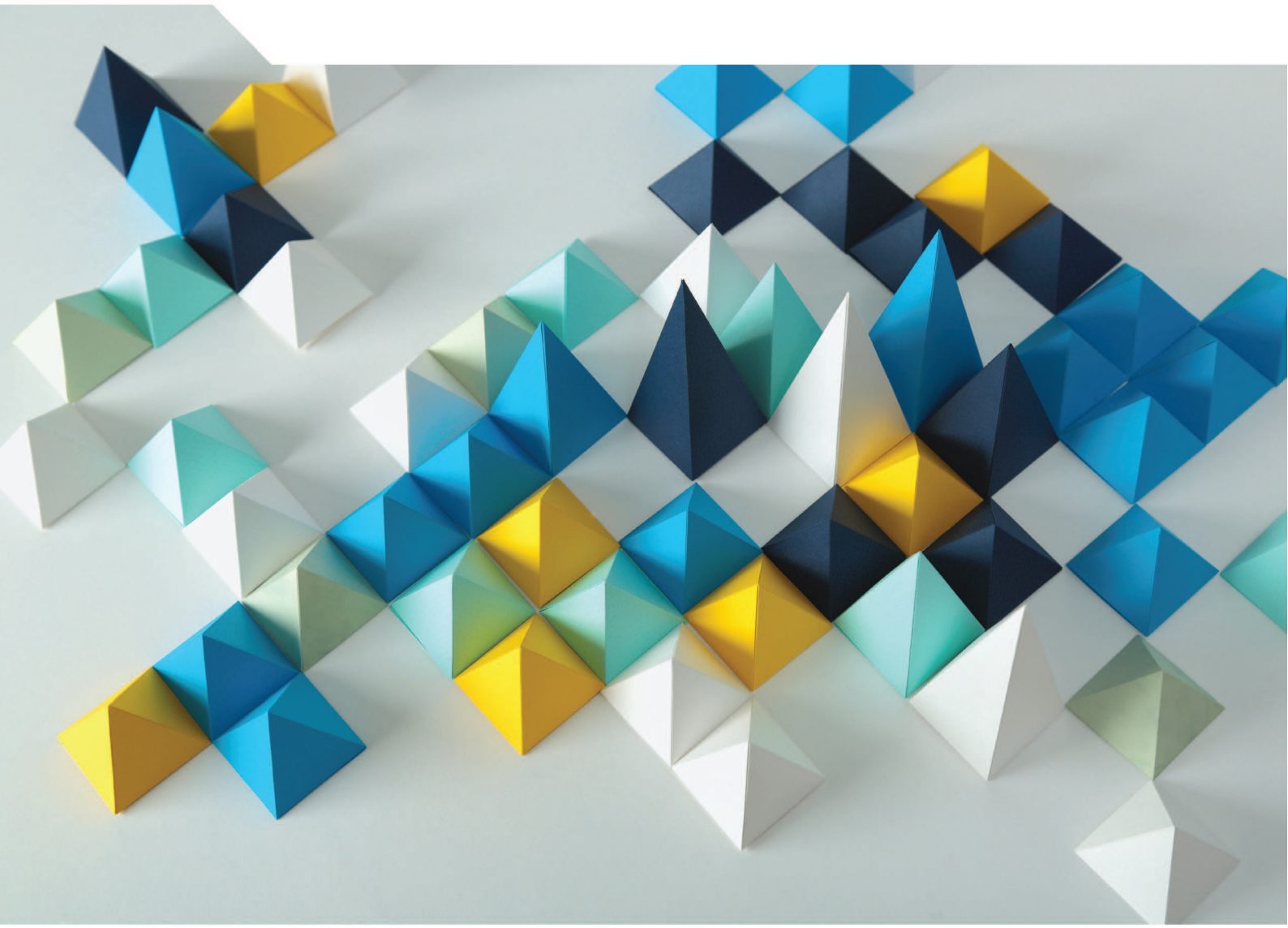
Higher Education

Benchmarking Higher Education System Performance: The Netherlands



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The statistical data for Israel are supplied by and under the responsibility of the relevant Israeli authorities. The use of such data by the OECD is without prejudice to the status of the Golan Heights, East Jerusalem and Israeli settlements in the West Bank under the terms of international law.

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Reader's Guide

Benchmarking synthesis report

The Netherlands, along with Estonia, the Flemish Community of Belgium and Norway participated in a benchmarking exercise of their higher education systems over the period 2017-2018. This country note for the Netherlands forms part of a larger synthesis report on Benchmarking Higher Education System Performance, wherein a more detailed analysis of the Netherlands's education system, policy comparisons and further discussion of the indicators presented in the scorecard for the Netherlands can be found (OECD, 2019[1]).

Quartiles

Quartiles are used in the scorecard for the Netherlands and throughout this country note to compare the Netherlands to the full membership of OECD countries (or, those reporting data for the indicator under review). Location in the bottom quartile means that the Netherlands is among the one-quarter of OECD countries with the smallest values for that indicator, while location in the top quartile means that the Netherlands is among the one-quarter of OECD countries with the highest values for that indicator.

Comparison countries

In order to provide some context to the scorecard values presented, the Netherlands is compared to individual jurisdictions in this note, including the other three jurisdictions that participated in the Benchmarking Higher Education Systems Performance exercise 2017-2018. The Netherlands is also compared to other European countries, including some neighbouring countries.

Universities of applied sciences

The term "universities of applied sciences" (UAS) is used in this note to refer to the Dutch and Flemish *hoger beroepsonderwijs* and the Estonian professional higher education institutions. See Chapter 2 of OECD (2019[1]) for a more detailed description of the institutional setting in these higher education systems.

Exchange rates

Financial amounts in this note are presented either in euros (EUR) or, when the comparison with other countries is relevant, in US dollars at purchasing power parity (PPP USD). The exchange rate is USD PPP 1 = EUR 0.81.

Data sources

When not otherwise specified, the sources for the data and information provided in this note are OECD (2019[1]), OECD Education Statistics (2018[2]) or the Dutch Ministry of Education, Culture and Science.

Chapter 1. Higher education performance in the Netherlands

1.1. Introduction

This country note for the Netherlands draws on the evidence base of the OECD Benchmarking Higher Education System Performance project to review the performance of the higher education system in the Netherlands. Its purpose is to assist the Netherlands in taking stock of where it stands in relation to other OECD member countries on different aspects of higher education and to provide input into future national policy planning processes.

This stocktaking exercise is supported in this note in two ways. First, a scorecard of 45 indicators is presented, which highlights the position of the Netherlands within the OECD. This scorecard draws on the evidence compiled during the benchmarking exercise and is organised into three domains: financial and human resources; education; and research and engagement. The first chapters of this note contain a brief discussion of the Dutch higher education system's position within these three domains.

The final chapter of the note contains a scenario exercise to support policy planning. Topics chosen for scenarios in the benchmarking country notes are issues that appear to present important policy challenges and are likely to persist for the near future. Assumption choices used for the scenarios take into account recent trends in the Netherlands. Following the presentation of the scenarios, a set of policy options are examined that could be feasible responses to the challenges under discussion and consideration is given to how successful action might orient the system towards the achievement of more positive scenarios.

1.2. Context and structure of higher education in the Netherlands

The Netherlands is a relatively wealthy country within the OECD. Gross domestic product (GDP) per capita is higher than the OECD average, employment rates are among the highest in the OECD and public debt is relatively low. This provides a favourable context for investment in education; the Netherlands spends relatively highly on higher education as a proportion of GDP per capita. Higher education is also prioritised highly in the public budget; the proportion of public expenditure going to higher education is 20% higher than on average across the OECD. This investment in general appears to pay off; the higher education system in the Netherlands is often cited as an example of a well-performing system in all three of its key functions (education, research and engagement).

The higher education system in the Netherlands serves more than 830 000 full- and part-time students in total. The system in the Netherlands is characterised by a binary divide between two main types of institutions: research universities (*universiteiten*), which are more academically oriented, and universities of applied sciences (*hoger beroepsonderwijs* (HBO) institutions, formerly *hogescholen*), which are more

professionally oriented. A number of institutions also exist outside of the binary system, such as specialist higher education institutions. The system is also largely public, with only around 15% of students enrolled in private institutions.

The Netherlands has a robust policy framework for higher education. National strategic goals and challenging policy issues are regularly reviewed, and the Netherlands has a strong history of experimentation with innovative policy solutions. The current strategic agenda for research and higher education focuses on creating excellent (world-class) education, improving course matching and student orientation, and tailoring educational offerings more to the student. Improving the social relevance of higher education is also a key goal, and the agenda emphasises, among other goals, strengthening regional collaboration and working towards making open access to all knowledge and educational materials the standard (see Chapter 2 of (OECD, 2019[1])).

1.3. Higher education scorecard for the Netherlands

Table 1.1 shows a summary of the relative position of the Netherlands within OECD countries according to a set of 45 indicators spanning the resourcing, education, research and engagement functions of higher education, in a scorecard format (where each box relates to one of the quartiles of the OECD distribution). These indicators are drawn from the evidence compiled during the OECD Benchmarking Higher Education Systems Performance project, in which the Netherlands participated during 2017-2018.

As can be seen from the scorecard, the Netherlands is in the top quartile of OECD countries in a number of different areas related to higher education performance. For example, employment rates for master's graduates are among the highest in OECD countries. The Netherlands also appears to have few challenges in attracting young academic staff into the profession, with the proportion of academic staff under 35 in the top quartile of the OECD.

In addition, the Netherlands performs strongly on indicators related to research outputs and outcomes; the numbers of publications per 1 000 of the population, the extent of international collaboration and the proportions of top-cited publications are all in the top quartile of OECD countries. This reflects the high levels of research and development (R&D) expenditure as a proportion of GDP in the Netherlands and the relatively high proportion of the higher education expenditure allocated to R&D activities (the Netherlands is in the top quartile for both of these indicators).

On the other hand, there are areas of the scorecard where the Netherlands is lower in the OECD distribution. For example, the system appears to favour younger students; the proportion of new entrants older than 25 is among the smallest in the OECD. In addition, while the Netherlands has a vibrant R&D sector and one of the more internationalised higher education systems, the proportions of doctorate holders in the population and the proportions of foreign citizen doctorate holders are below OECD median levels.

A wider discussion of the topics covered in this note, as well as many other topics spanning the resourcing, missions and performance of higher education can be found in the synthesis report for the benchmarking project in (OECD, 2019[1]).

Table 1.1. Higher Education system benchmarking: The Netherlands

Selected higher education (HE) indicators and country position in the OECD distribution (by quartile). Reference year range: 2005-2017

Financial and human resources	← Low	→ High
Expenditure on HE, % of GDP		
Public expenditure on HE, % of public expenditure		
Expenditure per student by HE institutions		
Expenditure per student, 2015 relative to 2008		
HE R&D expenditure, % of GDP		
Expenditure on R&D activities, %		
Household expenditure on HE institutions per student		
Non-household private expenditure on HE institutions, %		
Expenditure per student on grants and scholarships		
Academic staff younger than 35, %		
Academic staff older than 60, %		
Women among academic staff, %		
Expenditure on staff costs, %		
Ratio of academic staff to student		
Non-academic staff per 100 academic staff		

Education	← Low	→ High
Entry rates into bachelor's or equivalent programmes		
Students in master's and doctoral programmes, %		
*Socio-economic gap in HE access		
New entrants older than 25, bachelor's programmes, %		
Part-time students in bachelor's programmes, %		
International students in master's programmes, %		
Completion rates of bachelor's students		
Young population (23-34) with a HE qualification, %		
HE graduates above literacy proficiency level 3, %		
Employment rates of master's graduates (25-34)		
Employment premium, HE graduates (25-34)		
HE graduates (15-29) employed or in education, %		
Relative earnings of bachelor's graduates (25-34)		
HE graduates' relative level of self-reported health		
HE graduates' relative level of interpersonal trust		

Research and Engagement	← Low	→ High
FTE researchers per 1 000 population		
Researchers working in HE, %		
Women researchers in HE, %		
Doctorate holders in the population, %		
Foreign citizen doctorate holders, %		
Business enterprise funding of HERD, %		
Higher education-business collaboration in R&D		
SMEs collaborating on innovation, %		
PCT published applications from HE R&D, %		
HE R&D funding on basic research, %		
Number of publications per 1 000 population		
Publications among the 10% most cited, %		
International scientific collaboration		
International net flows of scientific authors		
Open access of scientific documents, %		

Note: The coloured square below each value represents the Netherlands's position in the OECD distribution, from the bottom quartile (left square) to the top quartile (right square). The square is shaded in grey (instead of black) when data are available for less than half of the OECD countries (the minimum number of countries with available data is 14). No coloured square means that data are missing for the Netherlands. For more information on methodological issues and metadata, see OECD (2019[1]) and the references cited therein. Follow the *Statlink* to download the data underlying the calculation of the scorecard.
*For the indicator 'socio-economic gap in HE access': the top quartile implies the difference between 18-24 year-olds with tertiary-educated parents and those with non-tertiary-educated parents is smaller.
Source: Adapted from OECD (2019[1]), *Benchmarking Higher Education System Performance*, https://dx.doi.org/10.1787/be5514d7-en.

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Chapter 2. Financial and human resources

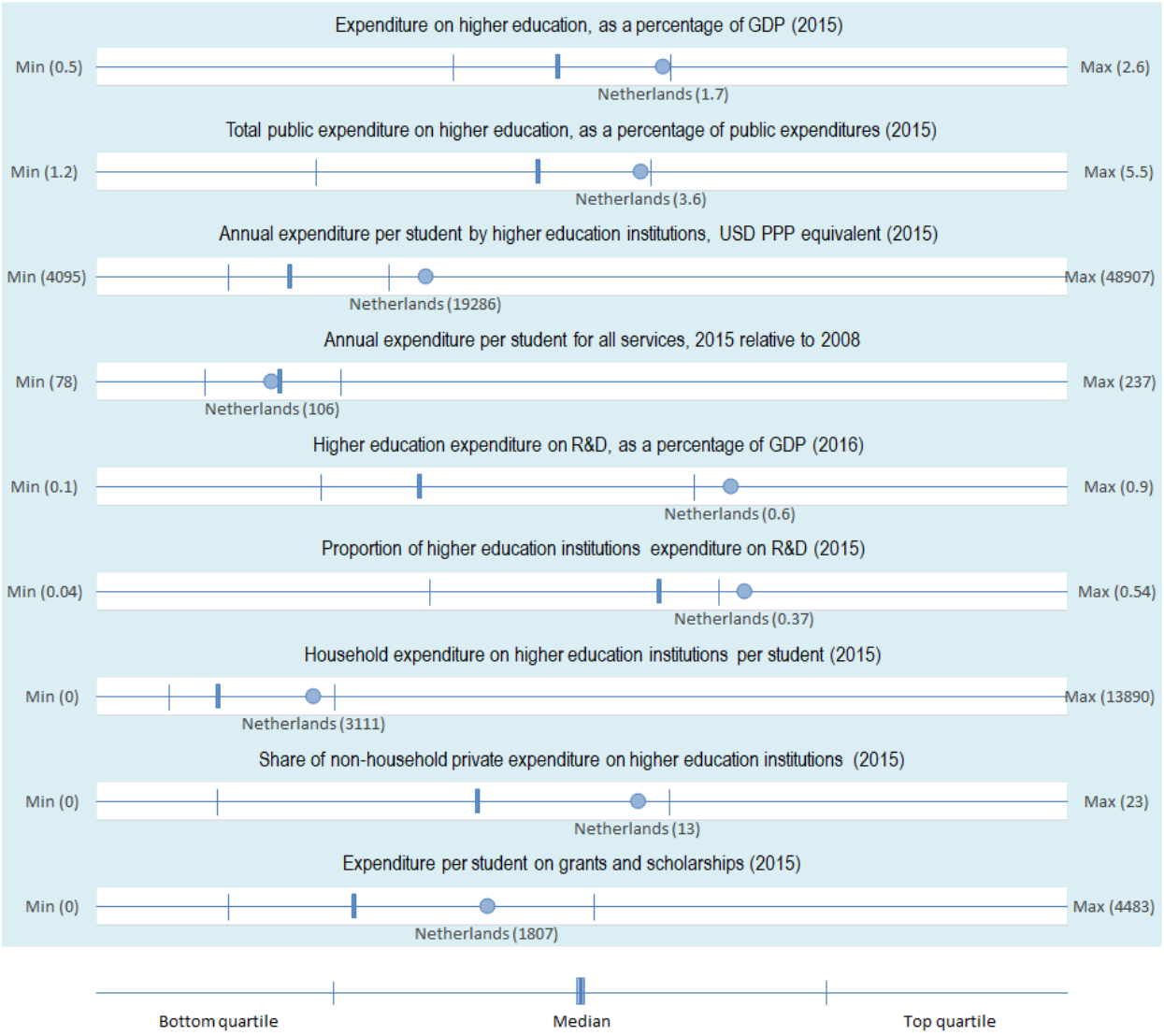
Highlights

- The Dutch higher education system (universities, universities of applied sciences and other institutions) is one of the more well-resourced among OECD countries, due to a combination of high GDP per capita and higher education expenditure as a percentage of GDP. Annual higher education expenditure per student was over USD 19 000 in 2015, placing the Netherlands in the top quartile of OECD countries.
- The share of private expenditure on higher education institutions in the Netherlands is well above the median of OECD countries. Funding from households (tuition and other fees) accounted for 16% of total expenditure in 2015, while other private sources accounted for 13% of expenditure. The government remains the biggest contributor to higher education expenditure, financing over two-thirds of the total expenditure.
- In 2015, the Netherlands was in the top quartile of OECD countries for the average combined amount of public grants, scholarships and loans received per student. A student loan system replaced a student grant system in the same year, which may increase the share of household expenditure in the future.
- Nearly 40% of higher education expenditure per student was allocated to research and development (R&D) activities in 2015, placing the Netherlands in the top quartile of OECD countries.
- The proportion of younger academic staff in the higher education system is relatively high and the proportion of older academic staff is relatively small among OECD countries.
- The share of women among academic staff increased from 35% in 2005 to 45% in 2016, one of the largest increases among OECD countries. Women were better represented in the younger age groups – reaching one-half of academic staff in the age group younger than 35 and the age group aged 35 to 44 in 2016.
- More than half of academic staff worked part-time in 2016, a similar share to the proportion of part-time workers in the population.
- Three-quarters of academic staff with teaching duties (excluding doctoral students, and including all higher education institutions) had a permanent contract in 2016, which is the highest among the four jurisdictions participating in the benchmarking exercise. However, only one-quarter of young teaching staff had a permanent contract.

