and equity. To tackle these challenges, we need new knowledge that we can quickly convert into new products and solutions. The applied research at universities of applied sciences is a key link between fundamental research and our society.

In recent decades, applied research at universities of applied sciences has developed rapidly. The 36 universities of applied sciences in their regions have often taken the lead in public-private partnerships aimed at knowledge development. These partnerships have given rise to living labs, field labs, innovation workshops and centres of expertise, forms of cooperation in which universities, companies, governments and often other knowledge institutions participate. Everywhere in the Netherlands there are now wonderful examples of professors whose resourceful approach and broad networks show that they are a crucial link in regional knowledge and innovation ecosystems.

For example, applied research at universities of applied sciences is directly fed by current questions from society. The combination of applied research and education also makes universities of applied sciences the natural partners for small and medium-sized enterprises when it comes to innovation. The research helps entrepreneurs innovate and ensures that new insights are delivered directly into the curriculum at universities of applied sciences. This is essential so that courses at universities of applied science continue to fit well into the regional labour market with applied research. The regional aspect is important, because about 85% of all graduates go to work in the region in which they are educated. The university as a knowledge accelerator.

This strategic research agenda outlines how universities of applied sciences can give a further boost to the impact of applied research so that they can continue to contribute as much as possible to the development of our knowledge society. The two shared ambitions are also central to the exploration launched in 2019 by the Association of Universities of Applied Sciences, the Ministry of Education, Culture, and Sciences, and the SIA regarding the future of practice-based research at universities of applied sciences. First, applied research at universities of applied sciences must be further integrated into the regional, national and international knowledge ecosystem. Secondly, universities of applied sciences need to be further equipped for their role as knowledge institutions, in particular with sustainable and effective research groups.

**Maurice Limmen**

*President, Vereniging Hogescholen (Association of Universities of Applied Sciences)*



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# Applied research

In recent years, universities of applied sciences have built a strong foundation for research. Now more than ever we must work to strengthen applied research, because we are facing major societal transitions in the areas of climate change, health, safety, digitisation and social equality. Research plays an important role in navigating these transitions. It is essential that each knowledge partner, universities of applied sciences, traditional universities and TO2 institutions each do their part in this effort.

Universities of applied sciences make their contribution in the form of research for and with practical applications. In technology, healthcare, ICT, education and the creative sector, researchers from universities of applied sciences work together on innovation with partners such as in SMEs, businesses, hospitals and municipalities. They find practical applications for new knowledge, bringing this knowledge to society. In this way, applied research contributes to breaking the 'knowledge paradox', the phenomenon that knowledge is often available, but not yet used. The applied research of universities of applied sciences is therefore an important accelerator of knowledge in social issues. Societal transitions also have a major impact on the labour market. Along with lecturers, researchers ensure that university of applied science students are trained with the most up-to-date knowledge. And with their broad networks, professorships are an important link in regional knowledge ecosystems.

There's work to be done. Although applied research has been given a place in the research landscape of the Netherlands, the potential of research at universities of applied sciences has not yet been fully appreciated. This agenda shows how applied research will be strengthened in the next four years, what universities of applied sciences need and what they can do for themselves. This agenda focuses on the further expansion and sustainability of applied research at universities of applied sciences. The agenda will serve as a compass for the continuing development of universities of applied sciences and research institutions in which research, in conjunction with teaching and professional practice, will occupy an autonomous role in the Dutch knowledge landscape.



## Practice based

The research that is carried out within professorships at universities of applied sciences is called applied research<sup>1</sup>. This research has undergone dramatic development over the past 20 years: from the work of pioneering professors to firmly-anchored and enduring professorships with impact.

This rapid development is reflected in the various studies, advice and evaluations that have been published in recent years.<sup>2</sup> It is research that takes place in, with and for practical applications and it is linked to higher vocational education. With applied research, universities of applied sciences connect different parties, different types of knowledge, and different disciplines with education and research. As a result, universities play an indispensable connecting role in regional knowledge and innovation systems and act as knowledge accelerators.

As a result of the societal transitions that the Netherlands is facing, the demand for well-trained professionals is increasing,<sup>2</sup> along with the demand for practical knowledge for the development of industries and disciplines. Applied research provides practical and applicable knowledge that is important for the success of social transitions. The benefits extend into<sup>4</sup> higher vocational education, the further development of knowledge and the innovation of professional practice. The applied research conducted at universities of applied sciences fits well with the needs of professional practice, such as SMEs: it is short-cycle, multidisciplinary and practical and contributes to the training of professionals.

The interaction between education, research and professional practice characterises applied research. After all, applied research always takes place in a co-creative process with partners from education, research and professional practice. This cooperation involves the questions raised, the implementation and the application of the research. This is why applied research usually takes place in networks, is multidisciplinary in nature and is usually short-cycle within longer-term research lines.

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1 Sometimes this form of research is called practice-based research

