Annual Report 2023

Content

About the Annual Report

The annual report of KTH Royal Institute of Technology is governed by the Ordinance on annual accounts and budget documentation (2000:605). The annual report shall provide a true and fair view of the organisation's results.

The contents of the annual report comprise not only information that KTH is required to report by law and government assignments, but also other information that KTH has chosen to present about its activities in general, and happenings in 2023 in particular.

The annual report contains reporting and monitoring of a large number of parameters that follow from the reporting requirements in the Higher Education Act, the public service agreement for KTH and universities and higher education institutions for the 2023 financial year, and the Ordinance on Annual Accounts and Budget Documentation. According to the Swedish National Financial Management Authority's regulations for Chapter 3(1) of the Ordinance on Annual Accounts and Budget Documentation, the public authority must also produce performance indicators and report according to these. KTH's performance indicators are few in number and constitute a small part of the overall reporting of activities.

Reporting requirements resulting from public service agreements or other decisions are presented on a light blue background.

The performance indicators that KTH has chosen to highlight in the 2023 annual report are presented on a grey background.

Quantitative data on volume and development are mainly obtained from KTH's operations system. Quantitative data in the text is often expressed as x (y), where x is the data for 2023 and y is the corresponding data for 2022.

Qualitative data on activities and developments are mainly obtained from decisions, minutes and information on the KTH website.

The annual report has been compiled within KTH's University Administration.

Abbreviations are used in KTH's annual report. The most frequently used abbreviations are listed below.

Commonly used abbreviations

KTH internal

ABE	School of Architecture and the Built Environment
CBH	School of Engineering Sciences in Chemistry, Biotechnology and Health
EECS	School of Electrical Engineering and Computer Science
ITM	School of Industrial Engineering and Management
SCI	School of Engineering Sciences
JML	Gender equality, diversity and equal opportunities
SciLifeLab	Science for Life Laboratory

Authorities, organisations and miscellaneous

EIT	European Institute of Innovation and Technology
hp	Higher education credits
HPR	Annual performance equivalent
HST	Full time equivalent student
KAW	Knut and Alice Wallenberg Foundation
KIC	Knowledge and Innovation Communities (within the EIT)
RISE	RISE Research Institutes of Sweden AB
SSF	Swedish Foundation for Strategic Research
SUHF	Association of Swedish Higher Education Institutions
THS	Student Union at the Royal Institute of Technology
UHR	Swedish Council for Higher Education
UKÄ	Swedish Higher Education Authority
Unite!	A university alliance which is part of the EU's European Universities initiative
Vinnova	Swedish Governmental Agency for Innovation Systems

This is KTH

The Royal Institute of Technology (KTH) has grown since 1827 into an international technical university. As Sweden's biggest university for technical education and research, KTH brings together students, researchers and teachers from all over the world. KTH's activities are based on a strong tradition of pursuing science and innovation, with emphasis on contributing to the sustainable development of society.

With a growing network of industrial partners, societal stakeholders and other universities, KTH is driving the development of how some of the greatest challenges of our age, such as climate change, food and water security, future energy supply and improved quality of life, should be addressed in a sustainable manner.

KTH's research and education covers the natural sciences and all branches of technology, as well as architecture, industrial economics, urban planning, history and philosophy. KTH's innovative climate is driving new perspectives and solutions and promoting excellence in education and research.

With outstanding academic expertise and educational innovation, KTH educates a wide range of engineers, architects, teachers and researchers who will be able to lead the transition to a sustainable and gender-equal world. The university has around 14,000 full time equivalent students and 1,500 doctoral students recruited both from Sweden and globally. KTH's programmes promote critical thinking and collaboration skills as a way of teaching students how to deal with complex challenges in a changing world. Students are given the opportunity to tackle real problems through partnerships with industry and society. KTH's interactive and experimental learning environments develop practical professional skills and innovative thinking.

KTH conducts both basic and applied research. KTH's research structures enable interdisciplinary and external collaborations that contribute to new knowledge and new technologies, products and services. KTH is committed to academic freedom and maintaining open, transparent research.

KTH in Figures 2023

Educational activities

- Master of Architecture and 17 Master of Science in Engineering programmes
- Master of Science in Engineering combined with Degree in Education
- 9 Bachelor of Science in Engineering programmes
- Subject Teacher Education in Technology
- Supplementary teacher education
- Master's programmes (one and two year)
- Bachelor's programmes and two-year university diplomas
- Further education, technical preparatory year/semester
- Third cycle education

- 13,955 full time students, of which 34 per cent are women and 66 per cent men (including fee-paying students)
- 11,496 annual performance equivalents (including fee-paying students)
- 1,532 active research students (at least 50 per cent activity), of which 35 per cent are women and 65 per cent men

- 2,790 new students on the first year of Master of Science in Engineering, Master of Architecture and Bachelor of Science in Engineering programmes of which 30 per cent are women and 70 per cent men
- 763 admitted to the Technical Preparatory Year/Semester, of which 31 percent are women and 69 per cent men
- 2,425 new students on one and two-year Master's programmes, 36 per cent women and 64 per cent men, of whom
  - 1051 students previously on Master of Science in Engineering studies programmes and
  - 1,374 students studying on a one or two-year Master's programme at KTH
- 287 newly-admitted students to doctoral studies programmes, of which 34 per cent are women and 66 per cent men

- 70 Master of Architecture, 60 per cent to women and 40 per cent to men
- 1,134 Master of Science in Engineering degrees, 39 per cent to women and 61 per cent to men
- 309 Bachelor of Science in Engineering degrees, 24 per cent to women and 76 per cent to men
- 1,525 Master/Master of Science (one and two-year) degrees, 37 per cent to women and 63 per cent to men
- 242 PhDs, 33 per cent to women and 67 per cent to men
- 52 licentiate degrees, 38 per cent to women and 62 per cent to men

Floor Space

281 800 m²

Research

Primary responsibility for five national strategic research areas

- E-science
- IT and mobile communication
- Transport research
- Production engineering
- Molecular biosciences (Science for Life Laboratory)
- Partner in another five areas

Lead partner in five programme areas within the European Institute of Innovation and Technology (EIT)

- EIT InnoEnergy
- EIT Digital
- EIT Health
- EIT Raw Materials
- EIT Urban Mobility

External financing, income from grants, 1,901 MSEK (excluding transfers)

- MSEK 381 the Swedish Research Council
- MSEK 271 EU
- MSEK 252 Wallenberg Foundations
- MSEK 184 Vinnova
- MSEK 142 Swedish Energy Agency
- MSEK 266 other government agencies
- MSEK 405 other external financing including private funds

Financial situation

MSEK 6,367 in total turnover (of which MSEK 883 transfers)
Government grants (excluding transfers)

- MSEK 1,280 First and second level (undergraduate) educational programmes
- MSEK 1,461 Research and third education cycle

Employees

5,286 employees, the equivalent of 4,006 full time positions, of which 1,696 are women and 2,310 men of which

- 339 professors, 75 women and 264 men (including visiting and adjunct professors)
- 276 associate professors, 78 women and 198 men

Organisation

KTH's courses, study programmes and research are organised into five schools. Each school has departments, divisions and research centres. The schools report directly to the President. Each school is led by a head of school.

The University Board oversees all KTH affairs and is responsible for ensuring fulfilment of its assignments. The Board consists of a total of 15 members: the President, 8 external members, 3 teacher members and 3 student members.

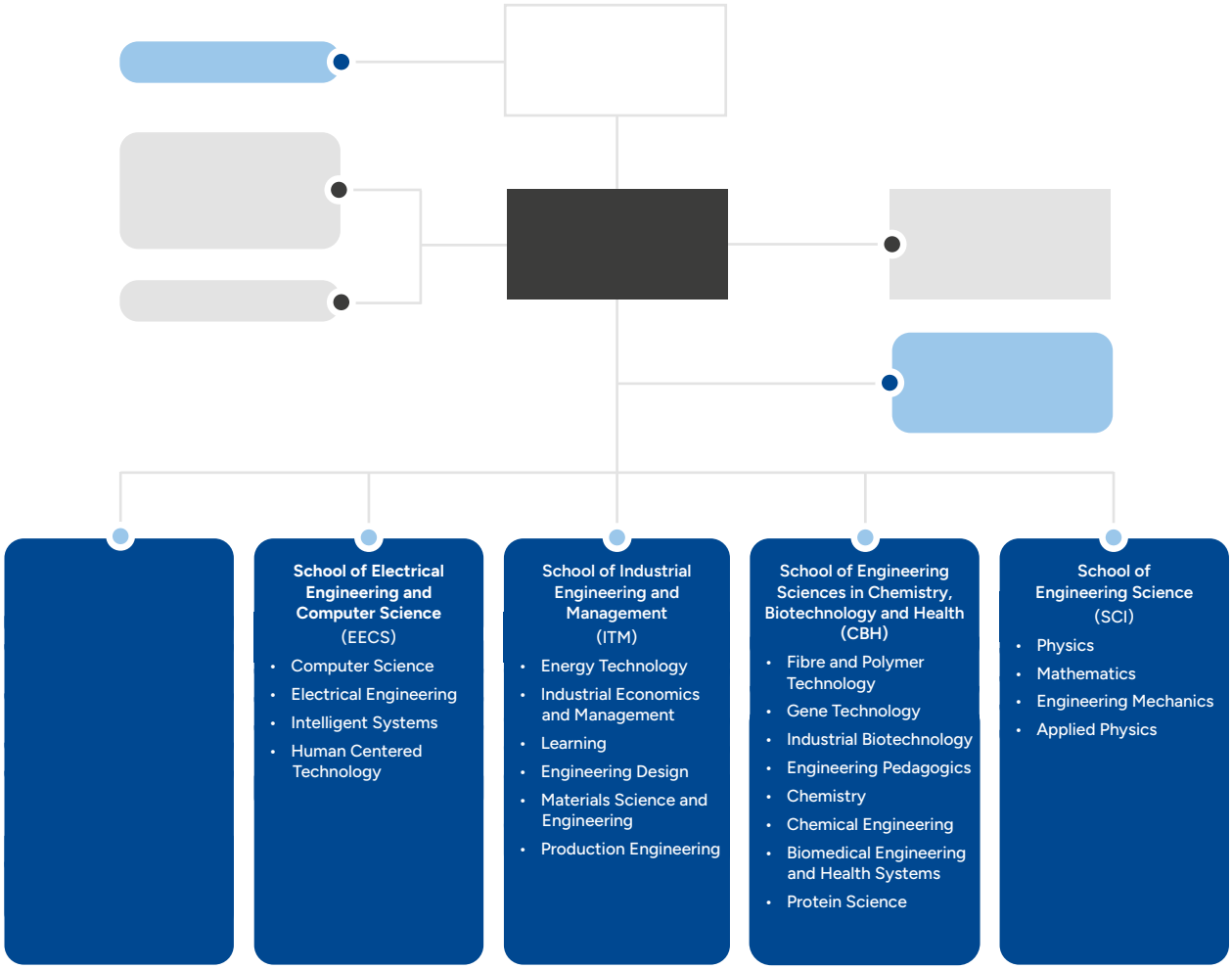
The President is the head of the public authority and bears overall responsibility for KTH's activities under the University Board. The Deputy President is the President's deputy. The University Director is the highest head of administration at the University. In 2023, there were Vice Presidents for research, education, digitalisation, international relations and sustainable development.

The President has a management group that deals with issues related to the strategic management and governance of the university. The management group also advises the President on matters relating to the planning, monitoring and development of the University's activities. The management group is made up of the President, the Deputy President, heads of school, the University Director, the Deputy University Director and the chair of the Student Union at the Royal Institute of Technology. In addition to these functions, the President's extended management group includes Vice Presidents, Deans of Faculty and Vice-Deans of Faculty.

The Faculty Council, chaired by the Dean of Faculty, is a university-wide body for KTH's quality development and faculty support work. The Faculty Council bears overall responsibility for issues related to quality in courses and study programme, research and collaboration. The majority of members are academically qualified and are elected by teachers and researchers.

The University Board decided in 2023 to establish a faculty board in each school by 2024. Elections were held in autumn 2023 for members of both the Faculty Council and faculty boards.