2.1. Financial resources

Figure 2.1 shows an overview of the position of the Netherlands within the OECD distribution on the indicators related to financial resources invested in higher education.

Figure 2.1. Where does the Netherlands stand in the OECD distribution? Financial resources



Note: The indicators represented in this chart are a subset of the indicators presented in Table 1.1. The coloured circle represents the Netherlands's position in the OECD distribution. The circle is not coloured when data are available for less than half of the OECD countries (the minimum number of countries with available data is 14). For more information on methodological issues and metadata, see OECD (2019[1]) and the references cited therein. Follow the *Statlink* to download the data underlying the calculation of the scorecard.
Source: Adapted from OECD (2019[1]), *Benchmarking Higher Education System Performance*, https://dx.doi.org/10.1787/be5514d7-en.

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The Netherlands spends a relatively large amount on higher education compared to other OECD countries

The Netherlands spent the equivalent of 1.7% of its GDP on higher education institutions in 2015. This places the Netherlands well above the median of OECD countries, at a level of expenditure similar to that of Nordic countries such as Denmark, Finland, Norway and Sweden, where social services expenditure is generally highly prioritised.

On average, Dutch higher education institutions spent more than USD 19 000 per student in 2015, which is in the top quartile of OECD countries and a similar level of spending to the Flemish Community of Belgium. The Netherlands also increased average higher education expenditure per student by 6% between 2008 and 2015, a rate of increase just below the median increase across OECD countries over the same period.

Higher education expenditure per student differs between universities and universities of applied sciences (UAS). While universities spent USD 29 000 per student in 2015, UAS spent less than half that amount (Table 2.1). However, when R&D expenditure is excluded, the amount of per-student expenditure was similar across the two subsectors, with UAS spending around USD 1 000 more on average. Universities in the Netherlands spent almost USD 18 000 per student on research and development in 2015, while universities of applied sciences spent less than USD 500 per student.[1]

Table 2.1. Annual higher education expenditure per student, by subsector (2015)

In PPP USD, based on full-time equivalents

		The Flemish Community	The Netherlands
Universities	Total expenditure	24 321	29 286
	Excluding R&D	11 137	11 537
UAS	Total expenditure	12 787	12 972
	Excluding R&D	12 173	12 497

Source: Adapted from OECD (2019[1]), *Benchmarking Higher Education System Performance*, https://dx.doi.org/10.1787/be5514d7-en.

The Netherlands has a high share of expenditure from private sources among OECD countries – both household and non-household

In 2015, two-thirds of expenditure on higher education institutions came from public sources in the Netherlands. This was just below the OECD median, and lower than in Belgium and the Nordic countries (Figure 2.2).

This was not due to a lack of public investment in higher education. The government spent around USD 13 000 on higher education per student in the Netherlands in 2015, a proportion which is in the top quartile of OECD countries (calculations from OECD (2018[2])). When including expenditure outside higher education institutions (e.g. expenditure on grants and loans), the Dutch government spent 4% of its total public expenditure on higher education, well above the OECD median.

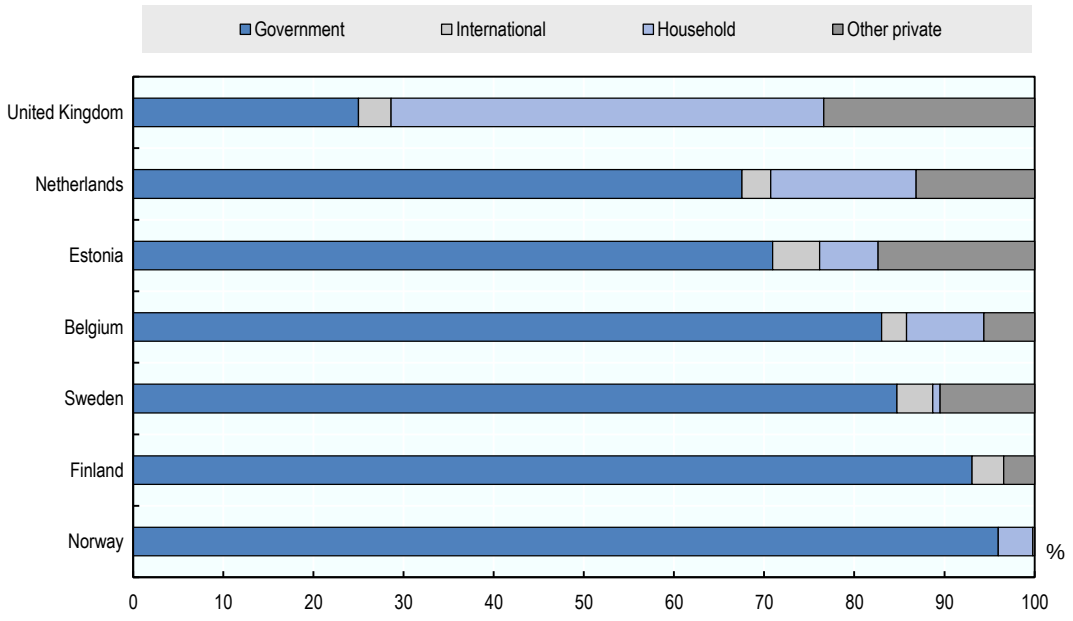
Dutch higher education institutions appear to have a relatively strong ability to obtain funding from a variety of sources, compared to most other OECD countries. For example, the share of household expenditure[2] within the total expenditure was 16% in 2015. This is around the OECD median, but it is one of the higher levels among European countries.

This is partly due to the cost of tuition fees in Dutch higher education, which is higher than in most neighbouring countries. The annual tuition fee for full-time bachelor's students in Dutch public institutions was around USD 2 400 in 2016, while it was around USD 400 in the French Community of Belgium, and there were no tuition fees in Denmark, Finland, Norway and Sweden (OECD, 2018[3]).

The share of household expenditure is projected to increase following the introduction of a student loan system in 2015, replacing its student grant system. The introduction of student loans is expected to generate additional financial resources of around EUR 0.9 billion per year. The government has committed to invest the totality of funding generated by replacing student grants with student loans for the improvement of higher education. For example, it is intended to hire an additional 4 000 teaching staff for the sector in order to provide more personal and intensive education (Dutch Ministry of Education Culture and Science, 2015[4]).

The share of funding from private sources excluding households was 13%, which is in the top quartile of OECD countries and is one of the largest among European countries. The large share of private sources other than households has been a feature of the Dutch higher education system since at least the late 1990s, reflecting government efforts to encourage the involvement of the private sector in higher education (OECD, 2008[5]).

Figure 2.2. Share of higher education expenditure in selected countries, by source (2015)



Source: Adapted from OECD (2018[2]), *OECD Education Statistics*, http://dx.doi.org/10.1787/edu-data-en.

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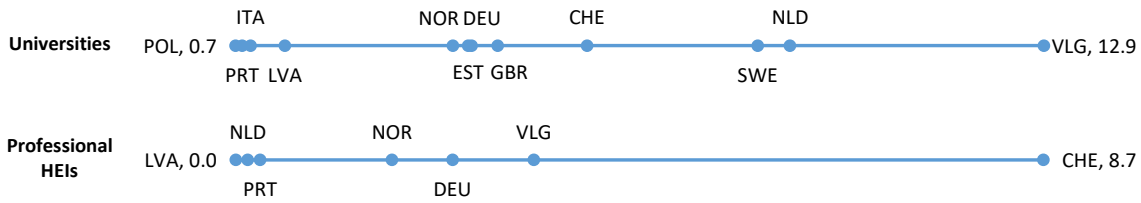
The large amount of non-household private expenditure on higher education, relative to other OECD countries, is reflected in the ability of Dutch universities to attract funding from private partners though research and training contracts (private third party funding). Private third party funding accounted for 9% of the revenues of Dutch universities in 2015,

the second-highest share among European OECD jurisdictions after the Flemish Community (Figure 2.3).

However, the share of private third party funding was just 0.2% in Dutch UAS; this is lower than in Dutch universities, but also than in higher education institutions (HEIs) in five of seven higher education systems with available data. This indicates the greater difficulty in attracting private funding in Dutch UAS compared to universities.[3]

Figure 2.3. Private third party funding in higher education, as a proportion of current revenues (2015)

By type of institution



Note: CHE = Switzerland; DEU = Germany; EST = Estonia; GBR = United Kingdom; ITA = Italy; LVA = Latvia; NLD = Netherlands; NOR = Norway; POL = Poland; PRT = Portugal; SWE = Sweden; VLG = Flemish Community.
Source: Adapted from European Register for Tertiary Education (ETER) (2019[6]), *ETER Database*, www.eter-project.com/.

StatLink https://doi.org/10.1787/888933942754

The amount of public expenditure on grants, scholarships and loans is relatively high among OECD countries

The government provides grants, scholarships and loans to support students in higher education financially. The average amount of public expenditure per student on grants and scholarships was USD 1 800 in 2015, and an additional USD 3 300 was spent by the government on loans, for a combined expenditure on student financial support of over USD 5 000. This level of government financial support places the Netherlands in the top quartile of OECD countries, though it is lower than some Nordic countries (i.e. Norway and Sweden). The combined amount of over USD 5 000 spent on grants, scholarships and loans exceeded the average household expenditure per student (USD 3 100). However, the household expenditure of USD 3 100 does not include living expenses.

Research in the higher education sector absorbs a large share both of national R&D expenditure and of the expenditure of higher education institutions

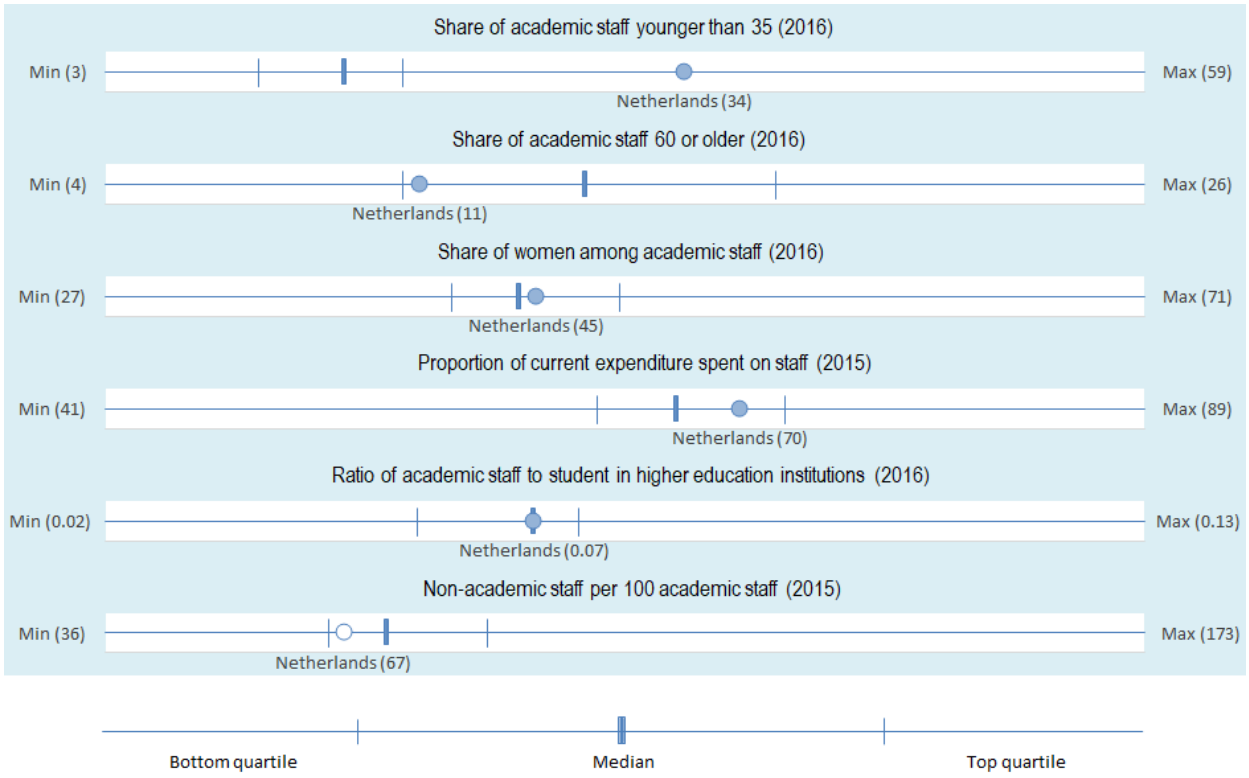
Gross domestic expenditure on research and development (GERD) was 2% of GDP in 2016, which is around the OECD median level. Higher education expenditure on research and development (HERD) was 0.6% of GDP, in the top quartile of OECD countries. This shows that a larger part of R&D in the Netherlands happens within the higher education sector compared to other OECD countries and highlights the important role that research has within higher education institutions. In Dutch higher education institutions, nearly 40% of higher education expenditure per student was allocated to R&D activities in 2015, in the top quartile of OECD countries. Universities accounted for the large majority (96%) of

R&D expenditure in the Dutch higher education system in 2015, with UAS playing only a minor role.[4]

2.2. Human resources

Figure 2.4 shows the position of the Netherlands in the OECD distribution on the scorecard indicators related to human resources in the higher education system.

Figure 2.4. Where does the Netherlands stand in the OECD distribution? Human resources



Note: The indicators represented in this chart are a subset of the indicators presented in Table 1.1. The coloured circle represents the Netherlands's position in the OECD distribution. The circle is not coloured when data are available for less than half of the OECD countries (the minimum number of countries with available data is 14). For more information on methodological issues and metadata, see OECD (2019[1]) and the references cited therein. Follow the *Statlink* to download the data underlying the calculation of the scorecard.
Source: Adapted from OECD (2019[1]), *Benchmarking Higher Education System Performance*, https://dx.doi.org/10.1787/be5514d7-en.

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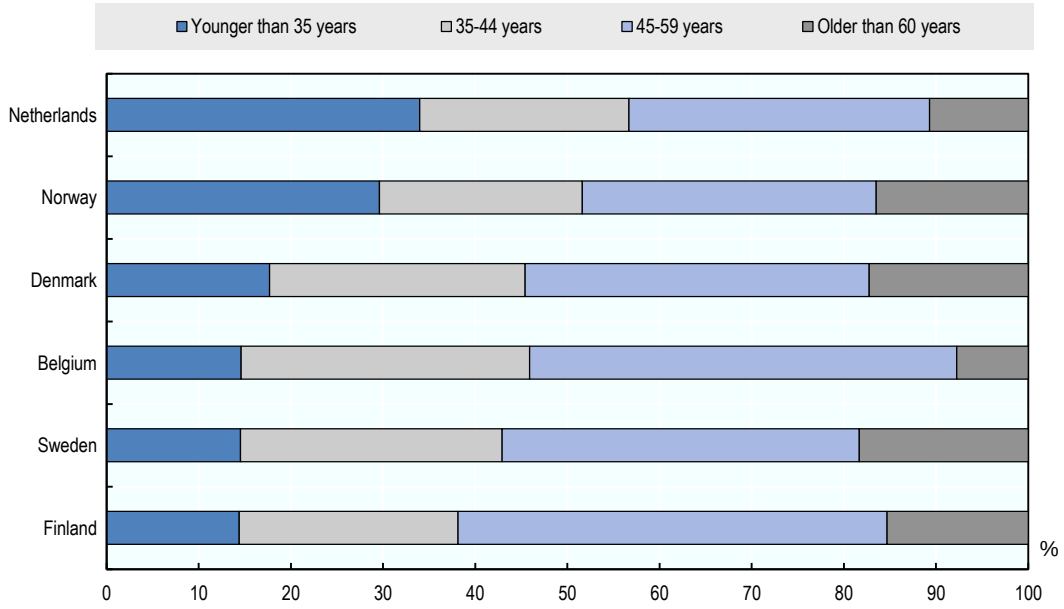
The Netherlands has one of the largest shares of young academic staff in OECD countries

The international definition of "academic staff" covers a wide range of job titles in Dutch universities and UAS. These include professors, associate professors, assistant professors, lecturers, lectors, researchers, post-doc researchers, doctoral candidates and student assistants.