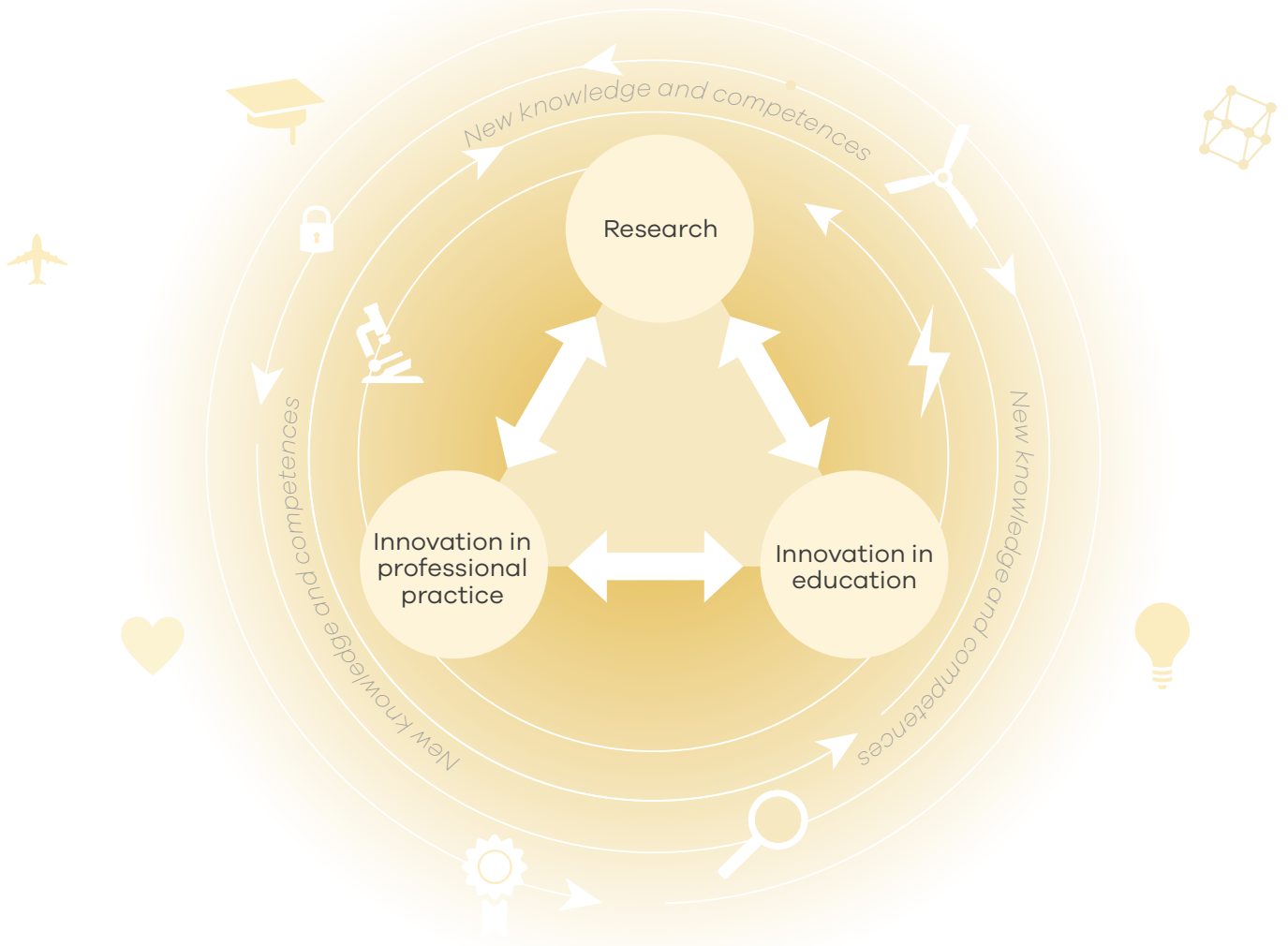
2 See timeline at the end of this chapter

3 See for example OECD (2017) *Review of the Innovation System in the Netherlands*

4 Impact is the common term for what is also referred to as continuing effects or valorisation; see the report 'More Value with Universities of Applied Sciences' (2018, Vereniging Hogescholen). This report further explains how research works in the three domains of education, knowledge and practice.

Applied research aims to provide relevant knowledge or knowledge products for professional practice, such as prototypes, pilot installations, toolkits and apps. Research questions are based on questions from companies, governments and public organisations. Projects are aimed at finding an application in one or more of these organisations. Because professionals and researcher-professors are involved throughout the research process, the research results are used immediately in practice and in education. This process of knowledge circulation is essential for a learning economy and promotes dialogue between research and society.<sup>5</sup>

*Figure 1* Interaction between research, education and the professional practice



5 See the report 'Towards a learning economy' (WRR, 2013))



**Anka Mulder** *Member of the Board of the Association of Universities of Applied Sciences and President of the Saxion Executive Board*

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*'In view of the major social challenges of today, one of the great strengths of universities of applied sciences is that they work intensively with the practical side and thus train students with the latest knowledge. The universities of applied sciences are real accelerators of knowledge, the missing link between more fundamental research and professional practice, where knowledge is put to use.'*

Applied research takes place in the real world and researchers gain insights from real practical situations, often staged in so-called living labs, centres of expertise, field labs or learning workshops. Universities of applied sciences play an important connecting role. This aspect is appreciated by governments, companies and other organisations that increasingly find the university of applied sciences as a knowledge partner. The 36 universities of applied sciences in the Netherlands will have nearly 700 professors by 2020. Financial resources have grown to 265 million euros and human resources have grown to nearly 6,400 researchers, with a total research effort of over 2,100 fte.<sup>6</sup>

The further development from a university of applied sciences to a knowledge institute is of great value for the contribution that the universities make to social transitions. The demand for knowledge to be able to act within and intervene in a complex professional practice is increasing. This translates into major policy and funding programmes such as the National Science Agenda and the national and European mission-driven innovation policy, in which applied research increasingly occupies an important position.

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<sup>6</sup> These figures are based on the Brancherapport praktijkgericht onderzoek 2020.

A woman with grey hair, wearing a white lab coat over a dark blue shirt, is smiling and holding a large bunch of dark green seaweed. She is in a laboratory setting with other people in lab coats working at computers in the background. There are various pieces of laboratory equipment, including bottles and a computer monitor, visible in the background.

## *Seaweed has global potential for the future!*

In addition to teaching, lecturer Tanja Moerdijk is also pursuing a postdoc at HZ University of Applied Sciences. Her research supports the development of the seaweed industry and is part of the Marine Biobased Specialities lectorate. Moerdijk is an analytical chemist and specializes in seaweed as a raw material. In her research, she and students explore the chemical taste and texture profile of seaweed in order to contribute to a sustainable production and processing of seaweed into a final product for the consumer. Knowledge from her research is used in various course programmes. She coordinates the research line in the programme, but also wants students to learn about the development of a product. That is

why she has set up a minor in which Chemistry students learn about the development of seaweed-based products. Entrepreneurship is central to this. In this minor, students have already developed sustainable shampoo blocks, effervescent tablets and bio-based plastic made from seaweed.

‘As a postdoc, you’re really making the connection between education, research groups, universities of applied sciences, and businesses. This will lead to wonderful opportunities and impact in the region,’ says Moerdijk.

[More information](#)

In 2021, universities of applied sciences developed a plan for their own doctoral programme: the Professional Doctorate (PD).<sup>7</sup> In doing so, universities of applied sciences have introduced new research-intensive vocational education to extend the boundaries of professional practice. Candidates are trained to become highly qualified professionals who learn to intervene in complex issues such as energy transition or healthcare. This enables a continuous learning line from associate's degree to bachelor and via master to doctorate in one's own professional field. The aim is that bachelor's and master's students at universities of applied sciences will reap the benefits of the PD candidates' research into the latest developments in professional practice. Thus, the introduction of the PD is also an investment in the quality of education and the connection to the labour market. The universities of applied sciences intend to start the pilot of the PD in 2022.