The organisation described above was in place in 2023. The organisational chart below shows the structure in 2023.



President's Foreword

The year was characterised by powerful development initiatives with a view to further strengthening KTH in the fields of research, education and innovation in the global knowledge arena. At the same time, intensive efforts have been made in 2023 to address increased costs due to inflation and global uncertainty.

Extensive work was carried out at many different levels at KTH in order to identify solutions for balancing the budget: this included an expanded range of programmes, more research applications, more continuing professional development, energy streamlining and more efficient use of KTH premises.

This was also the starting point for the campus review conducted during the year, which resulted in a decision by the University Board in November to relocate the activities at the Södertälje and Kista campuses to our campuses at Valhallavägen and Flemingsberg. Cutting costs was one motive, but it was every bit as important to reinforce the quality of the organisation and build a KTH for the students and researchers of tomorrow.

A new vision and new overall goals to work towards over the next five years, as well as a new faculty structure and a new model for preparation of research initiatives are a few other examples of crucial decisions building a robust KTH going forward. Other examples include a new resource allocation model for first-cycle education and the continued development of a common and coordinated operational support system.

KTH cherishes its collaborations both nationally and internationally. In 2023, KTH worked together with Stockholm University and the Karolinska Institute to launch a new two-year Master's programme in biostatistics and data science as part of the Stockholm Trio, as well as the Sustainability Forum conference. KTH's strategic partnerships with prominent universities and industrial partners have also been reinforced during the year.

CoARA is another organisation that KTH is now part of together with a number of European stakeholders, and this aims to improve the quality, efficiency and impact of research. The European alliance Unite!, which includes nine technical universities, has produced a handbook that aims to help researchers and others to make the transition to open science. Other exciting developments during the year included the government decision to establish Cybercampus Sweden, hosted by KTH, from 2024 onwards in order to reinforce Sweden's cybersecurity through research, education and innovation. KTH has improved its position in a number of major lists such as QS and THE, and is one of the world's top 100 universities. KTH also improved its ranking in the QS Sustainability list in 2023.

In other words, the KTH vision, "We are taking the lead for sustainable development of society", interacts well with KTH's journey towards the future.

Anders Söderholm,
KTH President

Students' Statement

Community, development and joy

The Student Union at the Royal Institute of Technology, THS, has been working for all students at KTH since 1902. The purpose of THS is to monitor and contribute to the development of education and study conditions at KTH. In practice, this means that we want our students to get the best education they can get, while having the most enjoyable and fulfilling time of their lives. As the representatives of our students, we are proud to say that we work with and not against KTH for this. We can move forward together by being an active partner that highlights the needs of students while also familiarising ourselves with KTH's opportunities and limitations!

Key issues of the year

The vice-like grip of the pandemic on the world has loosened, and we have now been able to turn our attention to other major issues. The campus review, which means that activities at the KTH campuses in Södertälje and Kista will largely be relocated, is the major issue that has characterised the year. We have been involved in all relevant forums as part of the campus review throughout the year, and we have fought hard to ensure that students have a voice in the matter. In connection with this and as part of the Future Education at KTH change programme, we have also worked together with KTH to map and gain an overview of the educational facilities and study environments we have today and how these can be developed going forward to ensure that we maintain and reinforce the quality of our education.

Additionally, KTH decided in the spring to introduce anonymous examination, where applicable, following strong lobbying from the student union. We feel that anonymous examination is a given if we are to guarantee equal treatment of students; and we are very pleased with this step, which we believe can improve students' chances of a fair education going forward.

As regards third-cycle education, the doctoral students' section has conducted an extensive survey of the situations facing doctoral students. The results of this survey clearly show which areas for improvement we should focus on in the future, while also laying a solid foundation for advocacy work in years to come.

Orientation for newly admitted students

For many students, their orientation provides the first and biggest memory of their time with us. This is a high-intensity period where all of KTH is overflowing with colourful, energetic students who are doing everything in their power to make our new students feel as welcome as possible in the big world of university. Together, our students spend hundreds of thousands of hours volunteering to help with orientation initiatives, and to give our new students a welcome to KTH that they will never forget. We were able to adopt a preventive approach with KTH to develop the orientation and make it a safer and fun experience for both recipients and new entrants.

Students organise events

Besides orientation and welcoming new students, there are of course a variety of activities ongoing among students. 2023 saw the arranging of the first Quarnevalen Festival since the pandemic, where students had the opportunity to build their floats and process through the streets of Stockholm in front of several hundred thousand people. Our students also had the opportunity to get in touch with the business community during THS Armada, the student union's labour market fair attended by almost 150 companies. In 2023, THS also hosted this year's Students' Nobel NightCap, the after-party following the Nobel Dinner.

Niklas Carlbaum,
Student Union President, THS

Education

Education at first and second-cycle level

Courses and programmes offered

KTH's education focuses mainly on the technical and scientific fields, with programmes leading to Master of Science in Engineering, Bachelor of Science in Engineering and Master of Architecture degrees. KTH also offers teacher training and a large number of in-service training courses

The courses and programmes offered at KTH mainly involve technology programmes. Priorities in courses and programmes offered are mainly defined between programmes and programme types. Over the last few years, both the government's special lifelong learning initiative and KTH's internal goal, to increase lifelong learning, have meant that priorities have been defined so that more freestanding courses can be offered. Just under four per cent of KTH's total education volume was provided in the form of freestanding courses in 2023.

Increased internationalisation is one of KTH's goals. The courses and programmes offered are influenced by internationalisation efforts such as education partnerships, exchange agreements and international partnerships. See the sections entitled *Partnerships* and *International mobility*.

Education at KTH includes digital elements and learning activities to a great extent, but courses in programmes are rarely run entirely remotely. Distance learning courses mostly relate to lifelong learning. There were just over 2,000 courses in total at KTH in 2023. KTH offered a total of 87 (78) distance learning courses that generated 357 (264) full time equivalent students, of whom 296 (118) were full time equivalent students in continuing professional development with direct government funding. This represented 77 per cent of the total number of full time equivalent students in continuing professional development with direct government funding. In terms of KTH's total number of full time equivalent students, three per cent of students were studying on distance learning courses. Among students funded by fees, fewer than one per cent of full time equivalent students were studying on distance learning courses. See the section entitled *Digitalisation*.

Labour market representatives participate in strategic councils and programme councils at KTH schools and have the opportunity to express their views. There are also external members on the Faculty Council and the University Board. These groups regularly discuss what programmes are needed in society and are in demand by companies, public authorities and organisations, for example. More specific discussions are also held within the strategic partnerships that KTH has with a number of companies, public authorities and organisations. See the section entitled Collaboration. There is a significant shortage of teachers in some natural sciences and technology subjects. KTH is working to meet the great need for trained teachers by conducting bridging teacher training programmes together with Stockholm University. Additionally, KTH and Stockholm University have been commissioned to run KPU for people with third-cycle qualifications. In addition, KTH has been tasked since 2022 with running a shorter bridging teacher training programme worth 60 credits. KTH already offers the Master of Science in Engineering and Education programme, which leads to a Master of Arts/Science in Education and a Master of Science in Engineering. See the section entitled *Teacher training programmes*.

A number of measures have been implemented during the year to increase the education volume, in line with the President's decision to balance the budget. See the section entitled *Systematic quality enhancement activities*. Overall, KTH had more beginners in 2023 than in 2022, and the number of full time equivalent students has increased: see *Figures 2* and *7*.

Qualifying programmes

The technical foundation year is a one-year qualifying programme aimed at students who have not achieved full eligibility for KTH study programmes during their upper secondary school studies. The qualifying courses provide bridging education at upper secondary level in mathematics, physics and chemistry. It is also possible to apply just for the second semester of the foundation year, which is particularly suitable for students who have followed the upper secondary school technology programme. In 2023, KTH offered qualifying programmes at KTH Campus, KTH Flemingsberg and KTH Södertälje. Students had the opportunity to start qualifying courses in both the autumn and spring semesters. Successful completion of KTH's foundation year or foundation semester allows students to apply for specially reserved places on any of KTH's Master of Science in Engineering, Bachelor of Science in Engineering or Master of Arts/Science in Education programmes.

KTH's qualifying programme was developed and expanded between 2020 and 2022 as a result of a targeted and temporary government initiative during this period. In 2020–2022, the number of beginners, full time equivalent students and annual performance equivalents was significantly higher than in previous years. In these years, KTH offered two new qualifying programmes, partly as distance learning courses. In 2022 and 2023, KTH had a higher number of beginners and full time equivalent students on the qualifying programmes than before the government's initiative. See *Figures 2* and *7* and previous annual reports.

Lifelong learning and transition

KTH is conducting a development initiative to increase and develop lifelong learning over the next few years according to the needs of the labour market. KTH is endeavouring to make this an integral part of the courses and study programmes offered at KTH. Lifelong learning refers to both contract education and continuing professional development with direct government funding and other, more informal learning activities such as open lectures. Priorities and assessments are based mainly on student demand, labour market needs and KTH's existing competence, but are also based on the government's initiatives such as the lifelong learning initiative, redeployment study funding and bridging teacher training.

KTH has continued to develop continuing professional development with direct government funding during the year, in the form of courses and concepts that are scalable, effective and attractive to companies, public authorities and other organisations. This format provides temporal and spatial flexibility and accessibility and is more clearly targeted at professionals. The experience is providing new opportunities for contract education and regular programme education as well. KTH is continuing to maintain close dialogue with companies and organisations in this work. KTH is endeavouring to develop more far-reaching and operation-integrated cooperations on education and lifelong learning, particularly together with strategic partners.

In 2023, KTH continued its efforts to facilitate the development of lifelong learning through aspects such as common working methods and support functions. Each school has a lifelong learning officer who works as part of a network.

Continuing professional development with direct government funding

As part of KTH's direct government funding for education at first and second-cycle level, SEK 11,150,000 has been earmarked for a special lifelong learning initiative where the courses and programmes offered aim to focus on education promoting climate transition. See the section entitled *Financial statements*.

Courses as part of the special lifelong learning initiative generated 384 (215) full time equivalent students in 2023 of students with direct government funding. There were also about two full time equivalent students who were funded by fees. In total, KTH offered 224 (205) in-service training courses generating full time equivalent students in 2023. The number of unique individuals who have taken at least one in-service training course is continuing to grow steadily. There were 4,445 unique participants in 2023, of whom 25 were students funded by fees, compared to 2,521 in 2022 and 1,451 in 2021.This corresponds to an increase of about 75 per cent in the number of participants between the years, both between 2021 and 2022 and between 2022 and 2023. This increase in the number of courses, full time equivalent students and unique participants reflects KTH's internal goal to increase and develop lifelong learning.

The number of individuals participating was significantly higher for distance learning courses offered, rather than for courses offered on campus: 3,869 distance learning participants and 810 on-campus participants. Courses with a scope of four credits or fewer and that were delivered as distance learning courses had the highest number of participants. These courses had a total of 2,479 participants in 2023.

By gender, the number of unique participants was 2,295 women and 2,150 men. The increase in the number of individuals compared to 2022 is greater among women than among men, with 96 per cent more women and 59 per cent more men. However, the number of full time equivalent students was slightly higher among men than among women: 211 full time equivalent students were male, 173 full time equivalent students were female. This indicates that men are more likely than women to enrol in more than one course, and that men are more likely to enrol in the longer courses worth more than four credits. However, the proportion of women on the freestanding courses was higher than the proportion of women among KTH's total number of full time equivalent students.

Contract education

KTH is continuing to train staff from companies in fields such as radio systems technology, AI and neural networks, Lean and industrial production, sustainable transport systems, property valuation and analysis, and cyberdefence and information security. In 2023, KTH's credit-bearing courses in contract education generated 45 (41) full time equivalent students and 57 (37) annual performance equivalents.

Cooperation with Scania on lifelong learning continued during the year with the joint steering committee for learning as a platform. A more informal and operation-specific learning process for selected staff at Scania was trialled and evaluated in 2022. In 2023, work began on creating a larger consortium together with KTH's strategic partners regarding the further development of this new format.

