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Expanding and steering capacity in Finnish higher education – Thematic policy brief

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About this thematic policy brief

Finland has a well-regarded higher education system comprised of 35 public higher education institutions, of which 13 are public universities, and another 22 are universities of applied science (UAS) (Vipunen, 2021[1]). In decades past, its higher education system outperformed many others in education attainment. However, by 2020 tertiary educational attainment among Finns aged 25-34 no longer exceeded the OECD average, and the educational attainment of the 25-34 year-old age cohort was modestly lower than that of Finland's older age cohorts (OECD, 2020[2]). Faced with a working age population that is forecast to diminish and a stationary adult skill profile, public officials have focused national attention and policy initiatives on raising tertiary attainment among Finnish citizens, and on raising the number of globally mobile learners that take degrees and enter the Finnish economy. The government has developed policy targets with respect to educational attainment and globally mobile learners, and backed those targets with additional resources to aid higher education institutions in accomplishing them.

A second important concern of Finnish policy makers is the landscape of its higher education institutions: is the distribution of responsibilities among its universities and universities of applied science, and coordination among them, well adapted to national needs? In recent years, Finland has chosen to raise the research and innovation capacities of its universities of applied science, and to widen opportunities for collaboration in education and research between research and applied science universities. How this distribution of responsibility among sectors compares to peer countries and whether this landscape is sufficient to meet the nation's needs for regionally balanced learning opportunities, robust support for innovation, and learning pathways that meet the needs of all learners are questions of continuing debate in Finland.

Against this backdrop, the Finnish Ministry of Education and Culture asked the OECD Resourcing Higher Education Project to provide a thematic policy brief to examine efforts to expand the enrolment capacity and attractiveness of its higher education system, and the distribution of responsibilities among its higher education institutions – viewed within the context of other OECD jurisdictions. Detailed questions, listed in the Introduction, were agreed with the Ministry of Education and Culture at the outset of the work.

In the first section of the policy brief, we closely examine whether the higher education system is on course to meet the attainment and global learner targets set by government, and the challenges that stand in the way of achieving them. In the second section, we review the nation's institutional landscape, noting that there has been a willingness to experiment with novel institutional arrangements linking the management of university and UAS institutions, and efforts to open the binary line to the sharing of instruction across sectors. Nonetheless, we conclude that there remains scope to provide Finnish learners with a more diversified learning ecosystem, and further opportunities for policy makers to support the continuing redistribution of responsibilities among its higher education institutions in ways that strengthen the nation's innovative capacities.

This thematic policy brief draws on international literature and data, policy documents and the results of the 2020 Higher Education Policy Survey (HEPS) among 29 OECD jurisdictions (Golden, Troy and Weko, 2021[3]) to assess how Finland's higher education resourcing policies compare to those of its peers. The brief was prepared in the OECD Secretariat by Thomas Weko and Lisa Troy. Particular thanks go to Maarit Palonen and Tomi Halonen from Finland's Ministry of Education and Culture for their input to the brief and feedback on draft versions of the text.

1. Introduction

Context for the thematic policy brief

The *Vision for Higher Education and Research in 2030*, developed by Finnish authorities and representatives of the higher education, research and innovation communities, sets out broad objectives for the future of the Finnish higher education system. This includes a commitment to increasing the share of higher education graduates to at least 50% of young adults by 2030, increasing the number of foreign degree students at higher education institutions, raising the global attractiveness of Finland's higher education system, making innovative use of digital educational technologies, and further strengthening Finland's research and innovation capacity.

The "Roadmap" for implementing the 2030 vision (Finnish Government, 2019[4]) contains five, long-term national development programmes, which form the core of government higher education strategy:

1. *Becoming the nation with the most competent labour force.* Actions are aimed at encouraging more people to pursue and complete a degree, particularly in fields with high labour market demand, with a focus on entry pathways and completion rates; increasing continuing education opportunities; and attracting more international students and researchers and supporting them to integrate into the Finnish labour market and society.
2. *Higher education reform and the environment for digital services*. Actions are intended to increase modular provision of higher education and the supply of digital courses and guidance services that serve degree training and lifelong learning, enabling Finland to become the world's leading user of digitalisation in higher education and lifelong learning.
3. *A higher education community with the skills to deliver the best learning outcomes and environments in the world*. Actions aim to enhance training for academic staff in curriculum development, teaching and guidance, with a specific programme implemented from 2020–2025.
4. *Higher education institutions will become the best workplaces in Finland*. Actions include a university leadership programme with international partners, designed to improve change management, employee competencies and well-being in higher education, with a specific programme operating from 2020-25.
5. *Co-operation and transparency driving research and innovation*. Actions are targeted towards strengthened co-operation between relevant line ministries, reform of the Research and Innovation Council and promoting knowledge clusters and innovation systems, including through increased collaboration between universities, universities of applied sciences and research institutes.

The current government's programme, adopted in December 2019, adopts many of the key priorities of Vision 2030, stressing the contribution of higher education institutions to skills development and demand-driven innovation (Finnish Government, 2019[5]). In this context, the government's programme identifies a number of priorities relating to the overall capacity and shape of the higher education landscape in Finland, including:

- Ensuring the number of available student places at universities and universities of applied sciences meets the needs of society, taking into account regional employment needs.
- Promoting the accessibility of higher education across Finland's regions, ensuring a higher education institution exists in every county.
- The creation, across Finland, of "successful clusters of excellence with higher education institutions, research institutes and businesses", linked to international networks.
- Support for higher education institutions "in their voluntary efforts to develop their activities, to find their strengths, to divide the responsibilities among themselves and to develop their mutual co-operation" (Finnish Government, 2019, p. 184[5]).

The April 2021 Education Policy Report of the Finnish Government (Finnish Government, 2021[6]) further emphasised these goals, identifying policy targets that include a tripling of foreign degree students (reaching 15 000 by 2030), and the aim of having 75% of these graduates enter the Finnish labour market.

The 2021 Education Policy Report recognises persisting inequities in the nation's higher education system, and signals the intention of government to improve accessibility and equality in higher education, especially for groups with a migrant or a lower socio-economic background. To achieve this objective, a new plan to support under-represented groups' access to higher education and to address the differences between fields of education is to be proposed in 2022.

The report additionally signalled a need for "an overview of the regulation on educational responsibilities" – i.e. regulations governing "the degrees and degree levels that can be completed in each higher education institution and the degree programmes the institution is obligated to organise." This, it notes, is necessary owing to the excessive rigidity of offering and the inability of institutions to "react to rapid changes in the labour market or the requirements of multidisciplinarity" and insufficient profiling of higher education institutions in their areas of strength. Moreover, there is concern that the degree offerings result in "lengthy educational paths and overlapping education" and an inadequate offering of flexible continuous learning opportunities.

Against this backdrop, the Ministry of Education and Culture has asked the OECD Higher Education Policy Team to provide a thematic policy brief containing a comparative analysis of policy approaches for steering and regulating the overall level of provision of higher education in national systems, promoting profiling and co-operation among higher education institutions and supporting internationalisation. Specifically, the brief addresses the following key questions:

1. How does the resource envelope within which Finland's higher education system operates compare to that of other higher education systems? Is the expansion of Finland's budget envelope, through targeted investments in enrolment capacity and internationalisation, sufficient to achieve the policy targets set by Finland for education attainment and international student recruitment and retention?
2. How does the landscape of Finland's higher education system compare to that of others in the OECD? How does the diversity of its higher education institutions, the resources available to them, the range of degree offerings they provide, and the regional scope of their provision compare to that of other higher education systems?
3. Viewed in comparison to other OECD higher education systems, how and to what extent has Finland chosen to re-shape the research and innovation capacities of its professional higher education institutions (universities of applied science, or *ammattikorkeakoulu*)?
4. Viewed in comparison to other OECD jurisdictions, what opportunities are available to Finnish officials to promote collaboration among higher education institutions, what tools have they used for that purpose, and what opportunities remain for reshaping the distribution of responsibilities among its higher education institutions?

This policy brief draws on international literature and data, policy documents and the results of a Higher Education Policy Survey (HEPS) among 29 OECD jurisdictions to assess how Finland's higher education resourcing model compares to that of its peers. For each main topic, the brief draws key conclusions that may help inform future policy in Finland, as the country seeks to refine the scale, shape, and attractiveness of its higher education system.

2. Policy ambitions, budget constraints, and institutional capacity for expansion

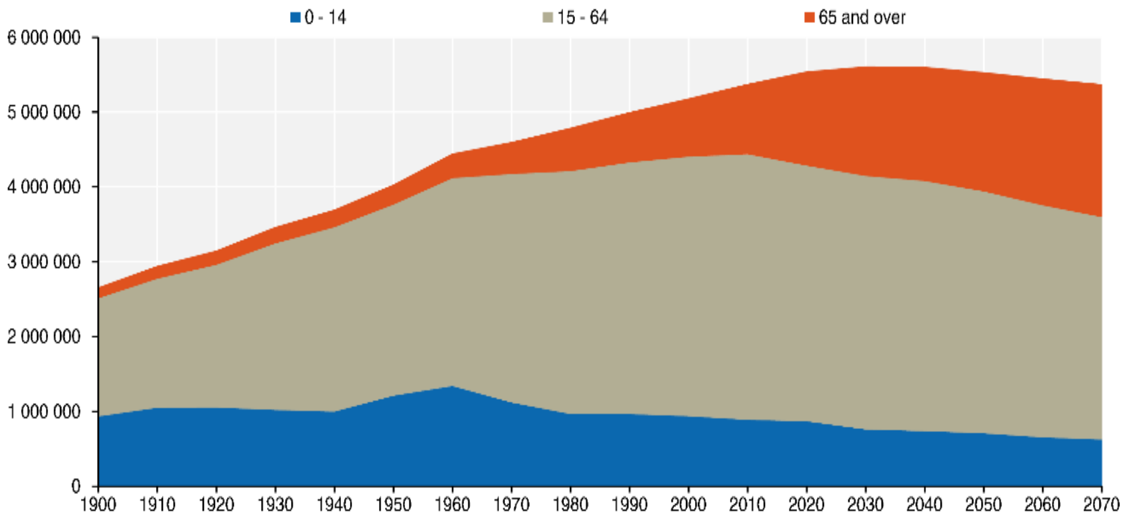
This section examines tensions between policy ambitions and budget resources in Finland's higher education system. Finland's demographic trends and anticipated skills needs have led its policy makers to set ambitious targets. They have called for a substantial rise in the level of educational attainment among its domestic population, and a rapid increase in the number of foreign students who take degrees in Finland and subsequently join its economy. However, lagging economic growth in the preceding decade led to a diminished budget envelope for the nation's higher education system. Meeting the economy's skills needs through rising attainment and in-migration appears to be unlikely on current trends, due to budgetary constraints facing the nation's higher education system – as well as institutional barriers.

An ageing and shrinking population

Finland's population is ageing and, on current trends, poised to decline (Figure 1). This generates rising dependency ratios, and pressures for the contraction of its educational system and the reduction of education expenditure (OECD, 2020[7]). The size of the working age population is forecast to decline, and to slow the rate of growth in Finland's economy (HYPO, 2020[8]). Recognising this trend, Finnish policy makers have been keenly interested in raising rates of labour force participation, and in expanding Finland's working age population. Attracting and retaining higher education students and researchers from outside of Finland is an important part of this wider skills strategy (Finnish Ministry of the Interior, 2019[9]).

Figure 1. Finland's population is ageing

Population by age group 1900-2017 and population projections 2018-70



Source: (OECD, 2020[2]), Continuous Learning in Working Life in Finland, https://doi.org/10.1787/2ffcffe6-en.
Adapted from (Statistics Finland, 2020[10]), Population Projection 2018-2070, https://www.stat.fi/til/vaenn/2018/vaenn_2018_2018-11-16_tie_001_en.html (accessed on 23 October 2021).

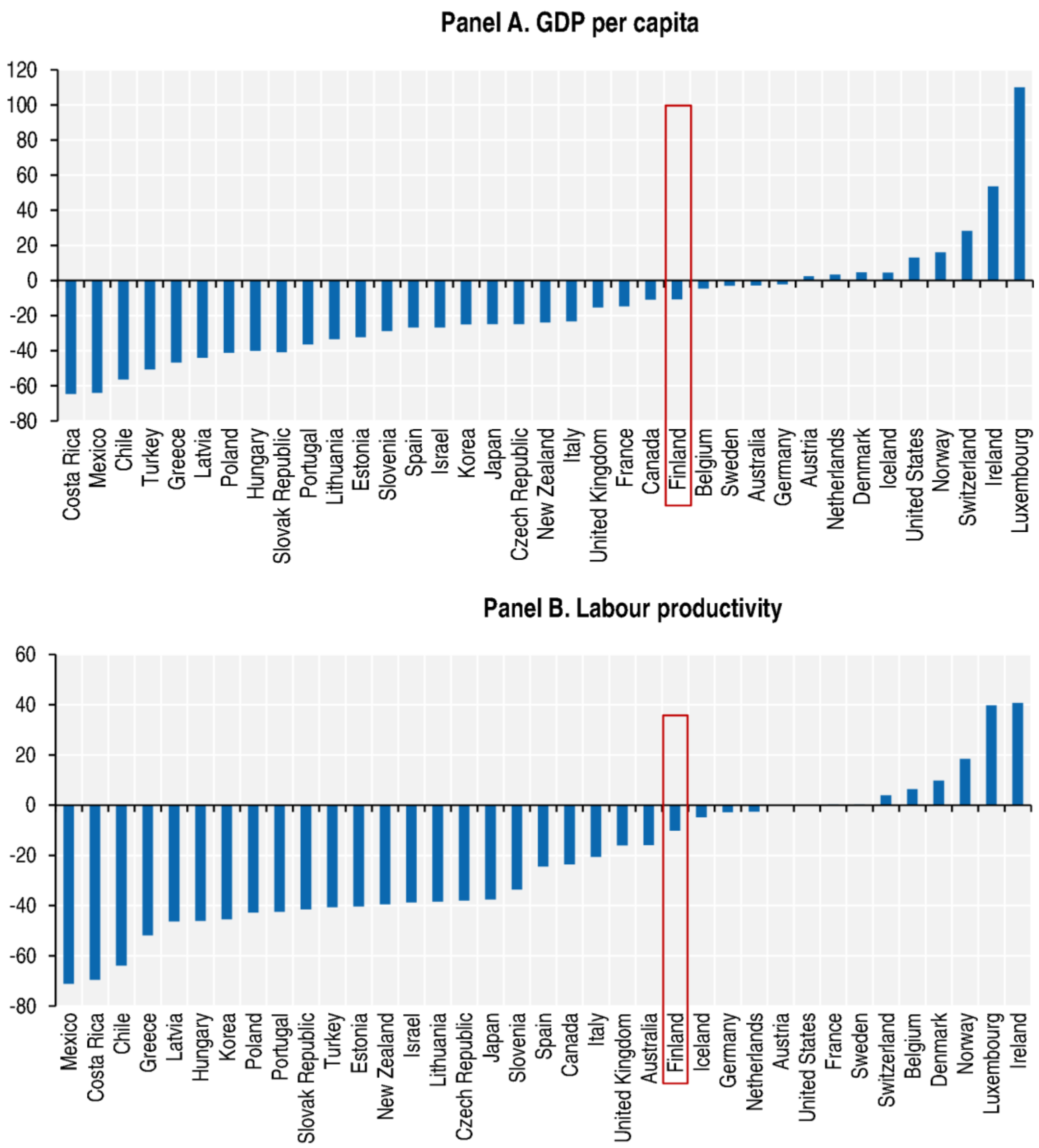
Lagging growth and rising skill demands

Finland experienced a lengthy period of low economic growth prior to the COVID-19 pandemic, owing to the distinctively large impact of the global economic crisis of 2008 on the country's economy. A short period of recovery in 2010-2011 was followed by major challenges in key economic sectors and a severe economic recession in Russia from 2014, one of its major trading partners (OECD, 2018[11]), (OECD, 2016[12]), (OECD, 2014[13]), (OECD, 2012[14]). Economic growth resumed in 2015, but the extended period of macro-economic contraction and low economic growth was felt in the public sector, resulting in austerity within the nation's higher education system.

Prior to the global pandemic, Finland's GDP per capita (at PPP exchange rates) was below both the median of the upper half of OECD countries and levels in Scandinavian countries (Figure 2, Panel A). Its labour productivity (Figure 2, Panel B) and labour resource utilisation were likewise below the median of the upper half of OECD countries. The OECD 2020 Economic Survey of Finland argued the country's lagging labour productivity was the result of "skills shortages, low investment, and resource misallocation" (OECD, 2020[7]).

Figure 2. GDP per capita and labour productivity is lower in Finland than the median of the upper half of OECD countries

Percentage difference vis-à-vis the median for the upper half of OECD countries, 2019

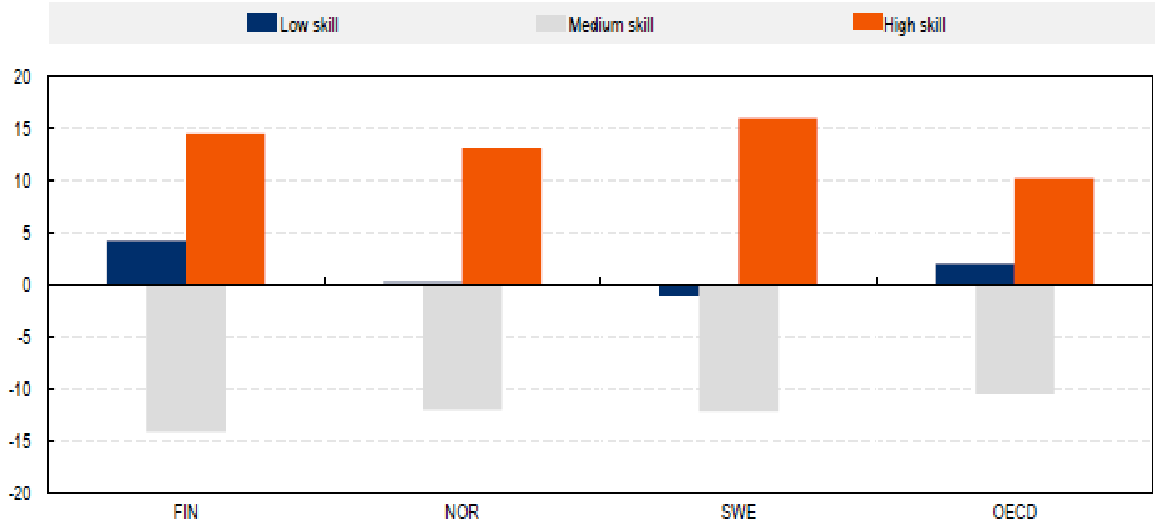


Notes: GDP per capita is at current PPPs. Labour productivity is GDP per hour worked.
Source: (OECD, 2020[7]), OECD Economic Survey, Overview, https://doi.org/10.1787/673aeb7f-en.

New employment opportunities created in the period 1998-2018 have overwhelmingly required high-level skills, while growth in the low-skilled occupations has been more modest, and middle-skilled jobs have declined as a share of total employment (Figure 3).

Figure 3. Job creation is skill-biased in Finland

Percentage point change in share of total employment, 1998 to 2018

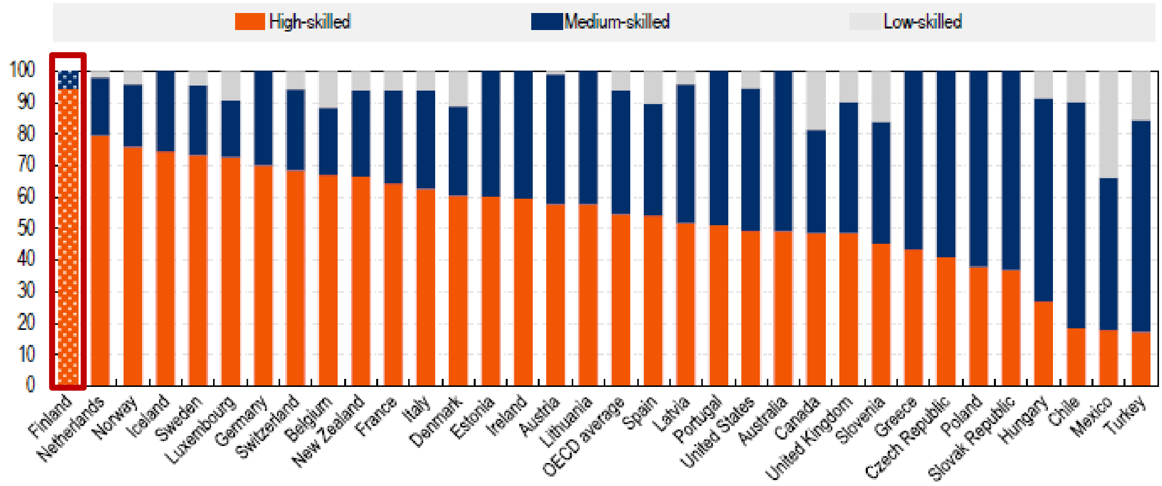


Note: High-skilled jobs correspond to the ISCO-88 major groups 1, 2 and 3; Middle-skilled jobs correspond to ISCO-88 major groups 4,6, 7 and 8; and low-skilled jobs correspond to ISCO-88 major groups 5 and 9. OECD average is simply unweighted average of selected OECD countries.
Source: (OECD, 2020[2]), Continuous Learning in Working life in Finland, Getting Skills Right, https://doi.org/10.1787/2ffcffe6-en. Update of (OECD, 2017[15]), "How technology and globalisation are transforming the labour market" in OECD Employment Outlook 2017, https://doi.org/10.1787/empl_outlook-2017-7-en, based on data from the European and national labour force surveys.

