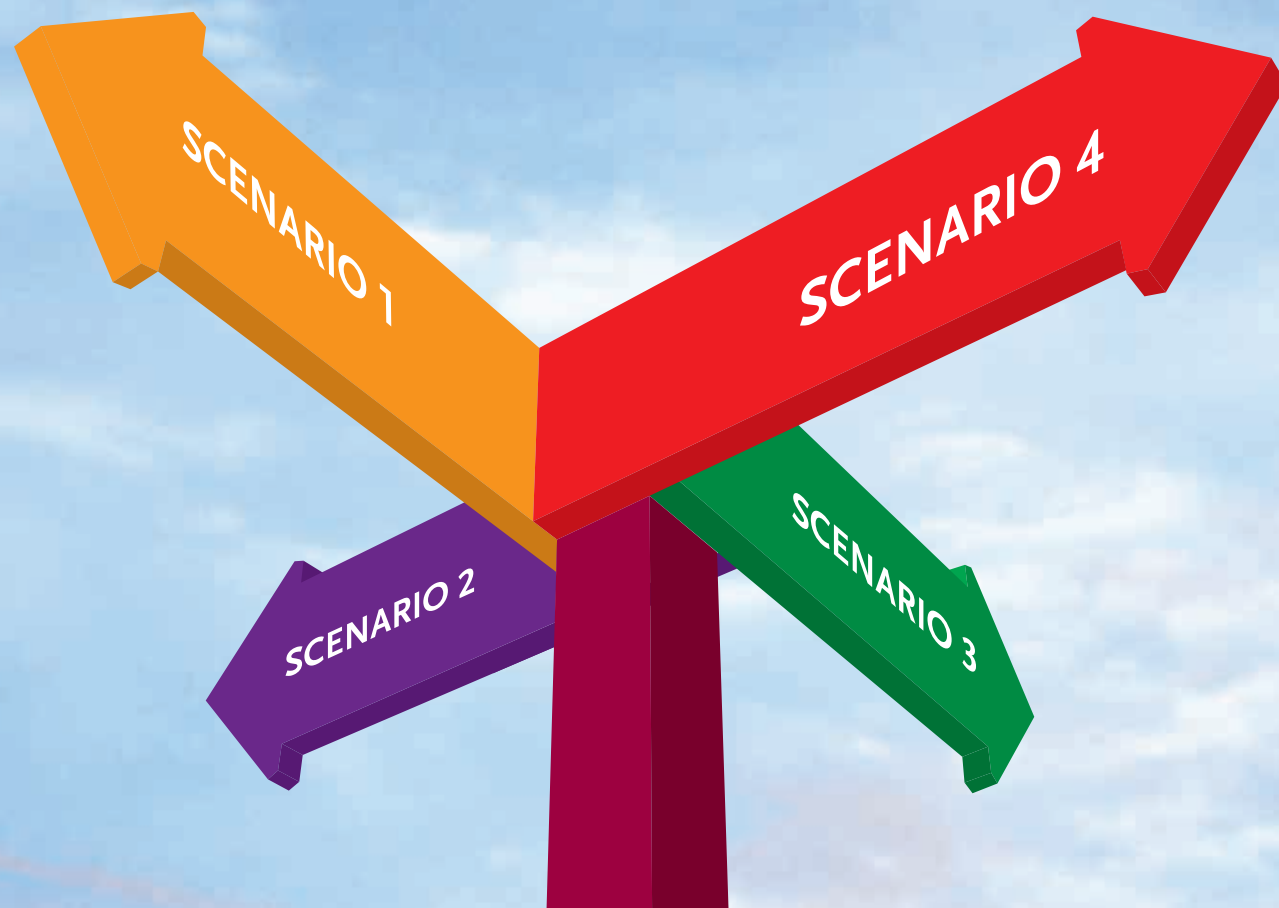


# Future knowledge

*4 scenarios for the future of Dutch universities*



## The scenarios

On the other side of this flap you will find the 4 scenarios. Useful to keep to hand while you read.

## National solidarity



Society emphasises  
public value  
of education  
and research

## European variation



A stable environment  
with little competition



A hyper-competitive  
environment in which  
competitive advantages  
are highly volatile



## Regional power

Knowledge is  
seen as a private  
commodity



## International selection

# Future knowledge

*4 scenarios for the future of Dutch universities*

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# 1 The future of Dutch universities

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In 2025 today's six year olds will be walking through the gates of our universities. What should they expect? Is higher education still accessible and affordable for all – or is it crowded and will they have to draw lots, take part in entrance exams, or apply for a chance to study? Will they go to a university in their area – or will distance no longer play a role?

What will they encounter? A breeding ground for socially relevant research? For scientific excellence? For ingenious solutions? Or a mixture?

Nobody is sure of the answer to these questions. But one thing is for sure, universities will play a key role in an international knowledge community. And that community is changing fast. New educational technologies are challenging universities to modernise. Urbanisation, the rise of European areas for research, education and innovation, and the increasing international mobility of knowledge workers offer new chances. Optimists see opportunities everywhere. At the same time there are doom scenarios, in which Dutch universities falter under the pressure of international competition, the rise of Asia and the financial crisis.

The future of the university is strongly influenced by external developments. This increases uncertainty and the importance of the development of strategies for the future. Therefore in February 2013 the VSNU association of universities and the Rathenau Institute started up the project **Future Strategy for Dutch Universities**. The goal is to arrive at a long term vision regarding the university itself, in terms of its scientific knowledge function and its relationship with stakeholders. The key question is how universities can optimally fulfill their scientific knowledge function in the future.

This publication is the result of the fourth phase of the process: the development of future scenarios.<sup>1</sup> In a great deal of strategic discussions about universities the topic is either student finance, number of students, societal challenges, MOOC's (massively open online courses) or innovation policy. However these *driving forces* are all connected. The **four scenarios** in this publication demonstrate how these connections may develop in the future.

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1) See [www.vsnul.nl/toekomststrategie](http://www.vsnul.nl/toekomststrategie) for an impression of earlier phases in this process.

Process



## 2 Four scenarios, two critical uncertainties

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For the development of the scenarios we used the method of Peter Schwartz's, "*The art of the long view*" (1991). The rationale is that organisations cannot influence large changes in their environment, but they can improve their capacity to properly respond to the changes. The scenarios are then used to formulate strategic options.

The scenarios for the Dutch universities are the result of exploring the most important developments in the universities' environment. Two critical uncertainties were identified based on conversations with universities, experts and stakeholders and further in-depth analyses. A short summary of the methods can be found at the end of this publication and on the project's website.

Two uncertainties underlie the four scenarios.

The first uncertainty is who the university should be for and who it should belong to. Do we see the university as public property, with the goal to advance society? Or is it in fact an enterprise with contractual partners, who can make demands on education and research in exchange for their investments? Who should pay for education? The state, the student, the employer? And is the answer the same for all forms of education, from bachelor's to post-doctoral? If education is not good enough, is it the inspector's duty to protect the public's investment? Or should students petition the courts

to get value for money? What is the dominant 'value network' within which the university operates: who are the most important stakeholders and what value do they attach to the university's performance?

The second uncertainty is the degree of competition and scale on which this competition takes place. Will universities have to compete more and more to recruit staff and students – particularly the best? Will competition for scarce research funding become fiercer, and more international? Or will universities choose collaboration and take on a regional role? Will research funding from direct government funding still allow the university to determine its own research priorities – if direct government funding remains a possibility? Or will the university design an entirely new financing model in order to maintain its global competitiveness?

Two strategic uncertainties, each with two diametrically opposed possibilities. Laid out on axes they present four different scenarios – four different images of the future. No global trends that encompass the entire world, no rough sketch of 'the university of the future', no certainties, just environments in which Dutch universities may have to operate in the future. The question is not which image will become reality, but which choices and possibilities each of them would present. They make it possible to explore the future.

# THE PAST AS A SOURCE OF INSPIRATION FOR THE FUTURE

The past can also make it easier to consider the future. What currently seems natural is in fact just a snapshot in a long-term historical process. That process shows that, over time, universities have been constantly changing in form and function. Knowledge of this variability can help with letting go of existing certainties, which in turn can help with thinking about the future.

## HYPER-COMPETITION

Ambitious students follow their instincts. National boundaries are not important for those who would like to become academics. Neither are barriers between disciplines. It has been this way for centuries.

The 'travelling brain' is even associated with the archetype of the scientist. Until well into the eighteenth century the form and function of the European university system was specifically designed to cater to heavy international traffic. With Latin as the language of instruction and no formal admission requirements aside from sufficient funds, the European universities made up an undivided network

within which students could freely travel for as long as they wished. Reputable scholars served as attractions for young talent and the universities competed with one another to bind such figures to their institution. The more great scholars, the more students, and the greater the chance that qualified successors would be found amongst these students – completing the circle.

During the nineteenth century this situation came to an end. Due to, amongst other things, the formation of the nation state, the division of science into separate disciplines, the increase in numbers of students and the formalisation of curricula the character of the university changed as well as its function. They primarily became symbols of regional or even national pride.

Travelling as a way to accumulate the necessary knowledge and skills was replaced by an extended stay at one university. Dutch and German replaced Latin as their lingua franca. Tests, examinations and progressive stages gradually laid the foundations of formal academic training, with admission requirements and eventual certification with diplomas. The contours of the modern university were forming.

Nevertheless, the wandering scholar did not disappear – indeed, his influence became increasingly strong over the course of the twentieth century. However, instead of moving continuously he now moved intermittently, and in the company of many others. The British Royal Society was the first to refer to this phenomenon as brain drain. They were referring to the mass departure of scientists to the United States and Canada in the years immediately after the Second World War, but within a short time the term had expanded to include the hurried exodus of countless Jewish scientists from



Nazi Germany in the nineteen thirties and forties, and of the inhabitants of former Eastern Bloc countries to the free West during the Cold War.

