

# *Fact and Figures*

Applied Research

by Universities of Applied Sciences

April 2010



**HBO** raad  
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# Applied Research by Universities of Applied Sciences

## Introduction

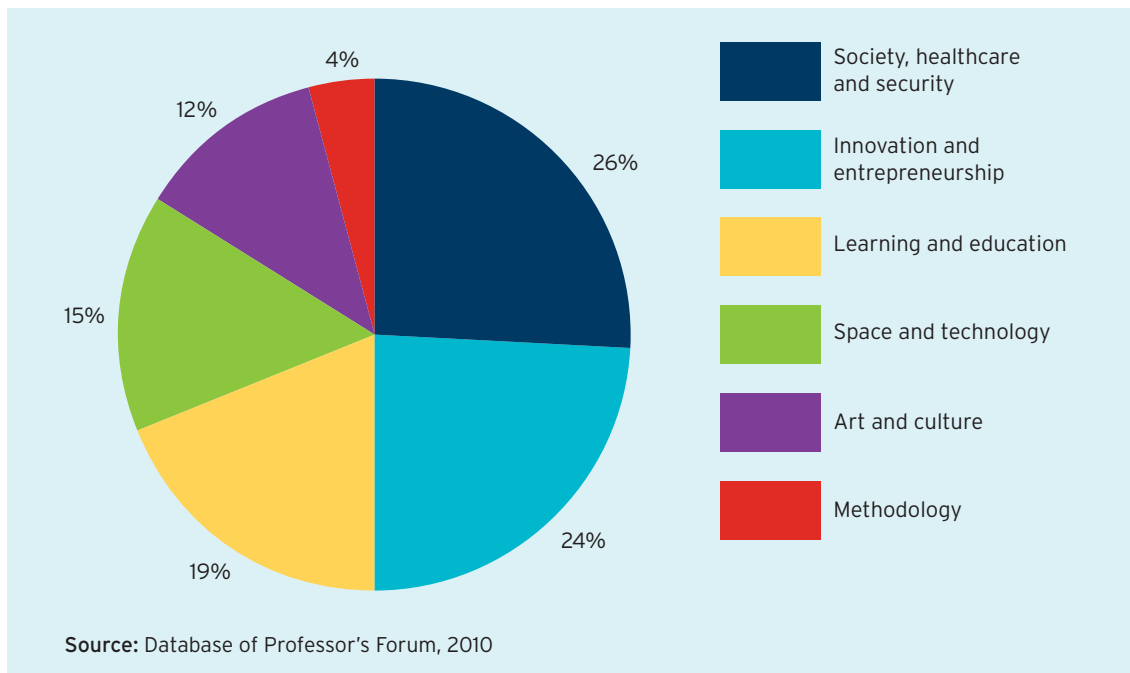
This fact sheet provides information on applied research by universities of applied sciences. The role of professors within applied research is explained in the fact sheet, as is the contribution to this research of the so-called 'RAAK programmes'. In addition, the important economic and social role which applied sciences fulfil in Dutch society and for the Dutch economy will also be discussed. The quality (assurance) of applied research will also form part of the discussion. Finally, the fact sheet touches on the ambitions of the universities of applied sciences with a view to creating a sustainable climate for research.

With the appointment of professors and the setting up of RAAK programmes, applied research at universities of applied sciences has been strongly rooted in professional practice. As a result, it makes a considerable contribution to the improvement of and innovation in professional practice. The universities of applied sciences give form and content to this in a variety of ways. For instance, they do so by carrying out research and sharing knowledge and insights. However, they also do so by providing the SME sector and public-sector organisations with products, designs and concrete solutions that can be applied. The research bears a close relationship to the education offered, by contributing to educational activities, to the professionalisation of lecturers and to innovation in the curriculum. The interchange between research and education ensures that graduates with innovative knowledge and research competences enter the labour market.

## Professors and research centres

Professors play a crucial role in the applied research of universities of applied sciences. A professor leads a research centre. A group of researchers, including lecturers, work within a research centre to carry out applied research in relation to a particular theme. In 2010, there are 457 professors attached to universities of applied sciences. Most professors work part-time for the university of applied sciences and have some other employment in addition to this. This ensures that there is good cross pollination between professional practice and the universities of applied sciences. The applied research of the professors focuses on a wide range of social and economic themes (Figure 1). Approximately a quarter of professors focus their research on the domains of 'society, healthcare and security' and 'innovation and entrepreneurship'.