In 2015, more than nine in ten jobs in shortage in Finland were in high-skilled occupations such as managerial or professional occupations – the highest proportion across all countries analysed by the OECD at the time. In contrast, on average across the OECD countries analysed, this was the case for only about five out of ten jobs in shortage. Instead, approximately four in ten jobs in shortage were in medium-skilled occupations, such as sales or handicraft workers, and one in ten jobs in shortage were in low-skilled elementary professions.

Figure 4. Pronounced shortages in high-skilled occupations in international comparison

Share of employment in occupations in shortage by skill level, 2015



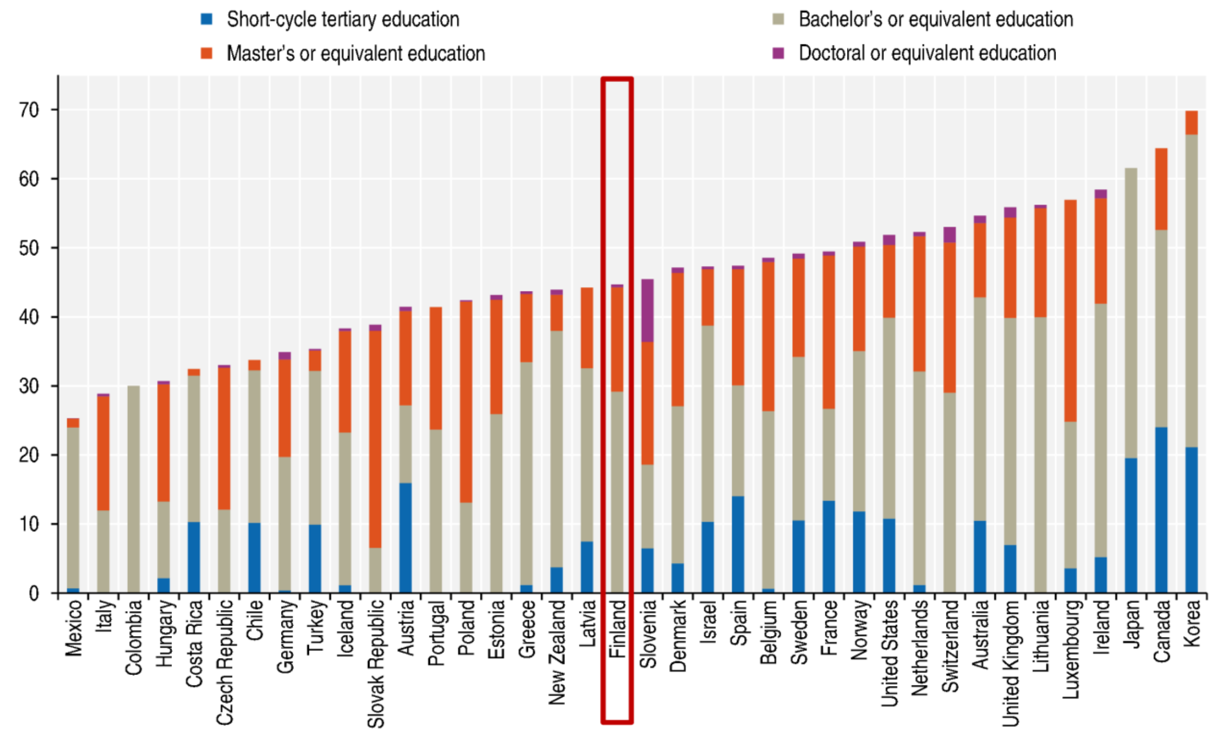
Note: High, medium and low-skilled occupations are ISCO occupational groups 1 to 3, 4 to 8 and 9 respectively. Shares of employment in each skill tier are computed as the corresponding employment in each group over the total number of workers in shortgage in each country. Data refer to the latest year for which information is available: AUS (2016), DEU (2012), ILS (2013), MEX (2016), NZL (2017), NOR (2014), SVN (2012), USA (2017).
Source: (OECD, 2020[2]), Continuous Learning in Working life in Finland, Getting Skills Right, https://doi.org/10.1787/2ffcffe6-en.
Adapted from the OECD Skills for Job Database (2018), https://www.oecdskillsforjobsdatabase.org/ (access on 15 September 2021).

The National Forum for Skill Anticipation (*Osaamisen ennakointifoorumi*) estimates that more than half of new entrants to the labour force will need higher education degrees to satisfy the skill demands of the future (Finnish National Agency of Education, 2019[16]). Their analysis points to the need for graduates to acquire meta-cognitive skills that include problem-solving skills, the ability to learn, and information evaluation skills. Skills in customer-related development of services, knowledge of sustainable development, and digitalisation are expected to be the most important specific skills sought by employers (Finnish Board of Education, 2019[17]).

Stationary educational attainment

Finland is widely recognised as having a well-skilled population. It consistently scores among the top performing countries in the PISA assessment of skills among 15-year olds, and in the PIAAC assessment of skills among adult populations aged 16-65. However, in 2019, Finland had a level of tertiary education attainment lower than all but 18 of the 38 OECD member countries (Figure 5), though a level equal to or modestly higher than central European nations with long traditions of vocational education, such as Austria and Germany. Moreover, the level of tertiary education attainment among young adults (ages 25-34) appears to be slightly lower than that of older age cohorts. Adults aged 40-44 have the highest level of tertiary attainment, with 47% holding tertiary degrees, while 44% of 35-39 year olds and 39% of 30-34 year olds hold tertiary degrees (OECD, 2020[2]). This trend is the opposite of that sought by national policy makers, and has led to an intense focus both on raising attainment among Finnish citizens and boosting foreign degree recipients – and, subsequently, workers.

Figure 5. Tertiary-educated population by highest level of attainment at age 25-34 (2020)



Note: Countries are ranked in ascending order of the total share of the population aged 25-34 having completed tertiary education. Colombia and Japan do not provide data on master's and doctorate degrees while Costa Rica, Chile, Portugal, Latvia, Luxembourg, Canada and Korea do not provide data on doctorate degrees
Source: (OECD, 2021[18]), OECD Education at a Glance database, https://doi.org/10.1787/b35a14e5-en.

Higher education resource envelope

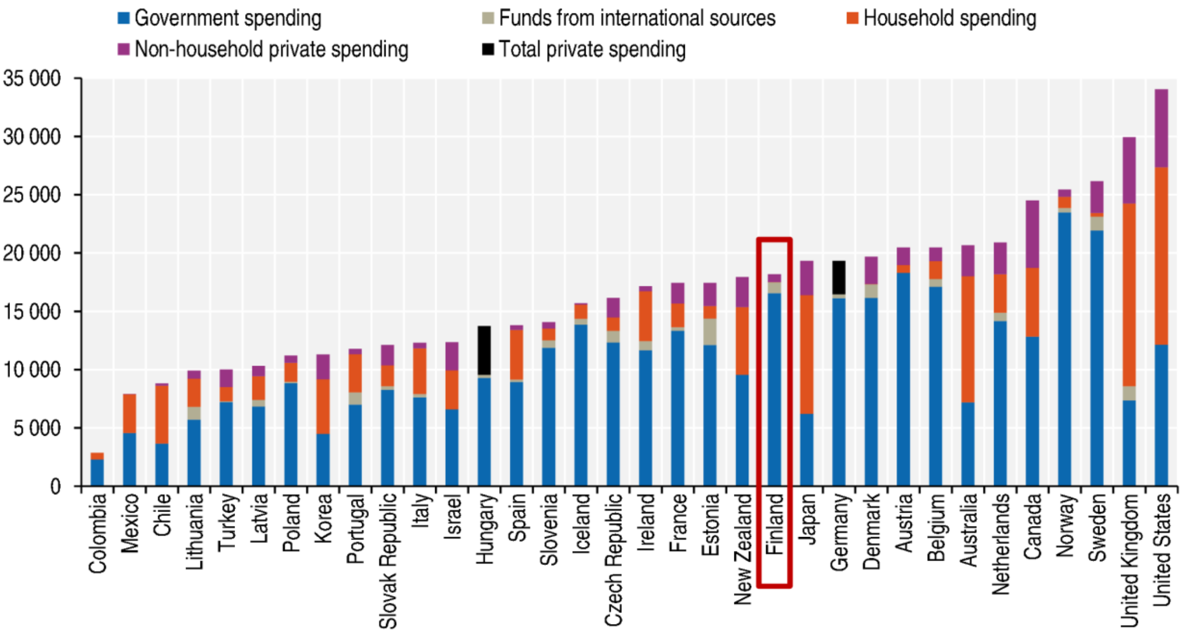
> *"Not investing in education and research and lagging behind our key reference and competitor countries in development is something Finland cannot afford." (Education Policy Report of the Finnish Government, 2021).*

Where does the money for higher education come from and go?

Like many European countries, including its Nordic neighbours, Finland's higher education system has relied almost exclusively upon public revenues for expenditure on its higher education institutions, making it the OECD higher education system most dependent upon government spending (Figure 6).

Figure 6. Public and private expenditure on higher education institutions (2018)

Expenditure per full-time equivalent student on public and private institutions, in equivalent USD converted using PPPs



Note: R&D expenditures – all expenditure on research performed at universities and tertiary education institutions - are included in this chart. Countries are ranked in ascending order of the public expenditure on public and private tertiary institutions per full-time equivalent student. Data for Luxembourg are excluded to improve the readability of the chart. Luxembourg spent an average of over USD 52 000 per FTE student on higher education institutions in 2017.

FTE means "full-time equivalency" for the purpose of full-time enrolled students.

Source: (OECD, 2020[19]), OECD Education at a Glance, https://dx.doi.org/10.1787/69096873-en.

Expenditures on Finland's higher education institutions reported to the UNESCO OECD Eurostat (UOE) joint data collection are disaggregated into three principal activities of higher education institutions:

- **Core educational services**, which include all expenditure that is directly related to instruction in educational institutions, including the salaries of teaching staff, construction and maintenance of buildings, teaching materials, books and administration.
- **Research and development**, which includes research performed at universities and other tertiary educational institutions, regardless of whether the research is financed from general operational funds or through separate grants or contracts from public or private sponsors. Methods for allocating costs to research activities, particularly when staff also undertake teaching and other duties and infrastructure is shared, vary between OECD higher education systems.
- **Ancillary services**, which includes all services provided by HEIs that are peripheral to their main education and research mission, such as student welfare, residence halls (dormitories), dining halls and health care. (OECD, 2020, p. 277[19]).

Among the OECD member countries with available data, Finland, after Sweden and Denmark, had the highest proportion of expenditure on higher education institutions allocated to research and development in 2018, which accounted for 44% of all spending, compared to just 26% on average across the OECD (Figure 9). This reflects the emphasis that Finland places on investment in R&D in general.

When measured as a proportion of GDP, Finland's 2019 gross domestic expenditures on R&D (at 2.79%) was higher than the OECD average of 2.47%. In addition, around one-quarter (25.4%) of Finland's R&D

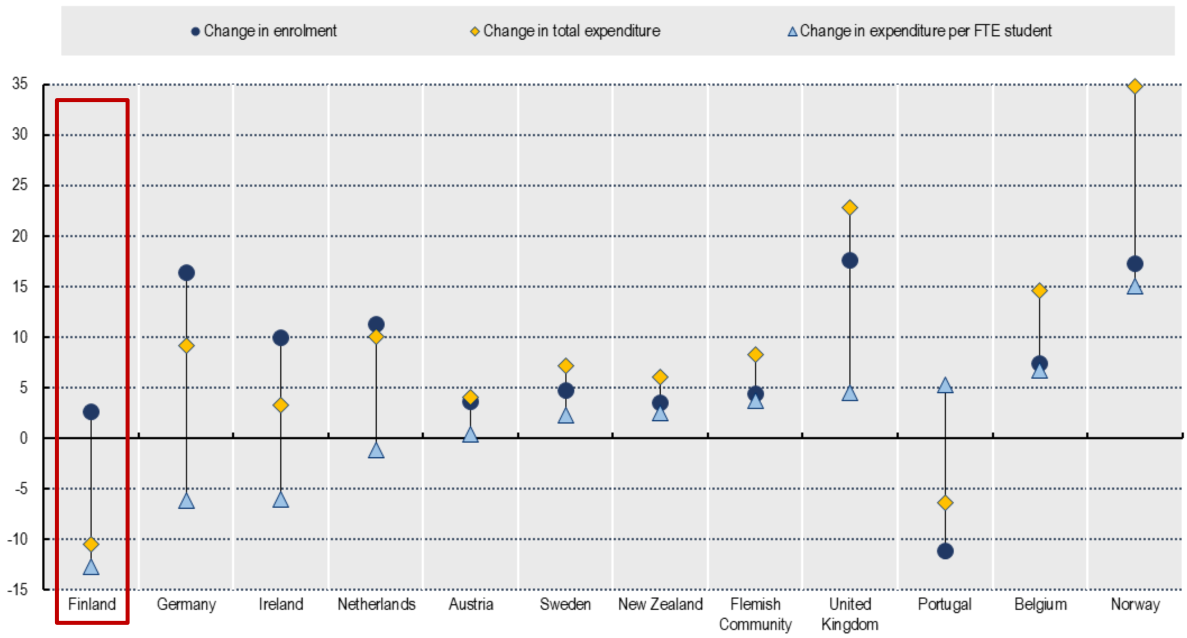
investment went to HEIs, rather than to other public institutions or industry, compared to the OECD average of 16.6% (OECD, 2020, pp. 39, Figure 8[20]).

Finland's shrinking budget envelope

Finland's higher education system keenly felt the effects of lagging economic growth in the decade following the global economic crisis of 2008. In 2011 Finland's real higher education spending per student was EUR 19 633, a level equivalent to Norway (EUR 19 117), while by 2018 real per-student spending had fallen to EUR 16 714. Between 2012 and 2017, Finland experienced a decrease in real per-student spending per full-time equivalent student more pronounced than any of the 11 other higher education systems shown in Figure 7, and it was the only system in which declining per-student spending was not driven by strongly rising enrolments.

Figure 7. Change in per-student spending on higher education in OECD jurisdictions (2012-17)

Percentage change in enrolment in FTE students, total expenditure and per-FTE-student expenditure on higher education institutions in USD adjusted for constant (2015) prices and constant PPP between 2012 and 2017



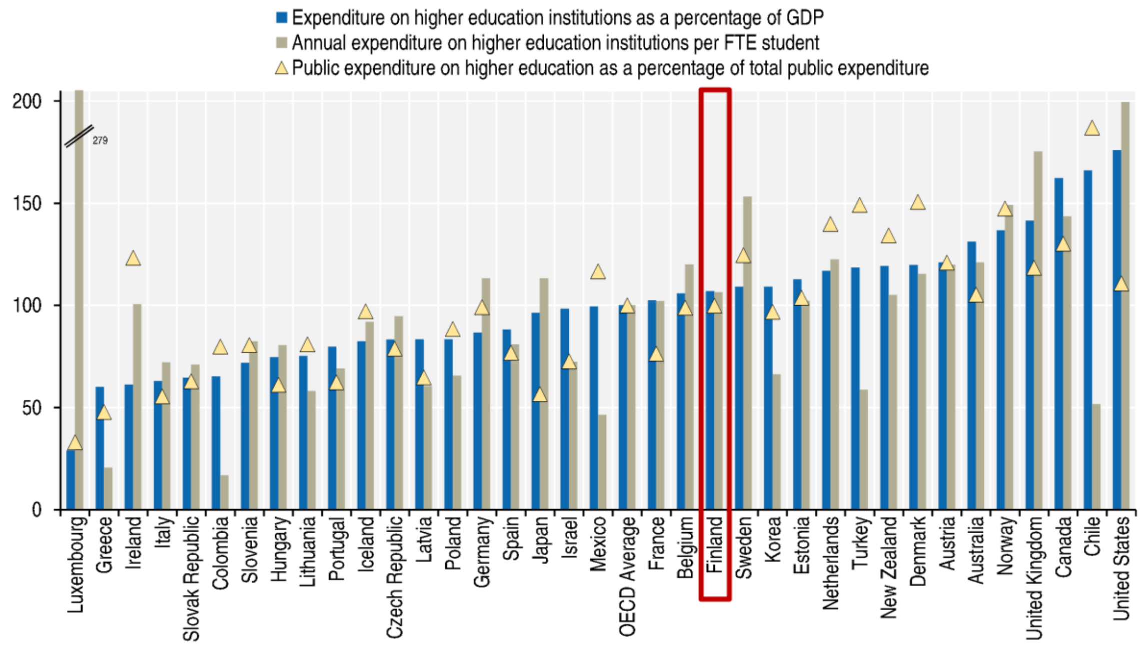
Note: Selected comparator countries with available data, ordered by percentage change in per-FTE-student expenditure in constant prices (2015) and constant PPP

Source: OECD (2020[19]) Education at a Glance 2020 (Educational expenditure by source and destination) https://doi.org/10.1787/edu-data-en. Data for the Flemish Community provided by the Flemish Department of Education and Training.

By 2018, Finland's annual expenditure on higher education institutions, both per full-time equivalent student and spending as a share of its GDP, was near to the OECD average, and its spending per full-time equivalent student was substantially lower than that of Sweden and Norway (Figure 8).

Figure 8. Expenditures on higher education institutions (2018)

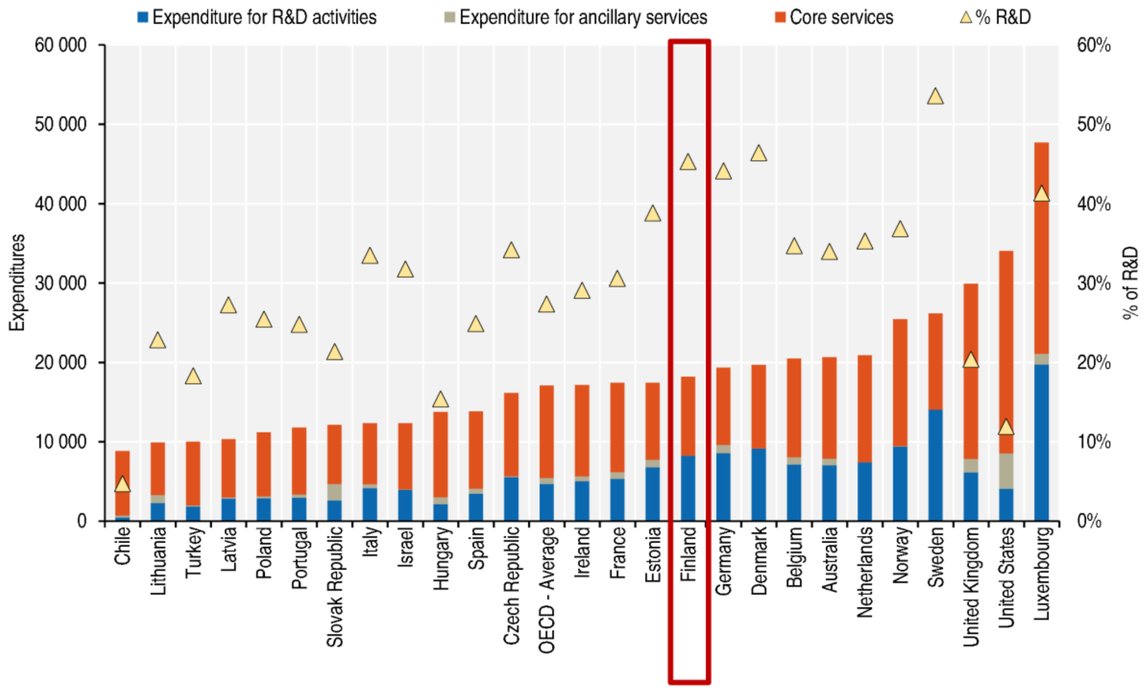
Selected measures of expenditure on higher education institutions (ISCED 5-8), OECD average = 100



Note: Expenditure on higher education includes spending from public and private sources on education, research and development, and ancillary services for students. The OECD average expenditure on HEIs as a percentage of GDP is 1.38%, average annual expenditure per student is USD 16 421, and average public expenditure on higher education as a percentage of total public expenditure is 2.9%.
Korea: Data exclude expenditure on some educational programmes provided by ministries other than the Ministry of Education (e.g. military academies); Norway: Educational expenditures are reported as percentage of mainland GDP (excluding offshore oil and international shipping); United States: Data include some post-secondary, non-tertiary education that occurs within HEIs; Colombia: Data refer to 2017 instead of 2018.
Source: (OECD, 2021[18]), Education at a Glance, https://doi.org/10.1787/b35a14e5-en.