**Nico L.U. van Meeteren** *Executive Director and Secretary  
Executive Director and Secretary-General, Health-Holland  
(Topsector Life Sciences & Health)*

*.....*

*'Universities of applied sciences play a crucial role in setting up sustainable public-private partnerships that help solve complex issues in and with practical applications and in the training of future-capable professionals, who can also contribute in the role of researcher, policy maker and/or entrepreneur. A new, practical doctoral degree is very important to the complex field of health, health care and well-being of the greatest importance. It will reinforce evidence-based and evidence-generating higher education, policy development, and entrepreneurship. This development strengthens the role of universities of applied sciences and is of great value for the challenges our society faces.'*

7 The Bologna Process of the European Union has led to a system of higher education across Europe consisting of three cycles: bachelor (level 6), master (Level 7) and doctoral studies such as PD (level 8).



## *Saxion Thermoplastic Composites Application Centre*

The Saxion professorship in lightweight construction works closely with SMEs in the region. This professorship has its own laboratories and unique, semi-industrial facilities. The professorship also includes the Thermoplastic Composites Application Centre (TPAC), which serves as a meeting point for researchers, industry and students. Together with SMEs and students, the TPAC bridges the gap between fundamental research and applicable, applied research. TPAC is one of the pillars of regional cooperation to consolidate the knowledge position and economic impact in the field of TPCs in the east of the Netherlands. Thanks to TPAC, Saxion students are introduced to the latest sustainable solutions in plastics and composites.

*'Scrap wood is a very large waste stream. TPAC's research showed that recycled wood can be easily reused in new wood-fibre composite panels. The first façade panels using wood fibres have now been produced by partner Innodeen and are being tested for industrial applications.'*

Jeroen Joling – Rouwmaat Groep

[More information](#)

## Research in connection with regional, national and international issues

Universities of applied sciences ensure innovation, knowledge and talent development in their regions. The 36 Dutch universities of applied sciences are spread throughout the Netherlands and strongly anchored in the region. Contacts between universities of applied sciences and companies, members of the public, other knowledge institutions and other organisations run through students, professors, researchers, staff services, professors and administrators. Often, this happens in meeting places such as campuses, field labs and living labs. These are crucial for cooperation. An example of cooperation in the quadruple helix are the Centres of Expertise (hereafter referred to as Centres). These are sustainable forms of cooperation between universities of applied sciences, knowledge institutions, companies and governments. Centres are ecosystems in which researchers, teachers, students, professionals and entrepreneurs collaborate on research and education. There are more than 50 Centres in the Netherlands covering almost all social themes from healthcare and sustainability to logistics, social innovation and safety. These physical places anchor applied research at universities of applied sciences to local issues and the regional labour market.

About 85% of higher education graduates start working in the region in which they are trained. Therefore, applied research contributes to a good connection with the regional labour market. The university of applied sciences provides more knowledge, innovation and more talent in the region. In the region, the foundation is also being laid for a connection with national and international networks. Knowledge is usually developed with partners in the region, but the impact and dissemination of knowledge is limitless.

The major cross-border social issues of our time call for a regional approach. In collaboration with local organisations, citizens and professionals, we can learn and experiment in practice and look for solutions to the greatest challenges. In the region, we are best placed to build innovative knowledge ecosystems in which we jointly develop new and applicable knowledge that is also relevant nationally and internationally. Translating the Sustainable Development Goals (SDGs) and European missions to our own region increases the impact we have with applied research. In addition, an international orientation for our research results in broadening and deepening of substantive knowledge. It also provides a reference and review for research results and methods. Many of the partners of the universities of applied sciences, such as traditional universities, SMEs and public organisations that are necessary for demand articulation, have broadened their scope beyond our national borders. This is especially true for universities of applied sciences located in border regions. By working together internationally, new perspectives emerge that strengthen innovative power.

# Combating energy poverty

The Center of Expertise Smart Sustainable Cities at Utrecht University of Applied Sciences is a platform for business and knowledge institutions. One of the projects initiated by this Centre focuses on energy poverty. More and more people are unable to pay their energy bills as energy costs are rising and few energy savings are achieved. The research focuses on vulnerable neighbourhoods. Housing associations, the municipality, local voluntary organisations and Tenants' Associations are working together on this project. Research is being conducted into the impact of policy instruments from seven European

countries for use in the private rental sector, including the Nederlandse Energiebox. This research provides insight into the participation and support of residents for the energy transition, contributes to the energy savings of residents and advises on changes in policy. Regional experience is reflected in the European Horizon2020 project ENPOR, which has set itself the goal of combating energy poverty. This is how international learning takes place.

[More information](#)





2021

2020

2019

2018

2017

2016

Presentation of plan for Professional Doctorate



Establishment of Open Science Advisory College



Industry Report 2020

Start of revision of the BKO

New research agenda



Second Delta Premium award

Professorship Vision



Start of themed tables

KICathons

SIA regional body evaluation



Applied research and the Coronavirus Crisis



CoE New Association Framework start of development of national platform for applied research

Investment agenda for knowledge coalition

Exploration of future applied research



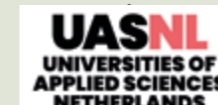
Signing of SDG charter

Advisory Group on research job profiles



First Delta Premium award

Commitment to Mission-Driven Innovation Policy



Start of UASNL



Publication of report 'More Value with Universities of Applied Sciences'

Atlas for Applied research Online



Universities of Applied Science Industry Agreement



New Code of Conduct for Scientific Integrity



Open Science National Plan signed by Vereniging Hogescholen



Publication of previous research agenda research with impact



Participation in NWA development routes

Publication of Quality Assurance Research Industry Protocol.

2021

2020

2019

2018

2017

2016



# Themes with impact

The previous research agenda 'Onderzoek met Impact' describes ten themes in which applied research is carried out. These themes provide insight into which aspects of society are being researched and provide a basis for further forms of cooperation. The aim of these themes is to make clear in a simple way how rich the research landscape of universities of applied sciences is and how this landscape relates to the social challenges of the Netherlands.

With regard to the previous agenda, the previous themes have been strengthened and two themes have been added that have increased in relevance in recent years and should therefore not be missing from the new research agenda. The first new theme is security, one of the missions of the current cabinet. With their research, professors contribute to a safer and more resilient Netherlands. The second theme is tourism and hospitality. This theme is socially and economically very relevant and serves as a basis for one of the pilots on which the professional doctorate is being developed.

This list of themes is not exhaustive. There are many subjects that intersect the themes or directly influence them. Universities of applied sciences have a lot of knowledge from different sectors (technology, sociology, education, health care, economics, art). It is a positive strength of the universities of applied sciences that they are able to work in a multidisciplinary and cross-thematic way through major societal transitions.