Figure 1: Professors per domain



Since the introduction of professors in 2001, the research function of universities of applied sciences has acquired a permanent and unmistakable position. The fact that higher education cannot do without research is now recognised and acknowledged on numerous fronts.

### Cooperation with companies and public sector institutions

An important principle of the applied research of universities of applied sciences is cooperation with the the private sector and public-sector institutions. After all, this knowledge emerges through interactive cooperation between universities of applied sciences and professional practice. The universities of applied sciences can play an important role in this regard in the emergence of 'communities of practice', in which lecturers/researchers, professionals immersed in professional practice and students can cooperate with a view to introducing innovation into professional practice.

RAAK projects are a good example of cooperation between universities of applied sciences, on the one hand, and the corporate sector and public institutions, on the other. Within the framework of RAAK (Regionale Aandacht en Actie voor Kenniscirculatie - Regional Attention and Action for Knowledge Circulation), the Ministry of Education, Culture and Science provides universities of applied sciences with subsidies for knowledge exchange and the creation of networks with companies and public-sector institutions. The scheme is administered by the foundation, Stichting Innovatie Alliantie (SIA). This foundation is a cooperative venture involving MKB-Nederland, VNO-NCW, HBO-raad, Syntens, TNO and Novay.

In the period from 2005 to 2009, 276 RAAK projects were started, of which the majority were in cooperation with SMEs. Projects within the framework of RAAK public-sector subsidies focus on public-sector institutions. The aim of the RAAK-PRO projects is to promote long-term structural cooperation between knowledge institutions, such as universities of applied sciences, companies and public-sector organisations. These projects have a duration of four years. RAAK projects have strong links to applied research conducted by universities of applied sciences, as is apparent from the fact that a professor from a university of applied sciences participates in the research in 95% of all projects.