Figure 9. Total expenditure on tertiary institutions per FTE student, by type of service (2018)

In equivalent USD converted using PPPs



Note: Expenditure (reported on the left axis) includes spending from public and private sources. Countries are ranked in ascending order of the expenditure on core services per FTE student. The triangles indicate the proportion of overall spending dedicated to research and development (on the right axis)

Source: (OECD, 2021[18]), Education at a Glance, https://doi.org/10.1787/b35a14e5-en.

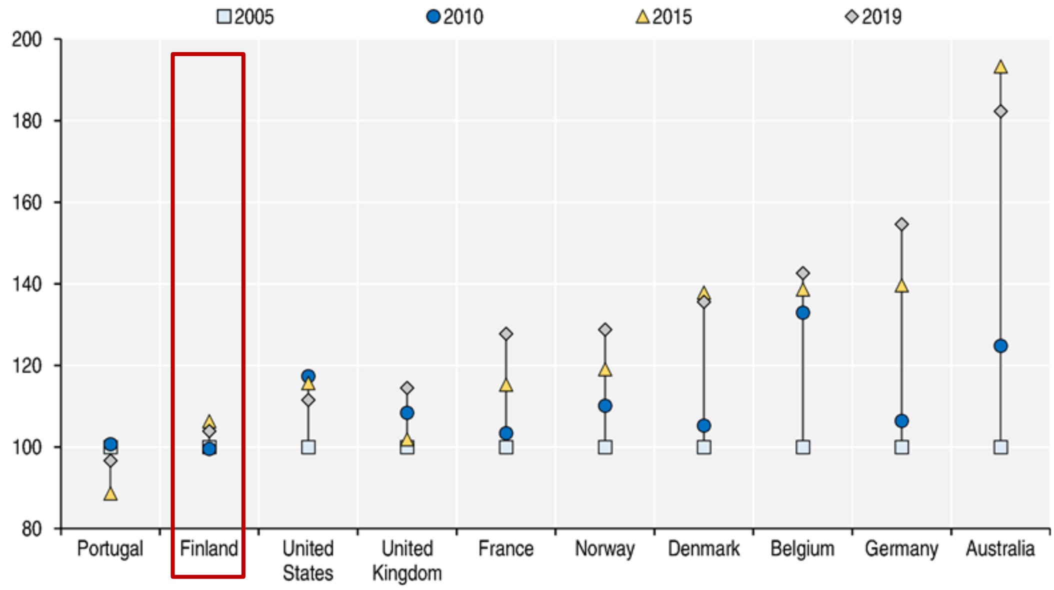
Raising attainment in Finland: The scale of the challenge

Finland faces a shortage of skills (OECD, 2020[7]). Almost all (90%) of the jobs in shortage are in high-skilled occupations, while more than half of new entrants to the labour market will need higher-level cognitive skills. This means that jobholders will need to hold a higher education qualification (OECD, 2020[2]), (Finnish National Agency of Education, 2019[16]), (Finnish Board of Education, 2019[17]). As a result, by 2030, the government aims to lift the tertiary attainment rate for the 25-34 age group from its 2019 level of 42% to 50% (OECD, 2020[2]). Reaching this target would mean that the number of degrees awarded annually by universities of applied sciences (UASs) and universities would need to reach 49 000 in total by 2030 (OKM, 2020[21]). In a similar vein, in its 2020 Economic Review of Finland, the OECD (2020[7]) concluded that "… more study places will need to be financed [and] … funding will need to come from government sources ….".

As a result, the government has provided extra funding to higher education institutions in their performance agreements for 2021-24 to encourage higher levels of enrolment in universities and UASs ((OECD, 2020[7]), (OKM, 2020[22]), (OKM, 2020[21])). This targeted funding comes against a backdrop of exceptionally slow enrolment growth in Finland in the period 2005-19, seen in comparison to other OECD systems, including Nordic neighbours Norway and Denmark.

Figure 10. Trends in enrolment in tertiary education (2005-19)

Change in the headcount of full and part-time students (ISCED 5-8) in public and private institutions, 2005=100



Note: Selected OECD jurisdictions with comparable data.
Source: (OECD, 2021[18]), OECD Education at a Glance 2021 database, https://doi.org/10.1787/b35a14e5-en.

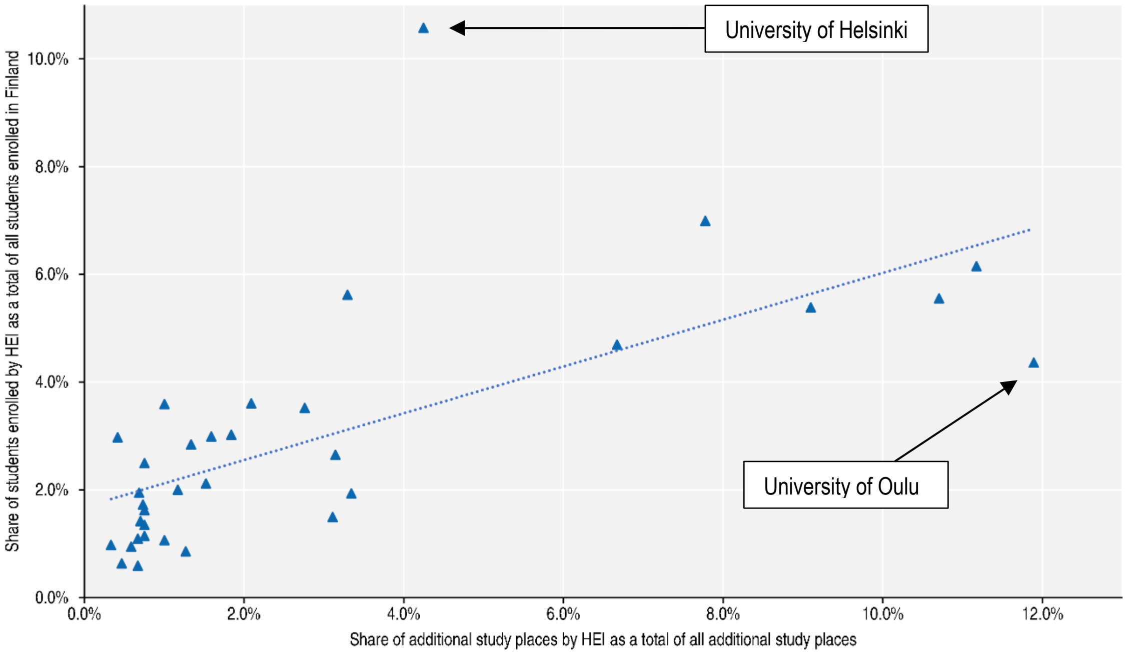
Constraints on expansion: Study places, study times, and admission rates

The Finnish government agreed to fund an additional 4 248 study places in 2020, and committed to funding 5 954 additional study places, in total, in 2021 and 2022, according to government funding agreements with universities and UASs for 2021-24 (OKM, 2020[21]) (OKM, 2020[22]).This commitment is anticipated to cost EUR 46 million per year in additional spending ((OKM, 2020[21]), Table 1) and is intended as a step towards achieving its educational attainment target (Government of Finland, 2021[23]). Study places are allocated to higher education institutions by study field[1], informed by employment forecasts, and result from a process of consultation between the Ministry of Education and Culture and higher education institutions.

In effect, the budgeted allocations of study places are an agreement between the institution as a supplier, based upon its assessment of willingness and capacity to supply additional study places, and the Ministry, which plays the role that student demand would do in demand-driven systems. As the correlation in Figure 11 shows, new study places are often added in proportion to prior enrolment capacity – but not always. The University of Helsinki, which enrols 10.6% of students in Finland, has agreed with government to take only 4.3% of the system's added enrolment capacity, while the University of Oulu has opted to take a much larger share (11.9%) of new enrolments relative to its prior enrolments.

[1] For example, in universities study places are allocated to 12 study fields: 1) education; 2) arts and culture; 3) humanities; 4) social sciences; 5) business, administration and law; 6) natural sciences; 7) computer science and data communications; 8) technology; 9) agriculture and forestry; 10) medicine; 11) welfare and health; and 12) services.

Figure 11. Correlation between the share of total enrolments (2020) and share of agreed additional study places (2021-22), by institution



Source: Enrolment data come from (Vipunen, 2021[1]), Education Statistics Finland (2020), https://vipunen.fi/en-gb (accessed on 2 September 2021). Numbers of additional study places come from (OKM, 2020[21]), Agreement between Ministry of Education and Culture and Aalto University for 2021-2024, https://www.aalto.fi/sites/g/files/flghsv161/files/2021-03/Aalto%20University%20Board%20Report%20and%20Financial%20Statements%202020.pdf (accessed on 15 December 2021).

Finland's ability to achieve its attainment targets is also limited by long study times and low admission rates. Part of the challenge Finland faces in achieving its target by 2030 is the time it takes a student to complete a degree: the median time for a university student to complete a higher education qualification is six years, while for a university of applied sciences (UAS) degree, it is five years (Vipunen, 2021[1]). Ten years after starting, 80% of university entrants and 73% of UAS entrants have received a higher education qualification (Vipunen, 2021[1])[2].

Finland also has an exceptionally low rate of acceptance of applicants for higher education (OECD, 2020[7]). In the six years between 2015 and 2020, universities accepted 30% of applicants, with 28% making an enrolment. The corresponding figures for UASs are 33% and 28% (Vipunen, 2021[1]). This rate is the lowest among 14 OECD jurisdictions reporting data on admission rates, and about one-half that of the average admission rate for first-time students in those systems. Finland's 87.1 percent rejection rate for applicants in "social sciences, journalism, and information" is the highest of any among higher education systems reporting data (OECD, 2019[24]).

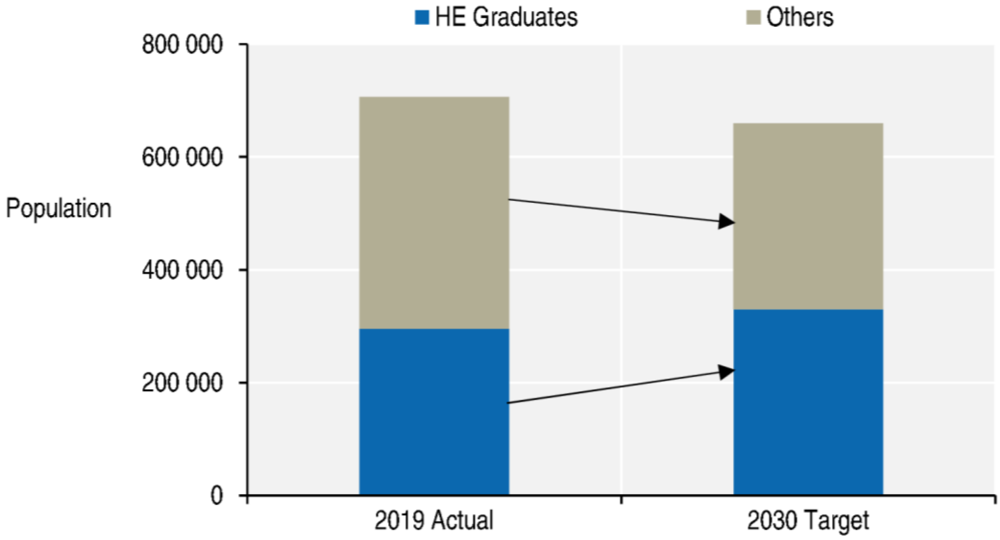
Scoping the educational attainment target

As noted above, the Ministry of Education and Culture (OKM, 2020[21]) states that its 2030 target (that half of young adults would hold a higher education degree by 2030) means that the system needs to build towards producing around 49 000 additional graduates by 2030 (Statistics Finland, 2020[10]). However, the population of Finland is beginning to decline; the size of the population aged 25 to 34 is forecast to fall by nearly 7% between 2019 and 2030 (Figure 12) (Vipunen, 2021[1]).

[2] These figures are the averages of the entrants in all cohorts from the 2001/02 academic year. The ten-year completion rate is the average of eight cohorts while the five-year completion rate is the average of 13 cohorts.

Given a population forecast of a shrinking age cohort, to achieve the target of 50% of the population aged 25-34 holding a higher education degree by 2030, the Finnish higher education system needs only to generate an additional **34 500** higher education graduates in that age group from 2019 to 2030, over and above the number of graduates that existed in 2019 (Figure 12)[3].

Figure 12. Population in Finland aged 25 to 34 years classified by educational attainment (2019 actual, 2030 target for projected population)

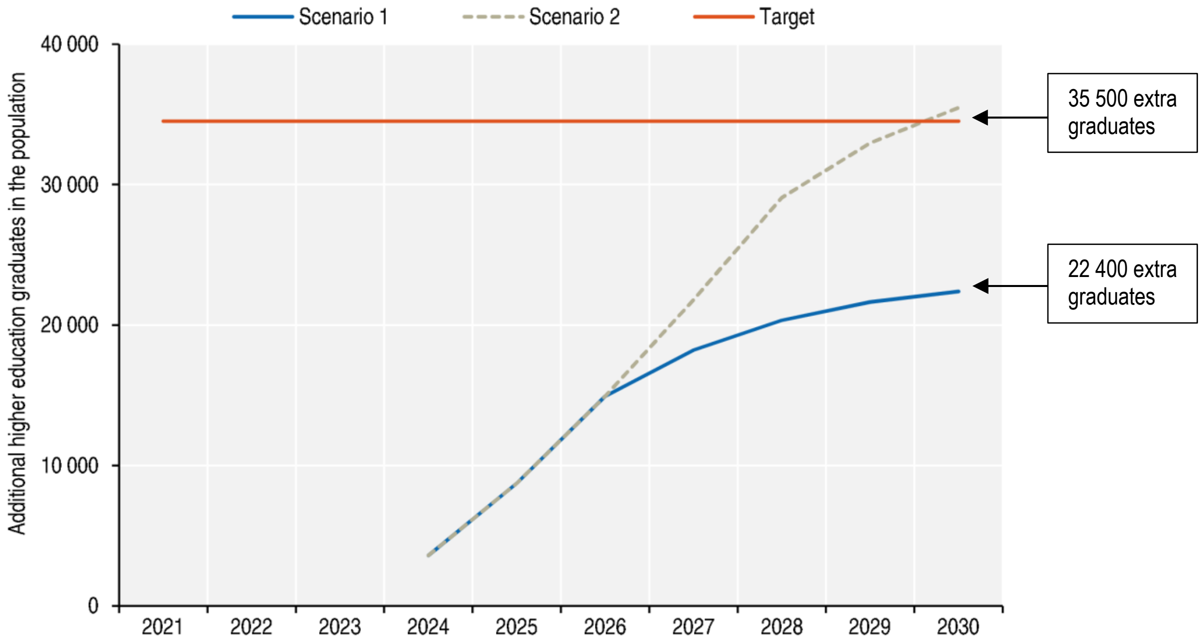


Note: Assumes even distribution of qualifications by year of age in the age band. Assumes no change in the contribution to educational attainment through net migration.
Source: Adapted from population forecast from (Vipunen, 2021[1]), Education Statistics Finland, https://vipunen.fi/en-gb (accessed on 2 September 2021)..

To achieve the number of graduates required to meet the government's 2030 50% attainment target, 10 000 additional study places each year above the system's 2020 enrolment capacity need to be maintained for five admission years from 2021 – that is through to the 2025 intake. Figure 13 shows the effects of the increased intakes on the educational attainment target[4]. Scenario 1 sees 10 000 additional places in each of the three years between 2021 and 2023 and then reversion to the 2020 intake level, while scenario 2 sees the additional 10 000 additional admissions (over the 2020 baseline intake level) occurring in each of the years between 2021 and 2025.

[3] This assumes that skilled migration remains at a steady state and that the number of graduates produced under 2019 policy and funding settings is evenly distributed by each year of age between 25 years and 34 years.
[4] Assuming that all the additional entrants were aged so as to fall within the 25 to 34 year age band during the year 2030.

Figure 13. Additional higher education graduates in the population aged 25 to 34, assuming 10 000 additional students in each year between 2021 and 2023 (Scenario 1) or in each year between 2021 and 2025 (Scenario 2)

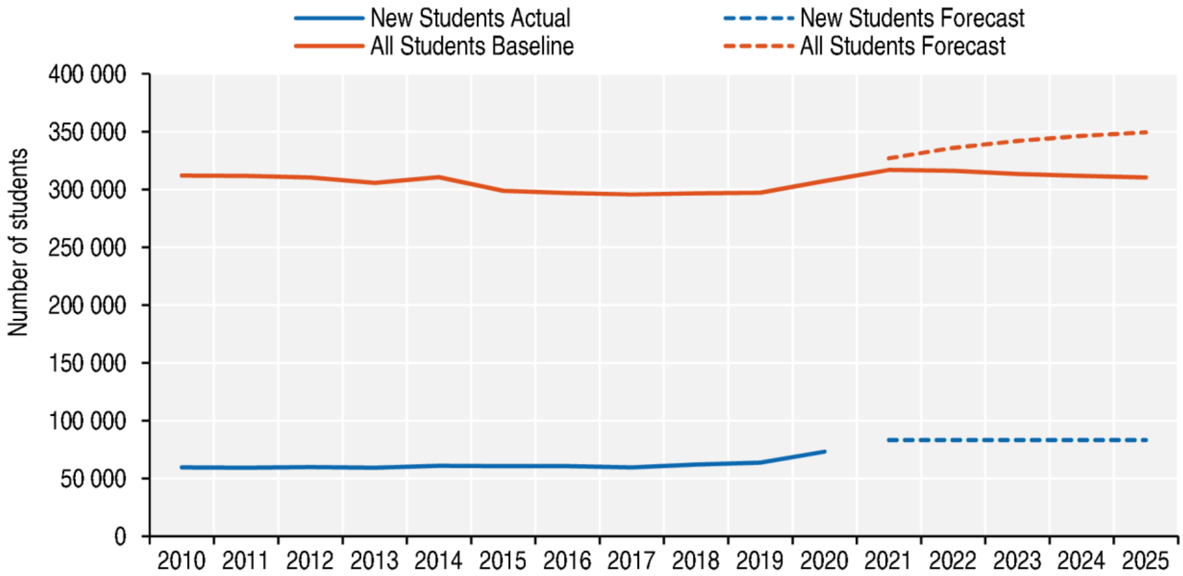


Note: The modelling assumes even distribution of qualifications by year of age in the 25-34 age band. It assumes completion rates and time to completion are maintained at the average level since 2001. It assumes all the additional students are aged between; 18 and 25 (2021 entrants); 18 and 26 (2022 entrants); 18 and 27 (2023 entrants); 19 and 28 (2024 entrants).; 20 and 29 (2025 entrants).
Source: Adapted from completion rate forecast from (Vipunen, 2021[1]), Education Statistics Finland, https://vipunen.fi/en-gb (accessed on 2 September 2021).

Achieving the results shown for Scenario 2 in Figure 13, depends also on the maintenance of current completion rates and time to complete. However, if people are accepted for study who would have been rejected without the increased number of study places, then maintaining academic performance (and hence, completion rates and times) at current levels would likely need extra academic and/or pastoral support.

Figure 14 looks at the number of students and the number of new entrants to the system in Finland's UASs and universities since 2010, with the forecast for additional students generated by Scenario 2 above – five intakes with 10 000 additional new students (over the 2020 level) each year between 2021 and 2025.

Figure 14. Number of students in, and new entrants to, Finnish higher education institutions 2010 to 2025, assuming 10 000 additional students (over the 2020 baseline) in each year between 2021 and 2025



Note: This figure shows the results of implementing Scenario 2 from Figure 23. The assumptions are the same as required for Figure 23.
Source: (Vipunen, 2021[1]), Education Statistics Finland, https://vipunen.fi/en-gb (accessed on 2 September 2021).