The impact of these emigrations on the economic and social development of both the countries of origin and the destination countries was enormous. The positive impact that the highly educated brain was expected to have on the economy of the country of origin was never realised. His 'student debt' would never be repaid. In this way he symbolised the classic example of a failed investment.

In other words: knowledge workers (students, scientific researchers, university lecturers) are of huge economic and social significance. They are indispensable when it comes to maintaining or improving well-being and quality of life and for scientific development and innovation. Even though means and motives may have changed over time; the 'battle for the best brains' is centuries old.

## PUBLIC-PRIVATE

Universities have historically been educational institutions. That is clear from the earliest financing models. Until the beginning of the nineteenth century professors supplemented their meagre incomes by having their students pay for their lectures directly. For this money the students were educated at the professor's house or in a rented hall – a hall that, in contrast to the university lecture halls, was heated. Popular professors, who taught well or presented challenging material, could count on having many students; professors who bored their audience with dull subject matter or offered outdated knowledge needed to keep a job on the side. Only half way through the nineteenth century was higher

education explicitly defined as a public interest and the responsibility for funding university staff shifted to the government. At least for those who were appointed at one of the three national universities (Leiden, Groningen, Utrecht). The VU University, the University of Nijmegen and the Municipal University of Amsterdam paid their staff with their own resources.

Conducting research was not officially one of a professor's tasks. Those who wished to satisfy their scientific curiosity did so on their own initiative; in a library or museum, and later in a laboratory, botanical garden or clinic. Purchase, maintenance and management of scientific equipment and other research facilities was usually carried out by private societies. They stimulated research by, amongst other things, holding competitions – and through the membership of scientific societies (Royal Society) or associations newly acquired knowledge could circulate within the scientific community.

Although the universities cheered on their professors with ever increasing enthusiasm for their research, it was still a long time before they were committed to putting aside extra funds for it. That did not happen until half way through the twentieth century. In addition to the provision of education, conducting research and serving societal interest also became explicitly a task for universities.

# 3 Exploring the future

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What does this look like in practice? In short: like a fire drill. No one can predict when a fire will break out, or where – not even if a fire will break out. But if it happens it is better that everyone knows what they should do in advance. That is why we rehearse regularly; so that we won't run around in panic, but know what the emergency number is, where the fire extinguisher is, who we need to warn, where the emergency exit is...

In much the same way the future scenarios help to formulate answers to contemporary strategic questions. The questions remain the same: How can the university keep offering top quality? What are the university's key roles? What are they training for? Who are its most important partners? Who invests in university courses? Where are boundaries with regards to other knowledge institutions (colleges, educational institutions, non-academic research institutions, private schools, industrial R&D)? What is the optimal way to connect to the labour market? What does differentiation in quality mean for the university business model? Is specialisation necessary, and if so, who or what determines the choices?

But depending on the scenario, the answers can be very different. Suppose the public function of the university gains value, and that competition for money and students gets stronger, then what is the best strategy to keep providing

top quality? Then who are the most important partners? Or in another scenario: suppose the competition declines and private partners become increasingly dominant. What would then be the best strategy to keep providing top quality? Then who are the most important partners?

Alliances to pay for top study programmes look very different in one scenario compared to the other – just like criteria for quality, core roles, research priorities and admission requirements. In this way the same questions lead to different answers. They invite us to look at the future of the university from different angles. This broadens strategic horizons.

The scenarios offer the opportunity to look at strategic questions in a new way. Not using old assumptions, but with an eye on future possibilities, chances and expectations for the universities. Outside traditional boundaries, beyond today's economic crisis, and focused on today's children – tomorrow's students.

That is the intent of the fifth phase of the Future Strategy for Dutch Universities project. With these scenarios managers, politicians and other stakeholders will be challenged to ponder different strategic questions and their answers during regional meetings.

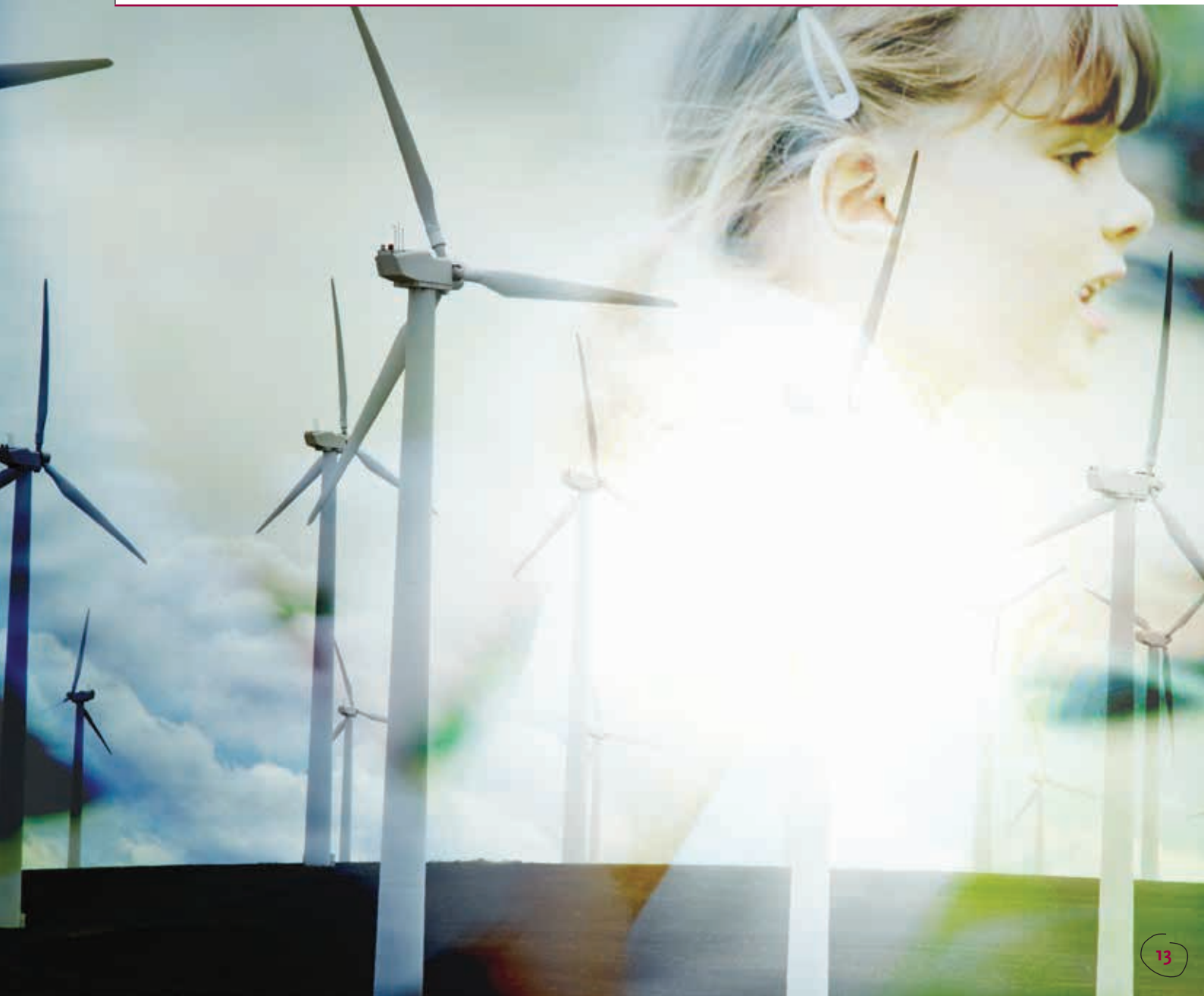
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The insights from the regional meetings can then serve as input for the second Duin and Kruidberg retreat in June 2014. There the participants will focus on the formulation of a long term vision for the university itself, of its scientific knowledge role and its relationship with stakeholders.

## NOTES

SCENARIO I

# *National solidarity*



## SCENARIO I

### Society emphasises public value of education and research, in a stable environment with little competition

#### Europe

Globalisation has failed. After a few escalating conflicts between Russia and Europe (about supply of gas amongst other things) calm has eventually been restored through a successful intervention by the United States. Russia's dominant position has subsided. Ukraine, Moldova and Georgia have definitively withdrawn from Moscow's influence and allied themselves with Turkey. The world is divided into five different power blocs, that in terms of size and influence are fairly evenly matched and hold each other in balance. Trade agreements between Europe, the US, Turkey, South America and Asia have ensured a stable and prosperous Europe – a 'Fort Europe' according to disappointed globalists.

After the joining of the former Yugoslavian states in 2020 the European Union has decided not to admit any new member states. The European borders are sanctioned by the European Parliament and set out in the European constitution. It was possible to successfully achieve political and economic integration by recognising the large cultural differences

between the member states. 'Diversity in unity' turned out to be a persuasive slogan. Europeans recognise each other as Euro-Italian, Euro-Belgian or Euro-Greek. Previously folkloric events have taken on serious significance: for example, participating countries now send genuinely talented musicians to the Eurovision Song Contest. Once again there is a strengthened basis for shared values and collaboration. Solidarity and happiness are more important goals in life than possession of money and goods. European youth use interrail from their 15<sup>th</sup> until their 25<sup>th</sup> birthdays. This allows them to easily visit their friends in other European countries.