## *Centre of Expertise Cyber Security*

The importance of digital security can no longer be ignored in the world we live in. The mission of the Centre of Expertise Cyber Security in The Hague University of Applied Sciences is to strengthen the cyber resilience of public and private organisations that are less well-equipped for cyber threats. An example is the Cyber Resilience project in which researchers have teamed up with 12 Dutch municipalities to investigate the interventions needed to increase cyber resilience for citizens and entrepreneurs. Another example is the Hackright project, in which youth convicted of cybercrimes are paired with companies as an additional form of sentencing. The aim is to prevent recidivism and to find a legal outlet for their ICT talent.

[More information](#)

# 12 themes



## 1 Health and well-being

How do we keep the Netherlands in good shape? This is an important social issue that many colleges are researching. A lot is possible in medical technology, and more will be possible in the future. This theme covers not only curative but also preventive aspects of health. Sport, exercise, nutritious food and a healthy living environment make an important contribution to human vitality. These fields of knowledge are incorporated into research into health and well-being by many universities of applied sciences.



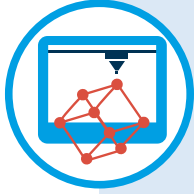
## 2 Education and talent development

Good education is the key to success and well-being in many areas of human functioning. Schools are part of wider networks of childcare, youth support and welfare. Individual development goes hand in hand with training for a professional environment and for a society in which we live together. Applied research at universities of applied sciences focuses on education itself (from primary education to higher education) and on talent development in a broader sense.



## 3 Resilient society: in the district, city, and region

People have to live side by side in the city. The city must have space and a good living environment for everyone, not only for the residents of the city itself, but also for the sake of the city's regional, state, national, and international roles. Resilient societies are able to cope with the complex challenges and the great instability they face. The changes resulting from migration, climate change, new technologies, socio-cultural diversity and geopolitical shifts have a major impact on the local and regional level. This puts more strain on the resilience of individuals, institutions, and governments in the district, city, and region. Applied research focuses on the issues involved.



4

## Key enabling technologies and sustainable materials

Key enabling technologies are characterised by a wide scope or scope in innovations and/or sectors. The digitisation, automation and robotisation of our industry is booming. This involves a combination of digitisation, interconnections of intelligent systems and 'future technologies' as a result of which manufacturing processes in industry and final business models and consumption patterns change dramatically. This creates a new basis for the development of products, services and smart sustainable materials. Included in this field of knowledge is the societal impact and acceptance of digitisation and the products and services that are being developed.



5

## Built environment: sustainable and liveable

The built environment needs to be healthier, smarter and more sustainable in order to increase the liveability of the Netherlands. The living environment is determined not only by the buildings, but also by gardens and parks and by how buildings are integrated into the landscape. Principles of ecology and the improvement of biodiversity are becoming increasingly important. In the Netherlands, the sustainable redevelopment of existing built-up areas is considered as important as new construction.



6

## Sustainable transport and intelligent logistics

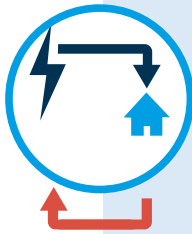
The logistics sector is an essential part of the Dutch economy. The passenger transport network (road, rail and water) is one of the most fine-meshed in Europe, as well as one of the busiest. The nature of freight and passenger transport will change significantly in the coming years. Urbanisation places new demands on mobility. It is not for nothing that there has been excellent cooperation between the sector and the universities of applied sciences on this subject for some time now. Sustainable logistics focuses on CO<sub>2</sub>-neutral transport of goods, persons and perishable products. This includes smart technical adjustments and more efficient use of existing infrastructure through, for example, information sharing.



7

## Sustainable agriculture, water and food supply

In a world where wealth and consumption are increasing, it is a major challenge to responsibly feed a global population which will reach 9 billion people by 2050. This is the subject of applied research in many Centres, and this research also employs innovations in the field of ICT and technology. Smart sensors help to monitor the condition of individual dairy cows (smart dairy farming); the analysis of large amounts of farm cultivation data makes a valuable contribution to better and more sustainable food production (big data, precision agriculture); engineering helps greenhouse growers to use less energy and less water for their plants (growing without daylight, robotics, internal circulation); laboratory research helps improve the composition of the food by reducing salt and sugar; and research into the soil is critical for sustainable food production. The maritime industry is also undergoing major changes as a result of three global developments: the reduction of greenhouse gases, the trend towards unmanned or low-manned navigation, and the rapid development of sensors and digitisation.



8

## Energy transition and sustainability

This topic of research focuses on the development and optimization of renewable energy sources and associated energy storage, distribution and transportation, and reducing the energy consumption of all consumers, from individual households to large-scale industrial sites. This involves research into technological solutions as well as individual willingness and possibilities for achieving a more sustainable energy supply: towards new technologies, acceptance of this technology and the behavioural change that is needed.



9

## Arts and the creative industry

The arts and creative industries are of great importance for strengthening culture, economy and society. They promote creativity and innovation in a high-tech society and contribute to shaping social and economic institutions and cultural practices. Universities of applied sciences carry out applied research in the context of arts and design programmes and at the intersection between creativity and other sectors such as healthcare, education, technology, and business. This dynamic calls for research into the arts in all forms and in connection with

a variety of disciplines, from culture and anthropology to neurology, and from technological materials to historical research. In the process, this industry is developing the Key Methodologies, methods based on design principles that help embed innovations in society.



10

## Entrepreneurship: responsible and innovative

Entrepreneurs are crucial to innovation. Therefore, entrepreneurship is an important focus in both national and regional policy and in the education and research of many universities of applied sciences. Good and responsible business is crucial for a healthy economic dynamic that meets the requirements of sustainability.



11

## Safety

A safe society is one of the societal challenges that applied research must address. Within universities of applied sciences, professors and researchers conduct applied research on this subject across a wide range of disciplines such as subversion, cybersecurity, forensic research and the role of the security professional.



12

## Tourism & hospitality

Complexity and dynamics in the tourism and leisure sector are increasing due to the global connection with other industries, combined with sustainability issues, digitisation, area development, and the impact of COVID-19. The research focuses on both negative influences of tourism, such as overtourism and crowds, and on tourism's positive influences on society. Positive influences include cross-overs with the healthcare industry. The universities of applied sciences work intensively with international universities in this sector.





# Agenda 2022-2025

Universities of applied sciences have laid a solid foundation for research in recent years. Now that the added value is clear, the need to pursue applied research is greater than ever. In 2019, a joint statement by the Vereniging Hogescholen, the Ministry of Education, Culture and Science, and the regional body of SIA entitled *Exploring the Future of Applied research* put it this way:

- In the future, applied research at universities of applied sciences will be fully integrated into our regional, national and international knowledge ecosystem.
- Universities of applied sciences are well-equipped for their role with sustainable and effective research groups.