In 2016, one-third of academic staff was younger than 35 in the Netherlands, one of the largest proportions among OECD countries (Figure 2.5). At the same time, the share of academic staff aged 60 or older was around 10%, below the median of OECD countries. The high share of younger academic staff may be partly explained by the fact that, in the Netherlands, doctoral candidates are often considered as academic staff, which is not always the case in other OECD countries. Around half of all doctoral candidates are employed directly by higher education institutions and are counted as academic staff (although there has been an experiment in recent years allowing for some doctoral students in the Netherlands who receive a scholarship and are not regularly employed by the institution). The remainder of doctoral candidates are either working outside of academia or receive funding for their doctoral studies from an external source (see Chapter 6 of (OECD, 2019[1])).

Figure 2.5. Share of academic staff in higher education, by age group (2016)



Source: Adapted from OECD (2018[2]), *OECD Education Statistics*, http://dx.doi.org/10.1787/edu-data-en.

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Government initiatives to support gender equity appear to be having some success

The share of women among academic staff in the Netherlands increased considerably in the past decade, from 35% in 2005 to 45% in 2016. This is the third-largest increase among OECD countries and economies with available data after the Flemish Community of Belgium and Korea. As a result, the Netherlands now lies above the OECD median in terms of the share of women among academic staff, from a position below the OECD median in 2005.

This progress could reflect the Dutch government's initiatives to promote gender equality and diversity in academia in recent years. For example, it financed the recruitment of 100 additional female professors (the *Westerdijk Talentimpuls* programme). In addition, 10 higher education organisations in the Netherlands have adopted the European Charter for

Researchers and the Code of Conduct for Recruitment of Researchers (see Chapter 4 of (OECD, 2019[1])).

As is the case for most OECD countries, women in the Netherlands were better represented among younger academic staff in 2016 than among older staff. In total, women accounted for 50% of academic staff among the age groups up to 44 years old.

Staff costs account for 70% of higher education current expenditure

Staff salaries and benefits are determined through collective labour agreements with the Association of Universities in the Netherlands (VSNU) and the Netherlands Association of Universities of Applied Sciences (VH), which represent higher education institutions, and trade unions, which represent employees. The government does not have a formal role in the negotiation process, which may explain the fact that no data are available on staff compensations for the Netherlands that is comparable to other countries. Overall, the Netherlands spent 70% of its higher education expenditure on staff costs in 2015, which is slightly above the median of OECD countries.

Three-quarters of teaching staff have a permanent contract, but the share is lower for young staff

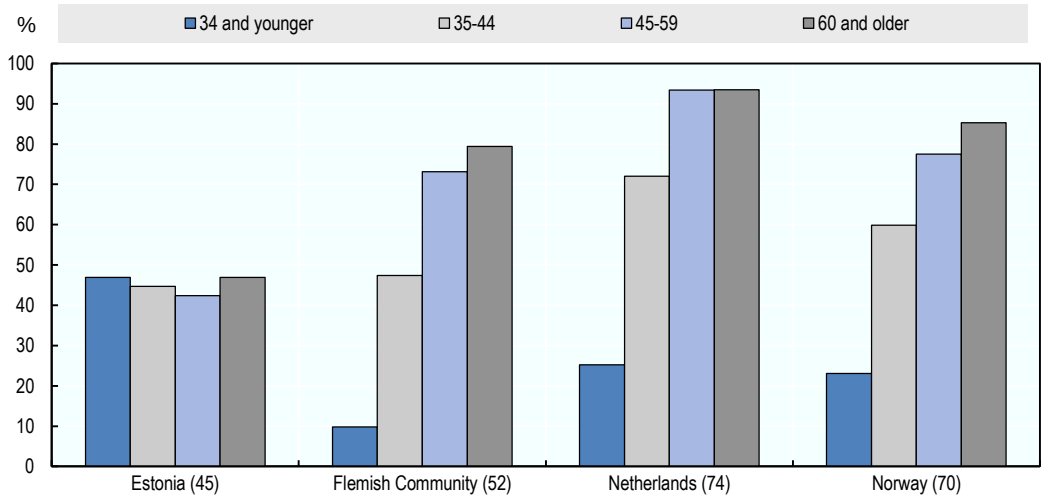
Across all age groups, 74% of teaching staff (academic staff with teaching duties in universities, UAS and other higher education institutions) had a permanent contract in 2016 in the Netherlands (Figure 2.6). This share is relatively large compared to the other three jurisdictions participating in the benchmarking exercise. This may be related to the national target of 80% of academic staff on permanent contracts, which is pursued by the Association of Universities in the Netherlands (VSNU) and the Netherlands Association of Universities of Applied Sciences (VH).

However, as in many other OECD countries, the share of teaching staff with a permanent contract differs considerably among the age groups. Only one-quarter of academic staff aged 34 or younger had a permanent contract in 2016, compared to over 90% of academic staff aged 45 or older (Figure 2.6). This could indicate more precarious future career prospects for younger academics in the Netherlands.

Figure 2.6. Share of teaching staff with permanent contracts, by age (2016)

Academic staff with teaching duties, excluding doctoral students

The share with permanent contracts across all ages is reported in brackets



Source: Adapted from OECD (2019[1]), *Benchmarking Higher Education System Performance*, https://dx.doi.org/10.1787/be5514d7-en.

StatLink https://doi.org/10.1787/888933942811

Along with work on fixed-length contracts, part-time work tends to be associated more with junior and intermediate staff categories of academic staff (European Commission, EACEA and Eurydice, 2017[7]). More than half of academic staff worked part-time in the Netherlands in 2016, a proportion above the median level of OECD countries. This can be partially explained by differences in definitions, as academic staff in the Netherlands are considered part-time when working less than 90% of a full-time workload, compared to 75% of a full-time workload for the general definition of part-time workers.

In most OECD countries, the share of part-time academic staff is much larger than the overall share of part-time workers across the economy (see Chapter 4 of (OECD, 2019[1])). However, in the Netherlands, the shares of part-time academic staff and part-time workers are similar, as the economy as a whole has one of the highest proportions of part-time workers (almost 50%) among OECD countries.

The academic staff-to-student ratio in the Netherlands is close to the median of OECD countries

The ratio of academic staff to students was about 1:15 in 2016, which is the median of OECD countries. When calculated separately for the subsectors, it was 1:8 in universities and 1:18 in UAS.

This indicator is often considered as a proxy for quality in higher education. However, it fails to consider how academic staff allocate time on teaching, research and other activities. For example, the higher number of students per academic staff in UAS is most likely due to their low research intensity compared to universities. Therefore, this indicator may not necessarily serve as a measure of quality of teaching or accessibility of academic staff for students. National data in the Netherlands, which corrects for staff time spent on research

activities, implies a staff to student ratio of around 1: 20 in both subsectors (Central Bureau of Statistics (CBS),, Education Implementation Service (DUO) and Ministry of Education, Culture and Science (OCW), 2019[8]).

There are also a number of recent initiatives in the Dutch system that target the improvement of teaching quality. Examples include:

- increasing the entitlement of teaching staff in both universities and UAS to training and development time
- the *Vliegende Start* programme in UAS to introduce new teaching ideas and practices in higher education
- the Career Framework for University Teaching, designed to support the career progression of academics on the basis of their contribution to teaching and learning (see Chapter 4 of (OECD, 2019[1])).

Chapter 3. Education

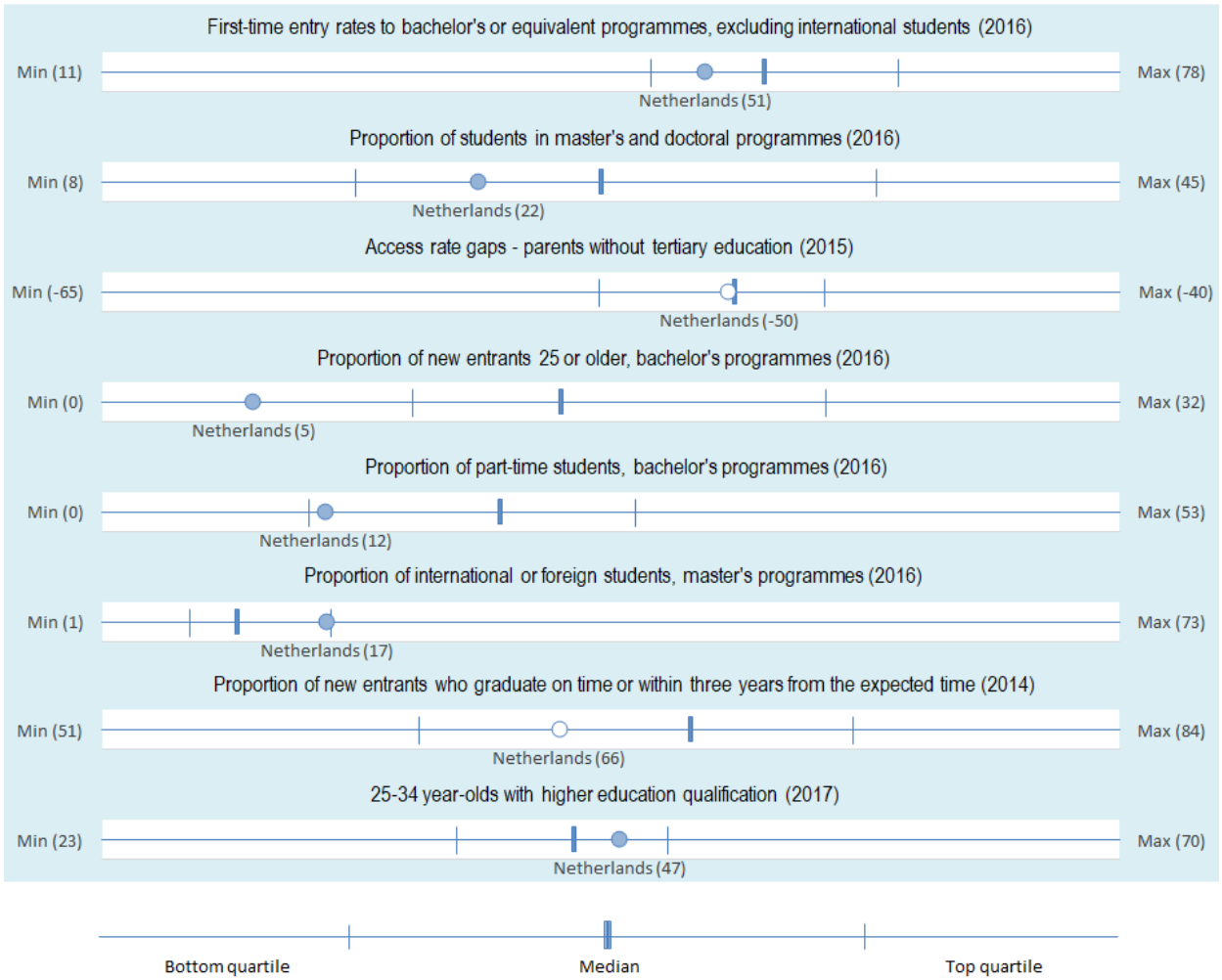
Highlights

- Nearly half of 25-34 year-olds had obtained a higher education qualification in 2017, which is above the OECD median. However, as in other OECD countries, access to higher education varies by family background.
- Approximately 70% of new entrants at the bachelor's level were enrolled in universities of applied sciences (UAS) in 2016. The share decreased by 8% between 2005 and 2016. However, it was still larger than in Estonia and the Flemish Community.
- Mature students (25 or older) accounted for 5% of new entrants to bachelor's programmes in 2016, one of the lowest shares among OECD countries. The shares of mature students were around or above the OECD median in master's and short-cycle programmes.
- Part-time enrolment accounted for only 10% of all students in bachelor's programmes in 2016, but the large majority of mature students were enrolled part-time.
- The share of international students in the Netherlands is relatively high at the bachelor's, master's and doctoral levels, compared to other countries.
- Around two-thirds of the new entrants who started a bachelor's programme in 2008 graduated within three years after the expected graduation year, a lower proportion than the median of OECD countries. The Netherlands adopted a number of policies to improve timely completion since then.
- According to the OECD Survey of Adult Skills (PIAAC), around 90% of higher education graduates younger than 35 demonstrated good literacy and numeracy skills (level 3 or above of the PIAAC proficiency scale), which is one of the highest shares among OECD countries participating in PIAAC.
- Higher education graduates (25-34 year-olds), on average, have a higher employment rate and higher earnings than upper secondary education graduates.

3.1. Access, student profile and completion

Figure 3.1 shows the position of the Netherlands on indicators related to access to higher education, the profile of students and completion of studies.

Figure 3.1. Where does the Netherlands stand in the OECD distribution? Access, student profile and completion



Note: The indicators represented in this chart are a subset of the indicators presented in Table 1.1. The coloured circle represents the Netherlands's position in the OECD distribution. The circle is not coloured when data are available for less than half of the OECD countries (the minimum number of countries with available data is 14). For more information on methodological issues and metadata, see OECD (2019[1]) and the references cited therein. Follow the *Statlink* to download the data underlying the calculation of the scorecard.
Source: Adapted from OECD (2019[1]), *Benchmarking Higher Education System Performance*, https://dx.doi.org/10.1787/be5514d7-en.

StatLink https://doi.org/10.1787/888933942830

Nearly half of 25-34 year-olds have obtained a higher education qualification

In the Netherlands, over one-third of adults (25-64 year-olds) had obtained a higher education qualification in 2017. This share is just below the median of OECD countries, above neighbouring Germany and slightly below Belgium. In the younger age group (25-34 year-olds), nearly half of adults had completed higher education, which is above the median of OECD countries.

Just over half of young adults in the Netherlands are projected to enter a bachelor's programme at least once in their lifetime (international students excluded), if the enrolment patterns observed in 2016 continue into the future; this is below the OECD median of 55%. The gap between the Netherlands and the OECD median increases slightly when considering the expected entry rates into higher education overall (including short-cycle and master's programmes), which stand at 52% for the Netherlands and 59% for the OECD median.

The majority of students are enrolled in bachelor's programmes, with UAS taking the majority of new entrants at that level of education

In the Netherlands, over three-quarters of higher education students were enrolled in bachelor's programmes in 2016, one of the highest shares among OECD countries. This is partially explained by the fact that 60% or more of the students attend UAS, where bachelor's programmes are the main programme offered. Over 20% of students in total were enrolled in masters and doctoral programmes, which is below the median proportion for OECD countries.

The share of students enrolled in short-cycle tertiary education programmes (associate degree programmes) was 2%, around the bottom quartile of OECD countries offering short-cycle programmes. The small share of short-cycle students reflects the relatively recent introduction of these programmes, which started as tertiary education programmes in 2007 as a pilot scheme and were officially recognised as higher education programmes in 2013. Although short-cycle programmes are not as common as they are in some other OECD countries, enrolments in these programmes have been increasing rapidly.

New entrants are defined as students who enter a programme at a given level of education for the first time. In the Netherlands, approximately 70% of new entrants at the bachelor's level enrolled in UAS in 2016. This share has decreased by 8% between 2005 and 2016, though the proportions entering UAS are still larger than in other participating jurisdictions with a professional higher education sector (Estonia and the Flemish Community).

Older students account for only 5% of new entrants at the bachelor's level – one of the lowest shares among OECD countries

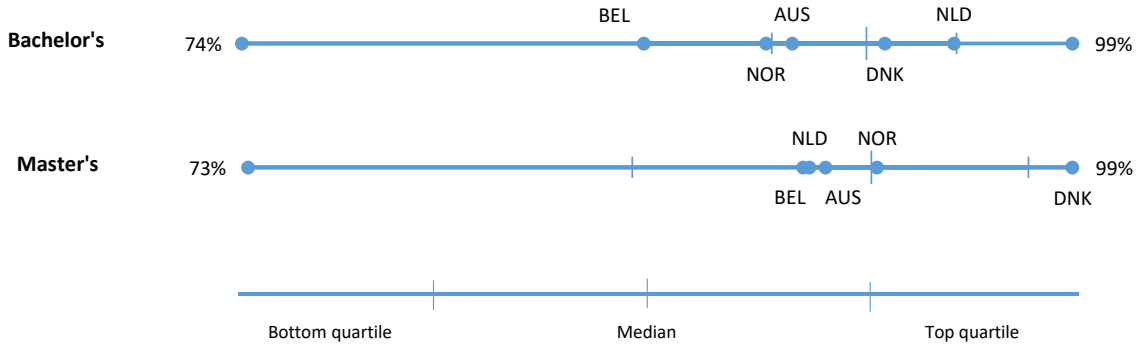
In 2016, older students (age 25 or older) accounted for 5% of new entrants to bachelor's programmes in the Netherlands, one of the lowest shares among OECD countries. In contrast, the share of older new entrants was 40% in short-cycle programmes, above the OECD median, and 33% in master's programmes, close to the OECD median.

The "one bachelor's, one master's policy", a rule that higher education students who already have a degree at the level where they are studying pay higher tuition fees, could partly explain the low share of older students at the bachelor's level. Bachelor's programmes are at least three years long, so the prospect of paying high tuition fees for several consecutive years may discourage second-time enrolment, which typically would be most likely for older adults (25 years old and over). In addition, students entering their programme after the age of 30 are not eligible for student financial assistance in the Netherlands, which can create a barrier to participation in lifelong learning.

In the Netherlands, 96% of bachelor's graduates in 2016 were first-time graduates, i.e. they graduated for the first time at the given level of education (bachelor's) during the reference period. This proportion was in the top quartile of OECD countries. In contrast, at the

master's level, 90% of graduates were first-time graduates, below the OECD median (Figure 3.2).