Given the size of the 2021-24 commitment for additional study places – 3 000 seats in each of those four years above the 2020 baseline – the Finnish higher education system is not on a trajectory to achieve its 2030 attainment target. Further and swifter progress would require a realistic long-term plan backed by higher levels of resourcing, with commitment at the centre of government to a substantially larger budget envelope than has been envisioned in the 2021-24 period.

Degree-mobile students: Can they enter higher education and stay in Finland?

One dimension of Finland's efforts to expand the enrolment capacity of its higher education system and the growth of the nation's highly skilled workforce centres on boosting higher education's capacity to attract and retain degree-mobile students. Below we briefly examine those efforts, set them in a comparative perspective, and compare possible future performance to agreed policy targets.

Finland's talent attractiveness and Talent Boost Programme

Finland's Talent Boost Programme, launched in 2017 by the government of Finnish Prime Minister Sanna Marin, is a co-ordinated initiative of the Ministries of Economic Affairs and Employment and Education and Culture, and Business Finland that aims to boost the immigration of senior specialists, employees, researchers, and students. It focuses on attracting the talent that will be instrumental for the growth and internationalisation of Finnish companies, and for research, development, and innovation in the leading growth sectors. The Ministry of Education and Culture has committed to investing EUR 46.2 million in 2021-24 to promote the internationalisation of higher education institutions and education-based immigration and integration (OKM, 2020[21]).

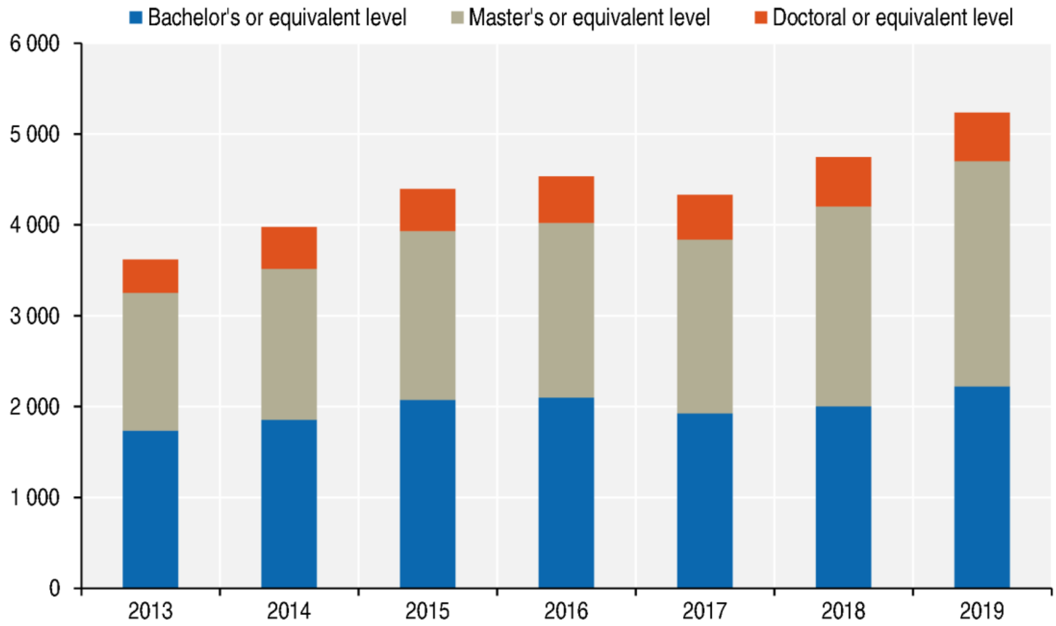
Funding and performance agreements between the Ministry and higher education institutions contain scholarship funding focused on boosting application and enrolment among degree-mobile learners.

In addition, they contain financial support for a variety of measures to integrate international students and graduates into the Finnish workforce, including support for businesses when hiring international students, help for international students in find firm-based internships and employment, and research collaboration with firms.

In light of Finland's policy aims – to attract talented students from abroad who subsequently join the Finnish workforce – we focus on degree-mobile graduates: students who have left their home country to study in Finland, and who have completed their degrees in Finland. Their numbers have risen from 3 617 in 2013 to 5 236 in 2019 (Figure 15), and in 2019 they accounted for 6% of bachelor graduates, 13% of masters graduates, and 30% of all students completing a doctoral degree.

Figure 15. Degree-mobile graduates numbers (2013-19)

Number of students who left their country of home to study in Finland and have completed a degree



Source: (Eurostat, 2019[25]), Degree-mobile graduates from abroad, https://ec.europa.eu/eurostat/web/education-and-training/data/database (accessed on 10 December 2021).

Many OECD higher education systems have made concerted efforts to raise rates of international, degree-mobile graduates, establishing well-resourced organisations to attract interest and applications, increasing the share of study programmes offered in English, and modifying national legislation to expand opportunities for mobile graduates to remain after completion of studies (Berquist et al., 2019[26]). Furthermore, countries that have experienced lagging growth rates in international recruitment, such as Sweden, have initiated ambitious national initiatives (Civinini, 2018[27]). Viewed in comparison to a set of non-Anglophone jurisdictions in Europe (Table 1), Finland's rate of growth in degree-mobile graduates in the period 2013-19 was strong, surpassing that of its Nordic neighbours, and trailing only that of Germany.

Table 1. Growth of degree-mobile graduates in Finland and selected comparison countries

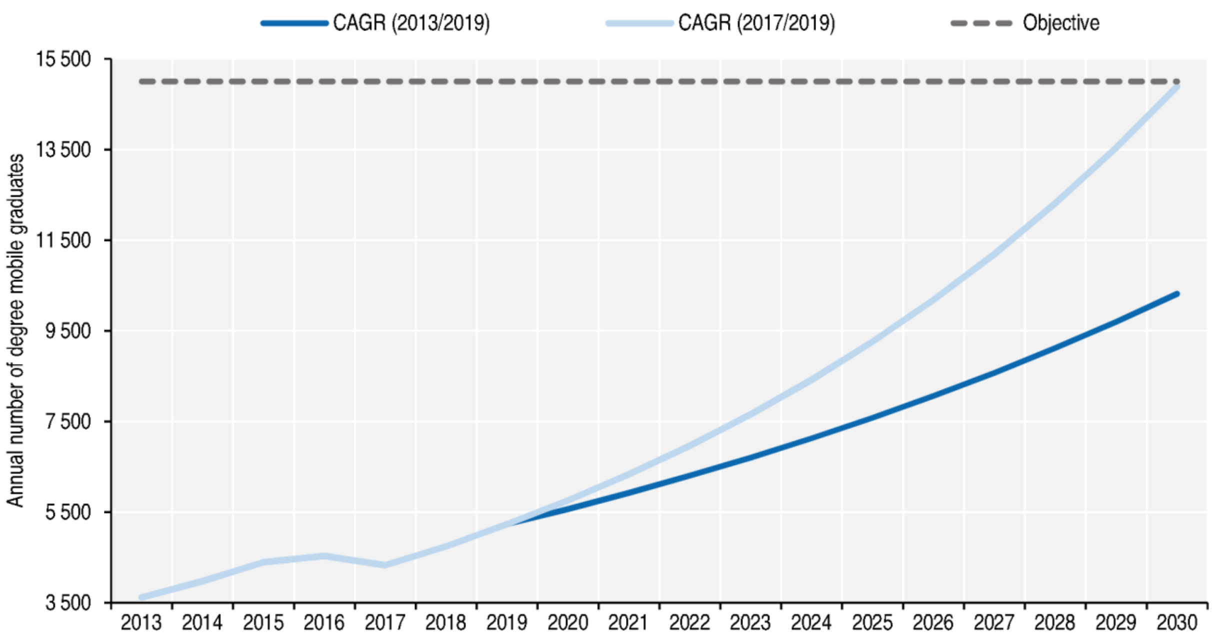
	Compound Annual Growth Rate (CAGR) (2013-19)
Sweden	0.1%
Norway	3.9%
Denmark	5.1%
Austria	5.6%
Finland	**6.4%**
Germany	9%

Note: $CAGR = (\frac{Ending\ value}{Beginning\ value})^{\frac{1}{number\ of\ years}} - 1$

Source: Adapted from (Eurostat, 2019[25]), Degree-mobile graduates from abroad, https://ec.europa.eu/eurostat/web/education-and-training/data/database (accessed on 10 December 2021).

The Finnish Government has set a goal of tripling the number of degree-mobile students from about 5 000 (in 2020) to 15 000 by 2030. To achieve this target, the Finnish higher education system must attract, admit, and graduate about 900 additional degree-mobile graduates per year by 2030. Figure 16 outlines two different scenarios: Scenario 1 forecasts the growth of degree-mobile graduates using the growth rate Finland's higher education system achieved between 2013 and 2019 (6.4%) while Scenario 2 uses the growth rate that Finland experienced between 2017 and 2019 (10%). As Figure 16 shows, when both growth rates are extrapolated to 2030, only the exceptional growth rate of 2017-19 sets Finland on a path to achieve its international degree target.

Figure 16. Two growth scenarios for the number of degree-mobile graduates in Finland



Note: CAGR = (Ending value / Beginning value)^(1 / number of years) - 1
Source: Adapted from (Eurostat, 2019[25]), Degree-mobile graduates from abroad, https://ec.europa.eu/eurostat/web/education-and-training/data/database (accessed on 10 December 2021).

In comparison to the average compound annual growth rates among countries in Table 1 (4.1%), the 2030 goal appears to be highly ambitious. Substantial and well-targeted investments agreed with higher education institutions, and complementary policies, have been set in place.

However, one constraint that may limit a tripling of mobile degree graduates appears to persist: Finland's highly selective admission process. International students, most especially those coming from non-EU/EEA countries, have lower acceptance rates than either Finnish or EU/EEA students (Table 2). For the 2021 study year, 25 800 international students chose to apply for a Finnish higher education degree programme, and 22% (5 946) were admitted (with 4 470 accepting a study place).

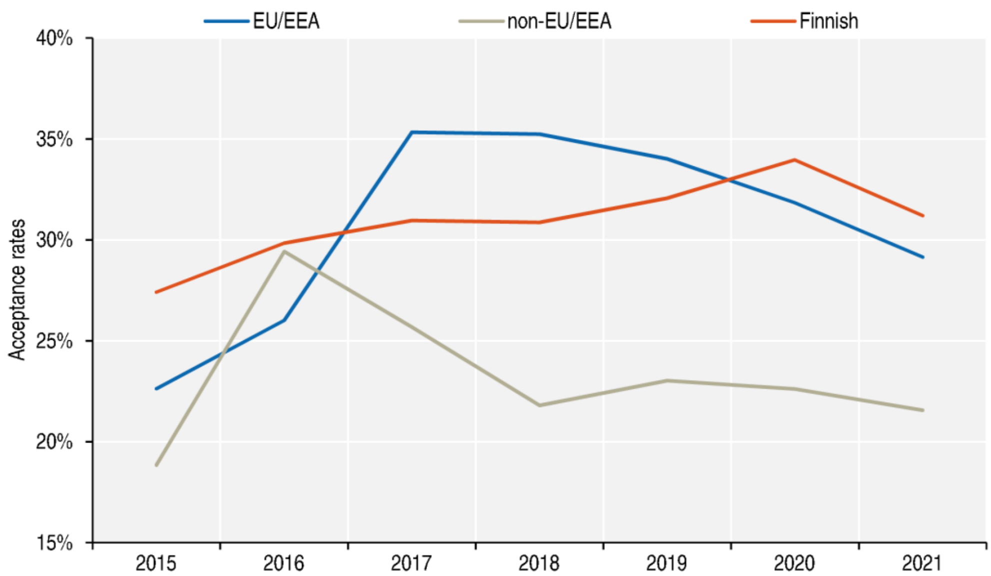
Table 2. Acceptance rates of study places in Finland, by origin of students (2021)

Finnish students			EU/EEA students			Other international students		
All applicants	Accepted a study place	Acceptance rate	All applicants	Accepted a study place	Acceptance rate	All applicants	Accepted a study place	Acceptance rate
211 305	65 934	31%	5 064	1 476	29%	20 736	4 470	22%

Source: (Vipunen, 2021[11]), Education Statistics Finland, https://vipunen.fi/en-gb (accessed on 2 September 2021).

Viewed over the period 2015-21, the rate at which non-EUA/EEA applicants have been admitted to Finnish universities do not show a consistent and increasing trend (Figure 17).

Figure 17. Acceptance rates (2015-21) by nationality of applicant: domestic, EUA/EEA, and non-EUA/EEA



Note: The non-specified students [missing data on country of origin] have been excluded
Source: (Vipunen, 2021[11]), Education Statistics Finland, https://vipunen.fi/en-gb (accessed on 2 September 2021).

Staying-on rates of degree-mobile students in Finland, after graduation

A second challenge that is well recognised by policy makers – and the focus of budget and performance agreements between the Ministry of Education and Culture and higher education institutions – is the "staying-on" rate, i.e. the proportion of graduates who choose to remain in Finland after completing their studies. Across the government, a host of complementary measures to encourage staying on have been adopted, such as a 2018 expansion of the duration that recent graduates can search for employment.

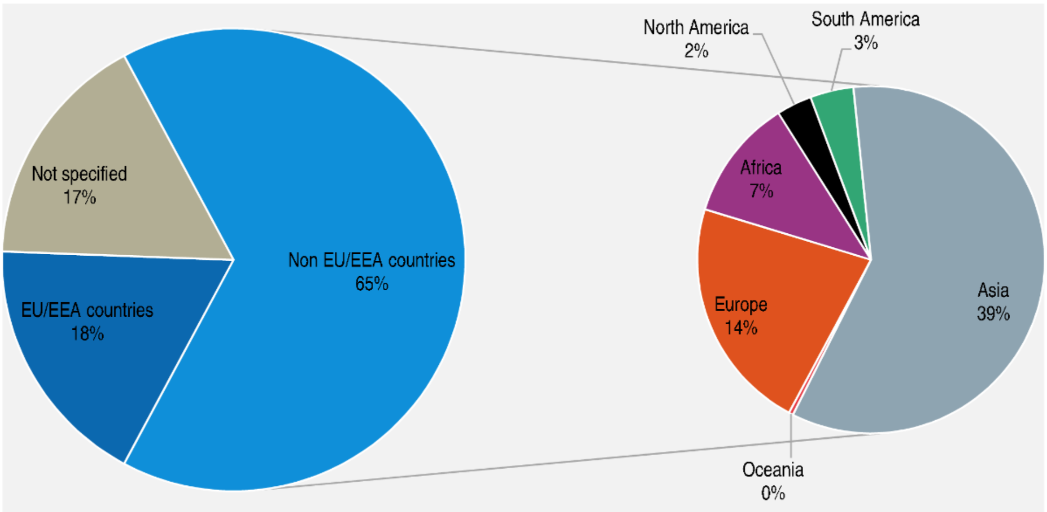
Past patterns of "staying-on" rates among degree-mobile graduates in Finland appear to be broadly comparable to international patterns, although it should be noted that countries report staying-on rates for a range of graduate cohorts and durations, and using both self-reported intentions and administrative records, limiting comparability. Recent analyses focused on doctoral graduates in European higher education systems show that in Sweden, three years after graduation, 38% of foreign doctoral students remained in the country (Myklebust, 2019[28]), while ten years after graduation 32% of foreign PhD graduates remain in the Netherlands (Rud, Wouterse and Van Elk, 2015[29]). One sample of international graduates from Finnish universities and UAS between 1999 and 2011 found a staying-on rate of 62% for the international students (of all degree levels) (Mathies and Karhunen, 2020[30]).

In Finland, survey responses from international students collected in 2019 show that rates vary by higher education sector and region of origin. One year after graduation, 53% of UAS and 50% of university graduates originally from outside Europe are employed in Finland, compared to 38% of UAS and 36% of university graduates originally from EU and EEA countries (Juusola et al., 2021[31]). Examining the reasons behind the high staying-on rates of international students in Finland compared to other countries, Mathies and Karhunen highlighted the recent government policies to encourage international students to stay on (Mathies and Karhunen, 2020[30]).

Taking into account recent staying-on rates in Finland and evidence from other higher education systems, a target of 75% of mobile degree graduates remaining in Finland, as proposed by the Government (Finnish Government, 2021[6]), appears difficult to attain. Given the relatively high propensity of non-EU/EEA mobile graduates to remain in Finland, boosting their share of enrolment is, at first glance, an attractive policy option. However, non-EU/EEA applicants are the least likely group of applicants to be admitted (Table 2), and already comprise about two-thirds of degree-mobile graduates, making this a limited opportunity for growth given the higher education system's enrolment capacity and admission policies.

Figure 18. Degree-mobile graduates by country of origin (2019)

Data has been aggregated by EU/EEA and non-EU/EEA countries



Source: Adapted from (Eurostat, 2019[25]), Degree-mobile graduates from abroad, https://ec.europa.eu/eurostat/web/education-and-training/data/database (accessed on 10 December 2021).

Institutional autonomy and the supply of higher education

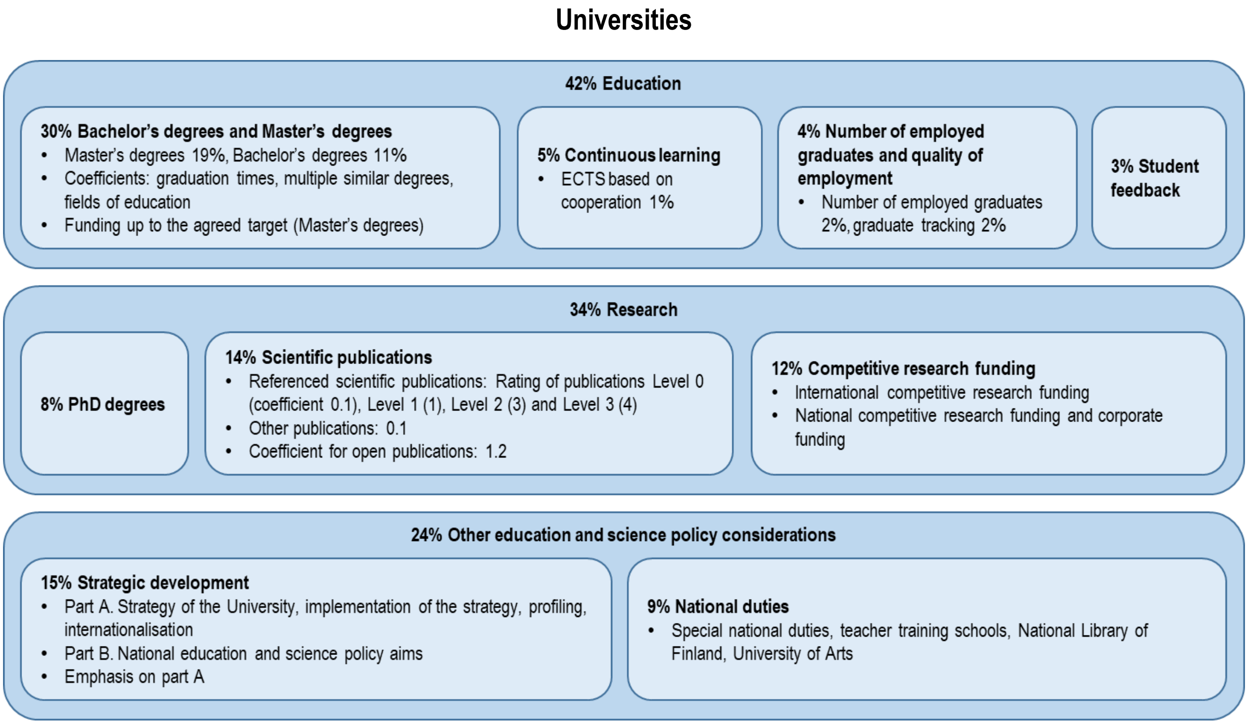
Higher education funding models

Finnish universities and UASs enjoy considerable decision-making autonomy. The institutions themselves decide who is admitted to study. In making those decisions, institutions are driven by a range of incentives and needs.