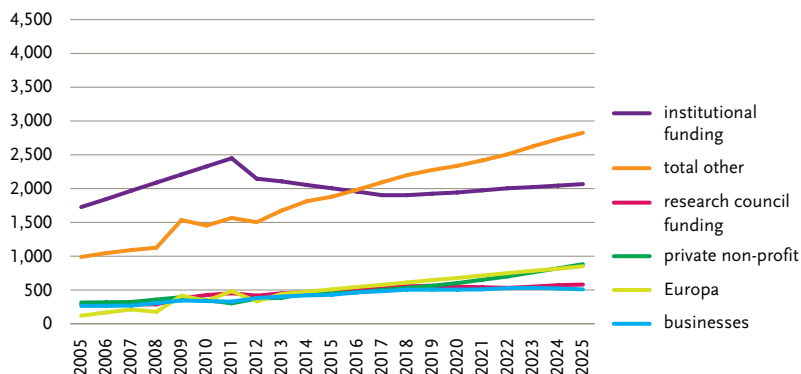
After the Russian fiasco the transition to a sustainable energy supply has gained momentum. The electric car has become a major European success story and export product. Under leadership from Germany, Norway and Switzerland most European countries have made significant investments into sun, water, wind and geothermal energy. That has paid off; with better energy storage techniques, a change in consumer culture (reduced consumption), eco-taxes and a reasonably functional resource recycling system, sustainability has become a less urgent political issue. Instead security, healthcare and privacy issues are high on the agenda. The income disparity in the Netherlands is small and employment rates are high. The retirement age has been increased to 70. Economic growth is limited, but never mind; money doesn't make you happy anyway.

## Research

European science policy is strongly focused on science and innovation. After the completion of Horizon 2020 (a success!) new *Grand Challenges* are formulated: recycling of scarce materials, extraction of the sea's resources (minerals, algae, salts), personalised medicine, *big data*, and the *silver economy* (innovations to improve quality of life). In order to implement this, money has been set aside **in one large European research budget**. Member states contribute to this pro rata. Public and private groups work alongside knowledge institutions on the agenda and the planning of the European research. Science and innovation are integrated into public life through co-creation, *Responsible Research and Innovation* and *Constructive Technology Assessment*. This has strongly rooted research universities into society.

Research council funding has become more dominated by regional development, for which the forming of consortia was necessary. In 2018 the decision was made to allow colleges, research institutes and businesses to participate in these consortia as well. This means that although the total amount of indirect government funding has increased, universities do not benefit from it. The Dutch Research Council, NWO, is even under pressure to ensure that the 'newcomers' participate adequately. Initially this even leads to a decrease. Business funding is relatively low and only from domestic industries. Because the European institutional structure has remained strong, there are still many 'traditional' business laboratories. Thanks to high quality education businesses have

Figure 1.1 Research funding



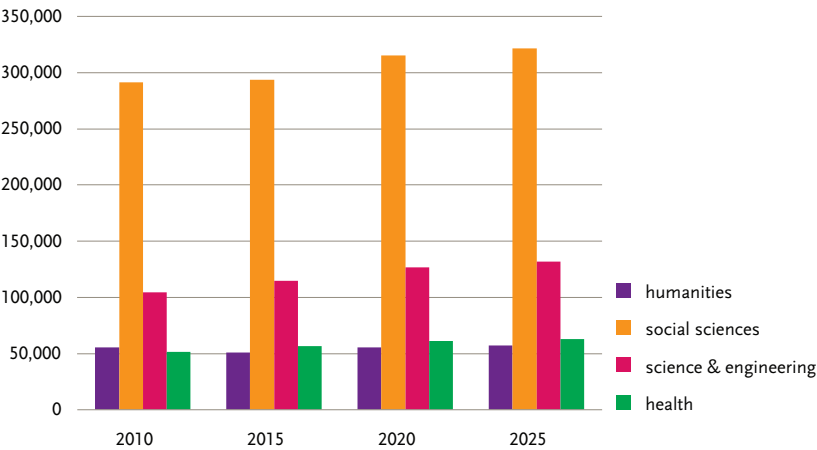
decided to invest in R&D in Europe. However, that does not result in much growth for universities, other than in the context of consortia.

Education

Unlike research, higher education has pre-eminently remained a **national issue** and is more focused on **‘Bildung’** than on vocational training (a separate market has been created for this). Because it is primarily a mechanism for cultural development (and that is an important building block of the European Union) education takes priority over research at universities. Universities have therefore become primarily educational institutions. Higher education is free up to and including the master’s degree.

The bachelor’s/master’s structure has remained the same, but students no longer choose a discipline but instead choose to focus on a social theme (health, life, housing, mobility, genocide, security, privacy, culture, space travel, safety, healthcare, global citizenship, materials, etc.). They prefer to study in their home region, but stay in contact with fellow students in other European countries through *online learning communities*. The social relevance of these themes ensures good links to the labour market. The international business community would very much like to get their hands on these extensively trained youngsters: they are often creative, flexible, enterprising and, not unimportantly, politely anarchistic. Thanks to these characteristics they are well suited for a life in business.

Figure 1.2 Higher education students per area

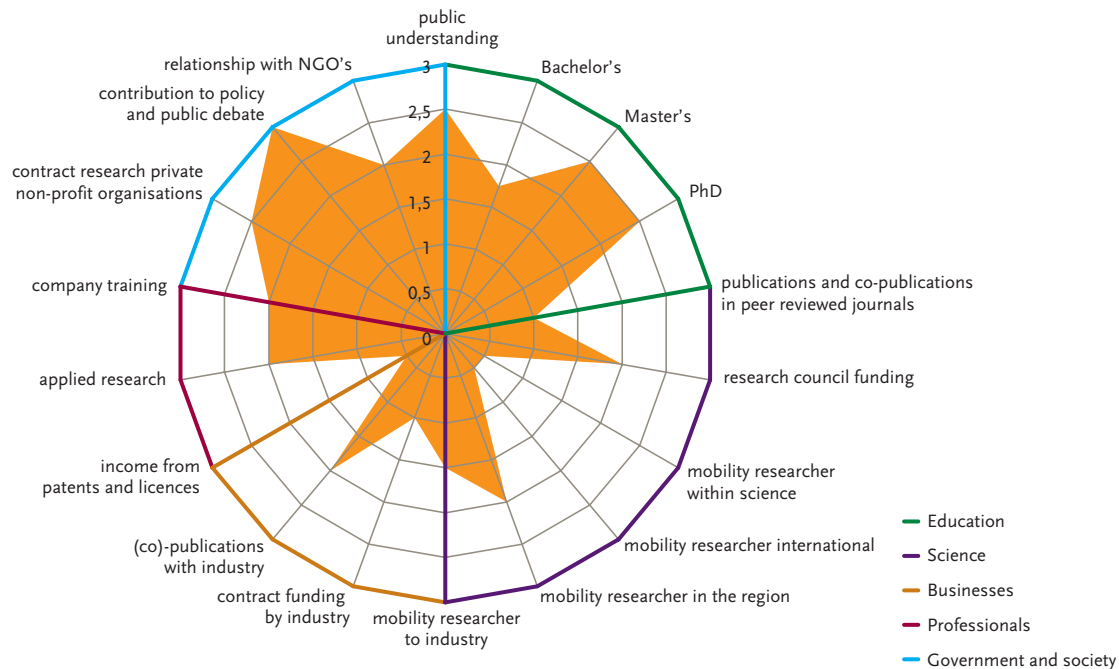




Students are free to choose what they study, but there is an admissions quota for relatively expensive courses. Students use *learning analytics* to discover their own talents and potential, so that they can fully develop. To this end the universities offer special *toolkits*, but leave the choice and pace of study to everyone's individual aptitude and preference. What is most important is that students learn the social themes of their study courses inside out. That presupposes an optimal balance between individual ability and study trajectory. Those that perform best do not do so through abstract

learning goals or individual grades, but in relation to the social theme. **Success is a collective achievement.** When students (in terms of *comparative learning statistics*) have made sufficient progress, they can pick up their bachelor's or master's degree. They can also determine which learning environment they prefer themselves: knowledge is offered in learning groups, libraries, at the workplace (hospital, town hall, knowledge institution) and online through MOOC's. Of course a professor can also still be deployed.

**Figure 1.3** *Performance profile*



## NOTES

## SCENARIO 2

# *Regional power*



## SCENARIO 2

A stable environment with little competition, in which knowledge is seen as a private commodity

### Europe

The inability of the European leaders to curb the ongoing economic downturn, has made belief in a united Europe to disappear. After populist movements had gained popularity for many years, 'Brussels' had become more and more associated with meddling and bureaucracy and three quarters of the member states had voted en masse against the European constitution twice in a row, Europe has fragmented into sub-regions that work together with varying degrees of success and cooperation. 'Freedom' and 'progress' have been important slogans, but they have lost their nationalist tinge.

In the Netherlands successive centre-right governments were compelled to reduce public services to a minimum. Old welfare systems have been eroded. Extensive deregulation – primarily for economic reasons – has drastically decreased the national government's power. It didn't help to restore the faith in 'The Hague' that the length of the governing period of often argumentative and unstable coalitions got progressively shorter.

In response, citizens, local businesses and local authorities have joined forces. With a little creativity it was possible to get the regions back on their feet. After all, in a local knowledge economy there are chances for everyone. Sharing with each other is also a choice. To make the region habitable again everyone had to contribute what they could. Not participating was not an option. One good turn deserves another. It is important to know one another: that creates the trust that is necessary to show solidarity and provide efficient services. In line with earlier 'bread funds', 'study funds', 'green funds', 'baby funds' and 'recycling funds' were also set up. Citizens see themselves more as social entrepreneurs. A 'do-it-yourself' attitude is encouraged and praised; at school pupils are graded for creativity, entrepreneurship and independence in addition to their normal grades for reading and writing. Learning to work together is an important part of education.

Not every region has been equally successful in pulling itself out of the mud. Some parts of Europe have become depopulated, while others have blossomed and become centres of activity. Geographical circumstances and location have helped to determine the development potential of different sectors.