Open online courses and study programmes

KTH received SEK 150,000 for government assignment U2022/02291 with the aim of making it possible in 2023 to maintain parts of the existing range of courses offered as part of open online courses and study programmes that can support society's climate transition. Within the framework of this assignment, KTH has offered five courses related to climate transition as open online courses and study programmes in 2023. See the section entitled *Environment and sustainable development*. Uppsala University is to report on the joint initiative in its annual report for 2023.

KTH's sustainable production initiative in Södertälje, Sweden

Since 2016, KTH has been implementing an initiative promoting education and research in Södertälje in collaboration with the municipality of Södertälje, Scania and AstraZeneca. One of the goals of the programme is to strengthen the competitiveness of Swedish industry through cutting-edge education and research. The education initiative includes three degree programmes: Industrial Technology and Sustainability, Industrial Technology and Production Maintenance, and Sustainable Production Development. KTH Södertälje already had a Bachelor of Mechanical Engineering programme and a technical foundation year programme. Despite extensive investment, KTH Södertälje has not achieved the anticipated volume increases within the programme and for some time has been witnessing a decline in the number of applicants per place for these programmes. Student completion rates are also generally lower in Södertälje compared to KTH's other campuses. The University Board decided in November 2023 that operations in Södertälje are to be relocated to KTH Campus and KTH Flemingsberg with a view to strengthening KTH's future development and finances. The relocation will be completed by 2027. See the section entitled *Premises*.

A new Degree of Bachelor of Science in Engineering programme was developed in 2023, with the first admissions taking place in the autumn semester of 2024. This was partly in light of KTH's regular review of the Bachelor of Science in Engineering programmes in 2021. This programme aims to replace the two existing Bachelor of Science in Engineering programmes at KTH Södertälje, which specialise in both industrial engineering and production maintenance and mechanical engineering. There were no admissions to these two programmes in the autumn semester of 2023. The new programme will be delivered at KTH Campus, but with applied elements in Södertälje.

In the 2023 autumn semester, there were 45 (37) beginners on the Master of Science in Industrial Engineering and Sustainability programme, and 10 (15) on the two-year Master of Science in Sustainable Production Development programme. The Master of Science in Engineering and two-year Master's programmes are closely linked to industry in Södertälje. Following the above-mentioned move to Stockholm, the close links with industry in Södertälje will be maintained in other ways; by means of applied elements of the programme, for instance. The Master of Arts/Science in Secondary Education, specialising in technology, has been on hold since 2022. The qualifying programme at KTH Södertälje had 154 (185) beginners. There was a total of 209 (318) beginners in education at KTH Södertälje in 2023.

See the section entitled *Research* for information on the sustainable production initiative within research in Södertälje.

Teacher training programmes

Master of Science in Engineering and Education

The Master of Science in Engineering and Education programme leads to both a Master of Science in Engineering and a Degree of Master of Arts/Science in Upper Secondary Education in mathematics and physics, chemistry or technology. Students studying engineering choose one of two specialisations: computer science or energy and environment. KTH has the right to award both Master of Arts in Education and Master of Science in Engineering degrees. In the spring semester of 2023, some of the compulsory courses in educational sciences were purchased from Stockholm University. All courses were run by KTH during the autumn semester, but teachers from Stockholm University were involved in several cases.

The programme had 99 (115) first choice applicants in the 2023 autumn semester. 71 (62) students started the programme in 2023; with 41 per cent women and 59 per cent men. 33 (34) students graduated from the programme in 2023; 67 per cent women and 33 per cent men.

All students on the Master of Science in Engineering and Education programme have mathematics as one of their teaching subjects. In Year 1, students acquire a basic knowledge of the four subject areas included in the various programme specialisations. These subjects are physics, chemistry and technology specialising in computing or technology specialising in energy and environment. Prior to Year 2, students choose one of the four possible subject specialisations and thus their teaching subject in addition to mathematics.

When choosing a specialisation, students are informed that there is a high demand for teachers in all these subjects. Chemistry and technology are the subjects where the teacher shortage is at its most acute. It has been difficult since 2017 to find enough placements at upper secondary schools as a consequence of the teacher shortage.

Master of Arts/Science in Education

The Master of Arts/Science in Education specialising in technology comprises 270 credits and started in its current form in the autumn semester of 2019. Since the autumn of 2022, KTH has chosen not to allow any admissions to the Master of Arts/Science in Secondary Education specialising in technology. Few people have applied for the Master of Arts/Science in Education, and the implementation of the 60-credit temporary supplementary teacher education requires the same resources as the Master of Arts/Science in Education.

This programme leads to two different degrees: a Degree of Master of Arts/Science in Secondary Education in technology and mathematics, and a Degree of Bachelor of Science in Engineering. The programme comprises a total of four and a half years of full-time studies, including two summer semesters. Two students have completed school placements in 2023.

Practice-based research and practice schools

KTH is already involved in the government initiative ULF (Education, Learning, Research), which will run until 2024 and is expected to become a permanent activity in 2025. Compensatory teaching for learning and research, K-ULF, is a project run at KTH in collaboration with school authorities as part of ULF. This activity is part of the government's initiative to develop long-term collaboration between universities and higher education institutions and accountable authorities in the school system with regard to practice-based research. In 2023, KTH has expanded its network for practice-based research in cooperation with accountable authorities.

KTH has signed partnership agreements for practice-based research with the municipality of Värmdö, the municipality of Lidingö, the City of Stockholm, the municipality of Nynäshamn, the municipality of Haninge and NTI-gymnasiet. Representatives from the accountable authorities participate in the K-ULF steering committee, where access to school placements and forecasts of the availability of school placements are a recurring theme.

In 2023, KTH has continued its work on developing what are known as practice schools. KTH has identified senior and upper secondary schools through the existing network of schools in K-ULF and initiated processes to ensure that a number of school placements per semester are guaranteed by the accountable authorities with which KTH has signed agreements as described above. There is a great deal of interest, but the availability of sufficient qualified supervisors in schools still presents a challenge. This is why KTH has continued to develop courses for future supervisors in 2022 and 2023, and an initial course offering has been conducted. The two courses *Supervising students on school placements*, 3 credits, and *Supervising students on school placements*, advanced course, 4.5 credits, jointly provide the 7.5 credits demanded of a supervisor at a practice school.

In 2023, students have participated in placement programmes at Fredrika Bremergymnasiet in the municipality of Haninge, Thorildsplans gymnasium in the City of Stockholm, Stockholm Science and Innovation School in the City of Stockholm and Gustavsbergs gymnasium in the municipality of Värmdö. Högsätra skola school in the municipality of Lidingö had one student in 2022, but none in 2023. NTI-gymnasiet and the municipality of Nynäshamn are expected to become active recipients of students on school placements in 2024.

KTH is continuing to work with challenges linked to the need for increased coordination between school placements that take place via practice schools and those that take place via what is known as the VFU portal. This portal is governed by a collaboration agreement between universities and municipalities in Greater Stockholm.

KTH forecasts that an increased number of students in 2024 will be able to participate in activities for students on school placements with our partner and practice schools thanks to the cooperation initiated with NTI-gymnasiet. The forecast remains uncertain, as the process of signing agreements with practice schools is still ongoing.

Bridging teacher training programmes

The Bridging Teacher Training degree programme (KPU) comprises 90 credits and leads to a Degree of Master of Arts/Science in Secondary Education in one or more of the subjects physics, chemistry, mathematics or technology. Admission to the programme requires sufficient academic qualifications in one or more of these subjects. This programme is delivered in part as a distance learning course, with some face-to-face meetings at KTH. Some parts of the programme are implemented in partnership with Stockholm University. The programme also continues during the summer, which means that any student who starts in June can be a qualified teacher by the end of August the following year. One third of the programme involves placement, which means that students are on site at a school where they participate in day-to-day work under supervision. Placements for KPU students have become more difficult to arrange in the right subjects and at the right levels. This is particularly true in the subjects of mathematics and technology in secondary schools. Some students do their placements in Years 7 to 9 even though they will be qualified to teach their subjects in upper secondary schools.

There were 63 (137) first choice applicants for the programme in 2023. 9 (35) students started the programme at the beginning of the summer semester, of whom 56 per cent were women and 44 per cent men. The number of applicants has fallen sharply since previous years, probably due in no small part to competition from the pilot programme with a shorter bridging teacher training programme, 60 credits, which will be taking place from 2022 onwards. 6 (23) students were still active in December 2023. At least two students have interrupted their studies for financial reasons due to delays in the management of the new redeployment study funding.

In 2023, 24 (16) students, of whom 29 per cent were women and 71 per cent men, have graduated from the bridging teacher training programme.

New short bridging teacher training programme

The government has commissioned KTH to organise a pilot project involving bridging teacher training programmes leading to a Bachelor or Master of Arts/Science in Education. The purpose of this pilot project is to increase the number of qualified and licensed teachers in schools by enabling a broader target group of people with a previous university degree to study to become teachers through a bridging teacher training programme.

The bridging teacher training degree programme for secondary education comprises 60 credits and leads to a Degree of Master of Arts/Science in Secondary Education in technology and mathematics. Admission to the programme requires a completed professional or general first-cycle qualification. This programme is delivered in part as a distance learning course, with some face-to-face meetings at KTH. One third of the programme consists of school placements.

There were 52 (39) first choice applicants for the programme in 2023. 19 (8) students started the programme at the beginning of the autumn semester, of whom 42 per cent were women and 58 per cent men. Around 15 students were still active at the end of 2023. The partial distance form of study should make it possible for students who do not live in Stockholm to study the programme, but like last year, no students from outside Stockholm have started the programme this year. Otherwise, there is a spread of age and previous professional experience among the students.

Of the students who started the programme in 2022, two students – 100 per cent of whom are women – have graduated in 2023.

Bridging teacher training programmes for individuals with third-cycle qualifications

KTH and Stockholm University offer bridging teacher training programmes for the Degree of Master of Arts/Science in Education in mathematics, natural sciences and technology for people with third-cycle qualifications. Students admitted to the programme have the opportunity to receive a special doctoral grant during their studies. The number of places on the programme is determined by the allocation of doctoral grants, which is limited to an average of 70 students per year on a national basis. The programme comprises 90 credits and is run at an accelerated pace over twelve months. This programme is delivered as a partial distance learning course, with about 20 teaching days in Stockholm during the year. The students come from all over the country.

The assignment is limited in time. It was initiated in 2016 and was initially intended to continue until mid-2021. An extension was decided in spring 2021, with an annual programme starting in January for the years 2022 to 2026.

The programme had 35 (14) beginners in 2023, of whom 43 per cent were women and 57 per cent men. Of these, 22 were still active at the end of the year. 10 (4) students graduated from the programme in 2023; 50 per cent women and 50 per cent men. The lower number in 2022 is due to the fact that no students were admitted in 2021.

The number of applicants has been low in all three locations where the programme is arranged. It has not been possible to fill the places.

Recruitment of students to first-cycle programmes

KTH's ambition is for technical education at KTH to be emphasised as a natural choice for young people who want to contribute to the sustainable development of society. The personal encounter between KTH representatives and prospective students is prioritised in the recruitment process. This is mainly done through what are known as student ambassadors, about 45 in number, who are KTH's representatives in meetings with upper secondary school students. They represent most KTH study programmes and campuses. The student ambassadors reflect the diversity of KTH in terms of gender, geographical origin, ethnicity and social background. All student ambassadors undergo training that includes communicating with young people, presentation techniques, student recruitment messages, target group knowledge and one-on-one coaching.

In 2023, KTH's student ambassadors conducted 110 student recruitment meetings with upper secondary school classes by visiting upper secondary schools, and when upper secondary school students made study visits to KTH. The number of student recruitment meetings was low in 2020 and 2021 due to pandemic restrictions on how people could gather. Instead, various digital activities took place in order to reach out to prospective students. 109 student recruitment meetings were held in 2019, which indicates that these meetings are now at the same level as before the pandemic.

In the autumn of 2023, KTH had a stand at two major education fairs: Kunskap & Framtid in Gothenburg and the SACO Student Fair in Stockholm. The purpose of participating in these fairs is partly to attract interest in studying at KTH and

partly to inspire visitors to the stand to search even after the fair for more information about courses and study programmes offered at KTH. KTH held seminars at both fairs that were attended by about 100 people at Kunskap & Framtid and about 400 people at the SACO Student Fair.