Figure 2: Number of RAAK projects per scheme

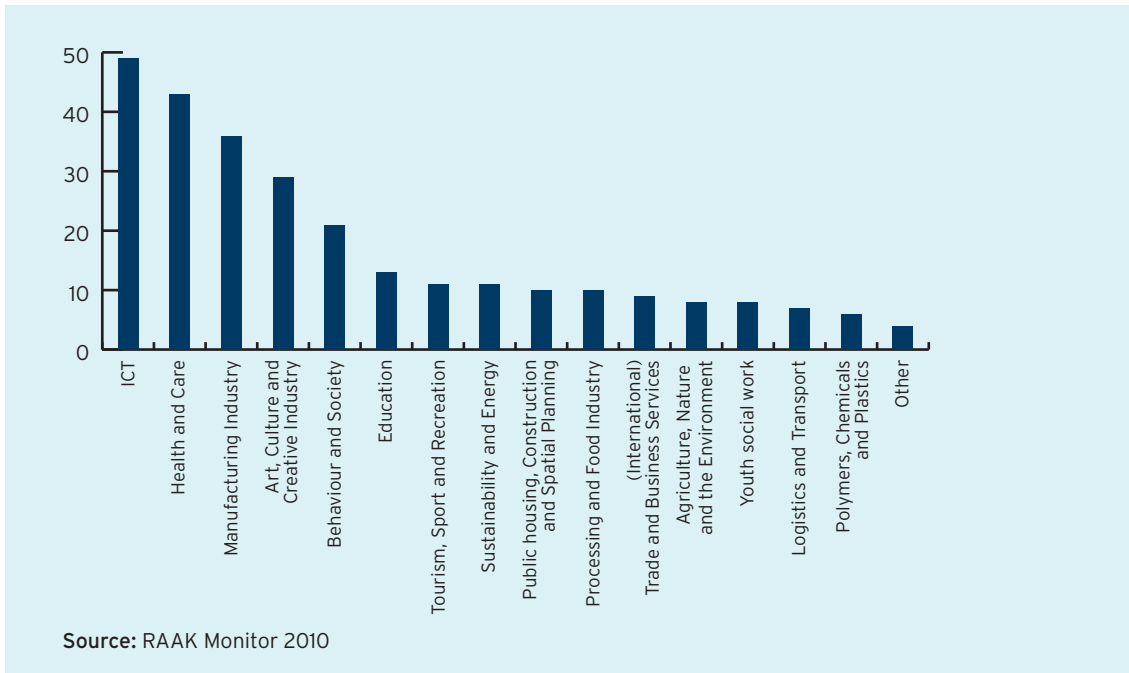


### An example of applied research: Composites in glass architecture—INHolland University of Applied Sciences

In cooperation with various partners from the SME sector, TNO and the Technical University of Delft, INHolland Composite Laboratory has developed and realised a composite façade for its new building in Delft. Not only was this a learning process for the students and the people from the SME sector, who cooperated in this, but it is also an experiment which will continue for several more years. The unique composite façade will be monitored to ascertain how the façade stands up to different conditions over time. This will ensure that it remains a source of knowledge and research for students and the private sector. A patent application has already been submitted for the façade design.

As in the case of the applied research of the professors, RAAK projects also take place in many socially and economically relevant sectors (Figure 3). In addition to economic themes, such as in the areas of ICT and manufacturing industry, the RAAK projects focus to a considerable degree on social themes, such as healthcare, behaviour and society, education and youth welfare work.

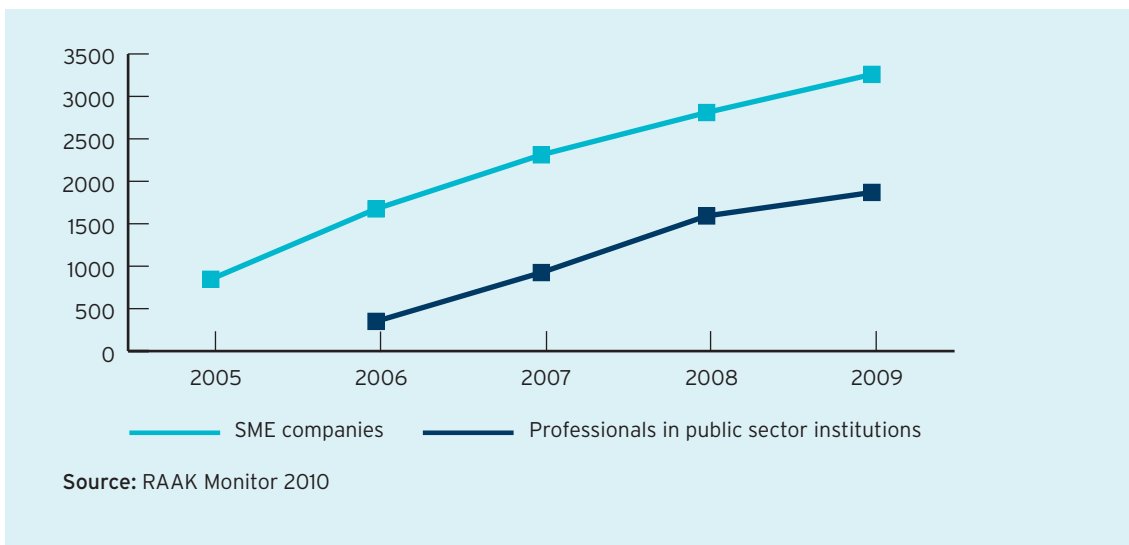
Figure 3: RAAK projects, per sector (2005-2009)