The Netherlands has also been split up in this way and divided into independent regions which differ significantly from each other with regards to economic development and

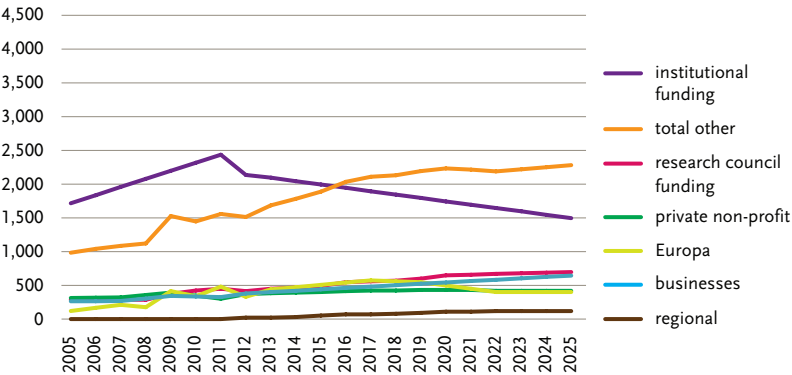
attractiveness. Every region has made us of its potential where possible; as a result each region has developed a unique and distinctive character. Some regions promote their identity annually during traditional festivals (Maastricht has beer festivals in October, Twente holds milk churn shooting championships every December).

Research

Because capacity for innovation, knowledge and science are also very important for the economic development opportunities of the region, the business community would like to invest in this area. The university's research programme is strongly linked with the region's economic chances and possibilities. Research that is not directly applicable or realisable has a hard time making progress. Universities behave as public entrepreneurs. They form conglomerations with the business community in knowledge producing and knowledge dissemination units (institutes, centres, faculties, schools, etc). Part of their role is the development and provision of refresher courses, so that employees and businesses can continue to adjust their products to market conditions. That requires customisation. A substantial part of a university's resources are generated through the revenues from its *life long learning* facilities. The traditional model of the *universitas* has been abandoned.

Research council funding has increased, since the NWO took over the innovation funds from AgentschapNL in 2016. Its task has become more focused on the allocation of government money. Ministries increasingly ask the NWO to manage the research they commission. The universities benefit from this. Research income sources that rise are contract related in two ways. Research for the business community increases, and in addition there are more regional funds in the strong urban knowledge regions (for this reason this source of funding has been included in the figure separately). However, these funds cannot compensate for the drop in the national resources and especially not for the drop in European resources.

Figure 2.1 Research funding



Education

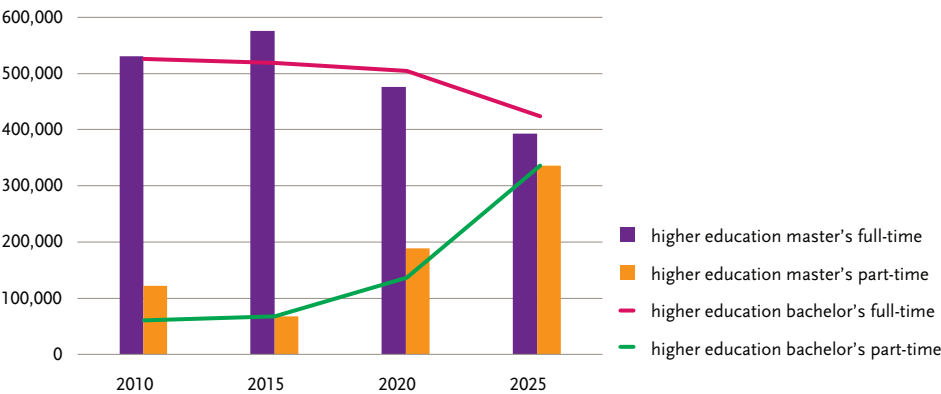
Business sectors worried about a shortage of well trained employees invest in training and vocational schools themselves. The specific need for knowledge is often regionally defined. As a result of this there has been a proliferation of courses from high, higher to highest – and with a range of diplomas, certificates and licenses to reward at graduation. The quality of these is often unclear. As well as differences in quality there is also a great deal of variation in price. This offers opportunities to the less wealthy students.

The proportion of full-time students decreases, while the number of part-time students of all kinds increases. That has created a large market for commercial higher education providers in all shapes and sizes, including SPOOC's (special

open online courses). Students no longer make a distinction between universities of 'applied science' and research universities. They are concerned with value for money.

Students compose their courses themselves in a modular fashion: they buy courses and training that are important for their careers or personal development. They keep doing that their whole lives. They are price conscious and always manage to pick an affordable study path from the wide selection available. A fixed curriculum no longer exists. Thanks to the close contacts between university and business, courses and the labour market are well linked. Students do not necessarily choose regionally, but rather by sector – technical, medical, ICT sectors and *life sciences* are especially popular. They prefer to live on the

Figure 2.2 Number of part-time and full-time students



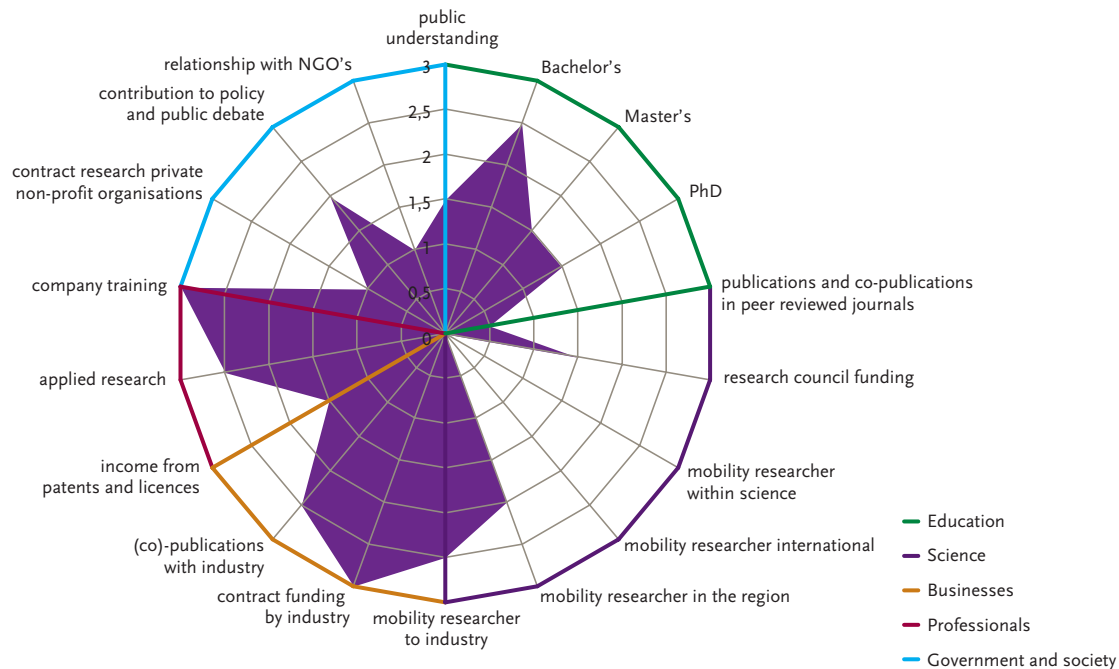
campus, where many businesses have also based themselves. In these **'valleys'** there are all kinds of places where employers, CEO's, students, teachers and customers can meet each other (e.g. catering, shops, hotels and cinemas).

In order to obtain an optimal balance between individual talent and training (career) of students, specialised firms in *learning analytics*

offer selection tests and career advice – for a price, of course. These firms often obtain their data from the nearby university.

In turn, the university maintains an extensive alumni network that they can use as a marketing mechanism, in case the number of applications drops. But that is hypothetical: the global growth of the student population is so large that there are enough students for every course offered.

**Figure 2.3** Performance profile



## NOTES



## SCENARIO 3

# *International selection*



## SCENARIO 3

Knowledge is seen as a private commodity, in a hyper-competitive global environment in which competitive advantages are highly volatile

### Europe

First China and the United Arab Emirates, and then Brazil and Iran have concluded that knowledge and creativity are the key to economic success. Those who wish to be (and stay) competitive must open their borders. Protectionism is dead. Following the lead of Guangzhou and Dubai, Rio de Janeiro and Tehran have set up mega-universities. They have just one goal: to make use of the enormous talent pool, and it seems to be working. The **global student population** has grown to more than fifty million in less than ten years. The thirst for knowledge seems to be unquenchable. Soraya Estaban has become an icon for a new kind of learning: once a grubby little girl from a shanty town, now a Nobel Prize winner and one of the most brilliant professors at the University of São Paulo. Her story inspired hundreds of thousands of girls in similar circumstances around the world. The 'knowledge wars' have entered a new phase: the competition has become fiercer now that the number of players has increased, and the stakes are higher than ever.

The former third world countries are catching up fast. Even so, the USA is still economically and politically dominant in the world. Their own supply of shale gas has made them less dependent on the import of oil, which has tipped the geopolitical balance with the Middle East. In addition, American foreign policy has successfully focused on undermining the formation of power structures in Islamic countries. As a result America has been able to fully focus on its own economic growth. Although racial conflicts still flare up now and then and despite the still increasing income disparity, belief in the American dream remains strong. Japanese youngsters would rather have a hamburger than sushi. Enough said.

Europe has been unsuccessful in resolving internal political differences, resulting in the stagnation of **European integration**. Economic inequality and the mistrust between member states turned out to be too great. After yet another financial crisis, the EU was torn apart. After that, North West Europe developed into a strong region, while countries like Greece, Italy and Spain have left the eurozone. With the neuro, North West Europe has developed a strong competitive position for itself when compared to other global regions.

Employment rates are high (the retirement age has been increased to 70), but so are income differences. Many jobs in the middle section of the labour market have disappeared due to

automation, significantly thinning out the middle class. Moreover, due to population growth in Europe coming to a standstill (resulting in a relative decrease in the workforce), a split in society between the *haves* and *have-nots* has developed, that largely coincides with the split between the higher and non-higher educated sections of the population. Experts refer to this as an hourglass model: the labour market is well stocked at the top and at the bottom, but the difference between the two is large and hard to bridge. In order to give their children the best possible chance in the labour market, parents send them to high quality private kindergartens as early as possible.