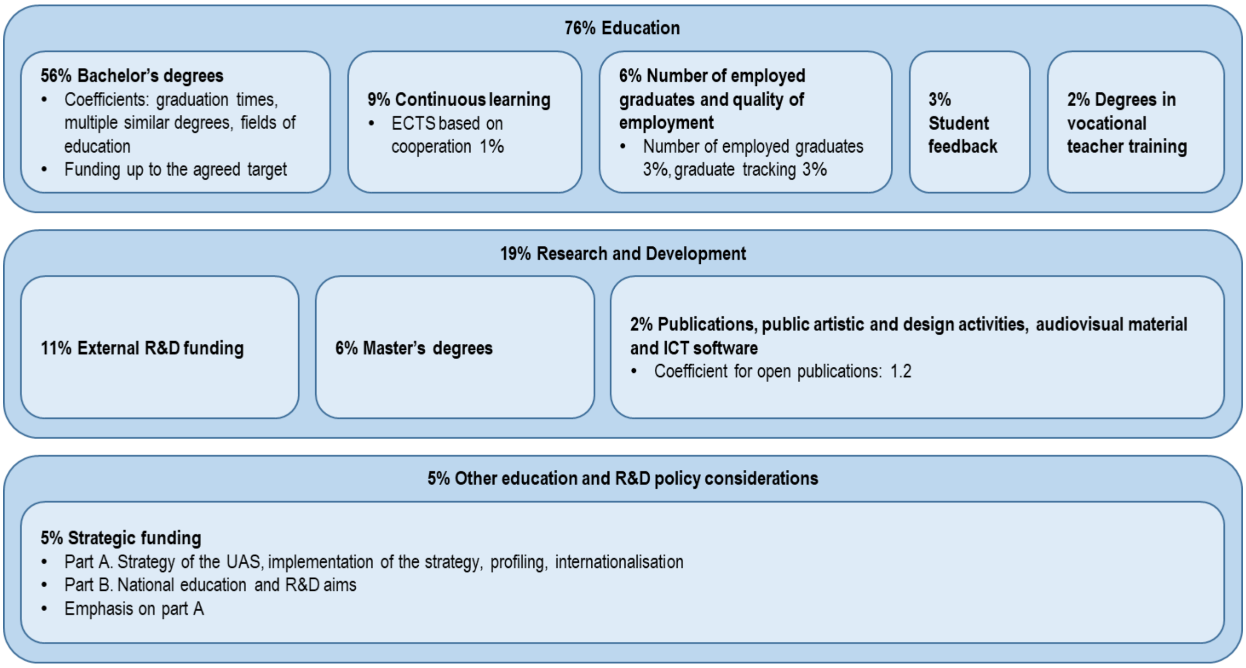
The most important of those incentives are those created by government; in Finland, there are no tuition fees and 92% of institutional revenue is from public sources (OECD, 2020[19]). This means that how government prioritises its financial support for institutions and government decisions on funding will drive institutional behaviour.

Government's funding for higher education is set annually. The Ministry allocates that funding between institutions through agreements it negotiates and signs with the institutions (OKM, 2020[21]) (OKM, 2020[22]). Those agreements are shaped and governed by funding models – one for universities, one for UASs – that are also set by the government. These models are an expression of the government's priorities for higher education (Ministry of Education and Culture, 2021[32]). Figure 19 below illustrates the funding models used to underpin the funding agreements between the Ministry and institutions for 2021.

Figure 19. Funding models for Universities and for Universities of Applied Science in Finland for 2021



Universities of applied sciences



Source: Adapted from (Ministry of Education and Culture, 2021[32]), Steering, financing and agreements of higher education institutions, Universities and Universities of Applied Sciences core funding models, https://minedu.fi/documents/1410845/4392480/UNI_core_funding_2021.pdf/a9a65de5-bd76-e4ff-ea94-9b318af2f1bc/UNI_core_funding_2021.pdf; https://minedu.fi/documents/1410845/4392480/UAS_core_funding_2021.pdf/1c765778-348f-da42-f0bb-63ec0945adf0/UAS_core_funding (accessed on 15 December 2021).

Figure 19 illustrates the differences in emphasis between the university sector and the universities of applied science. As would be expected, the universities have a much greater emphasis on research and therefore one-third of their Ministry of Education and Culture funding allocation is intended to cover research (compared to 19% for UASs), with a quarter covering strategic development and obligations to meet national priorities (again, a much higher proportion than in the UASs).

The education component of the funding (which constitutes three-quarters of the UAS funding and the largest share of the university model) places an expectation that the institution will meet an enrolment and graduation target set out in the funding agreement. It places educational performance requirements on institutions, such as graduation times, student satisfaction and graduate employment outcomes. Enrolment targets are set by field of study (OKM, 2020[21]). These targets are agreed between the Ministry and the institution during negotiations on the funding agreement.

Decision making about system capacity

One aim of the targets is to limit growth in fields where the government believes that the labour market demand may be weak. In other words, the target operates less as an enrolment *minimum* and more as an enrolment *limit*. In addition, the Ministry reports that there are no financial penalties in the funding agreement for failure to meet the targets, such as apply in countries like New Zealand (where the value of a shortfall in enrolments is deducted from the subsequent year's funding) or the Netherlands (where missing enrolment targets results in the loss of funding). The targets are set at field-of-study level for postgraduate degrees at universities and for bachelor degrees at UASs (OKM, 2020[21]) (OKM, 2020[22]).

As a result, the funding model and the associated funding agreements should be seen as designed to *steer* institutions (rather than to control or manage them). In that way, they reinforce the autonomy of the institutions while ensuring that institutions work as part of a system that contributes to national strategic goals and that they serve the interests of the labour market. While institutions make their own decisions, those decisions are made within the parameters set in the funding agreement.

One consequence of this approach is that the government has a limited capacity to direct institutions. The funding agreements contain many elements. As a result, an institution can prioritise one element at the expense of others and do so with relatively little risk of penalty. For instance, selecting more students may lead to reduced performance. In effect, that allows an institution to offset a smaller enrolment intake by performing better on completion targets; or an institution could choose to offset weaker educational performance by stronger research performance.

Those observations suggest that the Finnish funding model is one that leads to relatively strong institutional control over intakes and the choice of field of study. This means that the Finnish system is one that is principally "supply-led", in that institutions have a large measure of control over who enters the institution and what new entrants study, and where a conscious attempt is made to align the profile of graduates with forecasts of labour market needs.

The Finnish approach contrasts with higher education systems that are primarily "demand-driven". In those systems, students have high level of discretion over what they study[5], institutions are incentivised to take extra students and students usually pay fees. Examples are the United States, Canada, England (United Kingdom), Australia and New Zealand (OECD, 2020[20]). In these systems, labour market relevance is left largely to the uncoordinated decisions of students who – ideally equipped with labour market information – make decisions about study choices, and institutions respond student preferences. In those systems, the government attempts to anticipate demand and set some limits on the extent to which they will fund that demand.

Admission reforms – and unchanged institutional incentives

According the 2017 European University Association University Autonomy Ranking Tool, Finnish universities enjoyed an unusually wide scope of academic autonomy, ranking second out of 29 European higher education systems. Finnish higher education is one of only nine systems in which decisions on student admissions for bachelor study are made by the university. The high level of institutional control over to higher education institutions has enabled the unusually low rate of acceptance of applications for study. Faculties and discipline leaders in Finland's higher education institutions (and especially, in the research-oriented departments of the universities) are incentivised to limit enrolments and select students carefully. Enrolling only high-calibre, better-prepared students makes it easier to see them through to completion. The institutional – and departmental – focus of the admission process is reflected by the total of 180 distinct examinations for entrance (excluding art, music, design and other fields that require a portfolio or a performance to establish admissibility), revealing a priority for selection based on capability in particular subjects, rather than on more generic academic proficiency and skills[6][7].

Recognising the impact of admissions procedures on its chronic matriculation backlog and stagnant attainment rates, Finland has complemented the financing of additional study places with reforming arrangements for student admission to higher education. UAS institutions have agreed amongst

[5] In some countries with highly demand-driven systems, there are often constraints on choice in relation to high-cost programmes closely aligned to highly regulated professions (such as health professions). Examples of systems include the United States, Australia, and New Zealand.

[6] That approach applies in universities, not UASs, where the 24 institutions developed a single admission examination. "Flexible Paths? Higher Education Admissions in Finland 2020", presentation by Birgitta Vuorinen to UNESCO, IIEP.

[7] Some research suggests that general scholastic ability is a better predictor of university success than subject proficiency. Engler (2010) found that performance at university is more closely related to how well students performed at school overall, rather than to the particular subjects they studied at school. This applies to a broad range of school subjects and to nearly every field of study at university; what school subjects are taken is less important than how well students perform at school.

themselves a common standardised test of applicant aptitudes for most study fields (apart from fields such as fine and performing arts, and design). Universities have been encouraged to cooperate through the voluntary use of common entrance test and scoring, and are obligated to begin transitioning to a system of “certificate-based admissions” intended to diminish the role of separately set entrance examinations (Finnish Ministry of Education and Culture, 2021[33]).

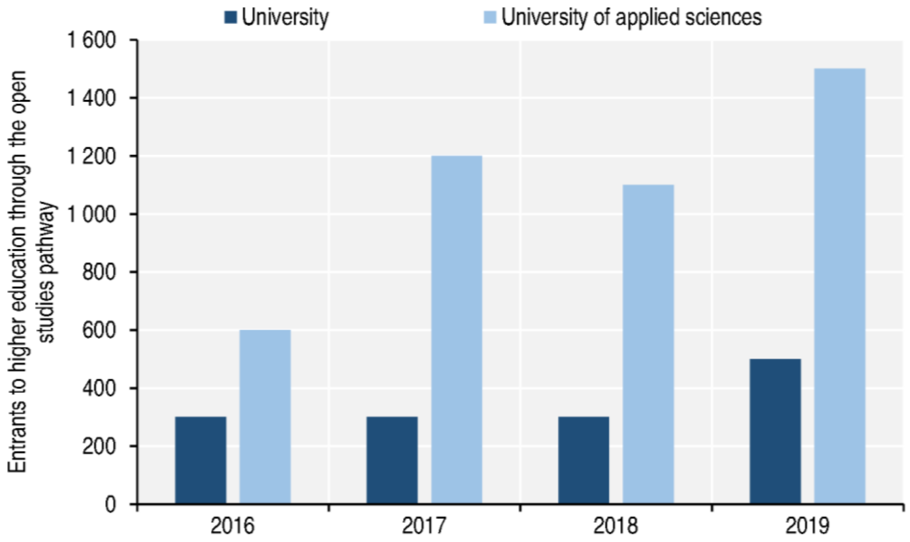
However, Finland’s efforts to widen the scope of intake and raise attainment have not focused on the way in which institutional funding agreements magnify institutional incentives for selection by specifying intake targets at a field-of-study level. Policy makers could conceive of other funding schemes that would encourage rectors to find economical ways of meeting more of the unsatisfied demand for places, while respecting the physical resource constraints that apply in some fields. The funding arrangements could include, for example: enrolment targets that operate at an institutional level, include penalties for failing to reach targets, and funding agreements that contain fewer elements (and, thus, allow greater focus on priority areas and fewer opportunities to offset poor performance in one area against good performance in others).

Open Studies – an avenue for expanding capacity?

The Open Studies pathway allows students to commence higher education studies without navigating university entrance requirements. Open Studies are offered in daytime, evenings, weekends and online by most higher education institutions in Finland. The goals, content and requirements are the same as for university or university of applied sciences (UAS) degree studies. Students who have completed at least 60 ECTS may apply to a degree programme in a Finnish institution, although higher education institutions may choose to set either a lower or a higher threshold. The credits obtained in Open Studies normally are successfully applied to a degree programme, since students are taking the same studies as they would in their destination degree programmes.

In 2020, a total of 45 000 students participated in Open Studies (University of Helsinki, 2020[34]). However, because they do not study on a full-time basis, their studies accounted for a small share of credits earned in Finland’s higher education institutions: in 2020, they comprised 9% of ECTS in the UAS sector, and 1% in the university sector (Vipunen, 2021[1]). Finland had 71 163 new entrants to degree study in its higher education system in 2020. By comparison, approximately 2 000 Open Studies students entered higher education degree programmes through the Open Studies pathway in 2019 (Moitus, Weimer and Välimaa, 2020[35]), of whom 25% entered the nation’s universities, and the remaining 75% were accepted in the UAS sector. The Open Studies acceptance rate was 35% at universities of applied sciences in 2021, and 26% at universities (Vipunen, 2021[1]). Study fields in which entry is highly selective, such as medicine, offered a small number of study places to Open Studies candidates, while entry to less selective fields such humanities fields is most common (Moitus, Weimer and Välimaa, 2020[35]).

Figure 20. Entrants to higher education through the Open Studies pathway (2016-19)



Source: (Moitus, Weimer and Välimaa, 2020[35]), Flexible learning pathways in Higher education, https://karvi.fi/app/uploads/2020/09/KARVI_1220.pdf (accessed on 15 December 2021).

While the Open Studies pathway to degree level studies has grown, this growth has been concentrated almost exclusively in the UAS sector, and in study fields in which competition for study places is most limited.

Set in the broader framework of Finnish higher education, the Open Studies pathway appears to offer a limited opportunity to expand the system's enrolment capacity in total, and in study fields of national priority. As is the case for the expansion of the system's enrolment capacity more generally, decision making about expanding capacity to absorb Open Studies learners rests with higher education institutions themselves – and their faculties and departments. Performance-funding agreements between the Ministry and higher education institutions do not contain targets with respect to Open Studies entrants. Seen from the vantage point of Finnish higher education institutions, there is limited incentive to create places for learners with age profiles or academic backgrounds who may have an elevated probability of non-completion. Doing so creates unwanted risks to institutional budgets in a system where the funding models of the Ministry link study duration and degrees completed to funding levels.

Conclusion

The resource envelope within which Finland's higher education system operated following the global recession of 2008 was highly austere, viewed in comparison to other OECD higher education systems, leading to a period of falling real per-student expenditures. Formulating ambitious policy targets with respect to attainment rates and mobile graduate staying-on rates – clearly important to address a shrinking workforce – would need to be backed by commensurate investments in the higher education system's capacity to attract, enrol, and retain students. Recent budget agreements between the Ministry of Education and Culture and the nation's higher education institutions very clearly reflect these policy targets, and link resources to those goals.

Analysis in this section suggests, however, that the recent expansion of Finland's higher education budget envelope has been a necessary but not sufficient condition for Finland's ambitious policy targets to be met. Finland's supply of study places continues to be exceptionally modest relative to demand, as indicated in low rates of admission among domestic students, and especially international (non-EU/EEA) learners.

Finland's supply of study places is constrained, in important part, by the willingness and the ability of its higher education institutions to expand their enrolment capacity.

The orientation of higher education institutions towards expansion is itself incentivised by a model in which labour market forecasts inform aggregate and study-field funding for added enrolment capacity by the government.

Further investment in added system enrolment capacity is warranted. However, this alone will not be sufficient to achieve the attainment goals set for 2030. In the near term, some greater flexibility in how enrolments are funded – shifting to faculty or institutional targets – might encourage institutions to seek greater enrolment capacity. In the longer run, Finland's higher education community (and wider society) might reflect on how to give substantially wider recognition of student demand in matching the preferences of learners to study opportunities, looking to models in systems with no (or very low) tuition fees, such as Denmark, Flanders, and Norway, that more fully balance learner preferences and educational supply.

3. Making use of the system's capacity: Shaping sectors and steering profiles

The preceding section focused on efforts to expand the enrolment capacity and attractiveness of Finland's higher education system to globally mobile learners. In this section, we examine how the capacity of Finland's higher education system is organised and used in support of the nation's priorities.

Finnish policy makers are not only concerned with the scale or scope of their system, but with the landscape or architecture of their system: the number and location of higher education institutions; their legal status, size, mission, subject focus, and research intensity; and how those institutions are to be co-ordinated with one another, whether through competition or collaboration.

Debates and policy decisions about the higher education landscape are shaped by two priorities that stand in tension to one another: diversification and dispersion, on the one hand; and concentration on the other. Governments aim to encourage diversification and territorial dispersion of higher education, thereby ensuring that the diverse needs of learners can be accommodated, that place-bound learners can be equitably served, and that varied regional needs of the country are sufficiently met, most especially through the dispersion of research and innovation capabilities. At the same time, governments wish to concentrate higher education activities – or some types of higher education activity – in a smaller number of institutions or in specific institutions to build critical mass, promote excellence or achieve efficiencies.

Policies to promote concentration or specialisation in higher education seek to create centripetal forces, through which existing activities, or activities in specific fields, are concentrated in fewer places. In some cases, such policies may address a real or perceived need to contract a higher education system in the face of declining student numbers. In such cases, a primary driver is nearly always a desire to achieve cost savings by maintaining economies of scale as numbers reduce. More frequently, concentration and institutional profiling policies have been motivated by a desire to promote specialisation and excellence in particular areas of teaching, research or innovation, by bringing scarce human and physical resources together or focusing activities in particular domains. Such policies often reflect the assumption that academic excellence requires critical mass in terms of staff, student numbers and skills, and that institutions and departments perform best when they focus on what they are good at, rather than trying to do everything. In some cases, institutional profiling, building critical mass and efficiency are all identified as objectives of reform policies.

Having created a multiplicity of institutions with varied capacities, missions, and locations, policy makers must also address the question of what mix of institutions with what responsibilities, and what measure of coordination or collaboration among them is best suited to our national needs.

Below, we examine and compare how Finland has organised the landscape of its higher education system. Specifically:

1. How does the landscape of Finland's higher education system compare to that of other jurisdictions in the OECD? How does the diversity of its higher education institutions, the resources available to them, the range of degree offerings they provide, and the regional scope of their provision compare to that of other higher education systems?
2. Viewed in comparison to other OECD higher education systems, how and to what extent has Finland chosen to re-shape the research and innovation capacities of its professional higher education sector -- its universities of applied science (*ammattikorkeakoulu*)?
3. Viewed in comparison to other OECD jurisdictions, what opportunities are available to Finnish officials to promote collaboration among higher education institutions, what tools have they used for that purpose, and what opportunities remain for reshaping the distribution of responsibilities among its higher education institutions?

Diversifying institutions, resources, degree offerings and locations of higher education provision

The landscape of higher education in Finland is less diversified than many other OECD higher education systems in three important respects: in the types of institutions established, in the resource level on which these institutions operate, and the range of degree offerings they provide.

Limited institutional, resource, and degree diversity

A legal framework authorising a binary landscape comprised of public research universities and universities of applied science limits institutional diversity in Finland. For many European higher education systems, especially those serving smaller jurisdictions, a binary structure of provision is common, in which higher education institutions provide advanced education in applied or professional fields, while research universities are authorised to award doctoral degrees and are funded to support basic scientific research. At different times, many jurisdictions have chosen to permit a binary institutional landscape including, among others, Austria, Belgium, Germany, Lithuania, the Netherlands, and the United Kingdom (prior to 1992). In contrast to many of these other binary higher education systems – such as the Netherlands and Germany – Finland does not have private higher institutions. Private institutions play an especially important role in the UAS sector in some binary higher education systems, as in Germany, where in 2018 10% of first-year students studied at a private UAS (Fachhochschulen). Often focused on study programmes and learning modalities that are closely adapted to labour market and learner needs, respectively, these private institutions introduce a measure of institutional diversity that is absent from Finland.