The KTH website and face-to-face meetings, such as visits to upper secondary schools, are the most important channels for reaching the target group before they choose their programmes. Advertising in social media channels and search engine optimisation have taken place in order to increase the target group's awareness of KTH and drive traffic to the KTH website during the application period.

Every year, KTH organises an Open Day to provide information about KTH's programmes in the learning environment. Two different open houses were arranged in 2023; one just for specially invited upper secondary schools with a view to helping to broaden recruitment, and one where members of the general public were welcomed. The open house arranged for specially invited upper secondary schools attracted a total of 113 visitors, while the one for the general public attracted more than 1,800 visitors.

About half of the participants in KTH's various student recruitment activities are women. The gender distribution is also equal in KTH's direct target group, second and third-year upper secondary students studying on natural and technological science programmes. One of KTH's challenges is that some educational environments and programmes have a major imbalance between men and women. Fill the Gap is a KTH initiative aimed at increasing the number of female students in computer engineering, IT, electrical engineering, mechanical engineering, sustainable production, vehicle engineering, technical physics and technical mathematics. A digital campaign was organised in 2023 as part of the initiative.

KTH is working to increase the knowledge and interest of children and young people in technology, natural sciences and mathematics and create an understanding of how these subjects are necessary for the transition to a sustainable society. The House of Science is the hub for this work, and reaches a large number of students every year thanks to its activities. The House of Science is run by KTH and Stockholm University, together with the City of Stockholm as a long-term partner. The House of Science offers supervised activities in biology, physics, chemistry, mathematics and technology at laboratories at Albano and the Bergianska trädgården botanical garden. The activities are often supervised by students from the university who act as role models for the pupils. The House of Science also offers continuing professional development for teachers and weekend and holiday courses for young people, and hosts events such as Teknikåttan and European Researchers' Night. It also focuses on developing activities for broader recruitment, including outreach initiatives and business cooperation, to make it possible to reach out to more young people in vulnerable areas.

Recruitment of students to second-cycle study programmes

KTH recruits students both nationally and internationally. International degree programme students are recruited mainly to KTH's two-year Master's programmes, which are all taught through the medium of English.

Focus during the year

KTH has attracted an increasing number of qualified international applicants to its second-cycle programmes in recent years, making it possible to select the most qualified students. In 2023, the total number of European and non-European students admitted and registered on one and two-year Master's programmes was higher than in previous years.

KTH's target group survey aimed at students admitted to two-year Master's programmes shows that respondents learn about KTH through search engines, ranking lists, web portals, family and friends. The main reasons for applying to KTH are programme content, KTH's ranking, the programme's good reputation and the attractiveness of Stockholm and Sweden. The most common reasons for admitted students not starting their programmes at KTH are that tuition fees are too high and that they have been admitted to another university, usually another prominent technical university in Europe. In recent years, respondents have increasingly indicated that they are satisfied with KTH's communication channels and the answers they have received to their questions before arriving at KTH.

Activities to raise awareness of KTH

Investments have been made in digital advertising for all two-year Master's programmes, and for studies at KTH in general, in order to reach out to prospective international students. This initiative is evaluated and adapted on an ongoing basis in order to reach the right target group in a cost-effective manner. A separate advertising campaign has been targeted at prospective female students in order to achieve a more equal gender balance.

KTH participated in a number of fairs and events during the year in order to establish contact and communicate with prospective students. These digital fairs were organised mainly by the Swedish Institute together with other Swedish universities. Additionally, KTH held its own digital events aimed at partner universities and other partners in a number of countries. During the year, KTH also participated in physical fairs, events and university visits in countries that included China, Indonesia, Thailand, India, South Korea, the US and Mexico. Trips to China took place for the first time since the pandemic and included events coordinated by the Swedish Institute, but also our own university visits and meetings. The new contacts made during fairs and events were followed up with emails for further information and interaction with KTH.

KTH participated in two national cooperation projects together with other universities during the year, where one of the aims is to recruit international talent to Sweden. One project, SIREUS, is being coordinated by the Swedish-American Chamber of Commerce. Swedish courses and study programmes are being marketed to American students as part of the project. KTH participated in a trip as part of the project during the autumn, with visits to universities in New York, Washington State and California. The other project is a collaboration with Swedish universities and the Swedish Embassy in South Korea. This project conducted a number of digital activities during the year in order to meet and support Korean students during the application period.

Social media communication is constantly being developed in terms of both content and choice of channels. During the year, particular emphasis was placed on providing daily insights into KTH's education and student life with the help of student ambassadors via Instagram and Chinese channels, for example.

KTH uses recruitment agents in Indonesia, Thailand and Vietnam as a complement to other initiatives in these countries. All agents work on a commission basis. Of the new students registered in 2023, five (four) were recruited via agents.

KTH has a number of cooperation agreements with scholarship organisations, particularly in Latin America and Indonesia, which makes it easier for student groups in those countries to fund their studies at KTH. It also increases KTH's visibility in the regions. The year saw a positive development in the number of scholarship holders from the Indonesian funding body LPDP, the Indonesia Endowment Fund for Education Agency, which generated scholarships for 14 (4) new students on KTH's two-year Master's programmes.

As in previous years, students from almost all two-year Master's programmes were hired to communicate with prospective students.

Communication with applicants and admitted students

Recruitment work continues until the admitted students being their studies at KTH, and so communicating with them and supporting them until registration is a priority.

KTH offered around twenty webinars for prospective international students throughout the recruitment-cycle. Topics included a presentation of KTH, Master's programmes in various subject areas, frequently asked questions in connection with application, and preparations prior to arrival. In the autumn, an interactive concept was offered where participants could enter smaller digital rooms and communicate directly with academic staff and students from the various two-year Master's programmes. These webinars have been recorded and are available on YouTube and the KTH website.

Activities funded by tuition fees

Activities funded by tuition fees bring in a large number of students with non-European educational backgrounds and help to promote diversity and internationalisation in the education and study environment at KTH. These activities have a major influence the planning of courses and study programmes, which means that discussions on the dimensioning of education, particularly at second-cycle level, have to be ongoing. There are also requirements for customised processing and support regarding fee and grant management and cooperation with relevant public authorities, for example.

KTH has built up a good knowledge of interest in degree programmes among applicants required to pay tuition fees and their opportunities for taking part in them. The high number of applicants to KTH's programmes meant that the total number of students required to pay tuition fees in 2023 was higher than in 2022. This is true of both second-cycle programmes and the first-cycle programme offered by KTH in the international admissions round. See the section entitled *Demand for KTH study programmes*. Fewer people applied for deferral of the start of their studies compared to 2022. A total of 6 (12) admitted students required to pay tuition fees applied to defer the start of their studies for the 2023 autumn semester. However, the number of admitted students requesting a refund of tuition fees was slightly higher than last year, 66 (60).

KTH has made efforts to recruit qualified international students since fees were introduced. As the volume of KTH's activities for students required to pay tuition fees increases, so do student services and orientation activities. See the section entitled *Recruitment of students to second-cycle study programmes*.

As well as the basic arrival and induction services, students who paid tuition fees are offered guaranteed accommodation, free primary healthcare, extended insurance cover and preparatory courses in English and Swedish.

In cooperation with THS, KTH organises arrival and induction services for all international students before the spring and autumn semesters. On special orientation days, students are offered a lift from Arlanda to KTH, where they can take out a contract for accommodation and receive services and information. The introduction in 2023 also included digital school meetings and a digital orientation ceremony. THS also organised social and digital activities.

Activities relating to the education of students required to pay tuition fees showed a result of SEK -2.2 (-6.6) million in 2023. This improvement compared to 2022 is due to more students being admitted to the organisation. At the end of 2023, the organisation had an accumulated surplus of SEK 31 million, compared to SEK 34 million at the end of 2022. See the section entitled *Financial statements*.

The following tuition fee levels applied to programmes starting in the 2022/2023 or 2023/2024 academic year. The fee for first-cycle courses and study programmes and Years 1 to 3 of the Master of Science in Engineering programme and the Master of Arts/Science in Education programme was SEK 122,000 per academic year. The fee was SEK 205,000 per academic year for architecture programmes (Years 1 to 3) and first-cycle courses in architecture. The fee was SEK 260,000 per academic year for Years 4 and 5 and second-cycle study programmes and courses in architecture. The tuition fee for other second-cycle study programmes and courses was SEK 155,000 per academic year. Study programmes delivered in cooperation with other universities may have different fee levels.

KTH's tuition fees have remained unchanged between 2017 and 2023. A decision was made to increase the tuition fee by ten per cent for the 2024/2025 academic year due to increased costs for educational activities.

Cooperation with the Swedish Migration Agency

Universities and higher education institutions must work together with the Swedish Migration Agency on implementing measures that develop and streamline efforts to ensure that abuse of residence permits for higher education studies is made more difficult. This assignment is being reported by the Swedish Migration Agency. KTH's President chairs the collaboration group set up by SUHF to develop dialogue and collaboration on the government assignment.

KTH has a contact person for the Swedish Migration Agency. Communication largely takes place via a functional address, and in some cases by means of direct contact with administrators at KTH.

KTH tells students what rules apply when applying for residence permits and, if necessary, acts as a link between the student and the Swedish Migration Agency. For students required to pay tuition fees, the Swedish Migration Agency checks against KTH's study documentation system to ensure that the tuition fee has been paid.

KTH was in contact with the Swedish Migration Agency when necessary during the year. Processing times for residence permit applications in 2023 were acceptable for new incoming students in most cases, but there was considerable variation. Some groups found that the processing time was too long for them to begin their studies. The closure of the embassy in Pakistan presented

an obstacle for the autumn semester of 2023. The Swedish Migration Agency did not initially offer an alternative way of applying for a residence permit, and the information provided to both universities and applicants was inadequate. Potential applicants were referred to the Swedish Embassy in Ethiopia at a late stage. This measure came too late to provide any real opportunity for prospective students to obtain residence permits, which meant that students from Pakistan who needed residence permits failed to enrol. KTH typically receives 10–20 students with qualifying degrees from Pakistan.

The Swedish Migration Agency's new rules from November 2022 regarding how passports are checked when residence permit applications are submitted had an immediate impact on KTH's recruitment of international students. As a result, the number of incoming and outgoing exchange students fell as early as the spring semester of 2023. As exchange agreements are reciprocal, this change in the rules is having an adverse impact on KTH's degree programme students as well. If a student who has planned to travel to KTH under an agreement with a university in the US, for instance, is prevented from attending by new visa rules, KTH is also prevented from sending a student to the US under that agreement.

A persistent problem in 2023 was the fact that students as part of partnership agreements who are only studying the second year of their programmes at KTH are allowed a twelve-month residence permit at most, and so cannot get a Swedish personal identity number. This creates problems for students in their day-to-day lives, and means increased administration for KTH.

The pilot project involving two-year residence permits and study intentions that was initiated by SUHF and the Swedish Migration Agency in 2019 came to an end in March 2023. KTH participated in the project. The Swedish Migration Agency and the participating universities implemented a procedure for reporting to the Swedish Migration Agency, which made it possible for two-year residence permits to be granted during the project period. For KTH, the project turned out well and made it easier for students to study in Sweden.

Demand for KTH study programmes

Demand for KTH study programmes leading to a professional qualification remains high. The total number of first choice applicants for these programmes in 2023 was 6,139 (6,265). The number of planned beginner places was 2,610 (2,605).

As in previous years, the most sought-after programme was the architecture programme, with 989 (1,043) first choice applicants. This was then followed by Master of Science in Computer Engineering with 679 (715) first choice applicants, Industrial Economics with 651 (673) and Engineering Physics with 402 (403). The highest number of first choice applicants among the Bachelor of Science in Engineering programmes was in civil engineering and design, with 230 (203).

KTH has an English-language first-cycle programme, the Bachelor's programme in information and communication technology. In 2023, the programme had 1,468 (1,412) first choice applicants. There were 551 (570) first choice applicants in the national admissions round and 976 (890) in the admissions round for English-language programmes, of whom 59 (48) people applied in both admissions rounds. This shows a continued strong interest in English-language programmes at first-cycle level.