## Research

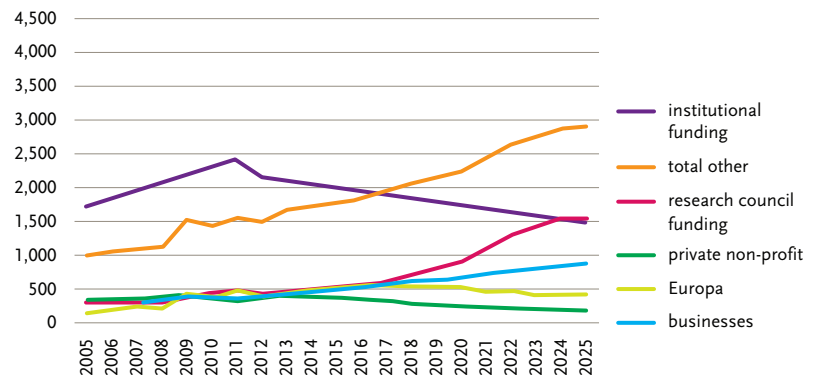
Universities with the highest positions in the global rankings and outstanding reputations are the most popular. But it is difficult to hold onto these positions. Scientific and technological developments are progressing rapidly.

Investments in equipment and scientific staff are expensive and uncertain. Choices can lead to striking gold, but can just as easily lead research down a dead end. In addition, the best of the talent pool are becoming harder to peg down. Brilliant professors (just like students) choose the best conditions. If they are better elsewhere, then that is where they will go. Long distance working is not possible for all disciplines, but still rapidly increases in popularity. Considering the largest proportion of the research is contracted and planned out by businesses, and these

businesses have an interest in a good quality research environment, the optimal match between business and researcher can change quickly. Businesses are constantly looking for the best place to conduct R&D. The global spread of specialised research centres has not always turned out to be a good idea.

It is unclear who is responsible for the solving of large social problems. It is difficult to develop long term visions in such an environment. After the disappointing results of Horizon 2020 decisions were made in Brussels to reduce the budget of the new Frontier 2025 programme and to exclusively focus on innovative and fundamental research. One time granted money from this fund strengthens the university's reputation considerably – but the competition is fierce. Past successes do not offer any guarantees for the future.

Figure 3.1 Research funding



North West Europe is still a strong economic region, of which the Netherlands is a part, thanks to good public infrastructure. The port of Rotterdam has been combined with the port of Antwerp. Schiphol has become more specialised in commercial and tourism traffic. Freight is increasingly being sent through the airport in Flevoland, that has the necessary space for freight and train traffic and has become much easier to access. In addition the ongoing investments in energy and ICT infrastructure still continue to bear fruit.

Government funding has also become strongly competitive. Direct government funding has been partly shifted to NWO. What remains is allocated on research performance and contractual agreements between government and universities. The goal is to use the money in such a way as to contribute to economic success.

Increasingly often foreign universities, especially from the border regions, compete to receive Dutch research funding. And likewise, foreign money flows freely into the Netherlands. That has led to a strong growth of 'research council funding', that has taken on the nature of government contract financing. In areas the Netherlands is strong at, businesses outsource much research through bilateral agreements, and especially at top universities and universities that have made distinctive choices. Private non-profit funds are small.

2) A learning identity is a kind of intelligence passport. It quickly shows what someone's talents are. It is for sale from specialised businesses.

## Education

MOOC's and globalisation have had a disruptive effect on the knowledge infrastructure. Demand for higher education has increased, but supply has decreased. There are only a few traditional universities left. The universities have lost their monopoly and the market for traditional university education in the Netherlands has shrunk to a quarter of what it was.

At the top of the pyramid there is tough competition for scarce positions. Universities have rigorous, global selection processes to ensure they get the best candidates. Certified tests are part of the selection procedure. Upon registration student candidates must present their *learning identity*.<sup>2</sup> MOOC's play an important role in the global search for talent, but also in the branding and profiling of globally active higher education institutions.

The entire education market is stratified (in this rigid hierarchy the best universities are at the top of the pyramid) and at the bottom it is strongly divided. There are courses for sale for every level and field. Available education is extensive and varied. Courses in the sciences, ICT, marketing, advertising, languages, economics, law and technology offer better opportunities in the labour market and so they are more popular with young people, while a market has developed amongst older people for history, culture and philosophy

courses. Most education is offered 24 hours a day or part-time. A leaflet (with disclaimer) describes exactly what a consumer can expect, in terms of opportunities in the labour market, time commitment (from students and teachers), expected returns and level of national qualification.

Figure 3.2 Number of full-time and part-time research university students

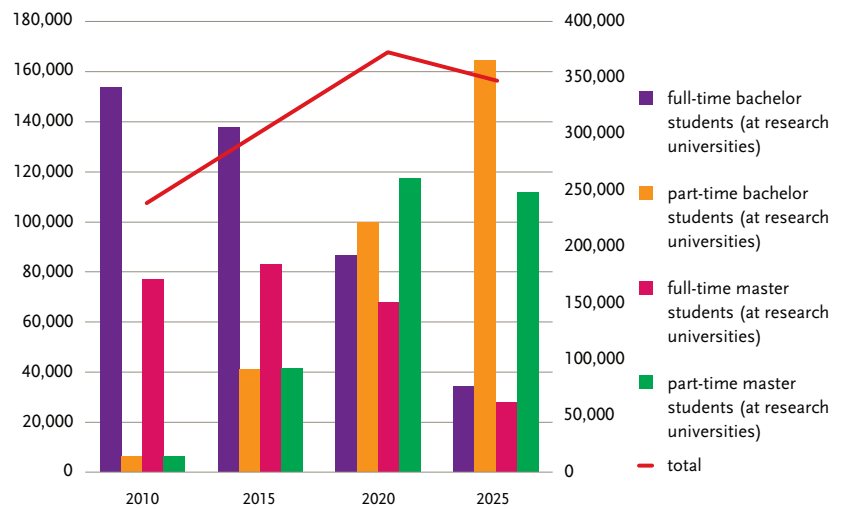
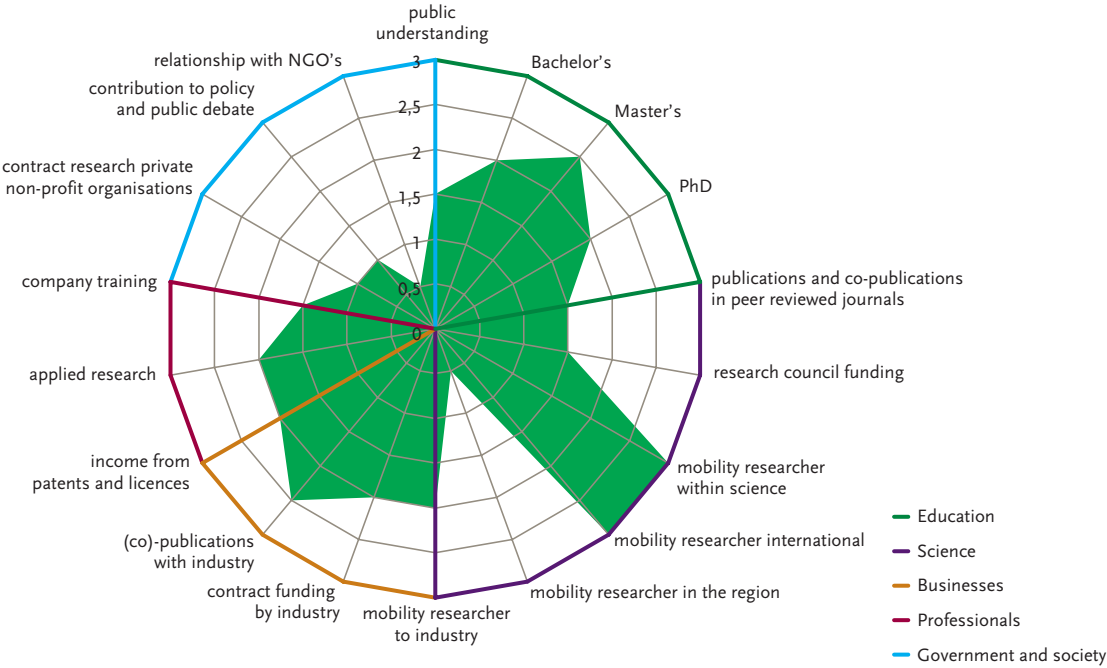


Figure 3.3 Performance profile



## NOTES



## SCENARIO 4

# *European variation*



## SCENARIO 4

A hyper-competitive, global environment in which competitive advantages are very volatile, and in which society has emphasised the importance of the public value of education and research

### Europe

European integration has progressed economically but stagnated politically. Constant squabbling over emergency funds, the permitted size of budget deficits and the debt burden of member states has hindered the growth of Brussel's power. In contrast, integration has been a great success at the social and cultural level. Actually to many peoples astonishment.

The cause of this was two-fold. First there was the outrage over the American government's shameless eavesdropping practices that sent shock waves across Europe. In reaction to this Europe has been re-examining itself. To their surprise the European political leaders discovered that certain norms and values are deeply ingrained in Europe's centuries old culture. Right to privacy. Respect. Courteousness. Tolerance. Integrity. These values are worth protecting. And the European government is responsible for their protection. Previously warm international relations with the formerly close ally have cooled considerably.

### Research

This unexpected European consensus laid the foundations for ideas regarding the assembly of a large European research fund, initially intended as a means to catch up with the Americans in the area of information infrastructure. However, they gained momentum after the first energy crisis caused by an acute shortage of neodymium in 2018. Governments and businesses suddenly came to realise that the dependence on scarce resources (African governments turned out to be notoriously unreliable suppliers) is a shared problem and deserves a shared research effort. In order to cope with the energy crisis (and more generally: the scarcity of resources) a decision was made to make large scale investments in research and innovation. Member states then united themselves in support of a new fund in which the ambitions of the former European Research Area, the European Higher Education Area and the European Innovation Area were combined.