Figure 3.2. First-time graduates as a share of all graduates, by higher education level (2016)



Note: AUS = Australia; BEL = Belgium; DNK = Denmark; NLD = Netherlands; NOR = Norway.
Source: Adapted from OECD (2018[2]), *OECD Education Statistics*, http://dx.doi.org/10.1787/edu-data-en.

StatLink https://doi.org/10.1787/888933942849

Graduate data suggest that the share of older students is larger in UAS than in universities. Some 7% of first-time graduates from UAS were 30 or older in 2016, while the same cohort made up just 1.5% of graduates from universities. The difference between the two subsectors was similar in the Flemish Community (Table 3.1).

Table 3.1. Share of first-time graduates older than 30 by subsector, bachelor's level (2016)

	Estonia	Flemish Community	Netherlands
Universities	18.4	2.0	1.5
UAS	34.5	7.7	7.1

Source: Adapted from OECD (2019[1]), *Benchmarking Higher Education System Performance*, https://dx.doi.org/10.1787/be5514d7-en.

Relatively few bachelor's students study part-time compared to other OECD countries, but part-time studying is more common among older students and in UAS

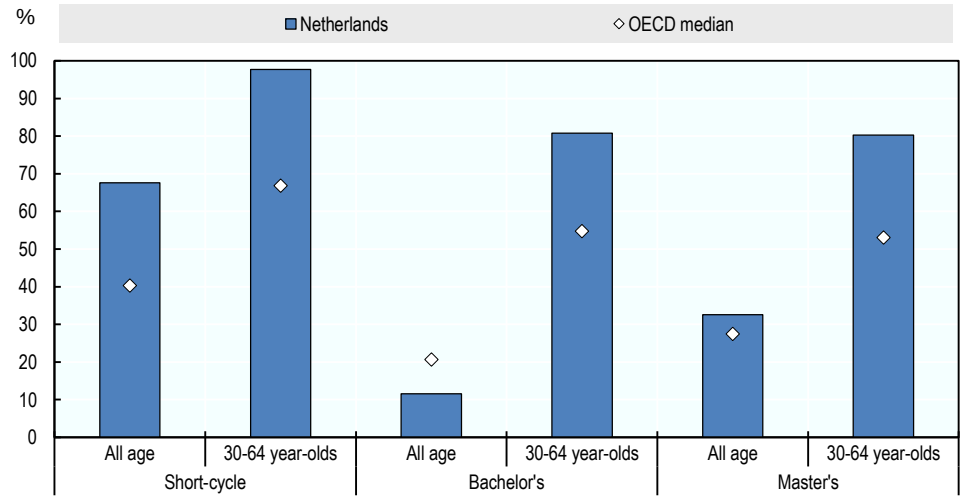
Around 10% of students in bachelor's programmes were enrolled part-time in 2016, which is below the OECD median (Figure 3.3). Part-time students are not eligible for student financial assistance in the Netherlands (though a special "lifelong learning credit" is available to them since 2017 to cover tuition fees). This could partly explain the low proportion of part-time students at the bachelor's level. Entrants older than 30 receive a lower level of student financial support (compared to younger students) whether they are enrolled part-time or not.

In response to the relatively low share of part-time students at a bachelor's level, the government has launched several initiatives, such as a learning outcomes pilot scheme, which allows institutions to validate prior learning, workplace learning and online learning. This could attract more working students, who are more likely to study part-time. A voucher system has also been piloted, providing students in some health and ICT

programmes with vouchers to enrol in modular and part-time education. These schemes are often targeted to UAS, which overall have a higher rate of part-time study (8%) than universities (1%) (both rates are lower than the national average because many Dutch part-time students study at the Open University of the Netherlands).

The share of part-time students is higher at other levels of higher education than at the bachelor's level. Part-time students accounted for two-thirds of total enrolment in short-cycle programmes (around the top quartile) and one-third in master's programmes (above the median). Older (30-64 year-old) students are more likely to study part-time (Figure 3.3). In 2016, over 80% of older students in bachelor's and master's programmes, and 98% of older students in short-cycle programmes (the highest), were studying part-time.

Figure 3.3. Share of part-time students in higher education, by age and ISCED level (2016)



Source: Adapted from OECD (2018[2]), *OECD Education Statistics*, http://dx.doi.org/10.1787/edu-data-en.

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There are substantial differences in access to higher education by socio-economic background

Access to higher education varies by family background in the Netherlands, as in other OECD countries. 18-24 year-olds whose parents did not complete higher education were 50% less likely to enter a bachelor's programme in 2015, compared to those whose parents completed one. This difference is in line with the median of OECD countries with available data.

Children of foreign-born parents were 30% less likely to enter a bachelor's programme, compared to those with native-born parents. This difference is large in absolute terms, even though it is smaller than in most OECD countries with available data.

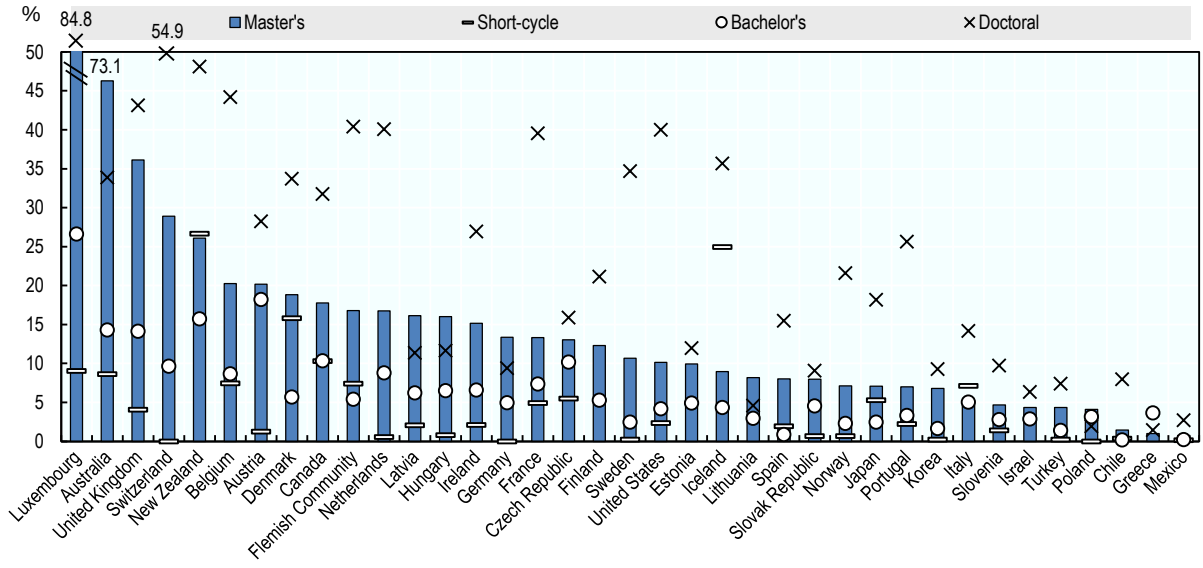
The Dutch government has long been trying to achieve equal access to higher education. Every student (except those studying part-time and those who are 30 or older when they start their studies) can access a universal public loan scheme. In addition, students from poorer households are eligible to receive supplementary means-tested grants.

The share of international students is higher than in the majority of OECD countries – but international students are concentrated in universities

In the Netherlands, international students accounted for 9% of all students at the bachelor's level in 2016, in the top quartile of OECD countries. At the master's level, this share was 17%, well above the median of OECD countries. The share of international students stood at 40% at the doctoral level, but it was just 1% at the short-cycle level, one of the lowest shares in the OECD area (Figure 3.4).

Figure 3.4. International students in higher education (2016)

Proportion of international students, by education level



Notes: The average for bachelor's, master's and doctoral programmes is calculated across countries with available data for all three series, while the average for short-cycle programmes is calculated separately.
Belgium: Data on short-cycle tertiary programmes are based on nationality and refer to the Flemish Community only.
Belgium, the Flemish Community and the Netherlands: Data exclude the Open University of the Netherlands.
The Czech Republic, Greece, Hungary, Israel, Italy, Korea, Mexico, the Slovak Republic and Turkey (all education levels) and the Flemish Community (short-cycle level): Data reflect the proportion of foreign students instead of international students. Foreign students are those who are not citizens of the country in which the data are collected.
Denmark: Students who have completed a bachelor's degree as international students and subsequently enrol in a second programme (e.g. master's programme) are not counted as international students.
Source: Adapted from OECD (2018[2]), *OECD Education Statistics*, http://dx.doi.org/10.1787/edu-data-en; data provided by the Flemish Ministry of Education and Training.

StatLink https://doi.org/10.1787/888933942887

The low share of international students in short-cycle programmes, which are offered only at UAS, is consistent with the generally lower share of international students in UAS (7% at the bachelor's level) compared to universities (13%).

The Netherlands offers one of the largest proportions of programmes taught in English of all non-English speaking European countries, and has previously been ranked as the leading country in this group on the provision of English-taught programmes (Wachter and

Maiworm, 2014[9]). At the system level (including universities and professional HEIs), there is a perception that the large number of programmes offered in English helps to attract international students and prepare Dutch students for an international labour market. However, concerns have also been raised nationally that large proportions of programmes in English could create additional barriers for students from disadvantaged or migrant backgrounds to succeed in higher education. It may also create distances between academia and the Dutch-speaking community (Royal Netherlands Academy of Arts and Sciences (KNAW), 2017[10]).

Around two-thirds of new entrants to bachelor's programmes graduate within three years after the expected graduation year – below the median of OECD countries

According to the most recent OECD Indicators of Education Systems (INES) survey on completion rates in higher education, less than one-third of the new entrants who started a bachelor's programme in the Netherlands in 2008 graduated within the expected duration of the programme, which is one of the lowest among OECD countries with available data. A further third of those had graduated within three years after the expected graduation year; while 20% had dropped out by 2014 (i.e. they had not graduated and were not in education).

The completion rate (graduating within the expected time) of the new entrants who started their bachelor's study in 2008 differed by gender, enrolment status (full-time or part-time) and the subsector. The completion rate was higher among female students than male students, as was the case in the most of the OECD countries with available data. It was also higher among part-time students than full-time students, which was opposite to some jurisdictions, including the Flemish Community of Belgium. Entrants in UAS were three times more likely to leave higher education without a degree, than those in universities. The government has taken a number of measures over the last couple of decades to increase the rate of timely completion (Table 3.2).

Table 3.2. Policies to improve timely study completion, the Netherlands (2017)

Study checks	Higher education institutions are required to offer students a non-binding "study check", assessing the match between the programme and the student competencies and expectations (e.g. self-assessment tests, evaluation of motivation letters, or intake interviews)
Online self-assessment test	Prospective students are often required to take a non-binding online self-assessment test
Study Choice 123 (*Studiekeuze* 123)	Government-funded web-based tool providing information for each higher education programme, including labour market prospects and results from the national student satisfaction survey
Binding study advice	Institutions provide students with binding study advice at the end of the first year that results in their expulsion from a programme if they have not made sufficient progress
Time-limited financial support	Students who qualify for means-tested grants can receive them only for the expected duration of the programme
Formula funding indicators	Funding formula excludes students who have been enrolled longer than the nominal study duration

Source: Adapted from information provided by the Dutch Ministry of Education, Culture and Science.

3.2. Graduate outcomes

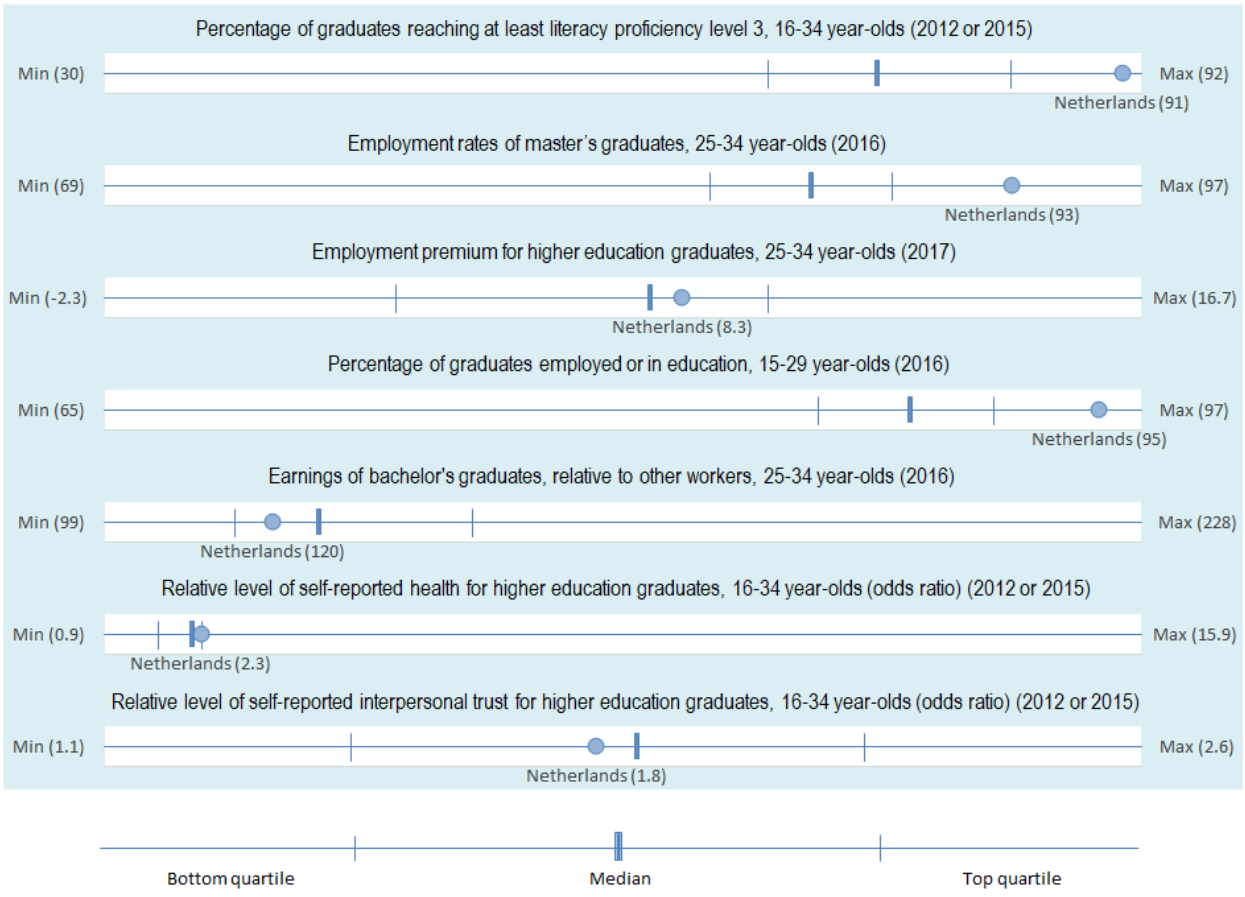
Figure 3.5 provides an outline of the position of the Netherlands within the OECD distribution on the benchmarking indicators related to higher education graduate outcomes.

The majority of young graduates demonstrate good literacy and numeracy skills

Currently, no internationally comparable data are available on the learning outcomes of higher education at the system level. In the absence of an international measure, this note uses the OECD Survey of Adult Skills (PIAAC) to assess skills proficiency among higher education graduates.

The literacy and numeracy proficiency scales range from below level 1 to level 5. A proficiency level of 3 implies an ability to understand and respond appropriately to dense or lengthy texts and complete tasks that require an understanding of mathematical information that may be embedded in unfamiliar contexts. In the Netherlands, 86% of young graduates younger than 35 achieved level 3 of the numeracy proficiency scale and 91% of the literacy proficiency scale – some of the largest proportions in the OECD area.

Figure 3.5. Where does the Netherlands stand in the OECD distribution? Graduate outcomes



Note: The indicators represented in this chart are a subset of the indicators presented in Table 1.1. The coloured circle represents the Netherlands's position in the OECD distribution. The circle is not coloured when data are available for less than half of the OECD countries (the minimum number of countries with available data is 14). For more information on methodological issues and metadata, see OECD (2019[1]) and the references cited therein. Follow the *Statlink* to download the data underlying the calculation of the scorecard.
Source: Adapted from OECD (2019[1]), *Benchmarking Higher Education System Performance*, https://dx.doi.org/10.1787/be5514d7-en.

StatLink https://doi.org/10.1787/888933942906

The odds of young (16-34) higher education graduates of reaching proficiency level 3 are over three times higher than for people with only upper secondary education for both numeracy and literacy; conditional on age, gender, immigrant and language background and parents' educational attainment. This is similar to odds for the OECD median country.

Higher education graduates demonstrate better social outcomes compared to upper secondary education graduates

Education is not only useful to provide the skills needed by the economy, but it is also helps to foster political engagement among citizens, civil society participation and other social outcomes. According to the OECD Survey of Adult Skills (PIAAC), young higher education graduates (16-34) in the Netherlands had three times the odds of disagreeing that "people like me do not have any say about what the government does" (a measure of political efficacy), than upper secondary education graduates, one of the largest differences among the OECD countries participating in PIAAC.

In addition, even though the Netherlands had one of the higher reported levels of trust among OECD countries (OECD, 2018[3]), young higher education graduates still had two times the odds of disagreeing with the statements that "only a few people can be trusted". This indicates that higher education is associated with greater levels of interpersonal trust in the Netherlands, even when overall levels of trust in the population are relatively high.