The number of applications for one and two-year Master's programmes taught through the medium of English remains high. Of the 25,465 (24,325) online registrations for the English-language second-cycle programmes for the 2023 autumn semester, 20,249 (18,835) came from students required to pay tuition fees, of whom 6,727 (6,411) paid the application fee.

KTH coordinates admission to two of the two-year Master's programmes offered within the framework of the European Institute of Innovation and Technology (EIT). One is a seven-track umbrella programme provided by EIT Digital, and the other is a one-track programme provided by EIT Urban Mobility. Students on the programmes study at two of the affiliated partner universities, one of which may be KTH. Admissions to EIT Digital and EIT Urban Mobility are managed through the EIT's admissions portals. The EIT Digital programme received a total of 786 (671) applications. The EIT Urban Mobility programme received a total of 251 (315) applications. See the section entitled Collaborations.

The qualifying programmes had a total of 1,346 (1,574) first choice applicants in 2023, which is a continued decrease: see the section entitled *Courses and programmes offered*.

Admission to KTH study programmes takes place in nationally coordinated admissions rounds in the joint admissions database for higher education in Sweden, which is managed by the Swedish Council for Higher Education.

Alternative selection

In the 2023 autumn semester, KTH has used the mathematics and physics exam and the architecture exam as an alternative selection for up to one third of the places on a number of Master of Science in Engineering programmes and between one-third and half of the places on the architecture programme.

The mathematics and physics test is a joint entrance test for a few selected programmes at KTH, Chalmers University of Technology, the University of Gothenburg and Stockholm University. This means that anyone who is eligible for the programme and passes the test participates in an additional selection group in addition to their secondary school grades and the Swedish Scholastic Aptitude Test.

The architecture test is an entrance test for architecture programmes at KTH, Chalmers University of Technology, Lund University and Umeå University. There are three different selection groups for architecture programmes: grades, the Swedish Scholastic Aptitude Test and architecture tests. In the selection procedure for the four architecture programmes, between one-third and one-half of the places for beginners go to students who have results from the architecture test.

The number of applicants in the selection group for the mathematics and physics test was as follows: Engineering Physics 44 (41), Electrical Engineering 3 (8), Vehicle Engineering 3 (5), Engineering Mathematics 20 (18), Materials Design 0 (1), Design and Product Development 1 (3) and Mechanical Engineering 3 (2). The architecture programme admitted 43 (55) applicants from the selection group for the architecture test.

Assessment of prior learning

KTH has a focus group that works with applications and questions regarding validation of prior learning. The KTH website was updated during the year with current information regarding prior learning and validation for admission and credit transfer. Cooperation is ongoing with two national validation networks: the Engineering Project and the Central Validation Network.

In 2023, KTH has also noticed an increased awareness among the general public regarding the possibility of having entry requirements for studies tested through prior learning, for both national and international prospective students.

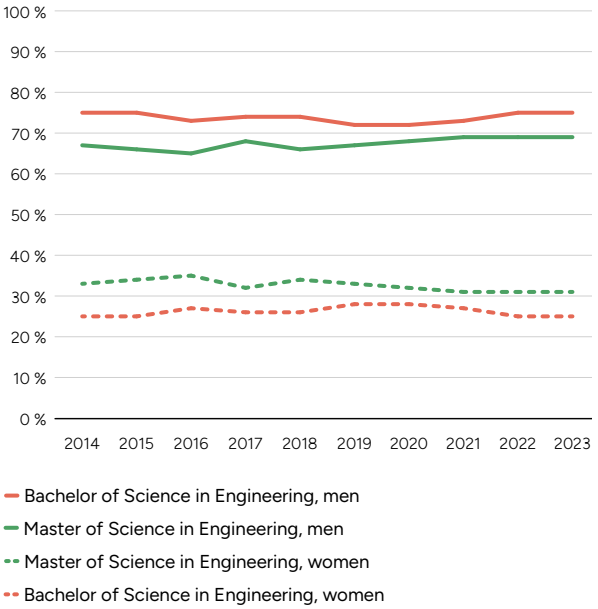
In 2023, KTH developed the process for identifying returning students who have interrupted their studies, but without valid approved leave from their studies. Validation is a recurring issue for this group. In 2023, KTH received 15 applications for recognition of prior learning for credit transfer for specific programmes.

To qualify for admission to KTH, seven applications for prior notification for entry registered during the year. Just over 100 applications were received regarding prior learning in connection with applications for programmes, distributed between the different admission rounds. The highest number of applications was received for the admission round for the 2023 autumn semester. It is difficult to draw the line between what is a matter for prior learning, what constitutes an exception and what constitutes entry requirements through formal qualifications other than those specified in the relevant course and programme syllabus. Statistics for cases related to applications for education are therefore estimated.

Beginners

In 2023, a total of 2,853 (2,742) beginners started studying on KTH's degree programmes leading to a professional degree. The architecture programme had 108 (117) beginners, the Master of Science in Engineering programmes had 2,053 (1,853) beginners and the Bachelor of Science in Engineering programmes had 647 (715) beginners. The bridging teacher training programmes had 63 (57) beginners.

Figure 1. Gender structure – new female and male students 2014-2023 in percent



Source: Ladok.

The two final years of the Master of Science in Engineering programmes are also two-year Master's programmes, which means that students studying for a Master of Science in Engineering are registered as beginners on a two-year Master's programme when they start the fourth year of their Master of Science in Engineering.

This does not apply to the Master of Science in Engineering and Education programme, which is a combined five-year programme. 71 (62) beginners started the Master of Science in Engineering and Education programme in 2023.

There were 2,393 (2,168) beginners for two-year Master's programmes. Of these, 1,051 (970) were already students on the Master of Science in Engineering programme. The one-year Master's programmes had 32 (41) beginners. In 2023, 760 (641) externally recruited programme beginners from Switzerland and the EU/EEA, including Sweden, commenced their second-cycle studies, of whom 38 (41) per cent are women and 62 (59) per cent men.

Of the total number of beginners in 2023, 32 (32) per cent were women and 68 (68) per cent were men. On the Master of Science in Engineering programmes in the 2023 autumn semester, 31 (31) per cent were women and 69 (69) per cent were men. Of beginners on the Bachelor of Science in Engineering programmes in 2023, 25 (25) per cent were women and 75 (75) per cent were men. The distribution between men and women differs greatly between the various KTH programmes. See *Figure 2*.

In its development plan for 2018–2023, KTH highlights the fact that women are in the minority for a number of study programmes. KTH is taking several measures to broaden recruitment: see the section entitled *Recruitment of students to KTH's first-cycle programmes*.

The median age of beginners studying architecture was 22 for both men and women. The median age of beginners on the Master of Science in Engineering programmes was 20 for both men and women. The median age of beginners on the Bachelor of Science in Engineering programmes was 21 for women and 22 for men. The median age for one and two-year Master's programmes was 24 for both men and women. The median age for qualifying courses was 20 for women and 21 for men. The median ages have remained stable over time.

In addition to the admission of beginners in Year 1, some programmes also offer the opportunity to start at a later point in the programme. The number of students from universities other than KTH who started the later parts of a Master of Science in Engineering was 147 (155). The corresponding number for Bachelor of Science in Engineering programmes was 5 (5), and for one or two-year Master's programmes 141 (140).

In 2023, 763 (776) students enrolled in qualifying programmes, of whom 31 (29) per cent were women and 69 (71) per cent men. Of students who started on the qualifying programmes in the autumn semester of 2022 or spring semester of 2023, 31 (29) per cent – or a total of 222 (323) students – have continued with a Master of Science in Engineering or Bachelor of Science in Engineering programme at KTH in 2023. Of these students, 27 per cent are women and 73 per cent are men. Most students who continue their studies at KTH pursue a Master of Science in Engineering.

667 (660) new fee-paying students were registered at KTH in the autumn semester of 2023, of whom 35 (33) were women and 65 (67) men. Of the new fee-paying students, 45 (83) were awarded scholarships from Swedish organisations or through scholarship programmes where KTH has an agreement on scholarship funding.

Figure 2. Total number of new students 2020-2023

	2023		2022		2021		2020	
	Total	Proportion (%) of women/men	Total	Proportion (%) of women/men	Total	Proportion (%) of women/men	Total	Proportion (%) of women/men
Master of Architecture, Degree Programme, 300 HE credits	**108**	**59/41**	**117**	**46/54**	**114**	**60/40**	**93**	**61/39**
Master of Science in Engineering Degree Programme 300 HE credits								
Biotechnology	94	73/27	82	56/44	85	73/27	79	76/24
Engineering and Education	71	41/59	62	40/60	54	37/63	58	34/66
Computer Science and Engineering	218	16/84	201	18/82	194	21/79	196	19/81
Design and Product Realisation	116	52/48	110	45/55	109	53/47	107	46/54
Electrical Engineering	102	15/85	87	20/80	95	13/87	77	9/91
Energy and Environment	87	46/54	73	47/53	78	49/51	78	56/44
Vehicle Engineering	118	14/86	89	9/91	96	14/86	95	12/88
Industrial Engineering and Management	163	31/69	159	30/70	156	34/66	160	28/72
Industrial Technology and Sustainability	45	27/73	37	32/68	39	18/82	33	39/61
Information and Communication Technology	67	18/82	72	17/83	67	19/81	69	22/78
Mechanical Engineering	154	17/83	136	14/86	145	15/85	146	18/82
Materials Design and Engineering	59	39/61	51	24/76	53	23/77	45	31/69
Medical Engineering	50	60/40	51	51/49	38	55/45	57	44/56
Media Technology	79	29/71	88	43/57	80	31/69	73	36/64
Civil Engineering and Urban Management	173	36/64	190	43/57	172	47/53	176	48/52
Engineering Physics	146	18/82	129	20/80	148	15/85	121	24/76
Engineering Chemistry	84	46/54	66	61/39	73	58/42	75	47/53
Engineering Mathematics	68	21/79	64	16/84	57	18/82	49	23/77
Open entrance	141	27/73	106	33/67	113	26/74	125	27/73
Sub-total	**2035**	**31/69**	**1853**	**31/69**	**1852**	**31/69**	**1819**	**32/68**
Bachelor of Science in Engineering, Degree programme 180 HE credits								
Constructional Engineering and Design	207	33/67	210	31/69	236	38/62	182	35/65
Computer Engineering	197	19/81	186	17/83	199	17/83	167	20/80
Electronics and Computer Engineering	43	16/84	41	12/88	51	20/80	37	11/89
Electrical Engineering	60	3/97	51	12/88	63	14/86	57	16/84
Industrial Technology and Production Maintenance	-	-	16	19/81	18	28/72	28	21/79
Chemical Engineering	46	52/48	47	49/51	51	55/45	46	54/46
Mechanical Engineering	-	-	65	12/88	100	11/89	91	20/80
Medical Engineering	52	25/75	42	40/60	37	49/51	32	56/44
Engineering and Economics	42	26/74	57	37/63	60	30/70	52	33/67
Sub-total	**647**	**25/75**	**715**	**25/75**	**815**	**27/73**	**692**	**28/72**
Subject Teacher Education in Technology, Secondary Education 270 HE credits	**-**	**-**	**-**	**-**	**6**	**0/100**	**6**	**67/33**
Supplementary teacher education 60 HE credits	**19**	**42/58**	**8**	**38/62**	**-**	**-**	**-**	**-**
Supplementary teacher education 90 HE credits	**9**	**56/44**	**35**	**43/57**	**65**	**37/63**	**61**	**43/57**
Supplementary teacher education for Graduates with a third cycle degree 90 HE credits	**35**	**43/57**	**14**	**36/64**	**-**	**-**	**26**	**50/50**
Masters programmes								
Masters programmes 120 HE credits	2393	35/65	2168	35/65	2279	38/62	2380	35/65
of which within Master of Science in Engineering programmes	*1051*	*35/65*	*970*	*33/67*	*1122*	*37/63*	*1217*	*35/65*
Masters programmes 60 HE credits	32	66/34	41	56/44	66	65/35	52	50/50
Sub-total	**2425**	**36/64**	**2209**	**36/64**	**2345**	**39/61**	**2432**	**35/65**
Bachelors programmes 180 HE credits	**144**	**45/55**	**120**	**37/63**	**119**	**32/68**	**119**	**36/64**
University Diploma programmes 120 HE credits	**-**	**-**	**31**	**19/81**	**31**	**35/65**	**33**	**45/55**
Technical Preparatory Year, Technical Preparatory Semester 60/30 HE credits	**763**	**31/69**	**776**	**29/71**	**1092**	**32/68**	**1204**	**35/65**
Total	**6185**	**32/68**	**5878**	**32/68**	**6439**	**34/66**	**6485**	**34/66**

Source: Ladok.