We have translated this vision into four ambitions:

#### *Applied research fully integrated into our knowledge ecosystem*

- 1 **Connection and collaboration.** Applied research is seen as a logical and valued knowledge partner in tackling societal issues.
- 2 **Visibility and added value.** Applied research by universities of applied sciences is visible and comprehensible to a wide audience. The impact of the research on the professional field and education is systematically mapped out.

#### *Universities of applied sciences are equipped for their role with sustainable and effective research groups*

- 3 **Culture of Quality.** Quality assurance and quality culture receive constant attention in applied research. Both the evaluation of research quality and the quality itself are reinforced.
- 4 **Research culture and structure.** Applied research has a solid and sustainable position in the universities of applied sciences. The research culture and structure is professional, supporting the research itself and the connection to education.



*‘For researchers at universities of applied sciences and in public knowledge organisations, the most important motivation is to conduct socially relevant research.’*

Motivations of researcher, Rathenau Institute 2018

## Four ambitions for the next four years

In recent years, applied research has grown significantly and the knowledge function of universities of applied sciences has become increasingly important in the Dutch knowledge landscape. By conducting applied research, universities of applied sciences contribute to the development of more knowledge, more innovation and more well-trained, innovative professionals. Applied research has proven itself, but is still too limited in scope to fulfil its mission and ambitions.<sup>8</sup> The course has been set and the four themes will be given priority in the coming years. To do this, funding needs to be increased.



**Marcel Levi** *Chairman of the Netherlands Organisation  
for Scientific Research*

*‘Research at universities of applied sciences is an obvious choice. How else can you teach students a culture in which decisions are made on the basis of knowledge and proven data and not on the basis of intuition or preconceived ideas?’*

<sup>8</sup> PwC ‘Research into the Adequacy of the Macrobudget, Efficiency of Spending and Costs (Allocation) in Universities of Applied Sciences’; VH, OCW and SIA ‘Exploration of Applied research at Universities of Applied Sciences’; and Birch ‘The State of Applied research in the Netherlands’

## 1 Connection and collaboration

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Applied research is seen as a logical and valued knowledge partner in tackling societal challenges.

We want applied research to play a prominent role within existing and new knowledge and innovation ecosystems so we can work together on societal challenges. Universities of applied sciences are the knowledge partners that connect parties, types of knowledge, disciplines, education, and research. The colleges choose a clear profile and have access to knowledge and expertise from the different industries. In so doing, universities of applied sciences develop methods for multidisciplinary work. Universities of applied sciences have sustainable research groups that are anchored in education and in various regional, national and international networks, enabling them to expand their activities and the impact of their research.

### *University of the North*

Five northern knowledge institutions have joined forces to promote overall prosperity in the northern Netherlands. Under the name University of the North, Hanzehogeschool Groningen, Hogeschool van Hall Larenstein, NHL Stenden Hogeschool, Rijksuniversiteit Groningen and the University Medical Center Groningen are working together. This cooperation between different fields of knowledge, between government, business and knowledge institutions, leads to better higher education and a more varied array of research. This increases the impact of education and research on the social environment. For example, the University of the North is working on the major

transition issues with a positive contribution to earning capacity in the region.

The University of the North wants to achieve broad-ranging prosperity. We stimulate transitions by strengthening collaborations in research, education and innovation between different knowledge institutions. We have an impact on social and economic development, innovation and entrepreneurship in our region.’

*Erica Schaper, chair of the board of directors, NHL Stenden*

[More information](#)

## 2 Visibility and added value

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Applied research by universities of applied sciences is visible and comprehensible to a wide audience. The impact of the research on the professional field and education is systematically mapped out.

We want to better communicate to stakeholders the successful results and impact of applied research on society, the economy and education, to clarify our role in the knowledge ecosystem, to offer clear value in our use of public resources, and to involve the public more in applied research. Applied research should be known as high-quality and relevant for societal transitions, whether regional, national, or international. The way in which universities of applied sciences report and communicate about the impact of their research needs to be further developed, so that everyone is clear about the added value of applied research.

### Winners of Deltapremie 2021



**Margie Topp**  
*Professor in Plastics Technology  
at Windesheim*

With her research and her working methods, Margie Topp is a wonderful figurehead for applied research. Her research into smart technology and materials is essential for science, professional practice and education. For years, Margie Topp and her team have been working on knowledge-building in plastics technology. She works in the field of new and disruptive technologies, high-quality reuse of materials and sustainable

production processes. A good example is the recycling of wind turbine blades, where Margie and her team have achieved impressive results in pioneering technical work. They have developed a new kind of strong composite from the blades which has already been used to construct a bicycle bridge.

Margie always works closely with student programmes at Windesheim and has a wide network of SMEs. In this way, she works on new knowledge and also trains students who—like her—do not shy away from tough issues.

[More information](#)

## Winners of Deltapremie 2021



### Steven Vos

*Professor in Move to Be at  
Fontys University of  
Applied Sciences*

Steven Vos focuses on the preventive aspects of health and providing fair opportunities for an active and healthy lifestyle for everyone. His research is focused on a fully integrated approach, as professional partners and knowledge partners from different sectors (sport, health, education, youth work, welfare) and disciplines (exercise and health sciences, social sciences, public management, social work, ICT, design and engineering, economics, and communication) are involved in all phases

of the research. With the support of these networks, proven, effective methodologies can be developed.

Steven is the initiator of the collaboration between four knowledge institutions in the Brainport region (Fontys, imec, TNO and TU/e) aimed at the vitality of the employees. At a national level, Steven is one of the drivers of the Sport & Exercise professors platform, and encourages cooperation between universities of applied sciences and conventional universities. This is also reflected in his contribution to national and International knowledge development.

[More information](#)

### 3 Quality culture

Quality assurance and quality culture receive constant attention in applied research. Both the evaluation of research quality and the quality itself are reinforced.

We want a quality culture in which care for the quality of applied research is a continuous process of self-reflection and improvement, and incorporates the insights of professional practice. A good quality culture leads to the research having a greater impact. Part of quality culture is to clarify the way research translates to practice and education. Quality culture can be improved by paying more attention to peer review methodologies involving practical partners, more awareness for open science (FAIR Data, Open Access), and by honouring the principles of scientific integrity<sup>9</sup> and the standards of good research practices, particularly in the training

<sup>9</sup> Honesty, care, transparency, independence and responsibility (Code of Conduct for Scientific Integrity, 2018)

of teacher-researchers. In this way, research projects can be a source of ongoing learning. We strive to constantly adapt the Research Quality Assurance Industry Protocol (BKO) to the requirements of universities of applied sciences and their professional practice for applied research. The BKO aims to continuously maintain and improve the quality of research.