Higher education graduates enjoy a premium in employment and earnings

Labour market prospects for higher education graduates in the Netherlands are excellent in general. In total, 95% of graduates younger than 30 from all levels of higher education were either employed or in education in 2017, one of the highest shares among OECD countries. In addition, the employment rate of 25-34 year-old higher education graduates was nearly 90% in 2016, 8 percentage points higher than that of young upper secondary education graduates. This employment premium is larger than the OECD median.

In addition, the employment rates were over 90% among graduates of short-cycle programmes (92%) and master's programmes (93%). The employment rate for 25-34 year-old bachelor's graduates was 93% in UAS. This was 20 percentage points higher than for university graduates with bachelor's degrees, though this is influenced by a majority of university graduates continuing with a master's degree after completing their bachelor's.

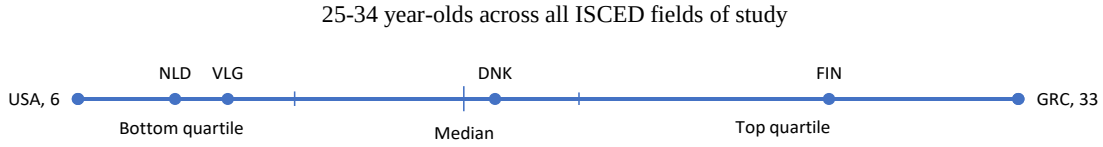
Dutch graduates have good employment prospects across all fields of study. In the Netherlands, the difference between the employment rate of 25-34 year-old higher education graduates in the field of study with the highest employment rate (services) and that with the lowest (arts and humanities) was 9% in 2017 (Figure 3.6).

Young higher education graduates (25-34 year-olds) working full-time earned more than individuals with upper secondary or post-secondary non-tertiary education in 2017. The difference in gross earnings (relative to the median for upper secondary or post-secondary tertiary education) was 20% for bachelor's graduates and even larger for master's graduates, who earned 45% more than the comparison group (in line with the OECD median).

Dutch graduates also appear less likely to end up in jobs with routine tasks compared to their counterparts in many other OECD countries. Around 5% of higher education graduates younger than 40 in the Netherlands reported being in occupations where they were unable to choose or change "the sequence of tasks" and "how to do the work" (a measure of routine jobs with few opportunities to learn by doing (OECD, 2013[11])). This

proportion was similar for bachelor's graduates from UAS and for universities (bachelor's and master's graduates). However, the proportion of workers in routine jobs was over three times larger for individuals with upper secondary education than for higher education graduates (age group: 16-34), above the median across OECD countries participating in PIAAC.

Figure 3.6. Spread in the graduate employment rate across fields of study (2017)



Note: DNK = Denmark; FIN = Finland; GRC = Greece; NLD = Netherlands; USA = United States; VLG = Flanders.
Source: Adapted from OECD (2018[2]), *OECD Education Statistics*, http://dx.doi.org/10.1787/edu-data-en; data provided by the Flemish Ministry of Education and Training.

StatLink https://doi.org/10.1787/888933942925

Chapter 4. Research and engagement

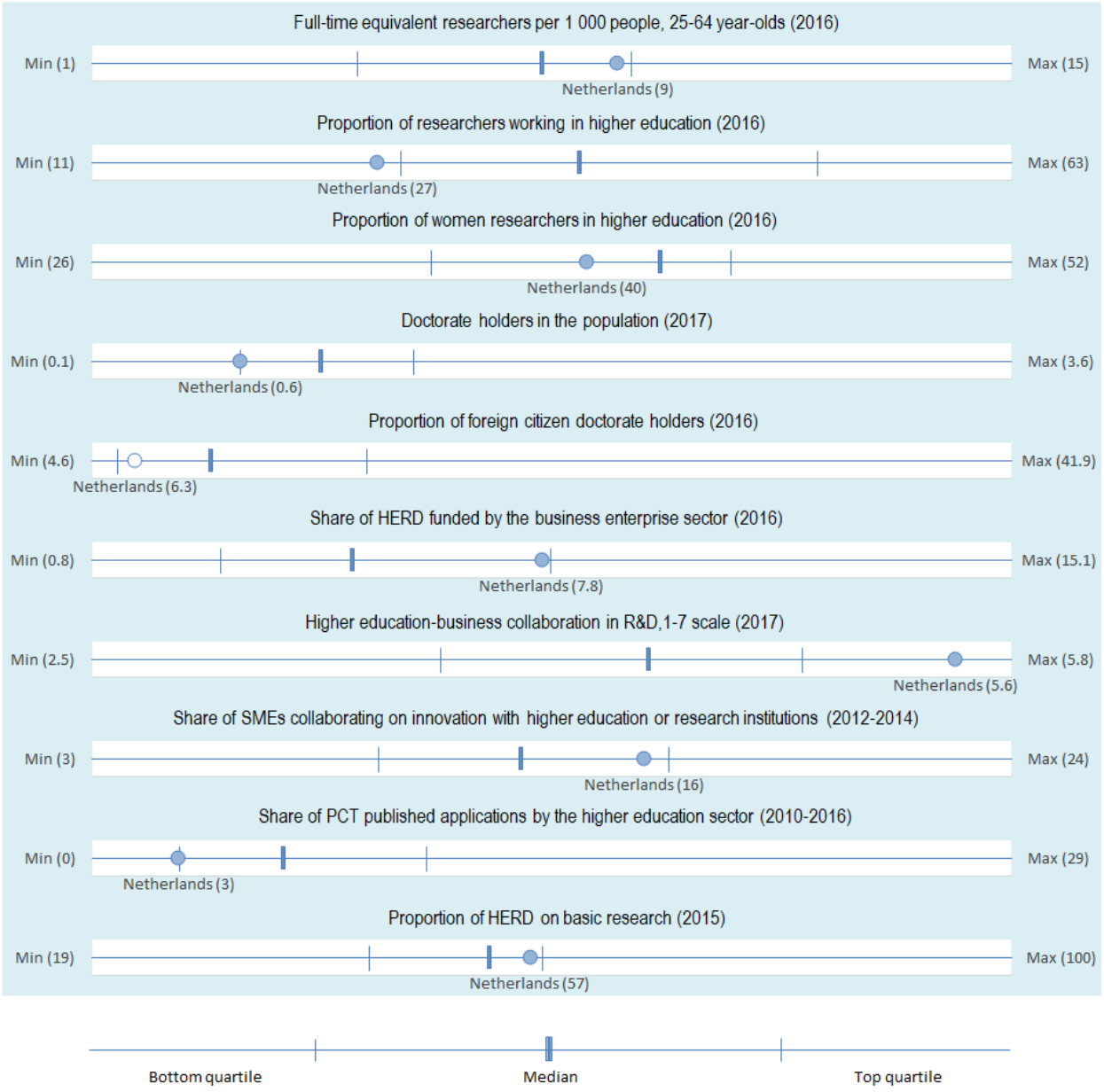
Highlights

- The proportion of researchers working in the higher education sector in 2016 in the Netherlands was in the bottom quartile of OECD countries, though the Netherlands also has the highest ratio of research support staff to researchers in the OECD.
- Despite increases in the numbers graduating with a PhD in the Netherlands in recent years, the proportion of the population with a doctoral level qualification remains rather low in the Netherlands compared to other OECD countries.
- The Netherlands appears to have a strong record of collaboration between the higher education research and development sector and business enterprise, with levels of reported collaboration in 2017 in the top quartile of the OECD.
- Bibliometric data indicate that the Netherlands is one of the top performers in the OECD both in the quantity and quality (as measured by citations) of scientific publications. The numbers of publications per 100 researchers and the proportion of publications among the top 10% most cited documents worldwide were both in the top quartile of OECD countries in 2016.
- Dutch researchers are more likely to engage in international collaboration than are researchers in most other OECD countries. In 2015, 35% of scientific documents published by Dutch researchers included some international scientific collaboration, placing the Netherlands in the top quartile of OECD countries.
- International researcher mobility tends towards a neutral net position for the Dutch research system, where the annual flows of researchers out of the Netherlands are roughly equivalent to the numbers of new inflows and returnees.
- The Netherlands is in the top quartile of OECD countries on the proportion of scientific documents that are made available through some form of open access. In 2016, 31% of Dutch scientific documents in the Scopus database[5] were published using an open access model.

4.1. Inputs and activities

Figure 4.1 shows the position of the Netherlands within the OECD distribution on indicators related to research and development inputs and activities.

Figure 4.1. Where does the Netherlands stand in the OECD distribution? Research inputs and activities



Note: The indicators represented in this chart are a subset of the indicators presented in Table 1.1. The coloured circle represents the Netherlands's position in the OECD distribution. The circle is not coloured when data are available for less than half of the OECD countries (the minimum number of countries with available data is 14). For more information on methodological issues and metadata, see OECD (2019[1]) and the references cited therein. Follow the *Statlink* to download the data underlying the calculation of the scorecard.

Source: Adapted from OECD (2019[1]), *Benchmarking Higher Education System Performance*, https://dx.doi.org/10.1787/be5514d7-en.

StatLink https://doi.org/10.1787/888933942944

The proportion of researchers working in the higher education research sector is lower than the median level

The Netherlands had a greater proportion of full-time equivalent researchers in the population in 2016 compared to the median level across the OECD, at 9 researchers per 1 000 people (Figure 4.1). The proportion of researchers working in the higher education sector is relatively low among OECD countries. In 2016, 28% of all full-time equivalent researchers were working in higher education institutions, compared to the OECD median level of around 40%. In the Netherlands, the lower proportion of researchers in higher education could be partly explained by the fact that research activity tends to be mainly concentrated in universities. In addition the overall science base in the Netherlands is strong, with highly active public research institutes and increasing numbers of enterprises performing R&D (OECD, 2014[12]).

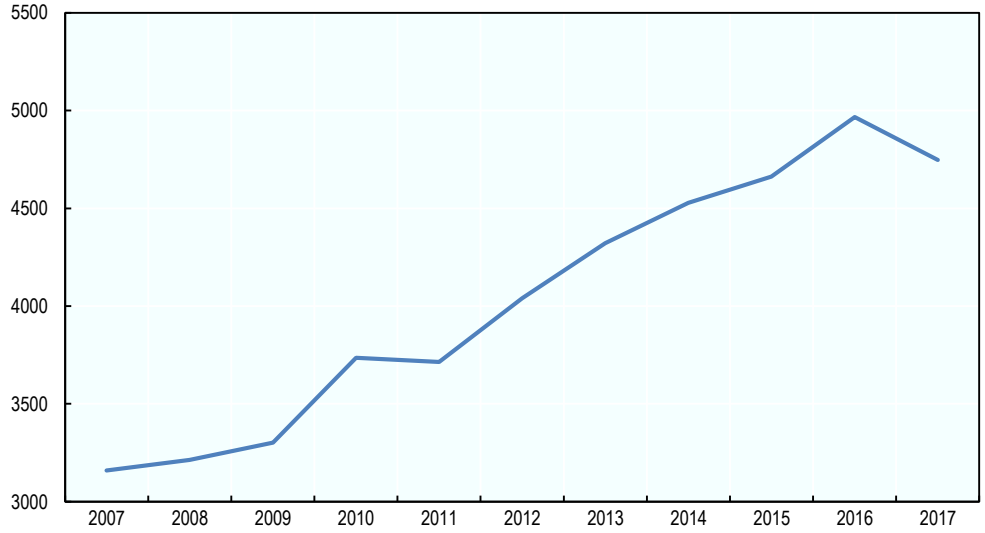
The proportion of researchers working in higher education can also reflect the emphasis on funding for higher education research within the national R&D system. In 2016, the higher education sector attracted about 30% of all gross expenditure on R&D in the Netherlands (OECD, 2019[1]).

The Netherlands has a lower proportion of the population with a doctorate than most OECD countries

Doctoral education is the entry point into a career in higher education research, and many OECD jurisdictions have been working to increase the numbers of people acquiring a doctoral qualification (OECD, 2019[1]). In the Netherlands, approximately 0.6% of the population aged 25-64 had achieved a doctoral level qualification in 2017, in the bottom quartile of OECD countries, and below the median level of just under 1% of the population. While this is a similar level to neighbouring Belgium (0.7%), it is far below the levels in many other European countries such as Denmark (1.1%), Germany (1.4%), Luxembourg (2.0%) and Switzerland (3.0%).

The Netherlands also seems to attract less doctorate holders from abroad than many other research systems in the OECD. In 2016, foreign citizens made up 6.3% of doctorate holders in the population, a level below the OECD median. However, the numbers of doctorate degrees awarded in the Netherlands have been increasing year-on-year in the past decade, although numbers decreased slightly between 2016 and 2017 (Figure 4.2).

Figure 4.2. New doctorate degrees awarded in the Netherlands (2007-2017)



Source: Rathenau Instituut (2019[13]), *Science in figures*, www.rathenau.nl/en/science-figures.

StatLink https://doi.org/10.1787/888933942963

First-time entry rates into doctoral education remain among the lowest in OECD countries, with 1.9% of the population expected to enter into a doctoral level programme in 2015, although graduation rates are above average.[6] The Netherlands, along with a number of other OECD countries, includes the number of doctoral graduates in the consideration for awarding research funding to institutions.

The position of doctoral fellow is a paid position in the Netherlands, and doctoral candidates are considered as employees rather than students, though there are also a small number of students on scholarships who are not directly employed. At the same time, the recruitment of academic staff (including doctoral candidates) and other criteria related to the career path is generally determined at the level of the institution in the Netherlands, with few regulations set at the national level.

Collaboration levels between the higher education sector and business are in the top quartile of OECD countries

Collaboration with other sectors of the economy is important for higher education R&D to ensure that knowledge is generated, shared and applied in a way that maximises its benefits to the economy and society, and to ensure the research produced by higher education can serve as an input into business innovation processes (Chapter 7 of (OECD, 2019[1])). The Netherlands appears to have a stronger record of collaboration with business than most other OECD countries, according to available evidence. A 2017 survey indicated that on a scale of 1-7 of the extent of collaboration, businesses in the Netherlands indicated a collaboration level of 5.6, one of the highest levels in the OECD.

In a 2014 survey, 16% of small and medium-size enterprises reported that they had recently collaborated with the higher education sector in the Netherlands on innovation development. While this proportion is above the OECD median, it is slightly lower than the reported levels in the other three jurisdictions participating in the benchmarking

exercise (ranging from 17% in Norway to 22% in Belgium). It is also less than half of the proportion of larger businesses in the Netherlands reporting collaboration with the higher education sector in the same survey (34%).

The Netherlands has introduced a number of policies that aim to create stronger links between higher education and business. For example, the Regional Attention and Action for Knowledge Circulation programme (RAAK) provides project-based financial support on a competitive basis for UAS that engage in collaborative research with external partners. Other reforms aimed at strengthening the role of UAS in the innovation process include the development of Knowledge Circles (which allow academic staff and local stakeholders to work together on projects of common interest) and Centres of Expertise, which develop and deliver knowledge services based on co-operation between academics, government and industry partners (Chapter 7 of (OECD, 2019[1])).

The Netherlands also attracts a relatively large share of co-funding from the business sector for higher education research and development, compared to other OECD countries. In 2016, 7.8% of total expenditure on higher education research and development was sourced from the business sector, above the OECD median value of 4.9%.

The higher education system in the Netherlands has developed many novel approaches to collaboration and engagement with the wider community. A recent OECD/EU review of the support for entrepreneurship and innovation in higher education in the Netherlands, carried out by applying the HEInnovate tool (HEInnovate, 2018[14]) identified a number of key strengths within the Dutch system in promoting innovative links with the wider economy, and a number of areas which could benefit from further improvement (Box 4.1).

Box 4.1. Applying the HEInnovate framework in the Netherlands

HEInnovate is a framework developed by the European Commission and the OECD for higher education institutions to self-assess how they manage resources, build organisational capacity, collaborate with external stakeholders, create and nurture synergies between their core functions, embed digital technology, promote entrepreneurship and support knowledge exchange with the wider world (HEInnovate, 2018[14]).

In terms of collaboration between the higher education sector and other areas of the economy, applying the HEInnovate framework to the system in the Netherlands highlighted the benefits and potential of the "valorisation" of knowledge (defined as created value from knowledge and translating knowledge into processes or products with economic and social benefit). The higher education sector in the Netherlands was found to have built strong knowledge exchange links with the wider economy and society, through:

- being active in regional initiatives such as the City Deals (see Chapter 7 of (OECD, 2019[1]))
- creating a supportive business environment for start-ups originating in the higher education sector
- providing staff and students with opportunities to participate in innovative activities.

Actions identified which could promote stronger value creation in the future include:

- recognising and rewarding staff participation in activities that can lead to valorisation of knowledge
- moving from project-based funding to the establishment of a sustainable funding base for future valorisation activity
- developing a research programme on processes, outcomes and impacts of valorisation activities, to stimulate future learning and improvement.

Source: OECD/EU (2018[15]), *Supporting Entrepreneurship and Innovation in Higher Education in The Netherlands*, OECD Skills Studies, https://doi.org/10.1787/9789264292048-en.