Preparatory courses for university following upper secondary school

Online preparatory courses in mathematics and programming have been offered to applicants to technical and scientific programmes in 2023, as in previous years, as well as a preparatory course in physics which is now offered. These courses aim to support and prepare beginners for the transition from upper secondary school to higher education. Further development of the courses has continued during the year according to an evidence-based digital learning model from the international Open Learning Initiative network. In 2023, new modules were launched for the courses that also prepare applicants for the mathematics and physics tests: see the section entitled *Alternative selection*.

International mobility

KTH works to encourage more students to undertake part of their education abroad.

653 (607) students started studying abroad in 2023. Mobility is back to pre-pandemic levels, for both incoming and outgoing students. Interest in exchange studies within Europe remains higher than before the pandemic. The most common countries for studying abroad in 2023 were France, Switzerland, Singapore and the US.

There continues to be considerable interest in studying as an exchange student at KTH. 1,101 (924) exchange students began their studies at KTH during the year. New partnerships have been formed in France and South Korea. Within Europe, most students came from universities in Germany, Switzerland, France and Spain. Of the incoming exchange students, 380 (305) came from outside the EU/EEA/Switzerland, most of them from Singapore, China, Japan and the US.

KTH Global is the annual event that highlights the international opportunities offered to KTH students. Students spent five days taking part in a talkshow about studying abroad, information about opportunities abroad for existing international students and information meetings at KTH's schools. A well-attended fair, with information sessions from foreign universities, was held in parallel in order to highlight the various exchange and international opportunities available to KTH students.

Double degree

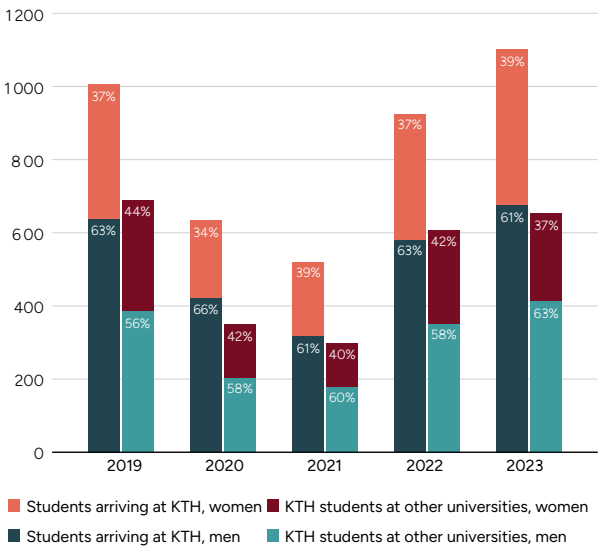
In addition to exchange students, KTH has a relatively large group of incoming double degree students under special partnership agreements with universities in Europe and Japan. These students study at second-cycle level for 18 months to two years, including degree projects, and are then able to obtain a Degree of Master of Science in Engineering from KTH and an equivalent degree from their home university. 140 (149) double degree students began studying at KTH during the year. KTH's degree programme students show less interest in double degrees. In 2023, three (two) KTH students began double degree studies abroad.

Placements

Placements, mainly through Erasmus, provide another opportunity for KTH students to obtain international experience. 109 (130) KTH students started Erasmus placements at companies or organisations in Europe during the year. The most popular countries were France, Switzerland, Germany and the Netherlands.

Figure 3. Student exchange 2019-2023

Number of students who began student exchange per year, in absolute numbers and proportion of women and men in percent



Source: Ladok.

Minor Field Studies

For the 2023 spring semester, 70 students were awarded Minor Field Studies (MFS) scholarships from the 2020 and 2021 rounds. KTH has decided to create its own travel grant, KTH Field Studies, for degree projects in low- and middle-income countries as the MFS programme has been discontinued by the Swedish International Development Cooperation Agency.

KTH-NOC Singapore

KTH has been working in collaboration with the National University of Singapore since 2005 on placements at start-up companies in combination with courses. KTH sent eight students under the programme in the spring semester. 24 students from NUS started the programme at KTH during the year.

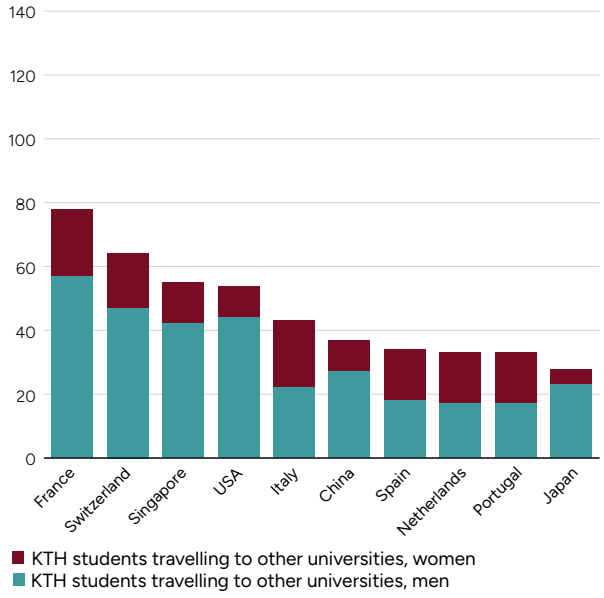
Integration initiatives

The Intensive Swedish for Engineers and Architects (Sfinx) programme in the county of Stockholm has been part of KTH's regular activities since 2011. Its aim is to facilitate entry into the labour market for engineers and architects who have immigrated to Sweden. Sfinx is a cooperation between KTH, the municipality of Järfälla, the City of Stockholm and the Stockholm County Administrative Board. Sfinx is also part of the regional cooperation Swedish for Professionals, Sfx.

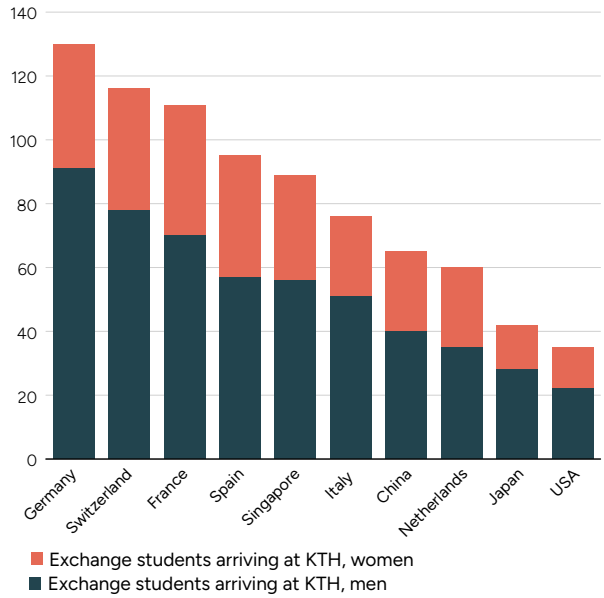
Participants spend 18 months learning Swedish, from Swedish for immigrants level up to and including upper secondary level, as well as English. This is done as part of adult education. Participants also have the opportunity to take part in courses at KTH without being registered, as well as the opportunity to participate in a mentoring programme run by the Swedish Association of Graduate Engineers and Architects Sweden. They also receive information about the Swedish business community and the Swedish labour market. There were 40 course participants at KTH in 2023, out of a total of 120 participants. The corresponding number in the previous

Figure 4. Student exchange – most popular countries 2023

Number of students who began student exchange during the year: the most popular countries KTH students travel to



Number of students who began student exchange during the year: the most popular countries exchange students originate from



Source: Ladok.

year was 50, out of a total of 100 participants. Reports are integrated into Swedish lessons and contribute to the grade in Swedish. A large number of participants find work during the programme, or after its completion.

The Erasmus+ IncluSTEM project integrates lessons learned from the previous Software Development Academy project, which provided new arrivals with a fast-track software development programme, with other projects from Technische Universität Berlin and Universidad Politécnica de Madrid. IncluSTEM was concluded in 2023. Cooperation on language learning and continuing professional development was implemented in 2022 to promote the integration of students with a migration background in higher education. Online courses for university staff on intercultural issues and focusing on the regulatory framework regarding refugees in higher education were attended by participants from all over Europe. The project held a final international digital conference in August 2023.

Bridging programme for architects and engineers who have completed foreign qualifications

KTH has established bridging programmes for architects and engineers within the scope of the remit. These programmes comprise 120 credits and include general vocational courses such as law, social sciences, communication, sustainable development, entrepreneurship and leadership, as well as subject-specific advanced courses. The aim is to provide anyone who has completed a foreign degree programme in architecture or engineering with the supplementary knowledge they need to practise the profession in Sweden. These programmes do not culminate in a degree.

KTH admitted students to both versions of the study programme in the spring and autumn semesters of 2018 and 2019. KTH decided to discontinue admission for studies starting in the 2020 spring semester as there were insufficient numbers of qualified applicants for the programmes.

Performance

The number of full time equivalent students and annual performance equivalents, offset against public funding, who were studying at first and second-cycle level in 2023 totalled 12,903 (12,547) and 10,545 (10,435) respectively. Some of the examinations for the autumn semester are always scheduled late in December. For 2023, 415 (510) annual performance equivalents were enrolled for examinations that took place in December 2022.

Of the total number of full time equivalent students, 78 per cent studied in the engineering disciplinary domain and 16 per cent in natural sciences. The humanities, law and social sciences disciplinary domains accounted for about five per cent of KTH's total number of full time equivalent students.

According to the 2023 public service agreement, KTH had the opportunity to offset a maximum of 143 full time equivalent students and annual performance equivalents against the disciplinary domain of design. However, the design domain included 399 (382) full time equivalent students and 365 (346) annual performance equivalents for 2023. The full time equivalent students and annual performance equivalents in excess of 143 were offset against the disciplinary domain of technology.

The performance indicator for education at first and second-cycle level was 82 (83) per cent, calculated as the number of annual performance equivalents in relation to the number of full time equivalent students. The performance rate is remaining relatively stable over time, but has fallen by one percentage point per year for the 2020–2023 period.

The proportion of women among full time equivalent students was 37 per cent and the proportion of men was 63 per cent, which means a two percentage point increase in the proportion of women compared to the 2020–2022 period.

The proportion of women on the Master of Science in Engineering programme was 32 per cent, and for men 68 per cent. The proportion of women on the architecture programme was higher than for most other programmes, with 58 per cent

women and 42 per cent men. The gender difference for the Bachelor of Science in Engineering programme was greater than for most of KTH's other programmes: 27 per cent women and 73 per cent men. The two-year Master's study programme had 36 per cent women and 64 per cent men. The students for the qualifying programme were 30 per cent women and 70 per cent men. In general, the percentage distribution between women and men has remained stable between 2020 and 2023. The proportion of freestanding courses is increasing at KTH, and the gender distribution within this type of programme was relatively even, with 46 per cent women and 54 per cent men in 2023. See *Figure 8*.

In addition to the performances offset against public funding, students required to pay tuition fees generated 1,052 (1,037) full time equivalent students and 951 (932) annual performance equivalents in 2023. This corresponds to a performance indicator of 90 (90) per cent. See *Figures 6 and 10*. For 2023, 53 (47) annual performance equivalents were enrolled for examinations that took place in December 2022.

KTH had a total of 1,710 (1,687) fee-paying degree programme students in 2023, of whom 577 (572) were women and 1,133 (1,115) were men. Of these, 194 (157) were scholarship holders funded by Swedish or KTH-affiliated scholarship programmes, corresponding to about 11 (9) per cent of fee-paying students. The gender breakdown among scholarship holders was 66 women and 128 men. In addition, there were 29 (14) paying students, 8 women and 21 men, on freestanding courses. The majority of fee-paying students therefore pay their own fees. To some extent, they may also be funded through scholarship programmes for which KTH holds no information.