In addition to this large European fund there are countless private and semi-private funds for scientific research. The tenders that these funds issue are focused on societal issues: healthcare, food-safety, security, privacy, resources, poverty reduction, emancipation of women, racism, rare disease, etc. There is a huge variety of funds. Some are established from the estates of the international elite (following the example of the Bill and Melinda Gates Foundation), some by consumer groups (using money gathered from crowdfunding). Some have extremely



vague objectives ('promotion of culture'), while others are very specific ('new employment opportunities for the Utrecht area'). Some issue tenders annually, others once every ten years. Some offer billions of euros, while others offer a few thousand. Some take a year to allocate funds, others have decided within a month. And so forth. However, one thing they all have in common is that they plan research competitively. Quality and selection are core values, central to these funds. Because scientific research is so important, and so highly respected, levels of application are high and competition is fierce.

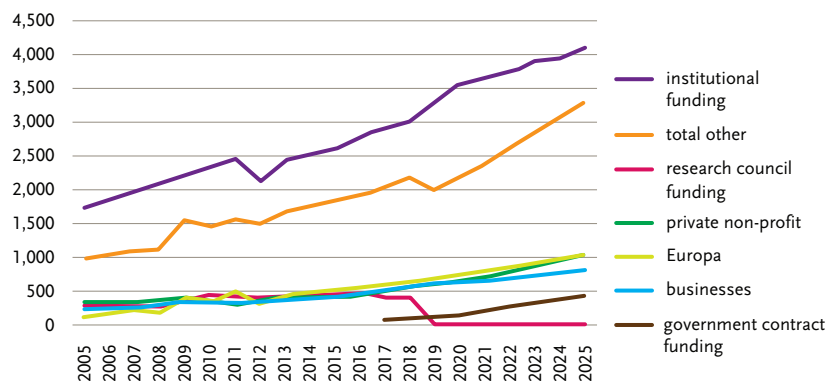
In practice this research climate primarily favours North West European groups. Much to their dismay Middle and Southern European member states must watch many of their researchers leave. Greek and Italian universities begin to languish. But within North West Europe academic mobility is also high. Top researchers leave for the best universities – and these are often places where the money from various funds allows both fundamental and strategic research to be conducted. Curiosity driven research takes a prominent place in both universities and in a growing number of specialist Institutes of Advanced Study.

The research landscape is highly fragmented: there are long-term research projects, but also short-term projects – there is research that can be carried out individually and there are also strong collaborative efforts, sometimes within a single discipline and sometimes multi-

disciplinary, at one workplace or as part of an international collaboration. And so forth. This multi-faceted assortment facilitates the rapid circulation of researchers (less than 10 percent have a permanent position!). It also creates space for a highly stratified population of researchers (young researchers, senior researchers, postdocs, interim researchers, experienced researchers.) Academic careers are more likely to be 'patchwork' than to show linear progression.

Direct government funding for research has been expanded but is distributed based on performance. Indirect government funding in the Netherlands is redundant and was merged with direct funding in 2019. Competition for excellent research is organised at the European level. Distribution of direct government funding based on performance provides a sufficient guarantee of quality of

Figure 4.1 Research funding



research. In 2019 a new source of public contract research emerges for international, national and regional governments.

Distribution of research funding is much more skewed, strengthened by the biblical adage: whoever has will be given more. That means that the richer universities are in a position to let money from one of the many non-profit private funds accumulate, and can persuade businesses to invest in collective research.

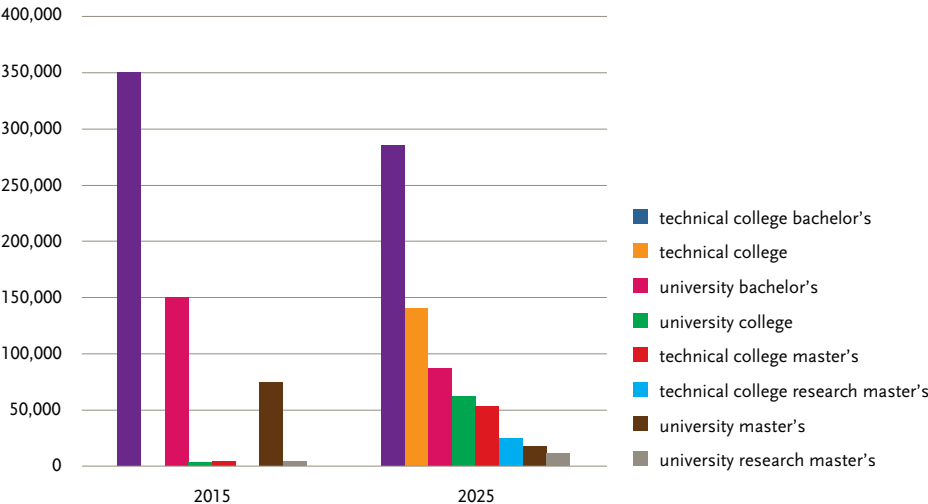
Education

The global education market has seen massive growth. That has led to new differences in quality. For this reason the Organisation for Economic

Cooperation and Development (OECD) has referred to the highest education as quaternary education since 2018. The education market is strongly stratified. Because there is such a large number of students, universities are forced to offer education at various levels. For a select group at the top of the pyramid (10 percent – those in so-called quaternary education) there are small *colleges*. Here, students prepare themselves for a career at the top of academia. They learn and live with their teachers in small *communities*, usually in or near a large city. Those who do not belong to this highly talented group will have nothing to do there, and will seldom or never visit.

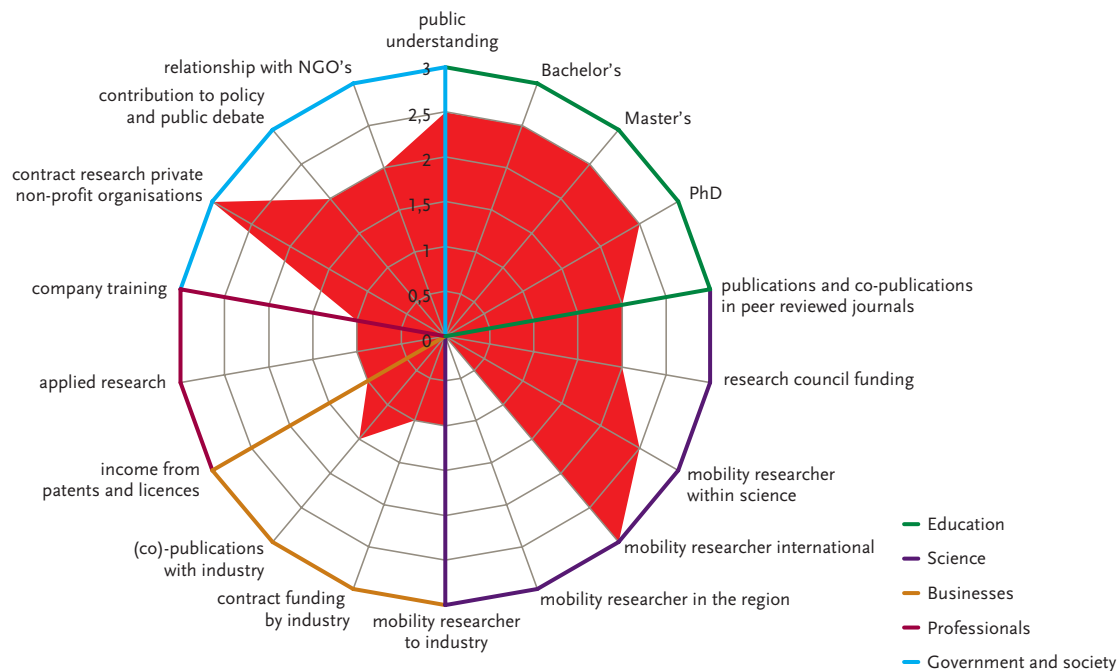
The other 90% of the student population can follow education at three levels. Depending on IQ,

Figure 4.2 Stratification of the education market



aptitude and motivation and after a rigorous selection procedure students are allowed to enter one of the three levels. **'Bildung'** is core for all three levels (with a focus on societal responsibility and European/universal human rights), but the way in which education is offered differs for each level. At the lowest level MOOC's dominate, at the second level live lectures are given and at the third level students encounter various kinds of *blended learning*. In this way higher education is accessible to all, but not everyone receives the same level or has the same prospects.

**Figure 4.3** Performance profile



## NOTES

## 4 Reminders for the future, dilemmas for now

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Four scenarios, four visions of the future. No certainties, but possible outcomes of contemporary developments. The question is not which image will become reality, but which choices and possibilities each of them present. Consideration of the various scenarios creates 'memories of the future'.

Three general dilemmas are immediately evident:

1. What are the university's core functions? University education currently has many variants from bachelor's degree to Higher Education for Seniors. Some scenarios seem to suggest further variation of types of education. Others suggest a reduction. The same is true for research. In one scenario the university is only expected to carry out basic research, in another it is expected to conduct a wider variety of research, with basic research taking a secondary position. Where are the boundaries with regards to other knowledge institutions (teaching universities, private educational institutions, non-academic research institutions, private schools, industrial R&D)?

2. How regional, national and international should a university be? Universities have national identities. Increasingly they are asked to develop a more regional or international role. That means that the development of the university is increasingly becoming the business of regional and international governing bodies. Or is the university independent of all governments?
3. Who pays for universities? Universities are currently still paid for largely by the national government. Will it want and be able to invest in universities in the future? Are the expectations of other stakeholders linked to investment in the university?

Considering the differences between the scenarios universities should have the space to make strategic decisions. Some of these decisions are not just the universities' decisions, but also those of stakeholders. Or perhaps they are primarily those of the stakeholders, if they must make space for new initiatives, develop education and/or research themselves, because they can do it better than the university, or because their expectations are linked to their investments.