4.2. Internationalisation and knowledge production

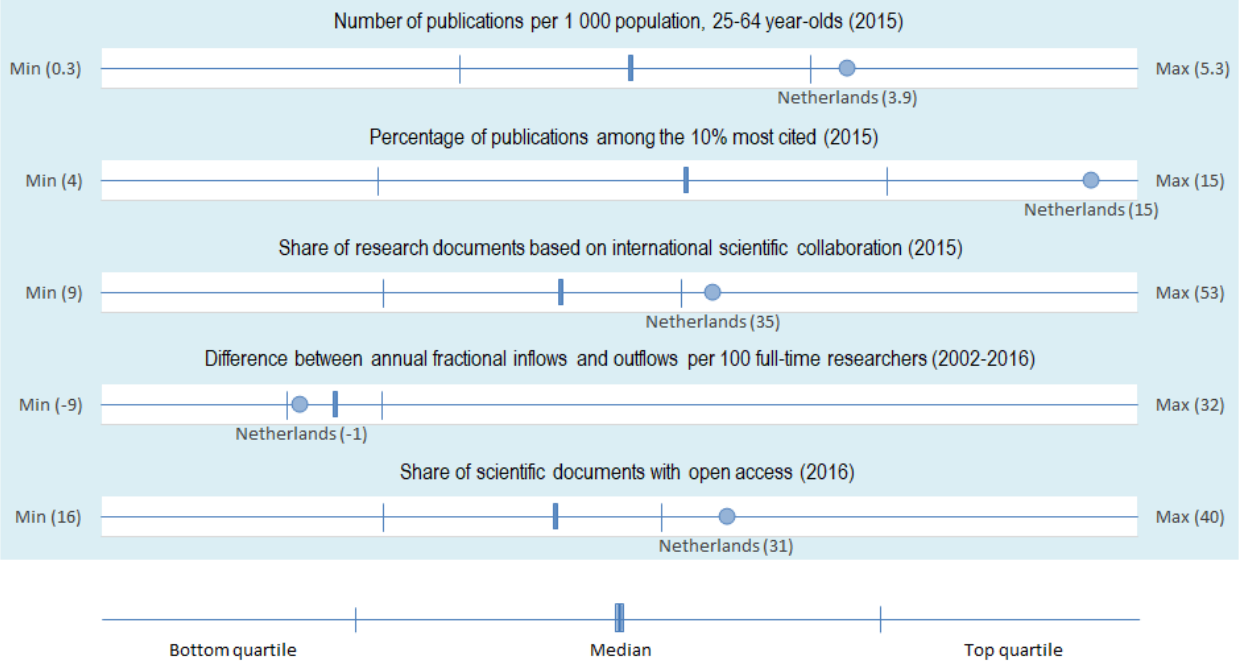
The Netherlands is a high performer on the quantity and quality of scientific output, according to bibliometric indicators

Bibliometric indicators are commonly used by governments and in institutional rankings to assess the quantity and quality of research output (Chapter 2 of (OECD, 2019[1])). The Netherlands is a high performer within the OECD in both quantity and quality of output, according to bibliometric indicators. In 2015, the Netherlands produced 3.9 publications per 1 000 people aged 25-64, a level in the top quartile of OECD countries (Figure 4.3). This was higher than many nearby countries, including France (2.1), Germany (2.5) and Belgium (3.1), though lower than the output attained in Nordic countries (ranging from 4.0 in Iceland to 5.3 in Denmark).

Citation-related bibliometrics are often used as a proxy for measuring the impact of scientific publications on the work of other researchers. Dutch research is also among the highest performing in the OECD on indicators related to citations. In 2015, around 15% of Dutch research publications were ranked in the top 10% most highly cited publications in Scopus (a database of scientific publications), the second-highest percentage in the OECD after Switzerland.

The most recent plan for the Standard Evaluation Protocol for assessing research in the Netherlands, covering the period 2015-2021, focuses less on research output and more on research quality than previous iterations. This protocol is applied to assess the performance of research in Dutch universities (OECD, 2019[1]). While the range of criteria for evaluation included covers both quantitative and qualitative evidence, the numbers of scientific publications and citations are considered as "demonstrable" indicators of research quality in the protocol (Association of Universities in the Netherlands (VSNU), Netherlands Organisation for Scientific Research (NWO) and Royal Netherlands Academy of Arts and Sciences (KNAW), 2014[16]).

Figure 4.3. Where does the Netherlands stand in the OECD distribution? Internationalisation and knowledge production



Note: The indicators represented in this chart are a subset of the indicators presented in Table 1.1. The coloured circle represents the Netherlands's position in the OECD distribution. The circle is not coloured when data are available for less than half of the OECD countries (the minimum number of countries with available data is 14). For more information on methodological issues and metadata, see OECD (2019[1]) and the references cited therein. Follow the *Statlink* to download the data underlying the calculation of the scorecard.
Source: Adapted from OECD (2019[1]), *Benchmarking Higher Education System Performance*, https://dx.doi.org/10.1787/be5514d7-en.

StatLink https://doi.org/10.1787/888933942982

Dutch researchers appear more likely to participate in international scientific collaboration, and often have a period of international mobility.

International collaboration in research and development facilitates the diffusion of knowledge and can help to increase the quality of research. According to bibliometric data, the Netherlands has one of the highest levels of international collaboration in the OECD. In 2015, 35% of international scientific documents published by Dutch researchers included some international scientific collaboration, placing the Netherlands in the top quartile of OECD countries.

Many higher education institutions in the Netherlands actively work to achieve greater levels of international collaboration, through heavy involvement in international alliances and consortia, such as the League of European Research Universities, the European Consortium of Innovative Universities and the IDEA League, among others. Many universities are also active members of research consortia funded by the European Commission. The government also includes the number of international research projects funded through the Horizon 2020 programme as an indicator in the allocation of formula funding for higher education institutions (see Chapter 6 of (OECD, 2019[1])).

Between 2002 and 2016, the Netherlands was close to parity on inflows and outflows of researchers (measured as a proportion of full-time equivalent researchers in the country), indicating no net "brain drain" or "brain gain" for the Netherlands, but instead an evenly matched "brain circulation" over the period. Higher levels of brain circulation (international inward and outward mobility of researchers) can create additional value for research and development systems, by circulating knowledge and enabling researchers to build networks beyond their immediate institutions or countries. The proportional volume of flows of researchers in and out of the Netherlands is similar to OECD average levels. In 2016, around 7% of scientific authors in the Netherlands left to another jurisdiction, while a similar percentage entered or returned to the Netherlands (Chapter 6 of (OECD, 2019[1])).

The Royal Netherlands Academy of Arts and Sciences (KNAW) and the Netherlands Organisation for Scientific Research (NWO) both provide funding to support researcher mobility, while individual higher education institutions also often allocate funds specifically to hire talented foreign researchers.

Open access to scientific documents is more prevalent than in most other OECD countries, but remains low overall

Ensuring that the results of research are as accessible as possible creates a number of potential benefits, including increasing the impact of knowledge, improving efficiency by reducing duplication of efforts and allowing results to be more easily validated. The main model of access to scientific publications across the OECD remains closed, with a majority of publications in all OECD countries published under closed access conditions.

Nevertheless, the Netherlands is in the top quartile of OECD countries on the proportion of scientific documents that are made available through some form of open access. In 2016, 31% of Dutch scientific documents in the Scopus database[7] were published using an open access model. This compares favourably to the OECD median level (26%), though still below leading countries such as the United Kingdom (40%) and Switzerland (36%).

The Netherlands has a number of policy initiatives that are aimed at increasing the accessibility of scientific research. For example, the Netherlands Organisation for Scientific Research (NWO) requires immediate open publication of results from research supported by public funds. The government also has a goal of making open access and open science the standard in Dutch research and, in conjunction with a number of research organisations, is working on a National Plan for Open Science with an ambitious target to make 100% of their publications openly available by 2020 (Chapter 7 of (OECD, 2019[1])).

Chapter 5. Scenarios for policy

This chapter extends the comparisons drawn in the previous chapters by looking forward, and presenting a set of scenarios relevant to the future of the Netherlands' higher education system. The purpose of these scenarios is to provide evidence-based conjectures about future trends in an area of national policy importance, which can stimulate debate and support policy-planning exercises (Box 5.1).

Box 5.1. Scenario development for policy analysis

Governments plan for the future of higher education in the context of a number of sources of uncertainty. Scenarios can be defined as descriptions of hypothetical futures that could occur and that, although somewhat speculative in nature, are nonetheless internally consistent and causally coherent (OECD, 2006[17]). The development of scenarios can provide support to national discussions on contextual and systemic trends, highlight possible consequences of current circumstances on higher education and the economy, and outline the main available policy directions.

In a context of increasing complexity in societies and economies, more emphasis is being placed on anticipatory exercises in the policy process (OECD, 2015[18]). Contemplating different policy scenarios can feed into the development of broad long-term strategic planning for higher education systems or pre-policy research related to particular policy topics.

Short and medium-term scenarios are likely to be more accurate and useful to the decision-making process of policymakers. The scenario exercise presented in Section 5.1 therefore focuses on the immediate decade ahead (i.e. up to 2030), and is developed using the following steps:

- statement of a subject area or issue of national policy concern and the rationale for the concern
- outline of the assumptions used to develop the set of future scenarios
- explanation of the likely impact of the assumptions on future trends
- discussion of implications for policy.

5.1. The profile and organisation of the university and UAS sectors in the Netherlands may need some refinement in the future, as demand evolves.

Box 5.2. Summary of policy concern

The proportion of higher education enrolments in Dutch UAS has been trending downwards in recent years. In addition, while both domestic and international student enrolments have steadily risen in recent decades, there are some indications that overall enrolment levels may moderate or even reduce in the future. As demand for higher education in the Netherlands continues to evolve, the government may need to ensure that roles and missions (both specified and implied) of institutions in both subsectors can also evolve to meet changing needs.

5.1.1. Rationale

There are legally specified differences in the missions and orientations of the subsectors in the Netherlands

The Netherlands has a binary higher education system, with 18 institutions[8] in the university sector and 36 institutions in the UAS sector (also known as universities of applied sciences or *hogescholen*). These subsectors have legally defined differences in missions and orientations, with universities focused on academic education and conducting the majority of research, while UAS offer programmes that are more occupationally specific (Table 5.1).

Table 5.1. Subsector differences in mission and orientation in the Netherlands

	Universities	UAS
Programme orientation	"research-oriented education" (academic, learning, teaching and research)	"higher professional education" aimed towards specific occupations
Programme level offered	Programmes at ISCED 6-8 (bachelor's, master's and doctoral level)	Mostly programmes at ISCED 5 and 6 (short-cycle and bachelor's level)
Modes of delivery	Full-time and part-time	Full-time and part-time
Dual-training programmes	Offered	Offered
Research capacity	Broad range of research activities	Practice-oriented research related to specific industries and occupations

Source: Adapted from information provided by the Dutch Ministry of Education, Culture and Science.

There are also a number of other differences in characteristics between the subsectors

In addition to the legally defined differences in missions between the subsectors, evidence gathered during the benchmarking exercise shows that the subsectors also tend to cater to different student groups. One reason for this difference is the tracking process present in the Dutch upper secondary school system, meaning that decisions about which sector of higher education students will enter are made much earlier in the school career than at the point of admission to higher education. Dutch students from the general secondary school

stream (HAVO) do not meet the entry requirements for universities and therefore can only attend UAS, while students from pre-university secondary education (VWO) are eligible to enter both subsectors (see Chapter 2 of (OECD, 2019[1])).

As Table 5.2 shows, the UAS sector caters to a much greater proportion of older students (7.1% of graduates are over 30, compared to just 1.5% of graduates in universities). Part-time students are also disproportionately enrolled in UAS, though in principle, institutions from both sectors are free to offer part-time education.

Table 5.2. Differences in subsector student characteristics and outcomes in the Netherlands, bachelor's level

	Universities	UAS
Share of first-time graduates older than 30 (%) (2016)	1.5	7.1
Part-time students (%) (2016)	1.1	8.3
International students (%) (2016)	13.1	7.4
Graduates with at least one tertiary-educated parent (%)[9]	73	47
Students graduating within the expected timeframe (%)	24.8	33.8
Non-completing students (%)	7.7	28.4

Source: Adapted from OECD (2018[2]), *OECD Education Statistics*, http://dx.doi.org/10.1787/edu-data-en; OECD (2018[19]), *OECD Survey of Adult Skills*, www.oecd.org/skills/piaac/data/; data provided by the Dutch Ministry of Education, Culture and Science.

Data from the OECD Survey of Adult Skills for the Netherlands show that graduates from UAS are less likely to have a tertiary-educated parent than graduates from universities, indicating that UAS tend to educate people from lower socio-economic backgrounds. Universities are more internationalised, having almost double the proportion of international students in bachelor level programmes (and also a much higher proportion in master's level programmes) than UAS.

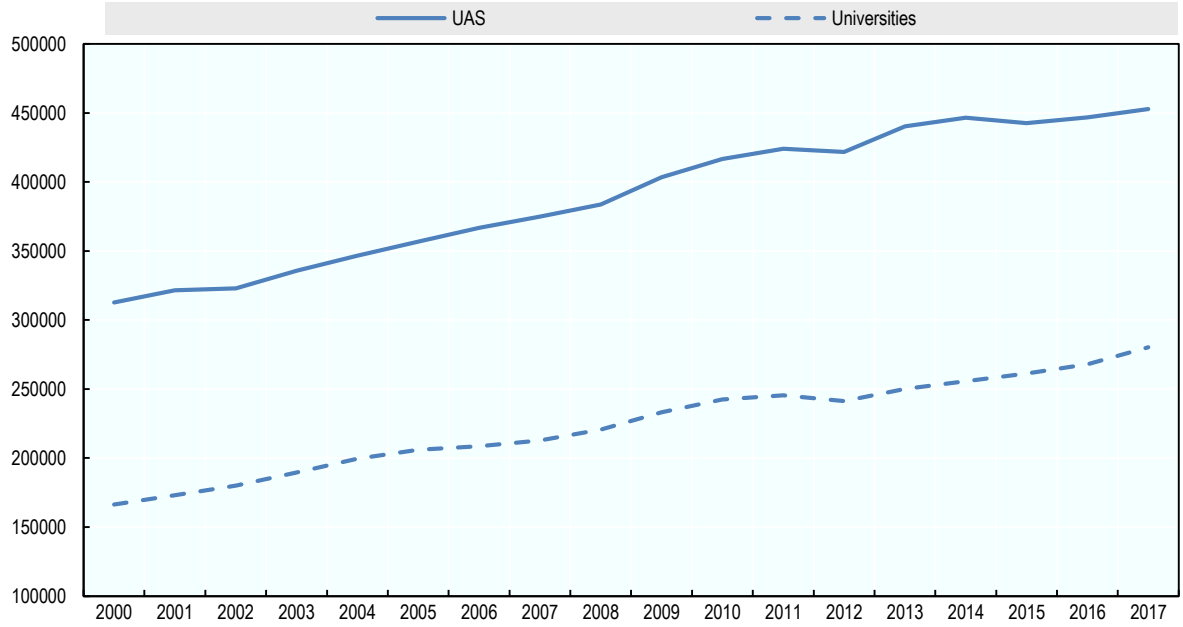
There are also marked differences in completion rates between the subsectors. While one-third of students who entered a bachelor's programme in UAS in 2008 completed their studies within the expected time, this proportion is lower in universities, where less than one-quarter of students complete their studies on time. However, in general, students in universities are more likely than UAS students to complete their studies. The overall rate of non-completion (defined as students who have not gained a qualification three years after the expected timeframe and are not in education) is much higher in UAS, where almost 30% of students end up not gaining any qualification, compared to less than 8% of students from universities.

UAS enrol the majority of students, though enrolments in universities have been growing at a faster rate than UAS in recent years

The UAS sector has always accounted for the majority of students in the Netherlands during recent decades. Of the three participating jurisdictions in the benchmarking exercise with a binary divide in their higher education systems, the UAS sector accounts for the largest share of enrolments in the Netherlands. Around 453 000 of the total of 732 000 students in public higher education institutions in 2017 were enrolled in UAS (62% of the total (Statline and Central Bureau of Statistics, 2019[20])).

Both sectors have been on a pathway of continuous growth in recent decades (Figure 5.1). Since 2000, however, the rate of growth in the university sector has been surpassing that of the UAS sector. Over the five-year period 2013-2017, university enrolments increased by almost 12% in total, while the rate of increase in the UAS sector was less than 3% over the same period.

Figure 5.1. Evolution of enrolments in the subsectors of the Netherlands (2000-2017)



Source: Adapted from Statline and Central Bureau of Statistics (2019[20]), *School size by type of education and ideological basis*, https://opendata.cbs.nl/statline/#/CBS/en/dataset/03753eng/table?dl=10641.

StatLink https://doi.org/10.1787/888933943001

The proportion of new entrants to higher education going to UAS have been reducing as well in recent years. In 2005, more than three-quarters of new entrants went to the UAS sector. However, over time, this share has been gradually reducing. In 2016, the most recent year with available data, the share of new entrants to UAS at the bachelor's level had reduced to 69% from a level of 77% in 2005 (Table 5.3).