### *Linking up better*

‘Our professorship has benefited a lot from the visitation. The commission was independent and critical, and we really learned from that. The research group was delighted and energised by our good assessment. Thanks to the visitation, we have better control over the products we deliver and we structurally question project partners about the progress of the project. Another valuable benefit is

that we as professors are now drawing up our own knowledge agenda, which will make us more in line with the national themes.’

*Bart Staal, professor in Active Factors in Physiotherapy and Paramedical Treatment HAN University of Applied Sciences.*

## **4 Research culture and structure**

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Applied research has a solid and sustainable position in the universities of applied sciences. The research culture and structure is professional, supporting research and its connection with education.

We want to strengthen the research culture and structure and make it more sustainable. The research has administrative support and sufficient support in the organisation. Universities of applied sciences develop robust research groups that can program long-term research. This makes them reliable partners in their knowledge ecosystem. Support services/departments work as well for education as for research and also for the connection between them. This involves expanding job classifications, supporting researchers’ career paths with a focus on inclusiveness, attention for data infrastructure and supporting the building of national and international networks and applications so that we are a stable knowledge partner for society. It is also likely that universities of applied sciences will cooperate more and program together to develop the necessary research infrastructure. The independent position of the SIA governing body within NWO should be maintained and further



strengthened. From this independent position, the governing body SIA contributes to NWO's strategy. The governing body SIA provides direction for quality and impact, developing and connecting networks and increasing the visibility of applied research, ensuring that applied research is well-positioned in the system. This should ensure that universities of applied sciences are well connected to the various forms of national and international research programming and further innovations in science policy.

### *How strengthening the research culture leads to better training*

*Bert Verveld has been chairman of the Executive Board of the Amsterdam University of the Arts (AHK) since 2015.*

*Why is strengthening the research culture important for the AHK?*

We want to further increase the impact of the AHK on our society. The AHK is a publicly funded institution that offers great course programmes. Our different fields of expertise equip us to make meaningful contributions beyond educating students. Our methods and views can contribute to tackling social issues. We really have a lot to offer, and it would be a shame not to put it to use. An example is the SPRONG application that we submitted together with Amsterdam University of Applied Sciences, Inholland University of Applied Sciences, and the Gerrit Rietveld Academie. Together, we use our methods to help young people who have been unemployed

for a long time become more resilient and thus, ultimately, to help them get back on the path to success.

In addition, practice-oriented research strengthens our own field of work. We are a laboratory for the professional field precisely because many teachers have dual vocations. They can learn and experiment with us. A very nice example of this is Marijn de Lange's postdoc project 'The Past Bubbles Around Us: Mime Archives in the Open'. This project focuses on opening up the archive of the Dutch mime, a unique archive within the Dutch performing arts sector that originates from an eminently physical, embodied theatre practice. This is direct knowledge that is useful for the professional field and for mime programmes, but this example also clearly shows that research offers opportunities for further growth for students and educators. I think it is important that we as a university make further development possible, and research is a way to deepen and develop our knowledge

*Read more* ➤

*Continuation 'How strengthening the research culture leads to better training.'*

*How has the AHK invested in practice-oriented research in recent years?*

As AHK, we have made research a priority. First of all, we have invested widely in networking, for example by focusing on the ARIAS network. Five Amsterdam knowledge institutions are members of this network, which explores connections between artistic and scientific research. We have also encouraged the development of an Art and Technology lectureship in the field of education. We have further expanded our research groups and established a Research Centre to better support our research groups.

We have been given a space at the Marineterrein in Amsterdam for interdisciplinary experimentation. That offers tremendous freedom with endless possibilities, from bio-based building to students working on projects with virtual reality techniques.



ALL THE MATERIAL YOU  
PRODUCED AND GAVE  
MY RESEARCH AND FROM  
QUESTIONS THE WAY  
DIFFERENT ELEMENTS  
LIFE.  
YOU'RE INVITED TO  
GO THROUGH  
DISPLAYED.

## What are we going to achieve?

### Reasonable basic funding

The research potential of universities is underutilized. Conducting research is one of the core tasks of universities of applied sciences. But it is still difficult to organize with the limited structural resources. There is currently a structural underfunding of applied research.<sup>10</sup> Applied research is still too dependent on secondary and tertiary funding streams. Consequently, funding is increasingly based on finite and competitive project funds with uncertain continuity. This puts the continuity and sustainability of the research under pressure.<sup>11</sup> In addition, these grants usually require matching funds from the research institution, which further encroaches on the basic funding of applied research.<sup>12</sup> As a result, the primary funding stream from the universities is too small to maintain professorships and at the same time provide the matching funds for projects. For this purpose, the size of the funded project has to develop a critical mass of at least 10% of the initial funding.

This situation leads to a range of unintended negative consequences. In essence, the volume, continuity and sustainability of applied research is under pressure from the lack of structural funding. This leads to the fact that there are relatively few researchers working at universities of applied sciences, and the researchers who are hired are not given adequate research positions. This makes it difficult for universities of applied sciences to build a sustainable research culture. The support for research is limited so that European applications or ambitions for Open Science are not fully realized. In addition, the job category descriptions are limited or not yet complete in all institutions, so researchers can find themselves on a dead-end career path. The current situation is characterised by a mismatch between ambitions and funding, and by uncertainty and pressure on the universities of applied sciences. Increasing the resources for applied research is therefore a necessary condition for achieving our ambitions.

In the short term, a structural addition of 100 million euros to the primary funding stream is required on an annual basis, increasing to a structural additional annual investment of 240 million euros in the long term.<sup>13</sup> With this structural funding we can work to realise our ambitions with the following results. The results are described below along with the responsible parties.

10 PwC Strategy& has recently quantified the size of the problem. Their research shows that structurally, an additional €120 million to €270 million is needed to solve the problem.

11 VH, 'Sector Report on the Quality of Applied research 2020'

12 Rathenau Institute 'Income and Expenses of Universities of Applied Sciences and Universities'; and 'Rise in Applications at NWO'

13 PwC 'Research into the Adequacy of the Macro Budget, Efficiency of Spending and Costs (Allocation) in Universities of Applied Sciences'; VH, OCW and SIA 'Exploration of Applied research at Universities of Applied Sciences'; and Birch 'The State of Applied research in the Netherlands'.