Degrees

In 2023, KTH awarded 1,134 (1,134) Degrees of Master of Science in Engineering, 70 (72) Degrees of Master of Architecture, 309 (292) Degrees of Bachelor of Science in Engineering and 679 (736) Degrees of Bachelor of Science. KTH awarded 1,487 (1,602) Degrees of Master of Science (120 credits) and 38 (70) Degrees of Master of Science (60 credits). See *Figure 9*. Many students take more than one degree based on the same studies, and this has been the case for many years. However, both the number and percentage have fallen slightly in recent years. In 2023, 539 (581) students graduated with one or more additional degrees in combination with a Degree of Master of Science in Engineering. Most of them graduated with a Degree of Master of Science in Engineering in combination with a Degree of Bachelor of Science and a Degree of Master of Science. In relation to the total number of Degrees of Master of Science in Engineering, the proportion was 48 (51) per cent.

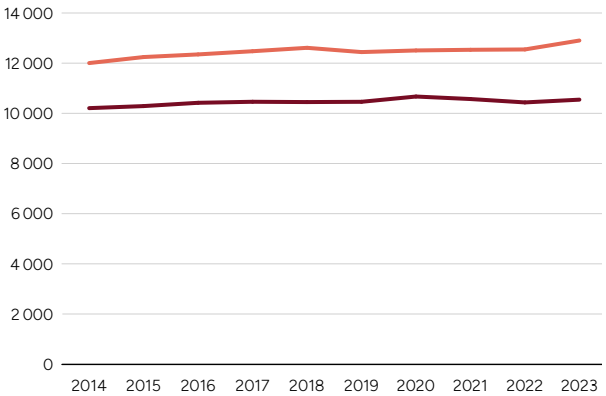
Of those who graduated with a Degree of Master of Science, 494 (519) were awarded a Degree of Master of Science in Engineering in 2023 or earlier. KTH thus awarded 993 (1,083) Master's degrees to students who had not graduated from KTH with a Degree of Master of Science in Engineering. See *Figure 9*.

Of the 679 (736) Degrees of Bachelor of Science awarded, 555 (605) were awarded to students studying on the Master of Science in Engineering programme, and 33 (44) to students on the Architecture programme. 68 students completed one of KTH's three Bachelor's programmes. In addition, 23 students graduated with a Degree of Bachelor without having followed a degree programme.

Women accounted for 39 (36) per cent of students awarded Degrees of Master of Science in Engineering, while men accounted for 61 (64) per cent. The proportion of women awarded Architecture degrees was 60 (60) per cent, and for men 40 (40) per cent. See *Figure 9* for gender distribution within programme types and programmes.

KTH awarded 66 (52) Degrees of Master of Arts/Science in Education in 2023. In total, KTH has thus issued 192 teaching degrees between 2021 and 2023, which is equivalent to 96 per cent of the assignment for the entire four-year period.

Figure 5. Full year students and full year performances 2014-2023

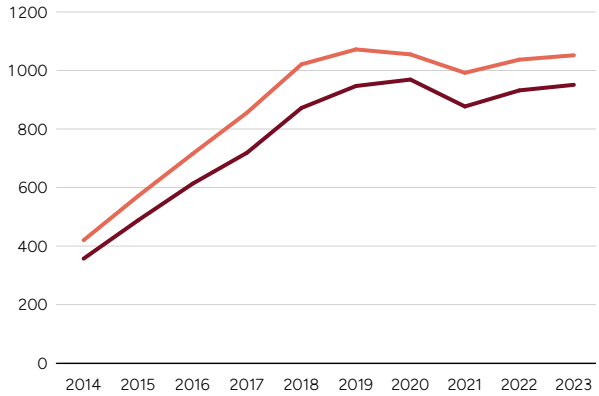


Full year students (FYS) are defined as the number of students who have started studies on a course multiplied by the number of course higher education credits divided by 60.

Full year performance (FYP) is defined as the number of higher education credits gained on a course or sub-course divided by 60.

Source: Ladok

Figure 6. Full year students and full year performances, fee-paying students 2014-2023



Full year students (FYS) are defined as the number of students who have started studies on a course multiplied by the number of course higher education credits divided by 60.

Full year performance (FYP) is defined as the number of higher education credits gained on a course or sub-course divided by 60.

Source: Ladok.

Figure 7. Full year students 2020-2023

	2023		2022		2021		2020	
	FYS	Proportion (%) of women/men	FYS	Proportion (%) of women/men	FYS	Proportion (%) of women/men	FYS	Proportion (%) of women/men
Master of Architecture 270/300 HE credits	456	58/42	430	58/42	429	61/39	461	60/40
Master of Science in Engineering 270/300 HE credits	5 345	32/68	5 076	32/68	5 033	33/67	5 165	34/66
in addition, within Master programmes	*2 171*	*34/66*	*2 268*	*34/66*	*2 392*	*36/64*	*2 351*	*35/65*
Bachelor of Science in Engineering 180 HE credits	1 595	27/73	1 600	27/73	1 633	28/72	1 513	29/71
Subject Teacher Education in Technology, Secondary Education 270 HE credits	4	43/57	6	25/75	9	39/61	5	55/45
Supplementary teacher education 60/90 HE credits	52	44/56	66	38/62	65	40/60	70	48/52
Masters Programmes 60/90 HE credits	19	62/38	28	58/42	38	57/43	50	49/51
Masters Programmes 120 HE credits	3 423	36/64	3 422	36/64	3 519	36/64	3 486	35/65
of which within Master of Science Engineering programmes	*2 171*	*34/66*	*2 268*	*34/66*	*2 392*	*36/64*	*2 351*	*35/65*
Bachelors Programmes 180 HE credits	281	40/60	263	35/65	262	36/64	272	35/65
Technical Preparatory Year, Technical Preparatory Semester 60/30 HE credits	665	30/70	774	31/69	951	33/67	811	32/68
University Diploma 120 HE credits	31	19/81	45	29/71	54	33/67	61	35/65
Exchange students arriving at KTH	560	38/62	530	38/62	306	37/63	431	35/65
Courses	472	46/54	307	40/60	234	38/62	184	41/59
Total	**12 903**	**37/63**	**12 547**	**35/65**	**12 533**	**35/65**	**12 507**	**35/65**

Source: Ladok.

Figure 8. Full year students and performance rate, fee-paying students 2020-2023

	2023		2022		2021		2020	
	FYS	performance rate (%)	FYS	performance rate (%)	FYS	performance rate (%)	FYS	performance rate (%)
Master of Architecture 270/300 HE credits	-	-	0	68	0	479	-	-
Master of Science in Engineering 300 HE credits	0	903	9	67	4	79	7	71
Bachelor of Science in Engineering 180 HE credits	1	160	12	62	5	67	3	71
University Diploma 120 HE credits	0	0	-	-	-	-	-	-
Bachelors Programmes 180 HE credits	11	84	16	77	16	75	15	93
Supplementary teacher education 60/90 HE credits	-	-	1	167	1	52	-	-
Masters Programmes 60 HE credits	16	95	23	91	16	94	13	99
Masters Programmes 120 HE credits	1014	90	973	91	949	89	1013	92
Courses	3	66	1	89	1	107	0	105
Study Abroad Programmes	6	62	2	56	0	0	3	98
Nordig	-	-	-	-	0	492	1	105
Total	**1052**	**90**	**1037**	**90**	**992**	**88**	**1055**	**92**

Source: Ladok.

Figure 9. First degrees 2020-2023

	2023		2022		2021		2020	
	Total	Proportion (%) of women/men	Total	Proportion (%) of women/men	Total	Proportion (%) of women/men	Total	Proportion (%) of women/men
Degree of Master of Architecture 270/300 HE credits	**70**	**60/40**	**72**	**60/40**	**99**	**57/43**	**86**	**55/45**
Degree of Master of Science in Engineering 270/300 HE credits	**1 134**	**39/61**	**1 134**	**36/64**	**1 310**	**37/63**	**1 119**	**37/63**
Biotechnology	53	68/32	46	70/30	54	70/30	38	55/45
Engineering and Education	33	67/33	34	47/53	27	56/44	27	37/63
Computer Science and Engineering	112	21/79	113	16/84	129	24/76	110	15/85
Design and Product Realisation	68	49/51	73	52/48	84	54/46	85	55/45
Electrical Engineering	60	13/87	58	21/79	62	13/87	54	24/76
Energy and Environment	67	60/40	56	57/43	69	58/42	57	68/32
Vehicle Engineering	103	24/76	94	19/81	116	16/84	92	14/86
Industrial Engineering and Management	111	39/61	120	39/61	151	36/64	132	35/65
Industrial Technology and Sustainability	2	0/100	-	-	-	-	-	-
Information and Communication Technology	26	38/62	32	22/78	47	28/72	35	37/63
Engineering Chemistry/Chemistry and Chemical Engineering	5	40/60	2	0/100	4	50/50	36	50/50
Mechanical Engineering	97	23/77	112	27/73	141	32/68	109	28/72
Materials Design and Engineering	23	43/57	20	50/50	25	48/52	34	44/56
Medical Engineering	33	48/52	41	56/44	31	58/42	36	58/42
Media Technology	47	57/43	35	37/63	43	63/37	42	48/52
Microelectronics	0	0/0	2	0/100	2	50/50	0	0/0
Civil Engineering and Urban Management	137	54/46	154	45/55	127	45/55	146	50/50
Engineering Physics	106	20/80	93	17/83	120	24/76	77	22/78
Engineering Chemistry	43	70/30	41	56/44	68	49/51	0	0/0
Not within programme/specialisation	8	25/75	8	75/25	10	20/80	9	22/78
Degree of Bachelor of Science in Engineering 180 HE credits	**309**	**24/76**	**292**	**35/65**	**388**	**32/68**	**311**	**30/70**
Degree of Master of Science	**66**	**52/48**	**52**	**48/52**	**74**	**61/39**	**57**	**42/58**
in Secondary Education, 225 HE credits, 2 teaching subjects	1	0/100	1	0/100	4	100/0	1	100/0
in Upper Secondary Education, 210 HE credits, 1 teaching subject	23	43/57	9	33/67	14	64/36	4	75/25
in Upper Secondary Education, 300 HE credits, 2 teaching subjects	37	57/43	37	54/46	46	54/46	41	34/66
in Secondary Education, 270 HE credits	0	0/0	1	0/100	6	67/33	9	44/56
in Secondary Education, 180 HE credits, 1 teaching subject	3	33/67	4	50/50	3	67/33	1	100/0
in Secondary Education, 240 HE credits, 2 teaching subject	0	0/0	0	0/0	1	100/0	1	100/0
in Secondary Education, 60 HE credits, 2 teaching subject	2	100/0	-	-	-	-	-	-
Degree of Master of Science 120 HE credits	**1 487**	**37/63**	**1 602**	**36/64**	**1 894**	**34/66**	**1 743**	**33/67**
of which also graduated as a Master of Science in Engineering [1]	*494*	*37/63*	*519*	*38/62*	*704*	*36/64*	*636*	*36/64*
of which joint degree	*45*	*47/53*	*53*	*32/68*	*38*	*47/53*	*47*	*41/59*
Degree of Master of Science 60 HE credits	**38**	**58/42**	**70**	**60/40**	**73**	**52/48**	**74**	**61/39**
Master Degree 60/90 HE credits [2]	**-**	**-**	**-**	**-**	**1**	**0/100**	**4**	**75/25**
Degree of Bachelor of Science 180 HE credits	**679**	**35/65**	**736**	**36/64**	**1 020**	**40/60**	**891**	**34/66**
University Diploma 120 HE credits	**18**	**39/61**	**20**	**25/75**	**27**	**22/78**	**17**	**47/53**

[1] this year and earlier
[2] according to older regulations

Source: Ladok.