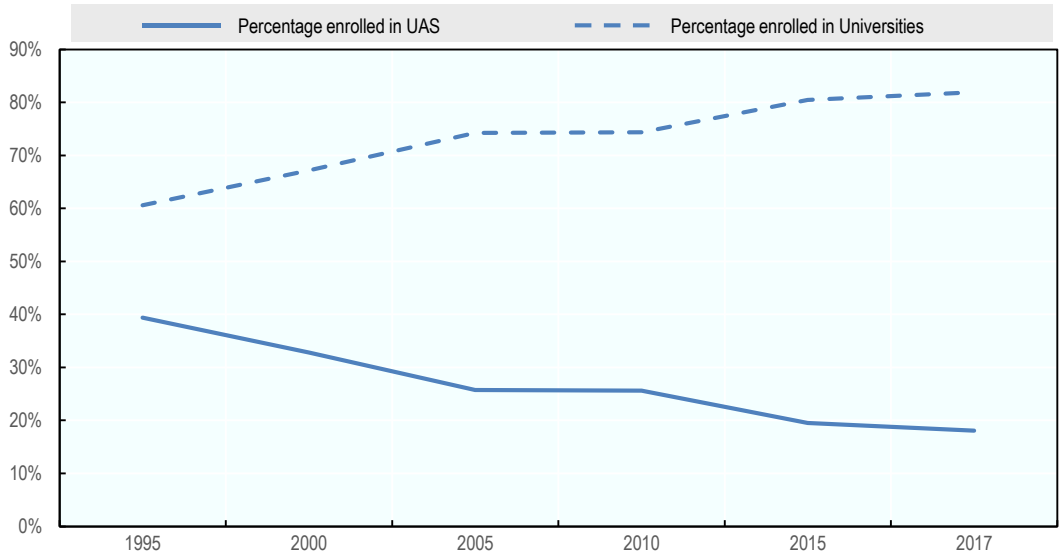
Table 5.3. Share of new entrants in UAS, bachelor's level (2005 to 2016)

	2005	2011	2014	2016
Estonia		31	29	31
The Flemish Community	64	55	60	62
The Netherlands	77	73	71	69

Note: The share of students in UAS is calculated over the total number of new entrants in universities and UAS. Institutions that are not classified in one of these two groups by the national statistical offices are excluded (for example, the Open University in the Netherlands).
Source: Adapted from data provided by the participating jurisdictions.

National data also show that students with a second-level pre-university (VWO) qualification (which provides access to both universities and UAS) are increasingly electing to enrol in universities rather than UAS. While in 1995, about 40% of all students with a VWO qualification enrolled in UAS, by 2017 that proportion had fallen to 18% (Figure 5.2).

Figure 5.2. First-year higher education students with a pre-university qualification (VWO), by sector of enrolment (1995-2017)



Source: Adapted from data provided by the Dutch Ministry of Education, Culture and Science.

StatLink https://doi.org/10.1787/888933943020

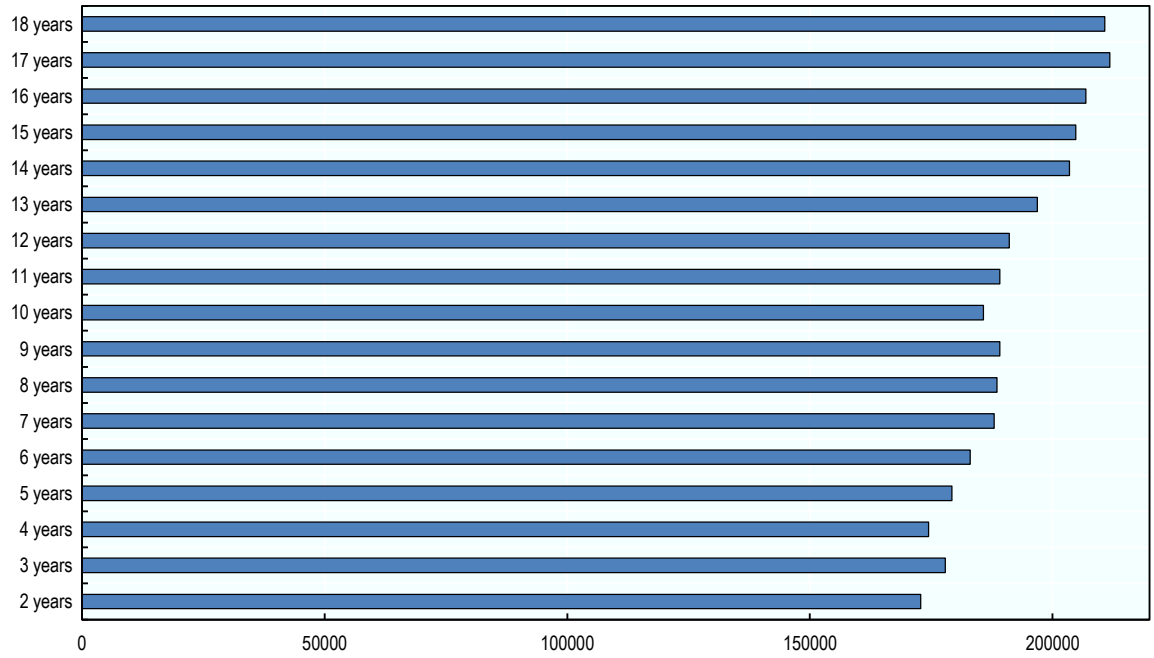
These trends, when considered together, could signal an increasing demand among prospective students for university education in the Netherlands compared to education in UAS.

International student numbers continue to grow, while the demographic profile in the Netherlands may lead to a reduction in domestic demand for higher education

The current demographic structure in the Netherlands indicates that the size of the cohorts entering higher education from secondary education is likely to shrink substantially in the coming years. Assuming there is no major change to migration patterns, the size of the cohort of 18 year-olds in the Netherlands could reduce by more than 20% from 2018 levels in the next 15 years (Figure 5.3).

Unless entry rates increase considerably, this could lead to a continuation of the reduction in enrolments in higher education by domestic students in the Netherlands in the future.

Figure 5.3. Population at each single year of age in the Netherlands (2018)



Source: Eurostat (2019[21]), *Population Database*, https://ec.europa.eu/eurostat/web/population-demography-migration-projections/data/database.

StatLink https://doi.org/10.1787/888933943039

Increased enrolments of international students could potentially offset reduced demand from domestic students. The Netherlands is an attractive destination for international students, due in part to the large-scale provision of higher education programmes in English, particularly at the master's level. While English-taught programmes have become increasingly commonplace across countries where English is not the first language, a 2014 study noted that the Netherlands is the leading provider of English-taught programmes in non-English speaking Europe, in terms of volume of programmes offered, and had the second-highest proportion of courses offered in English, after Denmark (Wachter and Maiworm, 2014[9]).

However, the Netherlands has been undergoing a period of reflection on the future direction of internationalisation of the higher education system, in particular about appropriate numbers of courses in the system that should be offered in English (Royal Netherlands Academy of Arts and Sciences (KNAW), 2017[10]). In a context where three-quarters of master's programmes in universities are carried out in English (Netherlands Association of Universities of Applied Sciences (VH) and Association of Universities in The Netherlands (VSNU), 2018[22]), master's programmes are offered only in English in some fields of study. There has been rising concern that the large increase in programmes offered in English may be resulting in the displacement of students who prefer to study in Dutch, as well as a decline in the use of the Dutch language in higher education.

In Denmark, which has a similar proportion of English-language higher education programmes to the Netherlands, the government has already moved to reduce places on courses taught in English. This decision was partly taken because of national research showing that only about one-third of international students remain in the workforce in

Denmark two years after graduation (Danish Ministry of Higher Education and Science, 2018[23]). If the Netherlands follows a similar course, the reducing size of the domestic entry cohort combined with a possibility that international student numbers may not grow as quickly in the future, could create a situation of declining enrolment numbers in the coming decade.

5.1.2. Scenarios for future demand in the subsectors

The trends outlined in the previous section provide indications of demand for higher education in the Netherlands, and raise important questions about how demand could develop into the future, taking into account the binary divide. The tendencies of the subsectors to cater to different sets of students, the demographic situation, stronger increases in enrolment rates in universities compared to UAS, and reflection about the internationalisation of higher education are issues that will all contribute to the future evolution of the higher education system in the Netherlands. Based on these trends, this section outlines some possible scenarios of future demand for higher education in each of the subsectors. The scenarios can be used to prompt reflection in the Netherlands on which of the possible outcomes described are desirable and attainable, and on associated implications for policy.

Table 5.4 sets out a number of assumptions used to generate scenarios of future demand for higher education in the Netherlands. Assumptions focus on two specific drivers: overall level of demand and the proportion of demand allocated to the UAS subsector. The starting point for each of the assumptions are the numbers of students enrolled in each subsector in the Netherlands, and recent trends in enrolments. Demand is measured in the scenarios as numbers of students, i.e. the numbers of students who could expect to achieve a place in a higher education programme in each of the subsectors. For this simple analysis, all other surrounding conditions are assumed to remain as they are currently (e.g. the open entry characteristic of Dutch higher education).

Table 5.4. Assumptions for future trends used in scenarios

Scenario	Proportion of demand targeted at UAS	Overall demand
Base case	Decreases by 5 percentage points by 2030 (based on the annual average decline over 2015-2017)	Increases by 4.5% by 2030 (based on average change from 2015-2017)
Trend reversal	Increases by 5 percentage points by 2030	Declines gradually by a total of 15% by 2030 (based on demographic trends)
UAS resurgence	Increases by 5 percentage points by 2030	Stays constant at 2017 levels
Double decline	Decreases by 5 percentage points by 2030 (based on the annual average decline over 2015-2017)	Declines gradually by a total of 15% by 2030 (based on demographic trends)

Under the “base case” scenario, the 2017 data are projected forward to 2030 by applying the annual average change over the most recent three years for which data are available (2015-2017). This scenario shows what would happen to demand by 2030 if the most recent trends simply continued indefinitely. In a “trend reversal” scenario, recent trends for both drivers are reversed. In this case, the trend of recent increases in enrolment turns instead into a decrease in demand (by 15% over the period 2017 to 2030), and the trend of

increasing share of enrolments in universities turns instead into an increasing share of demand for UAS (by 5 percentage points).

In a scenario of "UAS resurgence", overall demand would remain static at 2017 levels, but the share of demand for UAS would gradually rise by 5 percentage points by 2030. Finally, a "double decline" scenario shows how the situation could evolve in the case that the demographic patterns reduced demand by 15% and the demand for UAS also decreased by 5 percentage points.

Table 5.5 shows numerically how demand could evolve under each of the different scenarios, while Figure 5.4 shows visually the diverse ways in which different scenarios can impact the future of demand in the university and UAS subsectors.

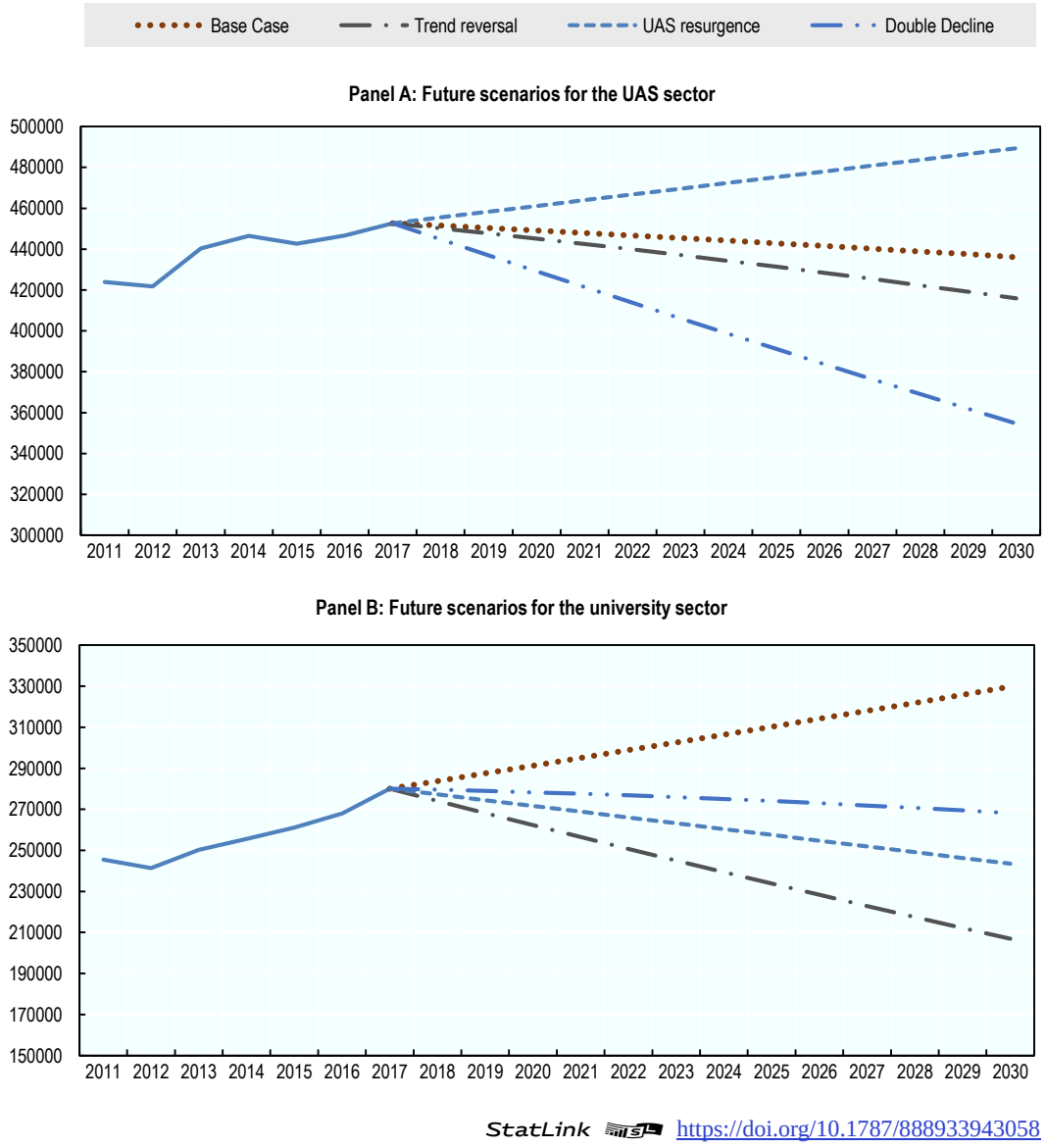
Table 5.5. Future demand for higher education in the Netherlands under different scenarios

	Demand for UAS (number of students)				Demand for university (number of students)			
	Base case	Trend reversal	UAS resurgence	Double decline	Base case	Trend reversal	UAS resurgence	Double decline
2017	452 690	452 690	452 690	452 690	280 114	280 114	280 114	280 114
2018	451 529	450 253	455 508	444 775	283 818	274 096	277 296	279 573
2019	450 349	447 750	458 327	436 924	287 541	268 143	274 477	278 969
2020	449 151	445 183	461 145	429 135	291 284	262 255	271 659	278 303
2021	447 933	442 550	463 964	421 409	295 045	256 432	268 840	277 573
2022	446 697	439 853	466 782	413 746	298 824	250 674	266 022	276 781
2023	445 442	437 090	469 601	406 145	302 623	244 981	263 203	275 926
2024	444 167	434 262	472 419	398 608	306 441	239 354	260 385	275 008
2025	442 874	431 370	475 238	391 133	310 277	233 791	257 566	274 028
2026	441 562	428 412	478 056	383 721	314 133	228 293	254 748	272 984
2027	440 231	425 389	480 875	376 372	318 007	222 860	251 929	271 878
2028	438 882	422 301	483 693	369 086	321 901	217 493	249 111	270 708
2029	437 513	419 149	486 512	361 862	325 813	212 190	246 292	269 476
2030	436 125	415 931	489 330	354 702	329 744	206 953	243 474	268 182

The scenarios highlight the disparities in potential outcomes in terms of demand for the higher education system, which could occur from even reasonably small changes in the driving factors. Actual outcomes and the ability to fulfil demand under different scenarios depends on how the context evolves and how policy actions work to nudge demand in different directions. For example, demand for university education in the Netherlands, under the "base case" scenario would continue to rise to almost 330 000 students by 2030, while under the conditions of the "trend reversal" scenario, demand could drop to just under 207 000 students.

The "UAS resurgence" scenario indicates a gradual increase in demand for UAS programmes (by approximately 10% on 2017 levels) and a corresponding gradual decrease in demand for university education (by approximately 15% on 2017 levels). On the other hand, under the "double decline" scenario, a combination of an overall decline in demand and a decline in the proportions electing to study in UAS would lead to reduced demand for education in both UAS and universities. However, UAS demand would reduce by more than 20% from 2017 levels, while the decrease in demand for university education would be much more marginal, at around 4% from 2017 levels.

Figure 5.4. Demand for higher education in the Netherlands (2011-2030)



StatLink https://doi.org/10.1787/888933943058

5.1.3. Implications for policy

Each of the possible future scenarios raises different implications for policy in the Netherlands. Scenarios that could create additional pressures on the system may require reactive measures, while proactive policy actions can move the system towards the more desirable future scenarios. This section discusses a number of possible policy implications of each of the scenarios.

Further increases in future demand for universities may not be fulfilled without additional investment

The "base case" scenario indicates more positive demand expectations for universities compared to UAS. This reflects recent trends and national data showing that the numbers

attending public Dutch universities reached record highs in 2017 (Statline and Central Bureau of Statistics, 2019[20]). The "base case" scenario implies that, if recent trends continue on their current path, there could be close to 20% increase in demand for universities over 2017 levels by 2030. This level of demand may not be feasible to accommodate in universities without additional investment. Already, some institutions have struggled with increasing numbers in recent years, including the increase in international students, which disproportionately affects the university sector. As a result, institutions have proposed to apply conditions of *numerus fixus* to English-taught courses pending reflection on the development of more balanced future approaches to internationalisation in the sector (Netherlands Association of Universities of Applied Sciences (VH) and Association of Universities in The Netherlands (VSNU), 2018[22]).