## 1 Connection and cooperation with society

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- In the coming years, applied research will further address major societal issues in collaboration with other knowledge institutions. By 2025, universities of applied sciences will participate in 50% of projects stemming from the Knowledge and Innovation Covenant or from the National Science Agenda. For: Universities of applied sciences, Regieorgaan SIA, NWO. Ministry of OCW, Ministry of EZK.
- Universities of applied sciences will participate in 25% of the applications for the National Growth Fund in the field of research and innovation. By 2025, at least one Growth Fund application will have been approved in which universities of applied sciences are initiators. For: Universities of applied sciences, Regieorgaan SIA, Vereniging Hogescholen, Ministry of EZK and Ministry of OCW.
- In the future, universities of applied sciences want to collaborate in a sustainable and structural way with other knowledge partners from the TO2 institutions and traditional universities, for example by creating more dual appointments and utilising one another's infrastructure more effectively. This requires a better definition of the available tools. For: Universities of applied sciences, Regieorgaan SIA, TO2 institutions, NWO, Vereniging Hogescholen.
- Internationally, universities of applied sciences are expanding their networks. This requires increased support for international grants and the conditions for active participation in international networks and consortia. There is a lot of potential in connecting international challenges and agendas (and related funding) with regional embedding and implementation. Think globally, act locally: for example, by applying SDGs to regional issues. For: Universities of applied sciences, Regieorgaan SIA, Vereniging Hogescholen, ROMs, UASNL.
- In order to be able to contribute as much as possible to European missions and societal challenges, each university of applied sciences must develop an internationalisation strategy for its research. It should also explore appropriate international rankings. UASNL can play a facilitating role in this effort. The question of whether UASNL can be integrated into the structure of the Vereniging Hogescholen is being explored. For Universities of applied sciences, Vereniging Hogescholen, UASNL.
- Regieorgaan SIA will contribute to the positioning and professionalisation of researchers at universities of applied sciences by continuing to invest in professorships, by contributing to the Leergang Bouwstenen voor Onderzoek programme and by awarding the Delta Premium jointly with the Vereniging Hogescholen. For: Regieorgaan SIA.
- Universities of applied sciences want to collaborate more frequently and more sustainably with the region. The synergy between the different collaborative spaces (such as Centres or living labs) will be better utilised. We are building a wide-ranging regional infrastructure using the thematic tables which correspond to regional issues and which can be used for joint programming. For: Centres, Vereniging Hogescholen, ROMs, Regieorgaan SIA, TO2 institutions, universities of applied sciences.

## 2 *Visibility and added value*

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- Professionalising universities of applied sciences and intensifying research communication funding must become available (within or outside existing schemes) for public engagement from a wide audience. For: Universities of applied sciences, Regieorgaan SIA, UASNL, Vereniging Hogescholen.
- Universities of applied sciences must communicate about successful outcomes of applied research and about the process of doing research to a broad audience including stakeholders both nationally and internationally. For: Universities of applied sciences, Regieorgaan SIA, UASNL, Vereniging Hogescholen.
- Over the next 5 years, all institutions – either singly or jointly - will develop an appropriate way to make the impact of applied research on education, practice, and knowledge development more transparent. This includes establishing a clear definition of the term. For: Universities of applied sciences, Regieorgaan SIA, Vereniging Hogescholen.
- Publinova (formerly the national platform for applied research or NPPO) is being developed as a showcase and advertisement for applied research, where projects and results are easily found and made accessible to a wide audience. For: SURF, universities of applied sciences, Regieorgaan SIA, Vereniging Hogescholen.
- The theme tables, the Atlas and the Delta Premium will be continued and expanded in the coming years. Theme tables are the place where the dialogue and connection between external agendas and universities of applied sciences are conducted on important social themes - both in the field of research and in the field of education. For: Regieorgaan SIA, Vereniging Hogescholen, universities of applied sciences.

## 3 *Quality culture*

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- Open Science. Where possible, open publications will be published. To stimulate this initiative, universities of applied sciences will explore Open Access and the possibilities for open publishing will be further elaborated. Open Science also includes research data that is FAIR. For: Universities of applied sciences, Vereniging Hogescholen, SURF, Regieorgaan SIA.
- By 2025, the Publinova (formerly NPPO) will be used by all universities of applied sciences to share knowledge and information about, and derived from, research (SURF, Vereniging Hogescholen, universities of applied sciences). This will require registration of research information. For: Universities of applied sciences, Vereniging Hogescholen, SURF, Regieorgaan SIA.
- All universities of applied sciences must have the quality assurance of their research in order. This means that from 2025, all universities of applied sciences must have a passing score for the criteria of the new and revised BKO (universities of applied sciences), as well as systematically mapping out the impact of the research on education and professional practice. For: Universities of applied sciences, Vereniging Hogescholen.

- From 2023, internal distribution of information for all universities of applied sciences must be complete, compliant with the guidelines of the Industry Protocol, and delivered to the Vereniging hogescholen in a timely manner. For: Universities of applied sciences, Vereniging Hogescholen.
- A process is being developed by the Association of Professors (VvL) to determine and improve the research skills of prospective lecturer-researchers. For: Vereniging van Lectoren, Vereniging Hogescholen, universities of applied sciences.
- All universities of applied sciences have a duty of care relating to the Code of Conduct for Academic Integrity: there must be a process for ethics review, the complaints procedure must be in order, and research personnel must have training in the field of academic integrity. For: Universities of applied sciences, Vereniging Hogescholen.

#### 4 *Research culture and structure*

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- All universities of applied sciences must value research and know how to make it transparent, especially because all students will encounter applied research during their degree programmes. The possibility of developing training courses that contribute to the professionalisation of research management is being explored. For: Vereniging Hogescholen, universities of applied sciences.
- Universities of applied sciences will develop robust research groups that can plan programmes, maintain sustainability, and grow for many years. This makes them reliable knowledge partners. This will also require career paths for professors, lecturer-researchers, post-docs, PhDs, PDs and supporters with an eye for diversity and inclusiveness. In 2022, a working group will start compiling a guide for job descriptions and result profiles of researchers and lecturer-researchers in coordination with HR employees at universities of applied sciences. Some form of standardisation is also needed to facilitate career paths between universities of applied sciences. For: Universities of applied sciences, Vereniging Hogescholen.
- Regieorgaan SIA will retain its independent position within NWO. The covenant will be updated and renewed. Within this independent position, the Regieorgaan SIA can optimally fulfil its regional role and thus stimulate the quality of applied research, strengthen the position of applied research in the knowledge system through national thematic programming, further develop the system and increase the visibility of applied research. For: NWO, Ministry of Education, Culture and Science, Regieorgaan SIA, Vereniging Hogescholen.
- The pilot Professional Doctorate will begin. The PDs will demonstrably contribute to innovation in their fields of work and continue their careers there successfully. After the pilot, the professional doctorate will be recognised nationally and internationally and implemented widely in universities of applied sciences. For: Universities of applied sciences, Vereniging Hogescholen, Regieorgaan SIA, Ministry of OCW.