### Added value of applied research

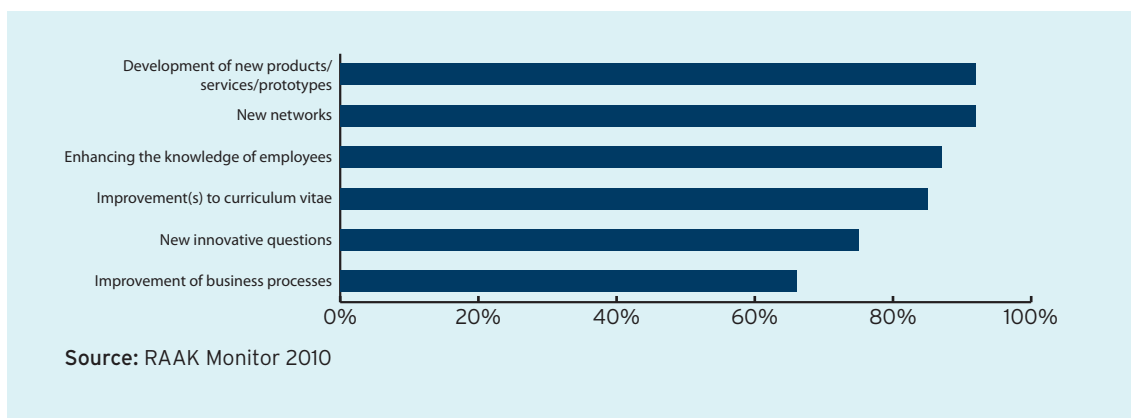
RAAK projects are an effective means of promoting cooperative ventures between universities of applied sciences, the SME sector and public-sector institutions. This is apparent from the considerable increase between 2005 and 2009 in the number of SMEs and public-sector institutions which cooperate with universities of applied sciences within the framework of the RAAK scheme (Figure 4). This increase contributes to achieving the aims of the Innovation Platform (Innovatieplatform), namely that one in four innovative SMEs in the Netherlands should cooperate with a knowledge institution.

Figure 4: The number of SMEs and public institutions involved in RAAK projects



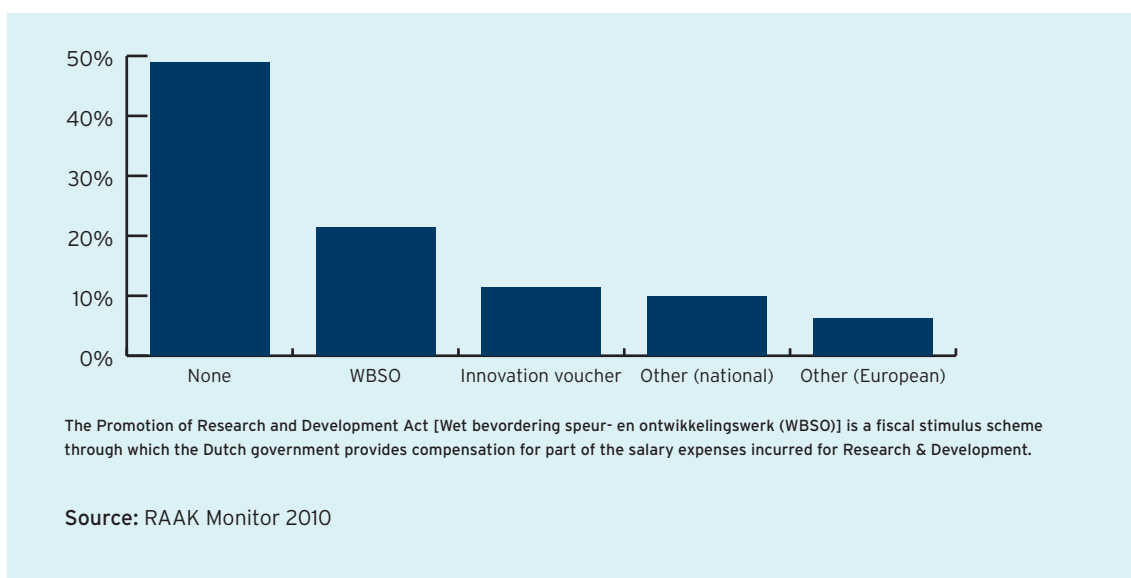
Applied research generates important results both for the university of applied sciences and for the SME sector. RAAK projects involving SMEs are an illustration of this. Figure 5 provides a number of examples of the results achieved within these projects. New products, services and/or prototypes are often the outcome of projects involving RAAK and SMEs (92%). Curriculum improvements (86%), the setting up of new networks (87%) and an improvement in business processes (66%) also occur.

**Figure 5:** Examples of the results of RAAK projects involving SMEs



The knowledge of universities of applied sciences appears to be an important source of innovation for SMEs. After all, more than half of SMEs which become involved in a RAAK project had never made use of an innovation subsidy previously (Figure 6). Clearly the scheme manages to reach a group of SMEs which have never been induced to innovate by other subsidies. Furthermore, it appears that only 28% of SMEs which participate in RAAK projects have their own Research & Development department.