# 5 Justification

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The scenarios are a result of exploring the most important developments in the environment surrounding the university and the discussion of these during the Duin and Kruidberg conference 2013. The first draft of the scenarios was put through an expert cross-examination by fifty people from the fields of higher education and scientific research in November 2013. Reports of these meetings and the associated documents can be found on the project's website<sup>3</sup>.

A list of literature has been included, which was used to help understand the most important developments and possible variations and effects of things like urbanisation, Europeanisation, the rise of Asia and the development of MOOC's.

In addition to text the scenarios also include various figures: quantitative analyses of the development of the number of students and quantity of research funding, and web diagrams that help visualise the expected performance of universities in the future. The scenarios for the development of the number of students are based on the Ministry of Education's Reference projection for 2013. This projection predicts the development of pupil and student numbers up to 2030 based on demographics and policy measures. The 'National Solidarity' scenario follows this reference projection's predictions with regards to numbers of students. The other three scenarios are variations on the reference projection, taking into account the

specific conditions of the student market in their scenario. In order to make a realistic estimate of international mobility in the different scenarios, OECD data for international student mobility from their document Education at a Glance 2013 was used.

The development of research funding in the different scenarios is based on a trend analysis of the long-term development of the different forms of research funding. For direct and indirect government funding this was done using data from the publication Thirty years of research funding 1975-2005 from the Rathenau Institute, the annual TOF data (Total Research Funding) from the Rathenau Institute and the NWO's annual reports. The trend analysis of European financing was based on European monitoring of the Netherlands' participation in AgentschapNL's (and its predecessors') European Framework Programmes. The trend analyses for business funding and private non-profit funding of university research are based on the R&D statistics from the OECD and the Central Bureau of Statistics.

The spider diagrams were constructed by using the sci\_Quest method for assessing the scientific and social qualities of research and education. The number of indicators and their nature was adjusted to be able to assess universities instead of research groups.

3) [www.vsnu.nl/toekomststrategie](http://www.vsnu.nl/toekomststrategie)

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The indicators represent five different sectors.

**Education:** public understanding, number of bachelor's and master's students and number of PhD's.

**Science:** publications and co-publications in journals, research council funding, mobility of researchers within science, mobility of researchers international, mobility of researchers in the region.

**Businesses:** mobility of researchers to industry, contract funding by industry, (co)-publications with industry and income patents and licenses.

**Professionals:** applied research and company training.

**Government and society:** contract research private non-profit organisations, contribution to policy and public debate and type of relationship with NGO's.

The data used for the quantitative analyses, as well as information about the sci\_Quest method and the way in which it is applied can be found on the project's website<sup>4</sup>.

Instead of being used descriptively this method is now being used to express expectations with regards to performance of the universities in the future. These expectations are related to the quantitative analyses of research funding and numbers of students. The scale is relative: for each scenario an expectation has been expressed compared to the current situation on a scale of zero to three. Zero corresponds to 'very much less' (---), half to 'much less' (--), one to 'less' (-), one and a half to 'the same' (+/-), two to 'more' (+), two and a half to 'much more' (++) , three to 'very much more' (+++).

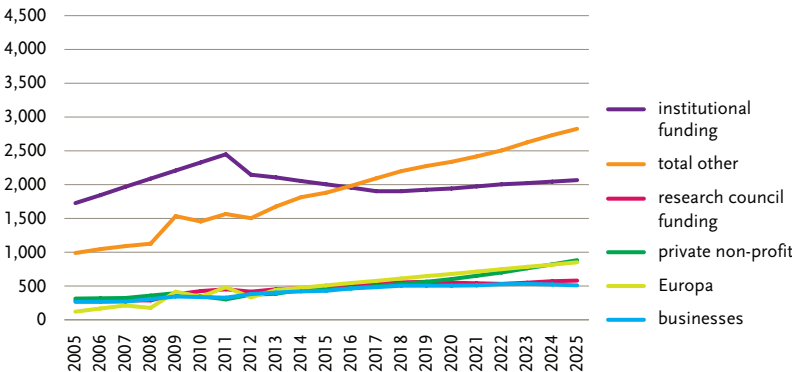
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4) [www.rathenau.nl/themas/thema/project/de-toekomst-van-de-nederlandse-universiteiten.html](http://www.rathenau.nl/themas/thema/project/de-toekomst-van-de-nederlandse-universiteiten.html)