Variation in per-student expenditure among Finnish HEIs is comparatively low

In OECD countries, expenditure per student varies significantly among higher education institutions, reflecting the diversity of revenues and missions within higher education systems. Drawing on institution-level data from the European Tertiary Education Register (ETER, 2016[36]))[8], Figure 21 displays the median and variation in institutions' current expenditure per student enrolled at ISCED levels 5-8. This includes expenditure on personnel (salaries and social expenses, such as payroll tax, insurance, pensions etc.) and other recurring expenditures on goods and services (such as electricity, rent, small equipment,

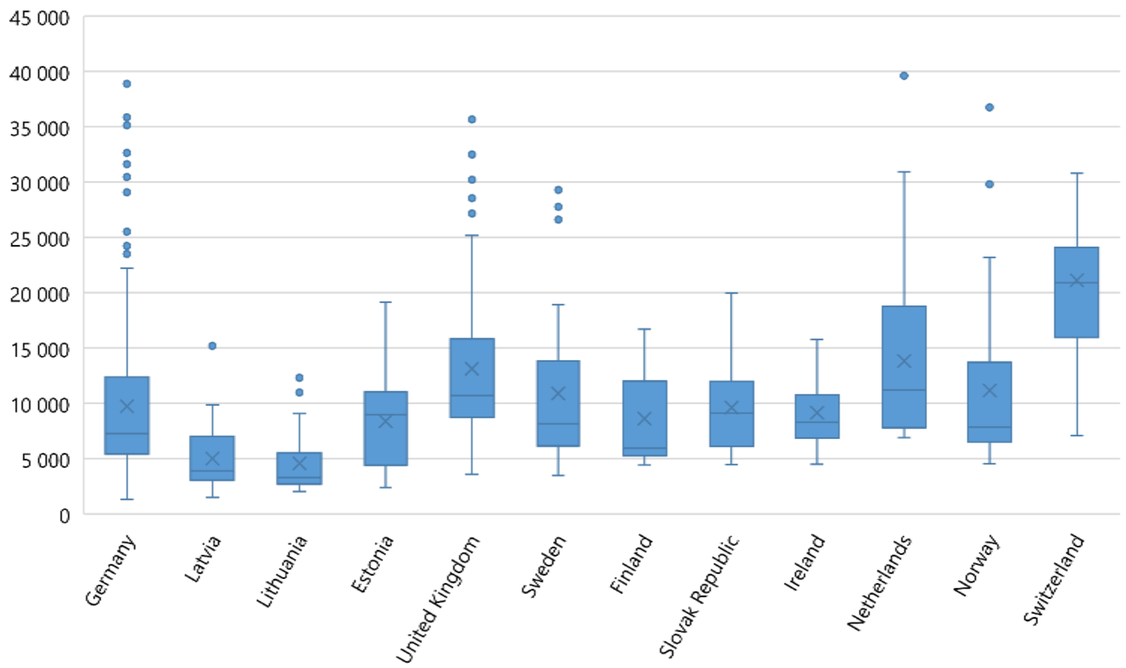
[8] Twelve of the 37 countries covered by ETER did not provide any financial data. Others reported data only for some types of institutions. These countries were excluded from the analysis in this brief. For the countries included in the analysis, data on expenditure per student was available for 1 004 of 1 291 HEIs.

repairs and maintenance of infrastructure etc.), but excludes capital expenditure (e.g. on the construction or renovation of buildings and major expenditures on equipment) (Lepori et al., 2019, p. 49[37]).

Variations in per-student expenditure among institutions can be explained by different factors, including the extent of research activities, institutional size and the type of facilities supported (e.g. hospitals or labs), fields of study offered, as well as strategic choices (e.g. whether institutions invest to achieve prestige or higher quality of education) (Marconi and Ritzen, 2015[38]).

There is noticeably less variation in per-student expenditure among higher education institutions in Finland than in systems with high levels of private spending (such as the United Kingdom), but also less variation in expenditure than in other publicly funded Nordic systems, such as Sweden and Norway.

Figure 21. Variation in expenditure per student in higher education institutions (Euros, PPP adjusted) (2016)



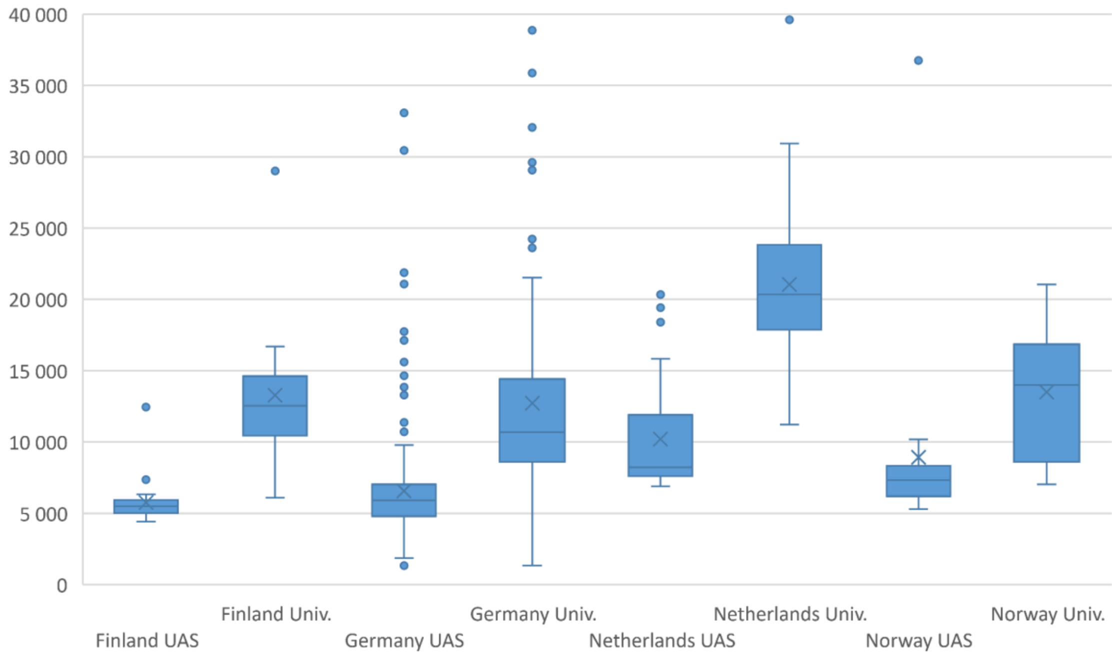
Note: Total current expenditure per ISCED 5-8 student in 2016. The adjustment for purchasing power parity has been made by the dataset managers. The boundaries of the boxes represent values at the 25th and 75th percentiles of the distribution. The upper and lower whiskers show the largest/smallest observations that lie within 1.5 times the interquartile range from the third and first quartile respectively. The average per-student expenditure shown in this graph is calculated based on institution-level data and may be slightly lower than the country-level per-student expenditure since students may be enrolled in more than one institution. 20 outliers with expenditure above 40k per student were excluded.
Source: (ETER, 2016[36]), ETER database and Danish Ministry of Education and Research, https://www.eter-project.com/#/home (accessed on 13 November 2021).

Because universities tend to spend considerably more on research and development activities than professional HEIs, their per-student expenditure is usually higher (OECD, 2019, p. 123[39]). Per-student spending in research universities was, **on average**, substantially higher than in universities of applied science, as Figure 22 shows. In Finland, the 2016 median expenditure per student in research universities was about twice that of UAS institutions: EUR 13 577 (PPP), compared to EUR 5 814 (PPP). A similar pattern exists in most European countries (Lepori et al., 2019, p. 49[37]), including Finland's Nordic neighbour, Denmark, where (in 2019) the median expenditure per student in research universities was about twice that of the UAS sector (EUR 15 600 PPP compared to EUR 7 900 PPP).

Research and applied science university per-student spending levels sometimes, though infrequently, overlap, as is shown in Figure 22.

Variation in spending within Finland's research university sector was somewhat less extensive than in comparator countries. A relatively small number of institutions lie outside of the 25th-75th percentile per student expenditure range – compared, for example, to expenditure per student in German research universities, which had far wider "whiskers". Finland's range of per-student spending in its UAS sector is much less extensive than the comparator UAS sectors represented in Figure 22. Comparison of box plots of per-student spending show the 25th to 75th percentile range to be much narrower in Finland.

Figure 22. Expenditure per student in universities and universities of applied science (EUR, PPP adjusted) (2016)



Note: Total current expenditure per ISCED 5-8 student. ETER dataset managers have made the adjustment for purchasing power parity. The boundaries of the boxes represent values at the 25th and 75th percentiles of the distribution. The upper and lower whiskers show the largest/smallest observations that lie within 1.5 times the interquartile range from the third and first quartile respectively. Seven outliers with expenditure above 40k per student were excluded.

Source: (ETER, 2016[36]), ETER database, https://www.eter-project.com/#/home (accessed on 13 November 2021).

Limited diversity in educational provision

Policy makers across the OECD are concerned with supporting greater flexibility and diversity in education provision, both with respect to study modes (e.g. part-time and blended or online programmes) and the range of qualifications available to learners (e.g. new qualifications that are targeted and comparatively rapid).

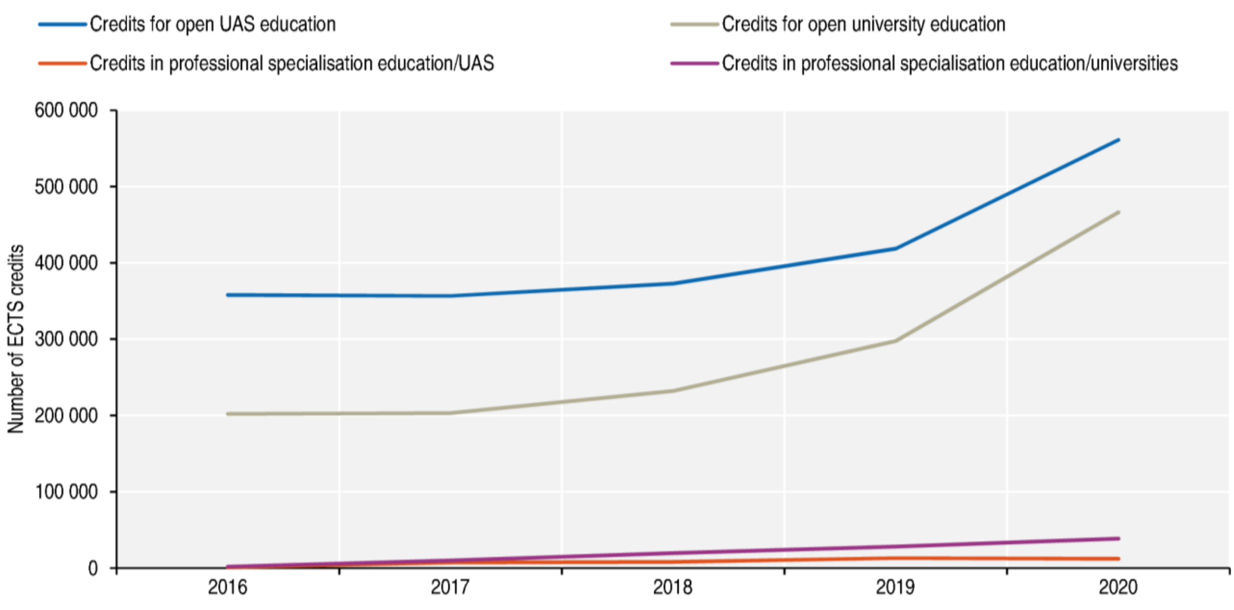
Four of the five other EU jurisdictions currently participating in the OECD Resourcing Higher Education Project along with Finland – Denmark, the Flemish Community of Belgium, Ireland, and Portugal – have a structure of qualifications in which their higher education institutions award degrees below the bachelor level (Lithuanian legislation allows this, but sub-bachelor's programmes are still rare). For example, in 2014 Portugal introduced a new *Cursos Técnicos Superiores Profissionais* (CTeSP) qualification as a means by which to increase tertiary educational attainment among the Portuguese population, investing an initial

EUR 48 million to launch the operational and equipment costs of the programme (OECD, 2019[40]). Integrated in 2016 into the legal regime of higher education diplomas, the CTeSP created an additional vocational pathway to the range of course offerings in Portugal polytechnics and polytechnic organic units in universities (DGES, 2021[41]). After a short duration of two years (including one semester of internship), the successful completion of the CTeSP programme leads to the award of a professional higher education technician diploma and delivers 120 ECTS (equivalent to the level five in the European Qualifications Framework).

In total, in 2019, about three-quarters of OECD member countries (29 out of 38) reported that they offered awards at the sub-bachelor's degree level. Finland's landscape of degree offerings, which does not offer a qualification shorter than the bachelor's award, is thus less diversified than many other OECD member jurisdictions, and less diversified than the cohort of countries participating in the OECD Resourcing Higher Education Project.

Finland has developed a short-term qualification to support continuous learning among higher education graduates who seek reskilling and upskilling: professional specialisation programmes, offered at 30 ECTS. There has been pronounced growth in activity related to professional specialisation programmes between 2016 and 2020 in the university of applied science sector (from 1 812 to 38 563 ECTS) and in the university sector (from 997 to 12 131 ECTS). Nonetheless, these courses still comprised only 0.47% of all UAS ECTS and 0.17% of all university ECTS in awarded in 2020 (Figure 23).

Figure 23. ECTS credits for open education and professional specialisation education (2016-20)



Source: (Vipunen, 2021[1]), Education Statistics Finland, https://vipunen.fi/en-gb (accessed on 2 September 2021).

Spatial diversification

While Finland has chosen to limit the diversity of its institutions, per-student resourcing levels, and degree offerings, the physical landscape of the Finnish higher education system is more diversified than many other jurisdictions. Finland's modest population (of approximately 5.5 million, 27th among the OECD's 38 member countries) and especially low population density of 19 inhabitants per square kilometre, make it the third most sparsely populated country in Europe after Iceland and Norway. The low density of Finland's population has led to a longstanding policy commitment to support its many rural and remote communities.

At the same time, concern about inefficiency in the provision of public services and the need to create higher education institutions of sufficient scale to compete globally has led to countervailing tendencies in policy making. Thus, for example, Finland has followed a sustained course of consolidation within its university system in recent decades, reducing the number of universities from 20 (in 2006) to 14 (in 2018). At the same time, governments have also pledged to "promote the accessibility of higher education across Finland's regions, ensuring a higher education institution exists in every county (*maakunta*)" (Finnish Government, 2019, p. 184[5]). Tensions between consolidation and physical accessibility to higher education have been managed by the development of a varied network of institutions – including university satellite campuses, universities of applied science, and university centres. (Vartiainen, 2017[42]).

Policy makers in many countries take a keen interest in the regional distribution of higher education institutions. Governments appear rarely to set precisely articulated criteria in law or strategic plans for the dispersion of higher education institutions – e.g. citizens must have a higher education institution within 100 kilometres of their home, or that each municipality of more than 100,000 residents must have a higher education institution. Rather, they typically express policy commitments more broadly, as in the 2020/21 Danish government's legislative programme, which called for "better education opportunities outside the big cities" (The Danish Government, 2019[43]).

Governments across the OECD, especially those with modestly populated territories, face a difficult trade-off. Simply stated, they aim simultaneously to ensure that rural communities and remote learners have equal access to the benefits of higher education – while ensuring higher education institutions operate at sufficient scale to make efficient use of public expenditures, and that higher education institutions perform their research and engagement missions at a high level. The policy measures taken by governments have included the establishment of specialised research universities; universities of applied science; university satellite campuses; university consortia; learning centres; or study sites. The costs and benefits of these policy choices, briefly described below, vary widely.

Specialised research universities, such as the University of Lapland, have the potential to provide both learning opportunities for dispersed populations and, through their research and engagement missions, to support regional development and well-being. However, owing to their small size, they risk high unit costs (e.g. cost per completed degree), and an inability to attract inputs (research funding, high quality researchers) sufficient to achieve their research and engagement missions at a good level of quality.

Teaching-led and professionally-oriented "non-research" institutions, such as universities of applied science, have been a principal policy option used by governments to widen the spatial distribution of higher education. In many European countries – including Denmark, Ireland, the Flemish Community of Belgium and Portugal – professionally focused higher education institutions have played a leading role in extending the regional coverage of the higher education network (Bonaccorsi and Lepori, 2019, p. 17[44]). As noted, expenditure per student in UAS institutions is, overall, about one-half that of research universities (Figure 22), and the extension of higher education access through UAS systems has proven to be a comparatively cost-effective policy option for governments. However, UAS institutions are not inexpensive. Their instruction costs are equal to the instructional costs of research universities. Moreover, their regional economic benefits may be modest, especially in UAS systems where research and engagement capabilities have been weakly developed. Thus, some OECD higher education systems have relied instead (or, in addition) on another strategy for distributing higher education across their territories: expanding satellite or branch campuses of already-existing universities.

Satellite (branch) campuses aim to distribute the teaching and research capacities of universities widely across national territory, doing this efficiently by centralising and scaling shared costs such as business services, student support services, and information technology infrastructure. In some higher education system with widely dispersed populations, they have played a key regional role. For example, among

Australia's 41 public and private universities, 33 had at least one satellite (or branch) campus in 2015, and across the nation, there were more than 60 satellite campuses with full-time academic and administrative staff (Fraser and Stott, 2015[45]). There is wide variation in the design and operation of satellite campuses, and evidence about their effectiveness and cost of satellite campuses is rare. Depending upon the design of satellite campuses, their cost per student may be higher than main university institutions, due, in part, to high instructional costs that result from low student/instructor ratios (Pennucci and Mayfield, 2003[46]).

Alternatively, policy makers may support the development of university consortia, which likewise rely upon the capacities of existing higher education institutions. Consortia aim to achieve a balance of regionally dispersed and efficient provision though a division of labour in which a group of higher education institutions agrees to deliver study programmes and research capacities aligned to regional needs, each institution in the consortium contributing according to their comparative advantages of cost and/or quality (State University, 2021[47]). In the United States, for example, the League for Innovation in the Community College, a nonprofit membership group, has initiated a national consortium for the sharing of online courses, with a view to permitting member institutions to offer courses to learners that would otherwise be unavailable (McKenzie, 2021[48]). More often consortia are formed for the purpose of pooling research and learning resources, exemplified by FinELib consortium, which centrally acquires electronic materials for Finnish universities, universities of applied sciences, research institutes and public libraries (FinELib, 2021[49]).

Where governments aim to ensure the physical accessibility of instructional opportunities across their territory, the least costly option has been the dissemination of instruction to widely distributed and dedicated learning sites – initially through broadcast technologies, and in contemporary times through online delivery. By relying upon courses developed in existing higher education institutions and delivered to sites without research capacities or career academic staff, local learning centres offer an especially inexpensive form of access to instruction. For example, in Sweden there are more than 200 "municipal learning centres" offering teaching via video conference equipment, allowing students in remote areas and their mentors to meet physically in a learning centre and communicate synchronously with a teacher and other students in an accredited higher education institution (Gynther et al., 2019[50]). Learning centres of this type have typically supported adults who are studying outside of degree courses, rather than learners seeking degree completion.

More recently, OECD higher education systems have aimed to make distributed learning sites effective for a wider range of learners, including those who seek academic credentials, and have created "wrap around" services and extensive supports for learners. In Australia, where rates of higher education attainment among 25-34 year olds in remote and very remote areas are one-half those of major cities, the federal government has established 25 Regional University Centres to improve access to tertiary education for regional and remote students (Jackson, 2019[51]). The Centres permit learners to study tertiary courses locally delivered by distance from any Australian institution, and provide a combination of physical infrastructure (e.g. computing, videoconferencing, study spaces), administrative and academic support services (e.g. writing and research support), and student support services (e.g. study advice, pastoral care) (Australian Government, Departmenf of Education, Skills and Employment, 2020[52]). In France, the government has likewise supported the establishment of a network of "connected campuses" (*Campus Connectés*): centres in predominantly rural municipalities where students can pursue degree programmes through distance education with the support of dedicated tutoring staff. In May 2021, there were 89 Campus Connectés sites throughout France, which allow students access to a wide range of higher education programmes provided online by different universities. (French Ministry of Higher Education, 2020[53]).

In practice, governments in OECD member countries draw upon a range of these options, creating distinctive institutional configurations. Some systems have opted to develop extensive networks of Polytechnic institutions while eschewing satellite campuses (e.g. Portugal). Others, such as Denmark, have relied upon both UAS-type institutions and satellite campuses to serve dispersed learners: in 2016, 14 of the 33 Danish HEIs were multi-site institutions, and ten of Denmark's 11 provinces (containing 99% of its population) were served by at least one HEI (Bonaccorsi and Lepori, 2019[44]).