**Figure 6:** Innovation behaviour of entrepreneurs: use of innovation subsidies by RAAK entrepreneurs



### An example of applied research: FORWARD - Arnhem and Nijmegen University of Applied Sciences

A reduction in fuel consumption and CO<sub>2</sub> emissions can be achieved by reducing the weight of the vehicle combination and, in particular, that of the trailer. Potentially a reduction in consumption of 5% is feasible as a result. In addition to the effect on the environment, a margin such as this is of considerable economic advantage to a transport company and consequently provides the manufacturer of the trailer with a competitive advantage. The companies which participated in the FORWARD project were given access to a database which enabled them to obtain information easily, which allowed them to develop lighter vehicle combinations.

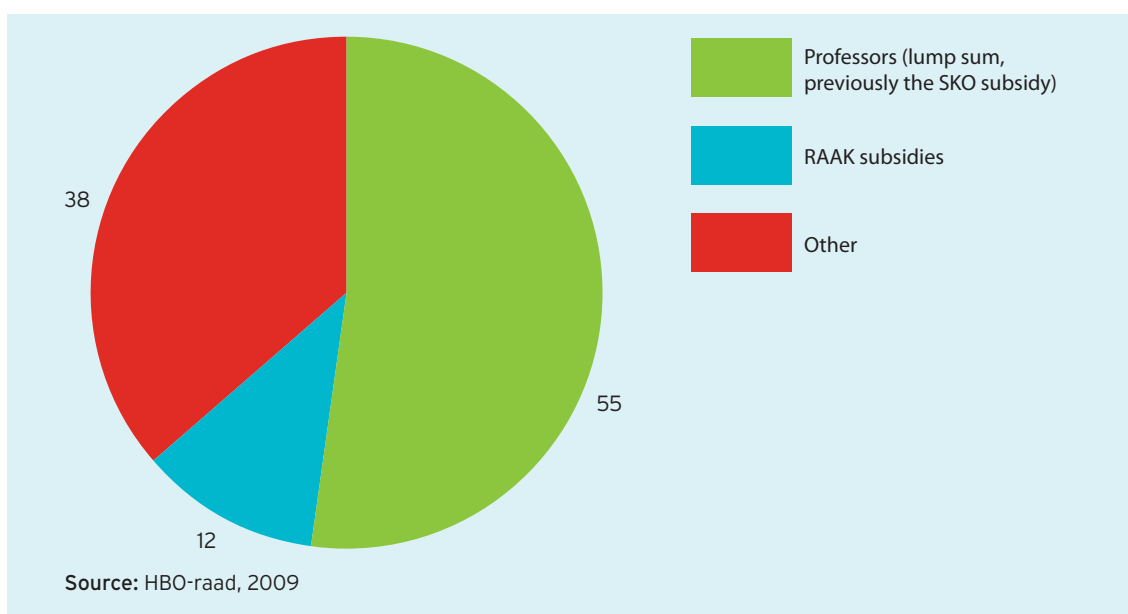
### Financing applied research

Using SKO funds (a subsidy for professors), more than 450 professors have been appointed since 2001. With the assistance of RAAK funds, more than 270 RAAK projects have commenced since 2005. Originally strengthening the research function was only a secondary focus of both subsidies. The SKO financing subsidy has since been included in the regular funding of universities of applied sciences (lump-sum financing).

Increasingly universities of applied sciences are managing to develop a broader financial basis for acquiring applied research through parties active in the areas in which they work and on the basis of national and international subsidies (Figure 7). In 2008, an estimated total of €105 million was spent on research at universities of applied sciences. Half of this related to the lump-sum funding by the Ministry of Education, Culture and Science, previously the SKO funds, and one tenth was generated through RAAK schemes. The universities of applied sciences have attracted the remaining €38 million in funds from other sources.

The amount in funding awarded to the approved RAAK projects amounted to approximately €110 million up until the beginning of 2010. More than 63% of these funds is financed from RAAK funds. The co-financing (financing by universities of applied sciences and partner organisations in the areas in which they work) amounted to approximately €40 million.