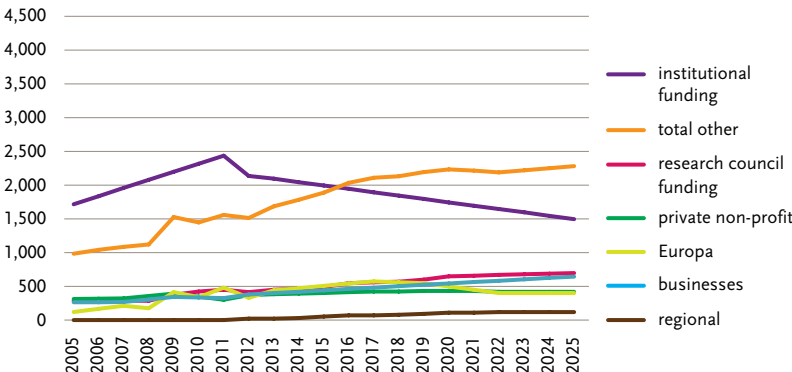
# Summary tables and figures

## Research funding

### National solidarity

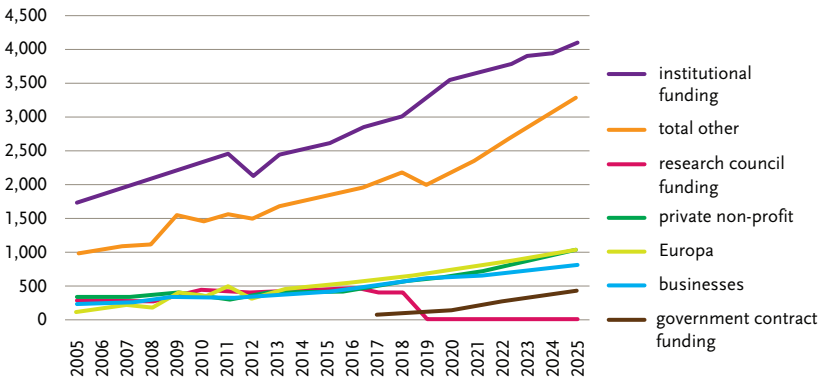


### Regional power

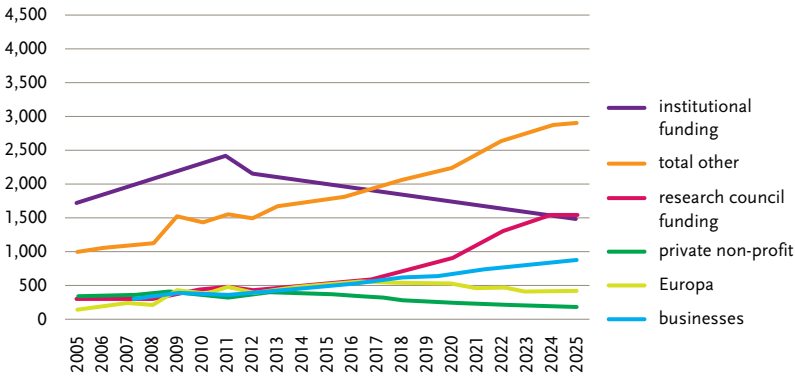




European variation

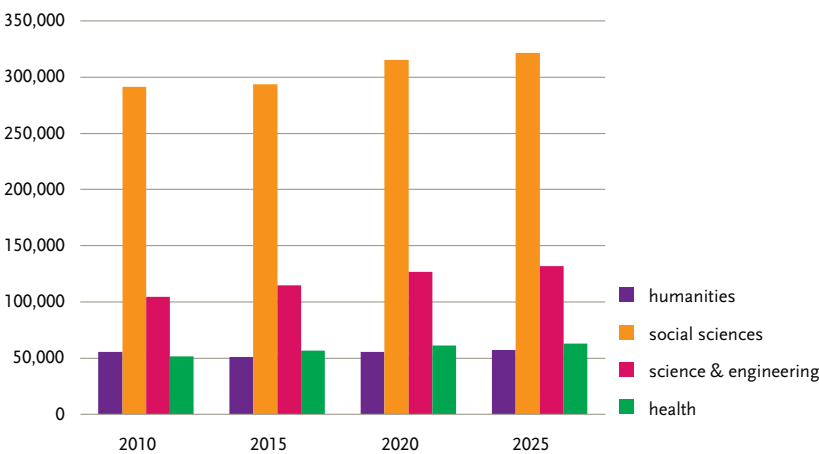


International selection

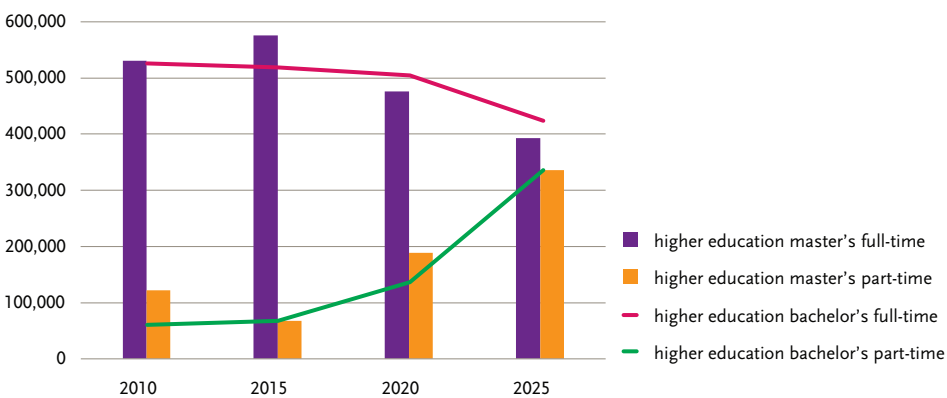


# Education market

National solidarity  
Number of higher education  
students per area

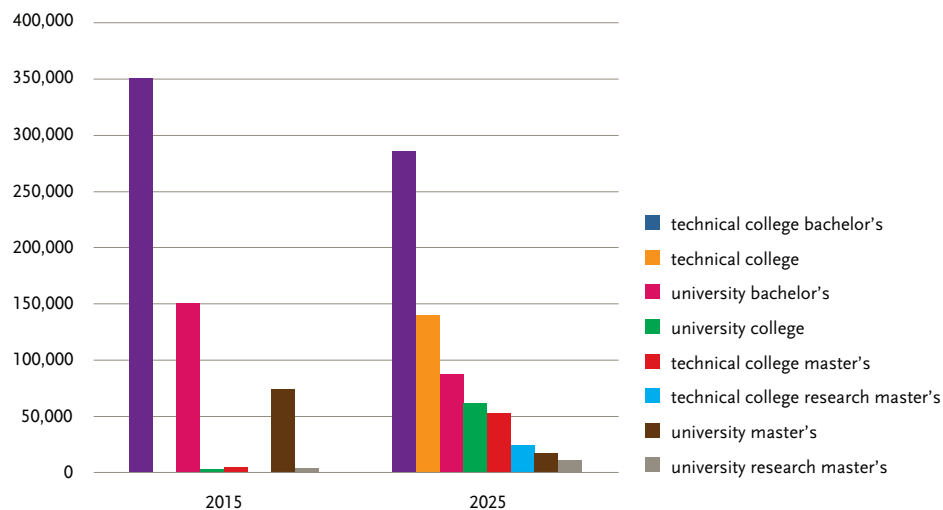


Regional power  
Number of part-time  
and full-time students



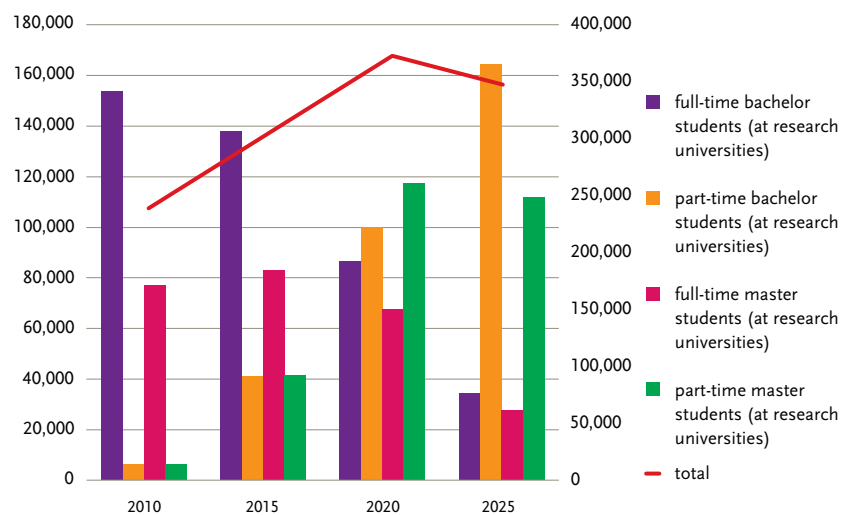
## European variation

*Stratification of  
the education market*



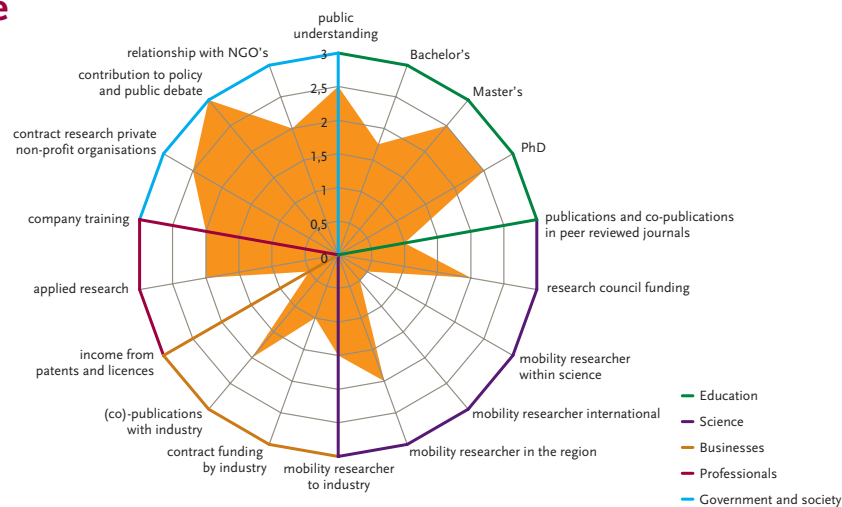
## International selection

*Number of full-time and  
part-time university students*

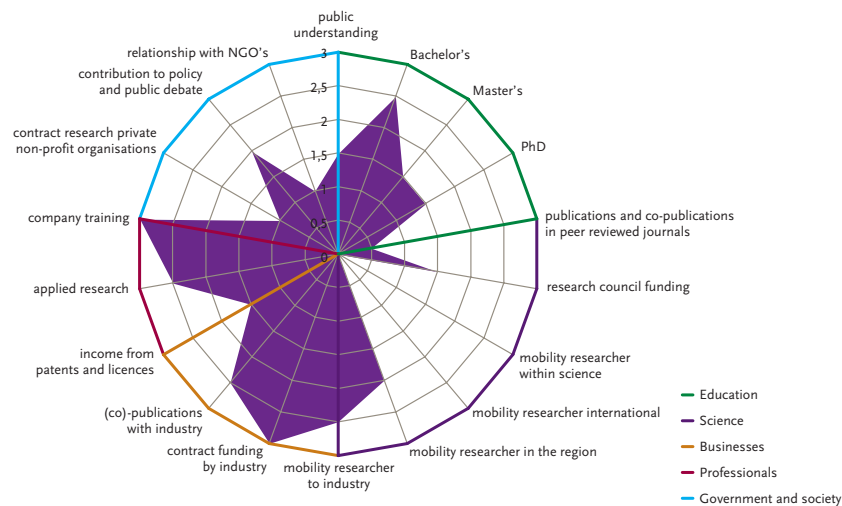


# Performance profile

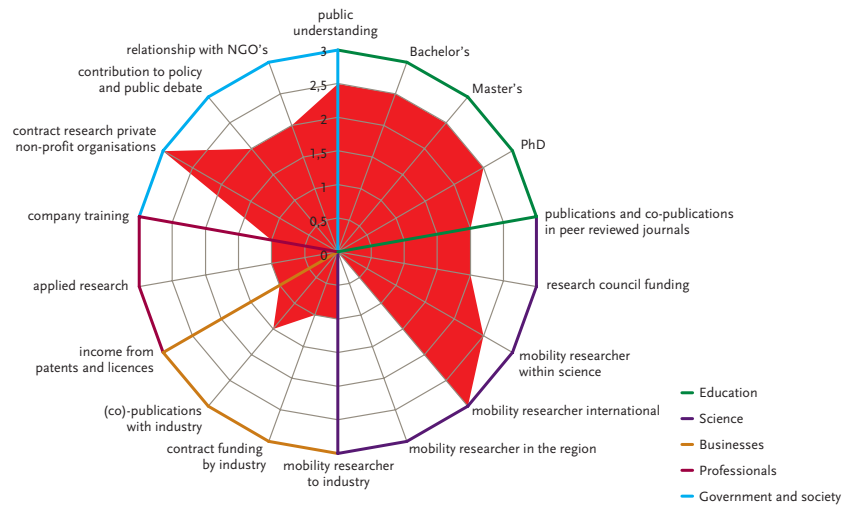
## National solidarity



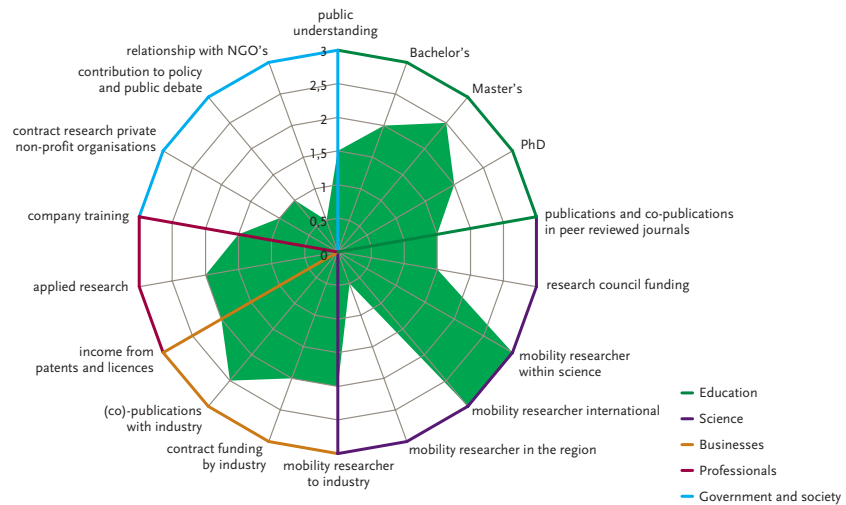
## Regional power



## European variation



## International selection



## Colophon

This is a publication by the Rathenau Institute  
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### **Editors**

Patricia Faasse, Barend van der Meulen  
and Patricia Heerekop

### **Design and format**

Jacob & Jacobus



## The scenarios

On the other side of this flap you will find the 4 scenarios with their features and the current performance profile.



Scenario 1: National solidarity

- Fortress Europe
- education institutions
- large social challenges

Scenario 2: Regional power

- regions dominant
- large variety
- economic opportunities

Scenario 4: European variation

- North West Europe
- many levels
- public and private funds

Scenario 3: International selection

- global competition
- quality and choice
- volatile

Performance profile now