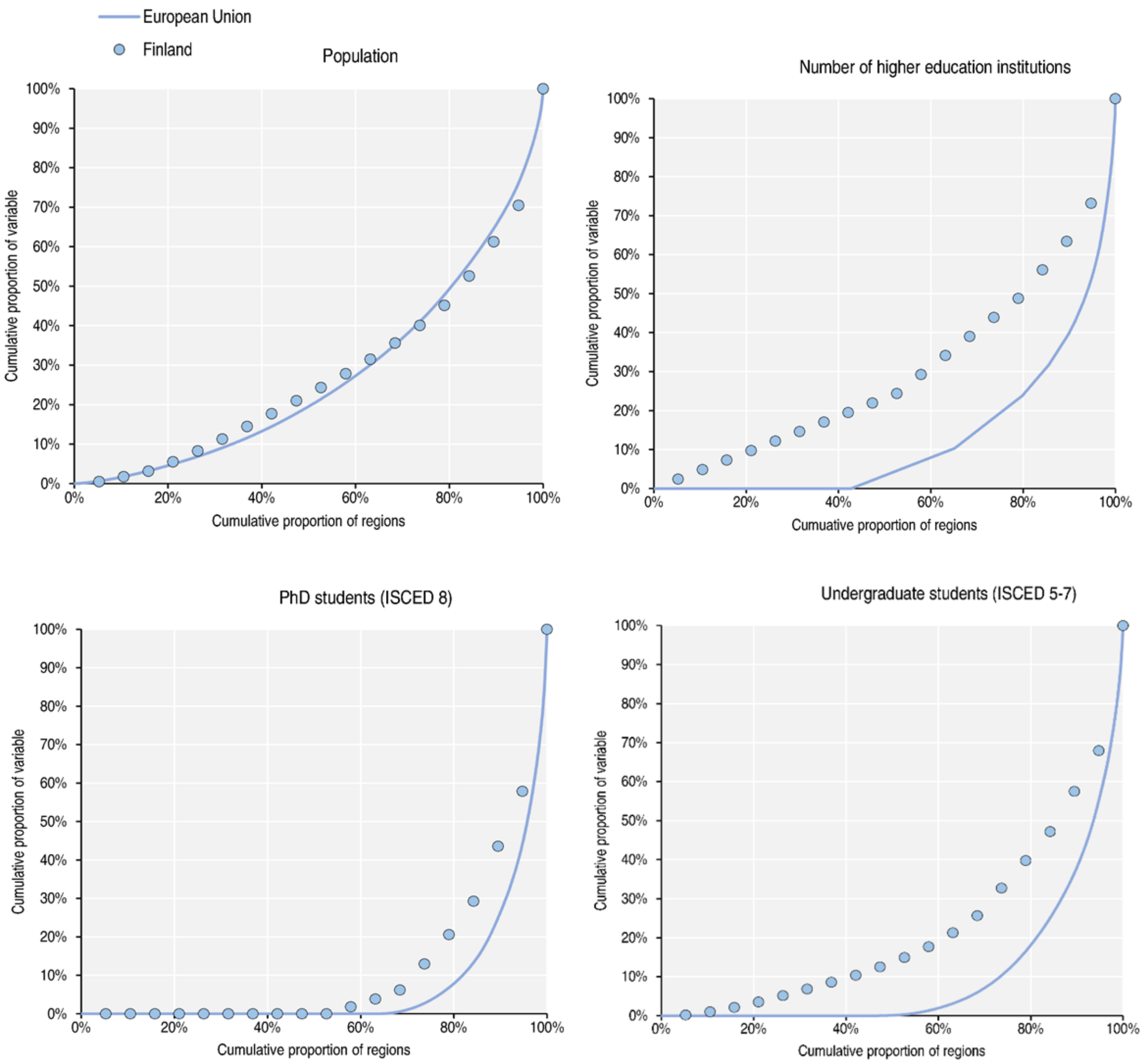
Finland has constructed a regional capacity based upon a diverse network of university and UAS institutions, the wide use of satellite campuses, and university consortia, and through this has achieved a relatively even geographic distribution of higher education. In 2016 all but one of the 19 Finnish counties were home to the main seat of at least one higher education institution (apart from Åland, an autonomous region containing 0.54% of Finland's population, and served by a Swedish-language UAS operating under the jurisdiction of the Åland regional government (ETER, 2016[36])).

Consequently, Finland has a distinctively high share of higher education institutions that are multi-site institutions and host satellite campuses. Among European nations participating in ETER, 22% of universities and 29% of universities of applied science had a satellite campus in another NUTS 3 region (Nomenclature of Territorial Units for Statistics) (Bonaccorsi and Lepori, 2019[44]). In 2016, 11 of the 35 Finnish higher education institutions (31%) covered by the ETER database were multi-site institutions, a share higher than the average of European nations participating in ETER. Finland also supports six university centres, each of which is located outside the nation's principal metropolitan areas. Each centre hosts the participation of three to five higher education institutions, and has a dual remit of supporting companies and communities through regionally focused research and development activities, and university studies targeted to adults and working learners. Together these consortia are run by research universities as their contractual partners, and operate at a scale comparable to small specialist university institutions in some OECD higher education systems. For example, in 2012 the Lahti Consortium had an operating budget of EUR 12 million, 160 staff, and 4 000 students, of whom 450 studied in degree programmes (University Consortia in Finland, 2013[54]).

Figure 24 displays the spatial distribution of population, undergraduate enrolments, higher education institutions, and PhD students in Finland (represented by dotted lines) and in the European Union (represented by solid lines). Lines with linear slopes (at a 45-degree angle) show an even spatial distribution, while concave lines show uneven distribution.

As the upper left panel in Figure 24 reveals, Finland's population is distributed across its NUTS3 regions much like that of the EU as a whole. However, in the remaining three panels in the Figure – representing the distribution of higher education institutions, of undergraduate enrolments, and doctoral student enrolments -- the dotted line representing Finland is less concave than the solid line representing the EU as a whole, i.e. Finland's higher education institutional capacities are more evenly distributed across its NUTS3 regions than is typical for the EU. If one were to take into account the spatial distribution of the Finland's higher education through its University Centres and satellite campuses, the concavity of the figure would further diminish, showing a still more even distribution of undergraduate learners and instructional sites across the Finland.

Figure 24. Regional distribution of population, HEIs, and students in Finland by NUTS 3 regions



Note: Reference year for population data (EU and Finland) is 2016. Based on the distribution of students and HEIs in 2016, excluding satellite campuses. Only higher education institutions offering at least ISCED6 education are included into the chart.
Source: Author's analysis of ETER 2016 data, adapted from Bonaccorsi, A. and B. Lepori (2019), *ETER Analytical Report: The Regional Structure of European Higher Education*, European Tertiary Education Register, https://www.eter-project.com/uploads/analytical-reports/ETER_AnalyticalReport_04_final.pdf, accessed on 13 November 2021.

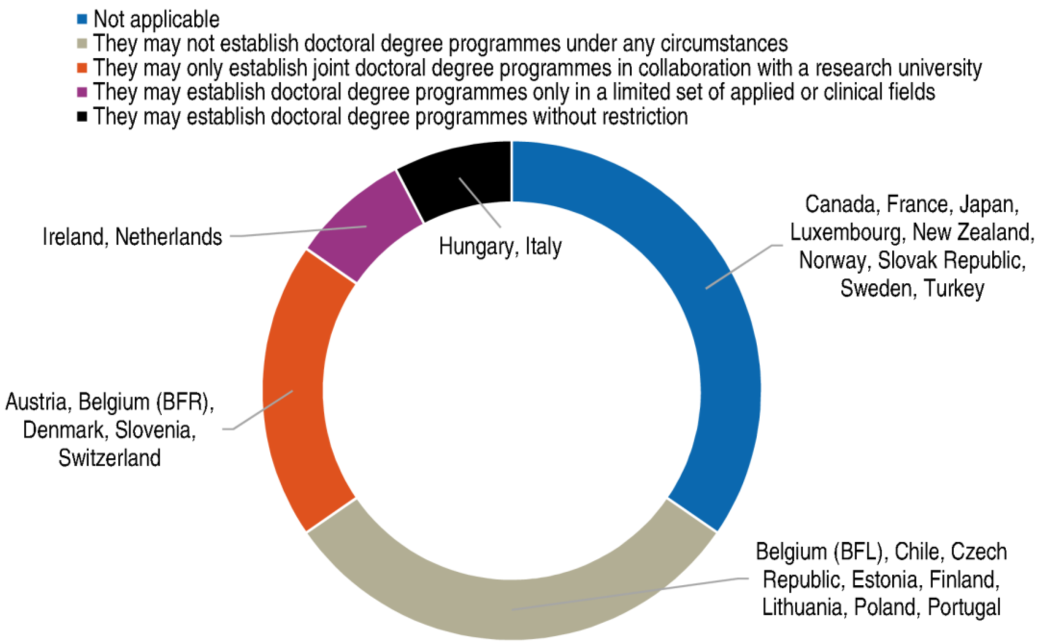
Reshaping the higher education landscape: Changing institutional roles and relationships

The landscapes of higher education systems are dynamic, and the subject of ongoing debate and policy initiatives that aim to better align them to national needs. One of the more dynamic aspects of higher education landscapes in recent decades has been the role of professional education institutions – universities of applied science – and their relationship to research-led universities.

Systems of higher education across the OECD, especially binary systems of higher education, establish in law, budgets, and other policy instruments the roles that universities of applied science may take on, and map out how they are to collaborate (or not) with research universities. Among the most important boundaries set for UAS institutions are the postgraduate programmes they may establish, and the ways in which they are authorised to collaborate with research universities.

Only two of twenty jurisdictions that responded to the 2020 OECD Higher Education Policy Survey (HEPS) had policies concerning postgraduate education in UAS institutions permitting them to establish doctoral degree programmes without restriction, while seven other jurisdictions imposed some limitation, and eight full prohibition (Figure 25). Finland is one of the eight jurisdictions in which doctoral study is not authorised in UAS institutions. In just over half of jurisdictions responding to the HEPS survey (15 out of 27), UAS (or similar) institutions are permitted to engage in the development of joint study programmes with research universities. Most jurisdictions (19 out of 27) permit collaboration across institutional sectors in the offer of individual courses (Table 3). While Finland's UAS and university institutions are jointly permitted to offer individual courses, they may not collaborate in the offer of joint study programmes or degrees. In total, Finland's legal framework authorises collaboration between UAS and university institutions in five of the six areas surveyed, as compared to an average of four areas across all responding jurisdictions, indicating it possesses a somewhat wider and more flexible legal basis for collaboration among sectors than other higher education systems.

Figure 25. Policies on the establishment of doctoral degree programmes in professionally-oriented higher education institutions



Note: Total jurisdictions responding = 26.
Source: (Golden, Troy and Weko, 2021[3]), How are higher education systems in OECD countries resourced?: Evidence from an OECD Policy Survey, https://doi.org/10.1787/0ac1fbad-en.

Table 3. Collaborative arrangements permitted between higher education institutions, within and across institutional sectors

Number of responding jurisdictions allowing each type of arrangement – Collaborative arrangements allowed in Finland are highlighted in bold blue

	Which types of collaborative arrangements are allowed between institutions in the same institutional sector or in different institutional sectors?	
	Within the same institutional sector	Across different institutional sectors
Jointly offering individual courses	**20**	**19**
Jointly offering entire programmes of study (e.g. dual degrees)	**21**	15
Jointly employing academic staff	**16**	**15**
Sharing physical facilities such as laboratories, libraries or computing facilities	**21**	**21**
Jointly procuring equipment	**20**	**18**
Jointly procuring services (e.g. for educational support or ancillary services)	**18**	**17**

Note: Total responding jurisdictions: 27. Different sectors defined as research and applied science universities or their equivalents.
Source: (Golden, Troy and Weko, 2021[3]), How are higher education systems in OECD countries resourced?: Evidence from an OECD Policy Survey, https://doi.org/10.1787/0ac1fbad-en.

Notwithstanding legal constraints governing the missions and scope of collaboration available to UAS institutions, in recent decades universities of applied science have been the focus of continuous debate, policy revision, and growing expectations on the part of firms and society. Across most OECD member countries with binary higher education systems, policy making has centred on efforts to (1) ensure that the network of UAS institutions provides equitable opportunities to learners dispersed across the jurisdiction's territory; (2) augment the capacity of UAS institutions to engage in productive collaboration with firms and the public sector; (3) diversify the range of qualifications they provide; and (4) widen the range of qualifications offered and the range of learners served.

Reshaping the capacity of the UAS sector to support innovation

Countries across the OECD keenly feel the need to accelerate innovation in commercial life and raise the productivity of their economies. They aim to do this through the knowledge-based modernisation of traditional industries, permitting businesses to move up the global value chain, and by cultivating the new sectors with a high potential for growth. Moreover, they typically aim to have the benefits of increased innovation and productivity widely shared – by all of society, and across the range of national territory. While political leaders have viewed traditional research universities as key drivers of knowledge-led innovation, UAS (and UAS-like) institutions have two comparative advantages vis-à-vis research universities. First, UAS institutions typically have closer links to small or micro-enterprises than do research-led universities; and second, by virtue of their greater number and wider territorial dispersion, UAS institutions are critical in broadly supporting innovation and sharing its benefits. Thus, policy makers across many jurisdictions have chosen to establish or expand public support for a UAS role in applied research, and the close engagement of UAS institutions in support of local firms and community partners. This support has taken many forms, but has centred on three principal initiatives:

1. Establishing **budget support for UAS-based research**, either through base funding to institutions, or through project-based funding set aside for UAS institutions;
2. **Upgrading the research capacity of academic staff in UAS (or comparable) institutions** either by boosting the level of research training held by staff, or by revising academic employment contracts to recognise and support applied research/knowledge mobilisation activities;

3. **Authorising the establishment of postgraduate study programmes and degree-awarding authority at UAS institutions.**

Budget support for UAS-based research: Recent, modest, and expanding

Budget support for knowledge creation and mobilisation on the part of universities of applied science (or comparable "new" universities elsewhere in the OECD) is recent and modest viewed in comparison to university research funding; however, its scope is expanding.

Funding for research within recurrent core budgets continues to comprise a very small share of total UAS funding – or, none at all. In some systems, such grants represent a small proportion of total institutional revenue, ranging from 2.6% of total revenue in universities of applied science in the Netherlands to 3% in university colleges in the Flemish Community. In contrast, Finland provides a substantial institutional allocation for research to universities of applied science, with the research component of the core grant representing over 15% of total institutional income in the sector (OECD, 2021[55]). However, in all systems, non-university institutions also generate research income from a variety of sources outside of core operating budgets, including targeted spending outside of core budgets, public enterprise and innovation agencies, and businesses.

The following sections provide an overview of the history and level of funding support for research in professional higher education institutions across the Netherlands, Flanders, Portugal and Ireland.

Netherlands

As a comparatively mature UAS system situated with a knowledge-intensive economy, the UAS sector of the Netherlands was perhaps the first in Europe to gain formal legal recognition of its mission in knowledge creation and application, in 1986 (European Commission, 2016[56]). However, it was not until 2001 that the UAS sector gained public investment in support of this mission. By 2017, the 37 UAS institutions of the Netherlands had a funding base of EUR 171 million in support of research. This was derived from three sources: 63% from first-stream funding by the Ministry of Education, Culture and Science (core recurrent grants to institutions), with the remaining 37% derived from second and third-stream funding, including funding by a dedicated fund for practice-oriented research at universities of applied sciences administered by the Dutch Research Council (EUR 18 million) (NWO, 2020[57]) and the European Union (EUR 5 million).

The Flemish Community of Belgium

In neighbouring Flanders, a modest 3% of Flemish University College revenues in 2019 were provided by grants in support of practice-oriented research, which the following year (2020) totalled EUR 30 million. Additional financial support (EUR 9.6 million in 2020) for knowledge transfer projects and training for researchers and research equipment has been provided to university colleges, principally through the TETRA (TEchnology TRAnsfer) programme. Additionally, the Flanders Agency for Innovation and Entrepreneurship (VLAIO) ran a call for proposals in 2020 with a total budget of EUR 2 million to fund infrastructure investments in university colleges to support research into digitalisation, the circular economy and sustainability and energy and climate. With an enrolment of 127 263 university college students in 2020, research and innovation spending per university college student was an estimated EUR 328 per student.

Portugal

Portugal's public polytechnic institutions were formally organised as a sector in 1979. In the decades that followed, academic staff in polytechnic institutions were eligible to participate in Portuguese Foundation for Science and Technology (FCT) research funding for individual research projects, R&D Centres (research teams), and Associated Laboratories (a consortium of R&D Centres), though they infrequently did so. It was not until 2009 that national higher education policies systematically focused on developing the capacity of polytechnics as practice-oriented and applied research institutions, boosting both their human and financial resources. In 2016, the Programme for the Modernisation and Valorisation of the Polytechnic Sector, initiated targeted funding of practice-based R&D activities in consortia of polytechnics. The Programme invested over EUR 65 million in its polytechnic sector, including EUR 48 million to fund newly established short-cycle professional technical courses (CTeSP), and additional EUR 17.5 million to support practice-based R&D activities among consortia of polytechnics (FCT, 2016[58]).

In addition to this dedicated funding stream, Portugal's polytechnic institutions now participate in a limited role within the nation's broader public funding instruments research and innovation. Portugal's Agency for National Innovation (ANI) has established a network of Collaborative Laboratories (CoLABS) creating consortia of higher education institutions, research centres, and firms in support of knowledge-led innovation in fields ranging from sustainable animal production to ocean technologies and products. By 2019, 26 CoLAB consortia had been established, five of which contained Polytechnic partners (CoLAB, 2019[59]). Portugal's National Science and Technology Foundation (FCT) designated 11 polytechnic institutions as principal hosts for 22 of the nation's 312 R&D centres (7%) in the 2020-23 R&D centre funding cycle (FCT, 2018[60]). FCT assessments of research centres range across six levels (from exceptional to poor), and have awarded polytechnic institutions scores distributed among three lowest scoring levels (good, fair, and poor) (Rodrigues Brás, 2021[61]). These assessments indicate the level of research polytechnic centres, judged against conventional scientific peer review procedures, remains modest.

Ireland

Ireland's Institutes of Technology (IoT) – and their successor Technological Universities (TU) – differ from many European Universities of Applied Science in that they deliver instruction from post-secondary non-tertiary level through to doctoral training. However, they are importantly similar in their focus and mission, as HEIs that are strongly oriented towards professionally focused study programmes, close engagement with SMEs, and carry an important regional remit. Like UAS institutions, they are teaching-led, and in past they have had very limited funding with which to carry out a research and innovation mission.

In 2007, IoT institutions had research expenditures of EUR 638 per full-time equivalent student, which rose to EUR 860 (nominal) in 2017, marking a measureable but modest rise (OECD, forthcoming[62]). In 2015/16, the total research income of Ireland's higher education system was approximately €500 million, of which EUR 70 million (14%) was obtained by the IoT sector (TU Research Network, 2019[63]). Following the adoption of the Technological Universities Act in 2018, the government made a 2020 commitment to raising the level of resource committed to TU research capacity, and the TU Transformation Fund has provided EUR 30 million per annum for a three-year period (2020-22) to support "research-informed teaching and learning, as well as supporting enterprise and regional development" (O'Shea, 2020[64]).

While IoT/TU institutions continue to obtain a modest share (12.2%) of their research funding from the Science Foundation Ireland, they have benefitted – like Portugal's polytechnic institutions and Flemish university colleges – from funding provided by their national innovation agency, Enterprise Ireland which provided 43% of Irish public funding for R&D for the IoT/TU sector in 2019. Total direct higher education R&D spending (HERD) for the TU/IoT sector in 2018-19 reached EUR 94.74 million, with the bulk of this spending (72.4%) concentrated at four of the sector's 13 institutions (THEA, n.d.[65]).

Finland's University of Applied Science sector in comparative perspective

In Finland, as in other binary systems, UAS sector research and innovation funding claims only a very small share of funding from traditional research funding bodies. Only EUR 4.9 million (1%) of the Academy of Finland's 2020 research funding (EUR 509 million) was awarded to UAS institutions (Academy of Finland, 2020[66]), and this funding stream account for only a small share of the sector's EUR 204.5 million in research and innovation funding (2019) (Research.fi, 2019[67]). Finland spent EUR 1 745 on research funding per UAS full-time equivalent (FTE) student in 2019. This was roughly twice the per-student research funding of Ireland's Institute of Technology sector, and as much as five to six times the per-student research and innovation funding of the Flemish University College sector – but only about a seventh of the per-student research funding of Finland's research university system.

Research and innovation capacity: The human dimension

Spending in support of research and innovation undertaken by UAS or non-traditional universities has been a steadily growing focus of policy for the past ten to twenty years. However, the evolution of this sector – and thus the "binary divide" in higher education systems – is equally the result of public policies that aim to transform the human resources of Universities of Applied Science (or counterpart institutions). There is necessarily a close link between spending and human resources in higher education institutions. Approximately two-thirds of higher education spending is allocated to personnel costs, and increased spending is required to raise the number of academic staff, the level of qualification of academic personnel, as well as their opportunities to conduct research and innovation activities (through reductions in class sizes or teaching contact hours).

In many OECD jurisdictions, UAS institutions have evolved from an earlier status as institutions that may have delivered instruction at both the ISCED 3 and 4 levels, and often fell within the jurisdiction of school education legislation. Staff employed in predecessor institutions were typically identified as "teachers"; held employment contracts in which they were solely obligated to teach, rather than carry out research responsibilities; and were not required to have earned a doctoral degree or, in some countries, any postgraduate education.

A key step in the development of UAS institutions or "new universities" with the capacity to carry out research and application missions has been to transform the skill profile of their workforce by establishing a requirement of postgraduate study for those who are starting their careers or investing in postgraduate degree attainment of existing staff. Alternatively, some higher education systems have focused on revising the career structure or the workload models contained in employment contracts in UAS-type institutions, with a view to creating wider opportunities and stronger incentives for research and external engagement. Some countries have pursued these "upskilling" initiatives on a comprehensive basis (or plan to do so), with a view to reshaping the entire workforce and its basis of employment, while others have adopted a targeted approach, investing in developing a cadre of staff within each HEI that can lead a transformation of its capacities.