**Figure 7:** Research funds of universities of applied sciences in 2008 (in millions of euros)



## Quality of research

Since May 2009, the independent Validation Committee for Quality Assurance in Research has been in operation, with Pauline Meurs, a professor at the Erasmus University, as its chairperson. The Validation Committee for Quality Assurance in Research assesses whether the universities of applied sciences provide sufficient guarantees for the quality of their research. In doing so, the Committee makes use of review reports drawn up by external committees which the universities of applied sciences set up themselves. The review committees assess both the academic quality and the social relevance of the research. In doing so, the committees consider all the possible benefits of publications, presentations, products, innovations in professional practice and improvements in education. The Validation Committee for Quality Assurance in Research then assesses, for instance, the independence and soundness of the evaluations.

The four universities of applied sciences which the Committee reviewed up until April 2010 were all validated. <http://www.vkohogescholen.nl/>The reports can be obtained from the Committee's website ([www.vkohogescholen.nl](http://www.vkohogescholen.nl/)). All the other universities of applied sciences will follow at the latest in 2015.

## Towards a sustainable research climate

Universities of applied sciences feel the need to educate students who are able to work within their professions with a critical approach and who can contribute to innovation in these professions. To achieve this, education is required which is closely linked to state-of-the-art developments in the respective disciplines. A sustainable climate for applied research within universities of applied sciences is required for this. The universities of applied sciences have therefore also formulated a number of ambitions for 2015 with regard to the development towards a sustainable climate for research (Table1).

**Table 1:** Ambitions 2015 in relation to applied research

2008	2015
1 FTE at professorial level to every 1714 students	1 FTE at professorial level to every 720 students
10% of lecturers active in research	20% of lecturers active in research
4.8% of lecturers active in research	10% of lecturers active in research
50% of lecturers with a master's degree	70% of lecturers with a master's degree

It is important that more lecturers participate in research centres or do research into current developments in professional practice through research centres. This has consequences for (the development of) the research competences of lecturers. These investments are in line with the pleas made in the Knowledge Investment Agenda [Kennisinvesteringsagenda (KIA)] 2006-2016. In this agenda, it is argued that investments are required in the Netherlands to increase the number of researchers within the working population.

## Investment in and benefits of applied research

In order to promote a sustainable research climate, investments are required. This emerges from recent research carried out by the professors Maassen van de Brink and Groot of TopInstituut Evidence-Based Education Research (TIER), in cooperation with the economic research bureau, APE. They were commissioned by the Dutch Association of Universities of Applied Sciences (HBO-raad) to carry out calculations on the impact of the Investment Plan derived from the strategic agenda of the universities of applied sciences set out in the document 'Dedicated to Quality'.

If RAAK is expanded further to become a framework for programmes, this will result in the strengthening of applied research at universities of applied sciences. In addition it will stimulate cooperation between universities of applied sciences, the SME sector and public-sector institutions. An additional investment of €220 million is necessary for this. On the basis of co-financing by partner organisations, the total investment stimulus required amounts to €367 million. These investments in applied research will result in a greater R&D capital stock, which will result in an increase of approximately €73 million in GDP on an annual basis. This means that the investments in applied research will already cover the costs after five years, while the benefits will exceed the costs by a factor of two after approximately 12 years.

### **An example of applied research: protected and supervised housing for young people - Saxion**

The transition from supervision by youth social work services to supervision by adult social work services is great for many young people, and is often too great. The problems which occur in this regard often result in young people becoming derailed, while years of youth social work were invested in them to keep them on the right path. This affects approximately 50 young people per region. When they reach the age of 18, young people are expected to be independent, but often only really become adults when they reach 25. Saxion University of Applied Sciences' project 'Protected and Supervised Housing for Adults' has carried out research to ascertain how these problems experienced during this transitional period can be solved. The result of the research is a concrete method for living independently with supervision. Due to the exceptional results, experiments with other groups will follow to ascertain how this scheme can be applied nationally. The good results of this research were rewarded with the Andrée van Es prize for 2009, which is awarded to the initiative in mental healthcare which goes beyond the boundaries of the sector.

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