The government of the Netherlands has already agreed with higher education institutions to reinvest the majority of income from the newly introduced student loan system back into higher education (Chapter 3 of (OECD, 2019[1])). However, the government has committed to targeting this investment towards improving education quality as opposed to financing increases in quantity. Further sustained growth in demand falling on a small number of institutions would require additional outlays on infrastructure and staffing, to ensure adequate accommodation of students and to allow the universities to maintain an appropriate balance between teaching, research and engagement activities.

A "double decline" scenario could limit access opportunities for students in certain groups

As the two subsectors in the Netherlands tend to attract different proportions of students from certain groups (Table 5.2), it can be beneficial for policy planning purposes to anticipate how future scenarios could affect these student groups. In the Netherlands, the UAS educate the majority of part-time students, older students and students without a tertiary-educated parent. A possible reduction of capacity in UAS, as could be envisaged in the "double decline" and (to a lesser extent) the "trend reversal" scenarios also could lead to a limitation of opportunities for students from the groups disproportionately represented in UAS to access higher education opportunities.

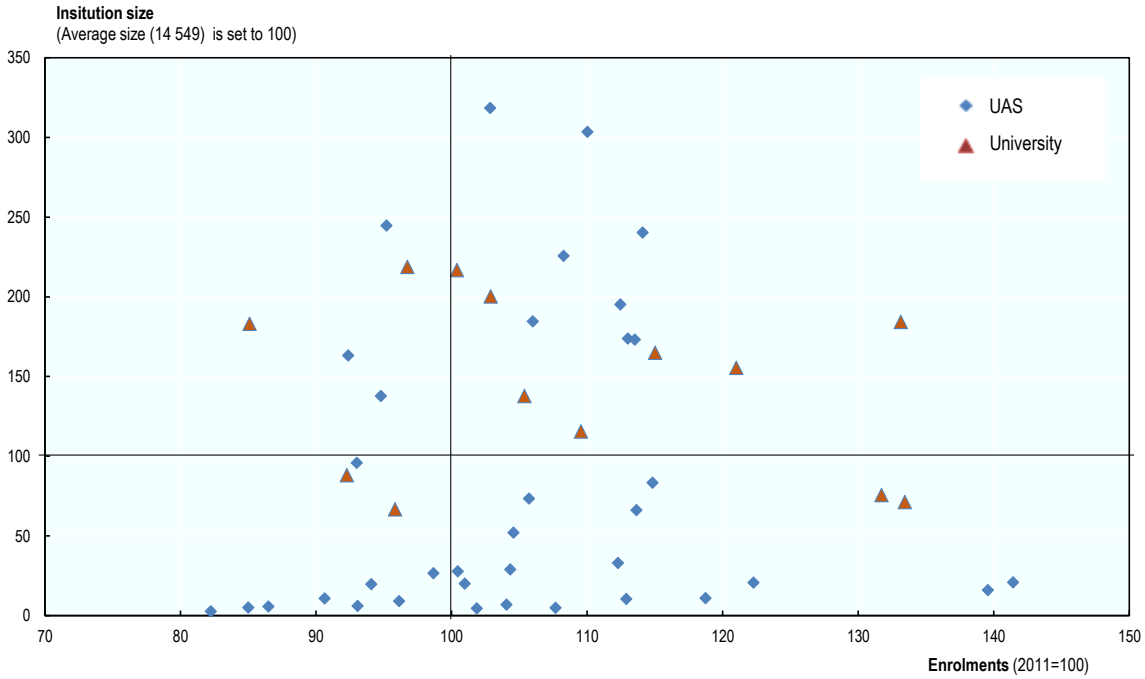
At present, ensuring equality of opportunity to access higher education to more disadvantaged and lower-participation groups is one of the major issues in the policy discourse alongside the future of internationalisation, further developing research capacity and the role of subsectors. In the Netherlands, specific policy for ensuring equity in education is targeted more at the school level, through the *Gelijke Kansen* agenda (Dutch Ministry of Education, Culture and Science, 2019[24]). The national strategy for higher education relates accessibility primarily to matching and course orientation initiatives (Chapter 2 of (OECD, 2019[1])). Previous OECD research also identified a possible need for the Netherlands to broaden its approach to promoting greater equity of access to higher education (OECD, 2008[5]). In a scenario of reducing enrolments in UAS, the Netherlands should ensure that the levels of participation in higher education of under-represented groups are monitored closely.

Changing patterns of demand will cut across the sectoral divide, and may lead to the need for consolidation.

While clear trends can be observed across subsectors as a whole, there are very diverse patterns in enrolments at the level of the individual institutions, which cut across subsector divides. While some universities have expanded their enrolments substantially between

2011 and 2015, four of the 13 universities had declining enrolments over this period. Some of the largest UAS have also increased enrolments over the period and maintained their share of overall enrolments (Figure 5.5). For example, the five largest higher education institutions in the Netherlands, which are all UAS in major urban centres, covered 27% of all enrolments in Dutch public institutions in 2011 and maintained the same proportion in 2015.

Figure 5.5. Enrolment changes in individual institutions (2015)



Source: Adapted from European Register for Tertiary Education (ETER) (2019[6]), *ETER Database*, www.eter-project.com/.

StatLink https://doi.org/10.1787/888933943077

Therefore, in scenarios that envisage a future reduction in demand for UAS, such as the "double decline" and "trend reversal" scenarios detailed in Figure 5.4, the decline is likely to affect a subset of institutions within the subsector more heavily. Despite the fact that there have already been many mergers in the UAS sector in recent decades, in a future scenario of declining demand overall, with uneven impacts between institutions, further consolidations may be required in order to better concentrate finite resources.

Future policy action could include mergers, networking between institutions or collaboration on specific programmes or fields of study. However, the Netherlands may find that scope to flexibly achieve efficiencies in the future and adapt to changing enrolment patterns is hampered by some systemic features and past history. For example, as a result of the strict binary divide, the traditional preference in the Netherlands has been for collaborations or mergers to take place between institutions with the same legal form, i.e. within subsectors (Williams, 2017[25]).

In addition, the Netherlands does not have a history of success with mergers of governance structures across the binary divide. A number of previous initiatives involving mergers

were subsequently unwound following opposition from representative bodies, public concern that mergers would lead to the loss in diversity of institutional missions, and cultural differences between organisations which could not be overcome (de Boer, 2017[26]). Furthermore, joint degree programmes between universities and UAS are in general not allowed (Williams, 2017[25]), and collaboration and alliances between universities appear to be more commonplace than alliances within the UAS sector (de Boer, 2017[26]).

Despite these existing challenges and some constraints imposed by the binary system, new degrees of flexibility and innovation in adapting to changes in enrolment across sectors could assist the Netherlands in successfully adapting to changing patterns of demand in the future. There is scope to explore ways to promote greater collaboration between institutions to strengthen institutional capacity in both sectors while promoting greater efficiency in the provision of education across sectors. The Netherlands could take into account some recent innovative examples from other OECD jurisdictions of collaboration across binary divides (Box 5.3).

Box 5.3. Collaborations across institution types in OECD countries

Many OECD countries are developing new models of inter-sectoral collaboration between higher education institutions, which have the capacity to reduce inefficiency and improve the quality of education.

The **Flemish Community** provides an example of a strict binary system that has also been able to put in place official mechanisms for co-operation between sectors. UAS in the Flemish Community focus mainly on occupationally specific and labour market-relevant education and training, and provide regional coverage to support access. In 2003, a decree was introduced that required all UAS to develop "associations" with a university. Associations are official bodies where co-operation between a university and one or more UAS is formally established. The key goals of the associations were to align all Flemish programmes with the Bologna structure, including academically oriented programmes offered by UAS; build better connections between the two sectors; improve efficiency of programme offerings and reduce overlap. The associations also facilitate transfer arrangements for students from one type of institution to the other and the development of learning pathways across education levels and subsectors.

Institutions from different sectors (universities and polytechnics) in **Finland** have agreements to share facilities across the binary divide. Closer collaboration between sectors is also a defined operational goal of the system, particularly to meet regional needs (Williams, 2017[25]).

In **Germany**, while the UAS (*fachhochschulen*) are not allowed to independently offer programmes of doctoral education, inter-sectoral co-operation agreements are encouraged, which allow for the joint involvement of institutions in both sectors in doctoral education programmes. These co-operative doctoral degrees are increasingly used in Germany to expand doctoral education (Eurydice, 2019[27]).

A "UAS resurgence" scenario could be achieved by continued relaxation of certain restrictions on the UAS sector, and by building capacity for internationalisation.

The Netherlands appears to be committed to maintaining the binary divide between universities and UAS into the future, as evidenced by the maintenance of restrictions that delineate the sectors, and the continuation of sectoral agreements between the government and the sectoral representative bodies out to 2024.

Despite some previously identified difficulties with the binary system (Box 5.4), perpetuating the binary divide may have paid a dividend for Dutch research, which is concentrated mainly in the 13 research institutions and recognised internationally for its excellence (Chapter 6 of (OECD, 2019[1])). By maintaining the binary divide and restricting academic research to universities only, the Netherlands may have avoided some of the issues observed in other countries that have opened up research capacity to a broader range of institutions, such as fragmentation of research capacity and funding (OECD, 2008[5]). Such fragmentation may prevent research groups and activities from achieving the "critical mass" necessary for top-quality research (Kenna and Berche, 2011[28]).

Box 5.4. The OECD view of the binary system in the Netherlands in 2008

A previous OECD review of higher education in the Netherlands identified examples of cases where the lines had become blurred between the orientations and missions of the subsectors in the Netherlands. The academically oriented research universities train professionals for the labour market in some fields, while UAS also offer programmes that are more theoretical. In addition, overlap in fields of study including business, law and communications were observed. The traditional idea of the more localised orientation of the UAS may also be outdated in the modern Dutch society where graduates from both sectors are likely to work outside of their local areas and internationally in various sizes and types of enterprises.

The review team concluded that the binary line in the Netherlands provides for two sectors with distinct roles; but neither is functioning at an optimum level and the inflexibility of the binary structure may not accommodate the full range of national needs. Continued "drift" in missions could undermine the rationale for the binary system and constant monitoring is needed by national authorities to ensure that the binary line is maintained.

Source: OECD (2008[5]), *Tertiary Education for the Knowledge Society: Volume 1 and Volume 2*, https://dx.doi.org/10.1787/9789264046535-en.

In the right conditions, demand for attending UAS could increase in the coming decade and create the "UAS resurgence" scenario, which projects an increase in annual demand for UAS by around 35 000 students a year compared to 2017 levels, even if overall demand remains static over the same period. This scenario would remove some of the pressure on universities and ensure sustainable growth in the UAS sector enrolments. It could be achieved by encouraging a broader range of programmes of study in the sector, and by UAS developing a more prominent positioning within the global higher education system.

While master's programmes exist in UAS, they are relatively rare compared to the university sector. Master's programmes comprise 13% of programmes offered at UAS, while 63% of all programmes offered in universities are at the master's level (Netherlands

Association of Universities of Applied Sciences (VH) and Association of Universities in The Netherlands (VSNU), 2018[22]). This may imply a greater role for UAS in providing master's programmes in the future, given the proportion of overall enrolments in master's programmes in general in the Netherlands, which is lower than the OECD average and many European countries (Chapter 2 of (OECD, 2019[1])).

Moreover, the majority of master's programmes in the Netherlands are only available in English, and the government is committed to ensuring that every graduate from a bachelor's level programme should have access to at least one master's programme in their field of study in Dutch in the future. Further encouraging and developing capacity in UAS (where programmes remain primarily taught in Dutch) to offer a wider range of appropriate master's programmes could lead to an increase in demand for studies in UAS.

Similarly, a general increase in demand, as foreseen in the default "base case" scenario, could also boost the demand and the numbers of the population eligible for doctoral training. The Netherlands appears to have a lower capacity to produce doctoral graduates compared to many other OECD countries (see Chapter 4), and currently, responsibility for doctoral education lies only with the universities. The rationale for restricting graduate programmes to only one sector in the Netherlands could be reviewed in light of current practices in the Netherlands and other jurisdictions.

Demand is high across Europe for doctoral education that is industry-focused (European Commission, 2017[29]). The Netherlands has already demonstrated an ability to introduce highly differentiated research activities in the UAS sector through the creation of the lector position and the establishment of Centres of Expertise for practice-based research (Chapter 6 of (OECD, 2019[1])). In the future, the Netherlands could build on these achievements and use them as a vehicle to create mechanisms for more advanced practice-based graduate programmes to be carried out in UAS under strict conditions (such as having a suitable staff profile), or give UAS a greater role in providing doctoral education, as is the case in Germany (Box 5.3).

Building capacity for a wider range of graduate programmes could also promote greater internationalisation of the UAS sector. The low level of internationalisation has been previously indicated by UAS students as one of the least satisfying aspects of their education experience (Studiekeuze123, 2018[30]).

Internationalisation can be promoted in UAS in many innovative ways, other than by switching programmes completely to the English medium of instruction. The concept of "internationalisation at home" has gained some policy attention in the Netherlands in recent years, and implies offering a more international orientation to higher education beyond increasing the numbers of international students. This can be achieved by creating a more internationally-focused curriculum, offering a section of a study programme in another language, or enrolling in online courses in a foreign higher education institution (Beelen and Jones, 2015[31]).

Internationalisation in UAS could also be encouraged by creating new partnerships with institutions in other countries through the joint provision of programmes, thus improving the circulation of international students. International partnerships between institutions are becoming increasingly commonplace, either in the framework of supranational programmes such as the Erasmus Mundus joint master's initiative (European Commission, 2019[32]) or individual agreements between institutions. If UAS could play a role in doctoral education, they could also seek ways to promote joint supervision arrangements for

master's and doctoral students with institutions in other countries, such as through the *cotutelle* model in use in some European countries, including Norway.

International partnerships can also enhance regional co-operation, which is an important part of the UAS mission in the Netherlands. For example, Estonia is working to strengthen links with neighbouring countries by offering higher education programmes of joint regional interest (see the Estonia country note).

Box 5.5. *Cotutelle* arrangements as a means of internationalisation

Cotutelle is an agreement on joint supervision of the doctoral degree level. Such agreements can be reached between the two co-operating institutions, the PhD candidate and the candidate's supervisors. A *cotutelle* agreement must always be reached on the individual level, but institutional agreements can also be made on *cotutelle* co-operation. The candidate receives a diploma from each of the institutions.

Cotutelle agreements across national boundaries are possible in many OECD jurisdictions, including Australia, France, Norway and Switzerland. Joint supervision agreements can act as a vehicle to promote a greater international profile for institutions, enhance brain circulation and increase the numbers of doctoral graduates with less commitment of resources from any one institution.

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Notes

[1] The statistics for the Netherlands on R&D and education expenditure report the intended allocation of funding, rather than the actual spending by institutions. The statistical reporting conventions differ by country (see Chapter 3 of OECD (2019[1])).

[2] Household expenditure on higher education institutions includes tuition fees, other fees charged for educational services (e.g. registration fees and laboratory fees) and fees paid to institutions for lodging, meals and other welfare services. However, the amount of other (non-tuition) fees is small relative to tuition fees in the Netherlands.

[3] It should be noted that the ETER data on which this indicator is based exclude funding for the Centres of Expertise, organisations associated with UAS and devoted to stimulating cooperation with private and public partners in research and training.

[4] according to calculations from national administrative data

[5] Based on a random sample of 100 000 documents in the Elsevier Scopus database.

[6]It should be noted that in the Netherlands, external candidates are excluded from the calculation of entry rates, which causes an underestimate of the true entry rate given the relatively large proportions of external candidates in these jurisdictions. See (Chapter 6 of (OECD, 2019[1])

[7] Based on OECD analysis of a random sample of 100 000 documents in the Elsevier Scopus database. See Chapter 7 of (OECD, 2019[1]).

[8] These consist of the 13 research universities, the Open University of the Netherlands and four smaller, more specialised institutes for theological or humanistic study.

[9] This proportion was computed based on the background questionnaire of the OECD Survey of Adult Skills (PIAAC) national data file for the Netherlands. Data includes master's graduates in universities.

Higher Education

Benchmarking Higher Education System Performance: The Netherlands

The scope of contemporary higher education is wide, and concerns about the performance of higher education systems are widespread. The number of young people with a higher education qualification is expected to surpass 300 million in OECD and G20 countries by 2030. Higher education systems are faced with challenges that include expanding access, containing costs, and ensuring the quality and relevance of provision. The project on benchmarking higher education system performance provides a comprehensive and empirically rich review of the higher education landscape across OECD countries, taking stock of how well they are performing in meeting their education, research and engagement responsibilities.

This country note draws on the evidence base of the project to review the performance of the higher education system in the Netherlands. Its purpose is to assist the Netherlands in taking stock of where it stands in relation to other OECD member countries on different aspects of higher education and to provide input into national policy planning processes. The stocktaking exercise is supported with a scorecard of 45 indicators which highlights the Netherlands's position within the OECD. This note also includes a scenario exercise to support future policy planning in the Netherlands.

Consult this publication on line at ***https://doi.org/10.1787/be5514d7-en***.