Targeted vs. across-the-board transformation in human resources

The Netherlands has chosen a targeted approach to the transformation of its human resources for research and innovation in UAS institutions. In parallel with the recognition of UAS institutions as research institutes with an applied research remit and the introduction of targeted research funding, the Netherlands government agreed in 2001 to establish new positions known as "lectorates" (sometimes described as UAS professorships). In 2015 the government had agreed a target of 580 FTE positions by 2024, and in 2020, 663 (headcount) lectorates had been established (Vereniging Hogescholen, 2020[68]).

As research leaders who frequently hold continuing appointments in firm or research universities or institutes, lectors are to work in concert with UAS lecturers, and together form research groups that engage in "valorisation", i.e. translate applied research into new products, services, processes and economic activity. While lectorates comprised only about 4-5% of all UAS teaching staff in 2016, their impact, combined with research funding initiatives for the UAS system, has led to a "structural and indispensable position [for UAS institutions] in Dutch higher education.

Contemporary UAS cannot be imagined without practice-oriented research, indicated for instance by a growing number of collaborations between lectors and their university counterparts as well as the trend for young PhD-holders to start a career at a UAS." (European Commission, 2016[56]).

In contrast to the targeted human resource policy choice of the Netherlands, other systems in Europe, including Portugal's polytechnic system and Ireland's IoT/TU system, have aimed to change comprehensively the training profile of their staff. In 2009, Portuguese legislation governing careers established a requirement for most polytechnic teachers to hold a PhD (while permitting non-PhD holders with relevant professional experience to teach, conditional on passing an examination organised by a consortium of polytechnic institutions) (OECD, 2019[40]). The impact on the profile of polytechnic staff was swift, with the percent of public polytechnic instructors holding a PhD rising from 11.1% in 2005-06 to 41.1% in 2015-16 (OECD, 2019[40]), and to 44% in 2018 (Rodrigues Brás, 2021[61]). Differences in the nomenclature of academic ranks in the university and polytechnic sectors continue (only the former contains the title of full professor), and notional instructional workloads are somewhat higher in the polytechnic sector. However, careers in the two sectors have converged, and the research profile of the highest-performing staff in some parts of the polytechnic sector surpasses that in some research universities.

In choosing to create a Technological University system through the transformation of its Institutes of Technology, Ireland has likewise put the human resources of its institutions at the centre of its policy focus. The Technological Universities Act sets criteria for IoT institutions to merge and be designated a Technological University (TU). The law stipulates that on designation as a TU, among those teaching on a full-time basis, 35% teaching at Irish Qualification Framework Level 8 and above (Honours Bachelor's degree, Master's degree, and PhD) must have a doctoral degree and a further 10% must have doctoral-equivalent qualifications, and this figure must rise to 65% in the ten years post designation. Among those teaching in technological university doctoral programmes, the Act requires that all will hold doctoral degrees (or a terminal degree, and "sufficient practical experience gained in the practice of a profession to which the programme relates, such that the degree and experience together can reasonably be viewed by the advisory panel as equivalent to a doctoral degree.") (ISB, 2018[69]).

Public authorities in Ireland are also engaged in an ongoing review of the career structure and workload of IoT/TU instructors, with the aim of creating an academic career structure consistent with European university norms, and a workload policy that permits academic staff in TU institutions greater scope for research and external engagement.

While Finland appears to have made a larger investment in research and innovation activities in its UAS sector than some other higher education systems, there is little evidence of a commensurate investment in human resources. The instructional workforce of Finland's UAS sector – measured in "person work years" – has a smaller proportion of its instructors trained to the doctoral level than higher education systems that have made upgrading the degree profiles of its workforce a key priority (Portugal), or authorised the award of doctoral degrees by UAS institutions (Ireland) (Collins, Crowley and Quinlan, 2020[70]). The Austrian UAS sector, which was established in 1994/5 and is roughly contemporaneous with Finland's UAS sector, had just over one-quarter (25.5%) of its instructors holding PhD degrees in 2020.

While most instructors in Finland's UAS institutions are trained to the postgraduate level, with 79% of instruction performed by those with a master's or doctoral degree, relatively few hold a doctoral degree: only 15% of "person work years" are performed by those trained to this level (Vipunen, 2021[1]). Among the UAS workforce who are identified in national reporting as performing "research and innovation" roles, a still smaller share (40%) hold postgraduate qualifications (with 11.6% holding a doctoral degree).

Doctoral training: From prohibition to careful steering

In binary systems (and other types of differentiated higher education systems), authorisation to establish doctoral study programmes has been perhaps the most prominent feature distinguishing research and applied science universities. In some binary systems, like those of Netherlands and the Flemish Community of Belgium, doctoral study programmes continue to be exclusive to research universities. In Ireland's differentiated higher education system, Institute of Technology/Technological University institutions have long possessed authority to award doctoral degrees, though in practice many have had a modest level of responsibility for doctoral training, enrolling 1 301 out of 8 038 (14%) full-time doctoral students in Ireland's entire higher education system in 2017/2018 (Higher Education Authority, 2018[71]).

Within binary or legally differentiated higher education systems, public authorities have gradually permitted higher education institutions with a professional education rather than research mission to undertake a controlled and regulated offer of doctoral training. The means by which a limited scope of doctoral training has been permitted varies depending upon the national policy infrastructure.

In Portugal, for example, following the adoption of Decree-Law No. 65/2018, Portugal authorised polytechnic institutions to award doctoral degrees, albeit on the condition that they provide "appropriate high-quality research environments" (Diário da República Eletrónico, 2018[72]). In particular, the decree-law links doctoral programme authorisation to the assessment of research centres carried out by their national research funding body for higher education, the FCT. The decree-law requires doctoral programmes be offered by polytechnic research groups based in research centres having achieved ratings of "very good."

In other OECD higher education systems, ranging from Austria to the United States, higher education institutions that are not research-led may award doctoral degrees, but jointly with research universities, or only in a narrow range of "applied doctorate" fields that are set out in law. For example, the California State University (CSU) is comprised of a network of 23 institutions mandated to provide wide access to undergraduate education and regional engagement. CSU institutions may establish a joint doctoral programme with a (research-led) University of California institution after an approval process that includes the governing boards of both higher education systems, and authorisation of external accreditation bodies. In 2017, there were 23 academic PhD programmes offered in collaboration between California State Universities and University of California institutions. In 2005 and 2010, the state legislature additionally authorised California State University institutions to offer a focused set of professional practice degrees, principally doctor of nursing practice (DNP), doctor of physical therapy (DPT) and doctor of education (Ed.D) programmes. Jointly awarded PhD degrees and PhD professional practice degrees awarded by California State University institutions together comprise 6% of all doctoral degrees awarded in the state's public university systems (Williams, 2017[73]).

In conclusion, Finland has chosen – like higher education systems throughout Europe and the OECD – to re-shape the landscape of its higher education system by augmenting the research and innovation capacities of its professional higher education institutions. It has done so with a focus on expanding research and innovation funding, while choosing to rely upon an instructional workforce that less often holds a doctoral degree than in peer nations, and refraining from awarding its applied science institutions a role in doctoral training and degree-awarding authority. While it has largely maintained the formal legal structure of the nation's binary system, there is wide scope within existing law to permit innovative collaboration across the binary line. How this opportunity has been used is examined below.

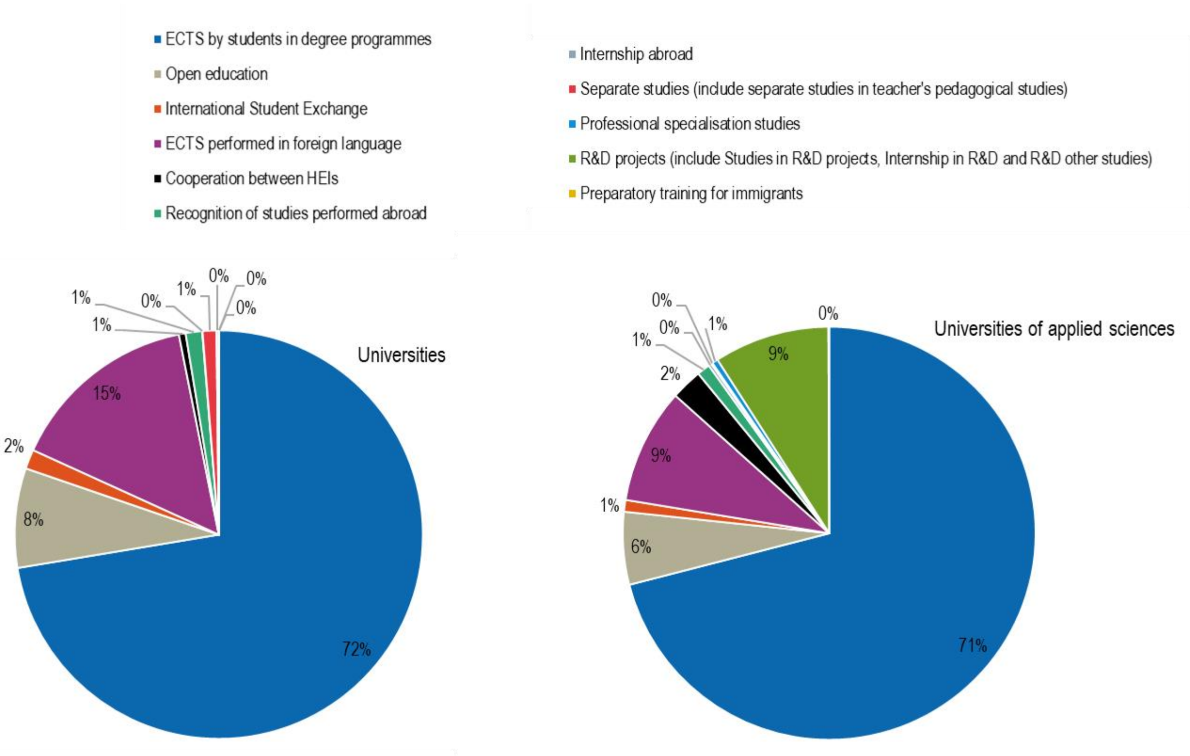
Collaboration within a binary landscape

While Finland has chosen to sustain many features of an institutional landscape that was established in the mid-1990s, its institutions operate within a system that authorises a comparatively wide scope of collaboration within and between its two sectors of higher education. With a growing pace, policy makers have pressed for collaboration among higher education institutions, which has begun slowly to re-shape the nation's institutional landscape. For example, Finland – in contrast to many other binary systems (e.g. Netherlands) – permits university institutions to own and manage universities of applied science.

In 2019, following a process that had commenced in 2014, Tampere University became the majority stockholder of TAMK, the Tampere AMK (UAS) institution.

More importantly, legal changes adopted in 2018 made it possible for higher education students enrolled in degree programmes to include courses from other Finnish higher education institutions in their degree programme (University of Jyväskylä, 2018[74]). While the aim of giving more freedom of choice to students and of improving co-operation in teaching, transfer and mobility between programmes and institutions was innovative, the number of study credits (ECTS) actually gained through co-operation between institutions represents a very small share of the total number of ECTS awarded in the higher education system. This is especially the case for the university sector: ECTS gained through study among learners obtaining instruction outside their home institution comprised 2.45% of credits (ECTS) at UAS institutions, and only 0.54% at universities (Figure 26). While quite modest, these figures mark an increase over earlier years, when cooperative ECTS rose from 0.43% in 2018 to 0.54% in 2020 in universities, and from 1.2% (2018) to 2.5% (2020) of ECTS awarded by UAS institutions.

Figure 26. ECTS at Finnish universities and universities of applied sciences (2020)



Source: (Vipunen, 2021[1]), Education Statistics Finland, https://vipunen.fi/en-gb (accessed on 2 September 2021).

The small proportion of ECTS gained through cooperative study among institutions has been attributed to the absence of clear information, difficult administrative procedures, and uncertainty regarding how credits are to be managed. However, funding and performance agreements reached between the Ministry and higher education institutions for the period 2021-24 allocate a measure of funding (1%) to ECTS based on co-operation, as this monitoring plan for the Oulu AMK funding agreement, below, indicates.

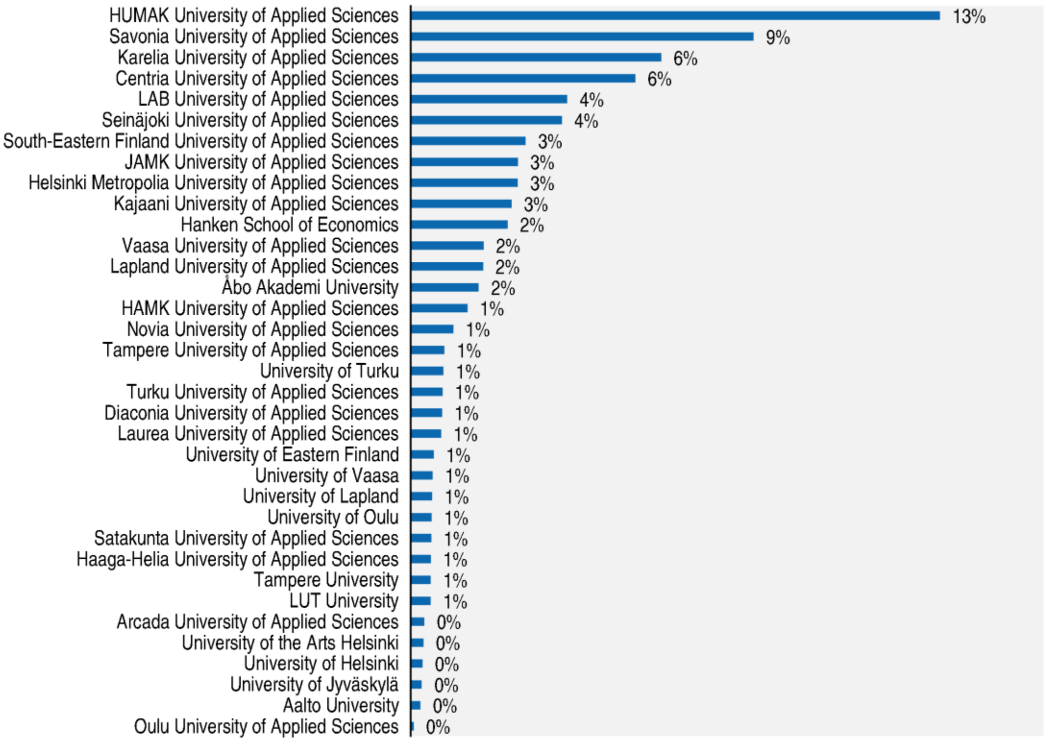
Deeper co-operation with the University of Oulu: 2021-24 Budget and Performance Agreement between Ministry of Education and Culture and Oulu AMK

Oamk (Oulu AMK) will deepen its co-operation with the University of Oulu so that the two closely cooperating schools will offer students flexible learning opportunities across different sectors, make their education offering more diverse, and enhance the efficiency of their RDI activities and use of all their resources. To achieve this objective, it must build clear study paths as part of curriculum planning, create joint study offering and develop service processes that meet the needs of the entire consortium.

Monitoring indicators: Credits from the joint study offering between Oamk and the University of Oulu:

- 2019: 1 745 credits (Oamk students) and 834 credits (UO students)
- 2022: 5 000 credits (Oamk students) and 4 000 credits (UO students)
- 2024: 10 000 credits (Oamk students) and 10 000 credits (UO students)

Figure 27. Share of ECTS gained through co-operation between institutions by Finnish higher education institutions (2020)



Source: (Vipunen, 2021[11]), Education Statistics Finland, https://vipunen.fi/en-gb (accessed on 2 September 2021).

Conclusion: Sufficient evolution of the landscape towards diversification?

Finland is a country with a small population, providing it with limited opportunities for creating a highly differentiated higher education landscape, such as that found in systems on the scale of, for example, Japan, Mexico, or the United States. Its system of public ownership and financing limits potential harmful inequities in resourcing – while setting limits on the diversity of its higher education landscape. A legal basis of binary higher education additionally sets limits on the diversity of its learning ecosystem.

Within these constraints, Finnish policy makers have a history of re-examining and modifying the landscape of their higher education system, fitting it to evolving national priorities. Seeking to boost the nation's international research profile, they have closely linked substantial funding to the consolidation and profiling their university institutions. Conscious of the need to expand the research and innovation (R&I) capabilities across the nation's entire territory, and for firms of all sizes, there has been an ongoing investment in augmenting those capacities. There has been a willingness to experiment with novel institutional arrangements linking the management of university and UAS institutions, and efforts to open the binary line to the sharing of instruction across sectors.

Nonetheless, there remains further scope to provide Finnish learners with a more diversified learning ecosystem, and further opportunities for policy makers to support the continuing redistribution of responsibilities among its higher education institutions. The opportunities available to them centre on decisions about governance, quality assurance, and funding. The last of these will be examined in a forthcoming OECD thematic policy brief for Finland, also part of the Resourcing Higher Education series. Here we focus on the first two conditions.

Governance and the institutional landscape

Finland has made large policy and financial commitments to the restructuring of its institutional landscape. However, it might benefit from a continuous and standing capacity and advisory body that has "system landscape" as its responsibility. This is the case in Ireland, where the Board of the Higher Education Authority has had, since 2012, a standing Committee on System Development and Performance Management (SDPM). The SDPM Committee has a mandate to assist the Board "in overseeing the creation and development of a co-ordinated system of higher education institutions, each with clear, diversified missions and with a strong focus on outcomes and funding for performance" (Higher Education Authority, 2021[75]). The SDPM Committee brings together representatives from industry, from abroad, and Irish higher education leaders with a wide range of responsibilities, spanning lifelong learning, teaching and learning, and research and innovation.

In the Finnish governing context, a new body would be need to be established, with a similar mandate and composition – drawn from the wider society, from across the higher education system, and with international members who themselves have engaged in landscape reform. The committee's mission could be to consolidate a vision of system architecture, to review and propose changes to the policy instruments used to steer the system's landscape, and to review initiatives that are likely to impact to shape of the higher education landscape. Examples of the latter might include a review of proposed changes to the role of University Centres within the institutional landscape, or an examination the Tampere experiment in creating a hybrid "university and AMK" institution, with a view to its assessing its suitability as a model for institutional collaboration for wider use within the higher education system.

Quality assurance and institutional responsibilities

In a number of OECD higher education systems, governments have chosen to use regulatory procedures within a ministry, such as a new programme approval authority, or used the evaluative capacities of a quality assurance body to implement a policy aiming to shape the nation's learning landscape. Governments typically refrain from using institutional or programmatic accreditation reviews undertaken by external quality assurance bodies as a basis for taking decisions about institutional funding or missions, out of concern that linking them to quality assurance will distort the integrity of the quality assurance review process and impair its capacity to play a trusted and corrective role. Exceptionally, England has linked a small pricing differential that higher education institutions may charge to its Teaching Excellence Framework, but as a stimulus to improved teaching, rather than for changes to the system landscape.

However, governments have set policy-based criteria about institutional responsibilities with a view to shaping the higher education landscape, and then called upon quality assurance bodies to act as expert reviewers for the purpose of implementing government policy criteria.

This has been the case with respect to authorising postgraduate – and especially doctoral – study programmes. In Ireland, for example, traditional universities (and the Dublin Institute of Technology) have doctoral degree-awarding authority. Until passage of the Technology Universities Act (in 2018), Institutes of Technology (IoT), similar in important ways to AMK institutions, did not have an automatic legal basis to award doctoral degrees. Rather, the Quality and Qualifications Ireland was tasked with reviewing the applications from IoT institutions, applying criteria laid out by government in policy, and advising the award of doctoral awarding authority to IoT departments or schools (Sursock et al., 2021[76]). In Portugal, the Ministry for Higher Education and Research has issued a decree linking the capacity of polytechnics to offer doctoral studies to the assessment of research centres by the national science funding body (FCT). Polytechnic institutions are authorised to award doctoral degrees on the condition that they provide "appropriate high-quality research environments" (Diário da República Eletrónico, 2018[72]), specifically indicated by a research centre assessment rating of "very good" (level four) in its six-level evaluation scheme.

If Finland were to set a policy-based guideline on institutional responsibility, it could use the evaluation capabilities of Finnish Higher Education Evaluation Council (FINHEEC), the Academy of Finland, or a newly established body to undertake a process of evaluation to offer advice on the distribution of responsibilities among its higher education institutions. If the process were to evaluate the capacity of institutions to award professional or academic doctoral awards, the institutional capabilities and expertise of the Academy of Finland might best suited to the task.

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Resourcing Higher Education Project

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