- Research data should be available for reuse whenever possible. For: Universities of applied sciences, Regieorgaan SIA, Vereniging Hogescholen, SURF.
- Research information systems must be in order, which will make it possible to account for investment in research more effectively. For: Universities of applied sciences, Vereniging Hogescholen.
- The continuity and stability of the applied research is served by a reassessment of the funding system, as established by the research of the Van Rijn committee. In 2021, a working group will start thinking about an alternative funding system that supports this. The opinions of this working group should be implemented by 2025. For: Vereniging Hogescholen, universities of applied sciences, Ministry of OCW.

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13 Commissie van Rijn, *Wissels om*, (2019)

# Annexe



## Annexe 1 Overview



### Theme

## Health and well-being

### Professor platforms

- Organisation of Personalised Health
- Self-management
- Use of Technology for Health and Well-Being
- Sport and Exercise

### Professional Doctorate

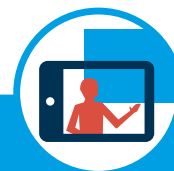
Health and Well-Being Pilot PD

**Missions/ KIA: KIA Health and Care**

**NWA** 6, 7, 14, 17, 19, 22

**SDG** 3

**Horizon Europe / Innovative Europe (Pillar 2)** 1



### Theme

## Education and talent development

### Professor platforms

- STUDIO 21CS
- Education at the intersection of art, science and technology (OKWT)

**Missions/ KIA: KIA Social Earning Capacity**

**NWA** 7, 8, 16

**SDG** 4, 10

**Horizon Europe / Innovative Europe (Pillar 2)** 2



### Theme

## Resilient society: in the district, city, and region

### Professor platforms

- City and district

### Professional Doctorate

Health and Well-Being Pilot

**Missions/ KIA: KIA Social Earning Capacity**

**NWA** 7, 8, 10, 16, 21, 23, 25

**SDG** 3, 5, 10

**Horizon Europe / Innovative Europe (Pillar 2)** 2



### Theme

## Key enabling technologies and sustainable materials

### Professor platforms

- ICT Platform PRIO
- Applied Research, platform DAS

**Missions/ KIA: KIA Key technologies**

**NWA** 3, 12, 13, 18, 20, 21, 24

**SDG**

**Horizon Europe / Innovative Europe (Pillar 2)** 3



**Theme**

Built environment: sustainable and liveable from environmentally-friendly and sustainably-produced materials.

**Professor platforms**

- Built Environment (NL-JU)

**Missions/ KIA:** KIA energy transition and sustainability

**NWA** 3, 9, 12, 21

**SDG** 11, 13

**Horizon Europe / Innovative Europe (Pillar 2)** 5



**Theme**

Sustainable transport and intelligent logistics

**Professor platforms**

- Logistics Applications in Societal Challenges (LOGITIMO)

**Missions/ KIA:** KIA energy transition and sustainability

**SDG** 11, 9, 13

**Horizon Europe / Innovative Europe (Pillar 2)** 5



**Theme**

Sustainable agriculture, water and food supply

**Professor platforms**

- Water
- Food and Health

**Professional Doctorate**

Maritime PD pilot

**Missions/ KIA:** KIA agriculture, water food

**SDG** 6, 12, 14, 15

**Horizon Europe / Innovative Europe (Pillar 2)** 6



**Theme**

Energy transition and sustainability

**Professor platforms**

- Biobased Economy
- Circular Economy
- Energy Supply in Balance
- Research platform for Urban Energy

**Professional Doctorate**

Energy & Sustainability PD pilot

**Missions/ KIA:** KIA energy transition and sustainability

**NWA** 3 en 5

**SDG** 7, 11, 13

**Horizon Europe / Innovative Europe (Pillar 2)** 5



**Theme**

**Art and creative industry**

**Professor platforms**

- Art ≈ Research
- Education at the intersection of art, science and technology
- NADR (Network Applied Design Research)

**Professional Doctorate**

Art + Creative PD pilot

**Missions/ KIA:** KIA Social Earning Capacity

**NWA** 7, 8, 10, 16

**SDG** 17

**Horizon Europe / Innovative Europe (Pillar 2)** 2



**Theme**

**Entrepreneurship: responsible and innovative.**

**Professor platforms**

- Retail Innovation
- Labour
- Nederlands Lectoren platform Ondernemerschap (Nlpo)
- HRM professor network

**Missions/ KIA:** KIA Social Earning Capacity

**NWA** 3, 4, 5, 16

**SDG** 9

**Horizon Europe / Innovative Europe (Pillar 2)** 2, 4



**Theme**

**Safety**

**Professor platforms**

- Safety

**Missions/ KIA:** KIA security

**NWA** 13, 24

**SDG** 16

**Horizon Europe / Innovative Europe (Pillar 2)** 3, 4



**Theme**

**Tourism and hospitality**

**Professional Doctorate**

PD Pilot Leisure, Tourism & Hospitality

**Missions/ KIA:**

- KIA Energy Transition and sustainability
- KIA Social Earning Capacity

**NWA** 23

**SDG** 8, 11, 13

**Horizon Europe / Innovative Europe (Pillar 2)** 2

## Annexe 2 Composition of working group

- Anka Mulder (Chair of Working Group), research portfolio holder. Chair of the Saxion Executive Board
- John Dane, chair of the Board of HZ University of Applied Sciences
- Mariska van der Giessen, professor at NHL Stenden and chair of the Association of Professors
- Anne-Marie-Haanstra, the Board of Directors of Iselinge University of Applied Sciences, on behalf of the Radiant group
- Geleyn Meijer, Executive Board of Amsterdam University of Applied Sciences.
- Inez Meurs, Regieorgaan SIA Executive Board
- Mark Mobach, Professor in Facility Management Hanze University
- Erica Schaper, chair of the NHL Stenden Executive Board
- Wilma Scholte at Reimer, Executive Board of Utrecht University of Applied Sciences
- Bert Verveld, chair of the Board of Amsterdam University of the Arts
- Martje van Ankeren, Secretary of this working group on behalf of the Association of Universities of Applied Sciences

With many thanks to:

- Jeroen van Deel
- Stella Blom
- Martin Otten
- Anja Tertoolen
- Wout Scholten
- Dymph van Outersterp

## Colophon

We would like to thank board member Anka Mulder and all other colleagues who have contributed to the realisation of this strategic research agenda.



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