These were issued upon completion of the Master of Science in Engineering and Education programme, or for bridging teacher training programmes (60 or 90 credits), or a bridging teacher training programme for students holding third-cycle qualifications. 52 (48) per cent of students awarded Degrees of Master of Arts/Science in Education were women, and 48 (52) per cent were men. See *Figure 9* and the section entitled *Teacher training programmes*.

KTH also awards Master's degrees jointly with other universities. 45 (53) Degrees of Master were awarded jointly with other universities in 2023, of which 16 (12) were awarded to fee-paying students.

In 2023, 20 (28) Degrees of Master (60 credits), 500 (511) Degrees of Master (120 credits), 6 (5) Degrees of Bachelor, 4 (2) Degrees of Bachelor of Science in Engineering and 0 (1) Degrees of Master of Architecture were awarded to students who paid tuition fees for their studies at KTH. These degrees are included in the data presented above.

Career support

KTH offers support to students as they make the transition to the world of work. Doctoral students are also offered career support, focusing on their entry into the labour market following their academic studies. In 2023, KTH offered one-on-one career coaching, reviews of CVs and cover letters, lunchtime career seminars and participation in various events. Lunchtime seminars were conducted through the medium of English and took place on site at KTH or online. Some of the lunchtime seminars were specifically aimed at doctoral students. A total of almost 800 students participated in the various activities in 2023. A national network on career guidance at Swedish universities was launched in 2022 with a view to exchanging experiences and developing coordination of career support activities. KTH invited the universities within the network to participate in some of KTH's career seminars in 2023.

Alumni relations

Alumni activities aim to establish and maintain good relations with KTH's former students, and to increase long-term involvement of alumni both in Sweden and elsewhere. Efforts were made during the year to develop the Alumnus of the Year initiative to raise awareness of the award. In addition, a permanent physical location has been established by presenting the alumnus in a portrait in the KTH library. The emphasis was also on continuing to develop and expand the mentoring programme so that more students at KTH have the opportunity to meet a mentor who is a KTH alumnus and so forge ties with working life. In 2023, participation has more than doubled from previous years, and over 400 students and alumni were involved in the programme.

A number of initiatives have taken place in order to expand the alumni network, including farewells to international students (Farewell), fairs for outgoing KTH students (KTH Global) and THS fairs. Initiatives were also implemented during KTH's academic ceremonies such as the awarding of diplomas and the conferring of doctorates. A major digital mailing to recent graduates has also been arranged with a view to recruiting new alumni to the network.

Following the pandemic, it has been relevant to rebuild contacts with KTH's international network. Alumni events were organised in Japan, the US and the UK in 2023. Besides these events, alumni as a target group have been included in events in Canada, China, Hong Kong and the UK. Recruitment of international students has been supported by alumni in Iceland, Taiwan, Mexico, Brazil, India, China and the US.

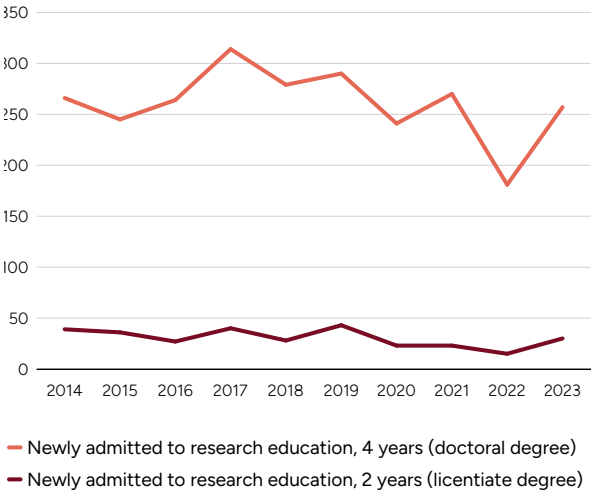
Third-cycle education

Recruitment

KTH conducts coordinated advertising for vacant doctoral studentships. The purpose of coordinated advertising is to raise the profile of KTH as both a workplace and a university, using a clearer recruitment process to increase interest among potential applicants. KTH advertises vacant doctoral studentships nine times a year.

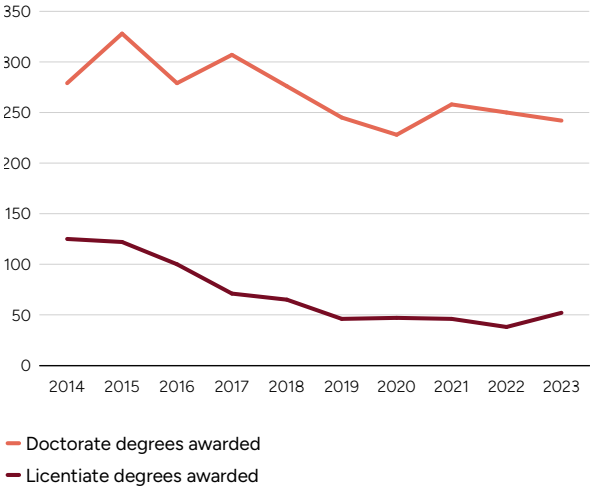
316 (263) doctoral studentships were advertised in 2023. 20,142 people applied, including 5,422 women, 14,675 men and 45 who did not declare their gender. Recruitment to

Figure 10. Newly admitted research students 2014-2023



Source: Ladok.

Figure 11. Licentiate and doctorate degrees 2014-2023



Source: Ladok.

Figure 12. Newly admitted and registered research students 2020-2023

New students per research field

	2023		2022		2021		2020	
	Total	Proportion (%) of women/men	Total	Proportion (%) of women/men	Total	Proportion (%) of women/men	Total	Proportion (%) of women/men
Biological Sciences	1	0/100	2	50/50	4	25/75	3	67/33
Computer and Information Science	46	24/76	45	24/76	74	32/68	62	27/73
Economics and Business	2	50/50	0	0/0	4	50/50	1	100/0
Electrical Engineering, Electronic Engineering, Information Engineering	48	23/77	22	27/73	42	17/83	29	17/83
Philosophy, Ethics and Religion	1	0/100	1	0/100	1	100/0	1	100/0
Physical Sciences	22	32/68	14	50/50	14	36/64	18	22/78
History and Archaeology	0	0/0	0	0/0	2	50/50	1	100/0
Health Sciences	6	50/50	2	100/0	9	67/33	6	67/33
Industrial Biotechnology	25	40/60	24	42/58	20	60/40	16	63/38
Chemical Sciences	10	80/20	11	64/36	5	40/60	8	38/63
Chemical Engineering	21	57/43	20	55/45	29	45/55	16	56/44
Arts	1	0/100	4	50/50	2	100/0	1	100/0
Mechanical Engineering	28	25/75	10	30/70	25	20/80	36	17/83
Mathematics	16	13/88	8	25/75	10	30/70	19	16/84
Materials Engineering	17	35/65	13	31/69	18	22/78	21	38/62
Medical Engineering	1	100/0	3	67/33	3	33/67	0	0/0
Environmental Engineering	5	60/40	5	60/40	1	100/0	1	100/0
Civil Engineering	34	41/59	12	50/50	26	31/69	21	29/71
Educational Sciences	3	67/33	0	0/0	4	75/25	4	75/25
Total new research students	**287**	**34/66**	**196**	**39/61**	**293**	**35/65**	**264**	**32/68**
Total number of students registered	**1 712**	**35/65**	**1 713**	**34/66**	**1 839**	**33/67**	**1 803**	**32/68**

Source: Ladok.

Figure 13. Doctorate and licentiate degrees 2020-2023

Doctorate degrees per research field

	2023		2022		2021		2020	
	Total	Proportion (%) of women/men	Total	Proportion (%) of women/men	Total	Proportion (%) of women/men	Total	Proportion (%) of women/men
Biological Sciences	5	40/60	2	0/100	4	25/75	2	0/100
Computer and Information Science	38	18/82	34	29/71	26	35/65	19	32/68
Economics and Business	4	25/75	2	100/0	2	50/50	0	0/0
Electrical Engineering, Electronic Engineering, Information Engineering	35	20/80	27	15/85	44	23/77	37	16/84
Philosophy, Ethics and Religion	3	33/67	2	50/50	1	0/100	0	0/0
Physical Sciences	15	27/73	27	22/78	22	32/68	12	33/67
History and Archaeology	2	100/0	1	0/100	2	50/50	2	0/100
Health Sciences	1	100/0	4	25/75	8	50/50	4	0/100
Industrial Biotechnology	20	45/55	25	44/56	14	29/71	13	38/62
Chemical Sciences	7	29/71	7	14/86	13	38/62	23	48/52
Chemical Engineering	25	60/40	15	20/80	16	50/50	18	44/56
Arts	2	100/0	0	0/0	6	50/50	2	0/100
Mechanical Engineering	21	24/76	33	36/64	35	26/74	33	30/70
Mathematics	13	23/77	12	25/75	9	11/89	8	25/75
Materials Engineering	23	17/83	27	7/93	27	33/67	24	13/87
Medical Engineering	5	60/40	3	33/67	1	100/0	5	80/20
Environmental Engineering	3	0/100	2	0/100	1	0/100	5	40/60
Civil Engineering	17	59/41	26	42/58	27	41/59	16	31/69
Educational Sciences	3	67/33	1	100/0	0	0/0	5	40/60
Total	**242**	**33/67**	**250**	**28/72**	**258**	**33/67**	**228**	**30/70**

Licentiate degrees per research field

	2023		2022		2021		2020	
	Total	Proportion (%) of women/men	Total	Proportion (%) of women/men	Total	Proportion (%) of women/men	Total	Proportion (%) of women/men
Biological Sciences	0	0/0	0	0/0	0	0/0	1	0/100
Computer and Information Science	5	20/80	2	0/100	3	33/67	2	0/100
Economics and Business	2	100/0	0	0/0	0	0/0	1	0/100
Electrical Engineering, Electronic Engineering, Information Engineering	13	15/85	9	33/67	9	22/78	13	23/77
Philosophy, Ethics and Religion	0	0/0	0	0/0	2	50/50	2	50/50
Physical Sciences	1	100/0	0	0/0	1	0/100	2	0/100
Health Sciences	0	0/0	1	100/0	1	0/100	0	0/0
Industrial Biotechnology	2	0/100	1	0/100	2	50/50	0	0/0
Chemical Sciences	1	0/100	0	0/0	0	0/0	1	0/100
Chemical Engineering	3	100/0	0	0/0	3	100/0	1	0/100
Arts	0	0/0	0	0/0	0	0/0	1	100/0
Mechanical Engineering	4	25/75	8	25/75	2	0/100	2	50/50
Mathematics	2	0/100	0	0/0	0	0/0	2	0/100
Materials Engineering	3	33/67	5	20/80	6	17/83	4	50/50
Environmental Engineering	1	100/0	1	100/0	1	0/100	2	50/50
Civil Engineering	14	50/50	10	20/80	15	40/60	13	31/69
Educational Sciences	1	100/0	1	100/0	1	100/0	0	0/0
Total	**52**	**38/62**	**38**	**29/71**	**46**	**35/65**	**47**	**28/72**

Source: Ladok.

third-cycle programmes also takes place in a different order and also without prior advertising, as is the case for externally employed doctoral students, for example.

Admissions

287 (196) newly admitted doctoral students began their doctoral studies in 2023, of whom 34 (39) per cent were women and 66 (61) per cent were men. Ten per cent of newly admitted doctoral students are admitted with the aim of obtaining a Degree of Licentiate. Half of these are women, and half men. See *Figure 12*. The number of admissions varies over time.
The large drop in the number of doctoral students admitted in 2022 has been recovered, but the downward trend over time is persisting. Work was initiated during the year to follow up on the processes for recruitment and admission of doctoral students.

Externally employed doctoral students are doctoral students whose primary employment is outside the university and who conduct their doctoral programmes within the framework of their employment. The employer may be a private or public organisation. There were 35 (18) newly admitted externally employed doctoral students in 2023, of whom 29 (17) per cent were women and 71 (83) per cent men.

In 2023, 107 people (37 per cent) of students newly admitted to third-cycle education had a qualifying degree from KTH, of whom 57 per cent had a Degree of Master and 41 per cent a Degree of Master of Science in Engineering. Of the new admissions in 2023, 49 per cent have degrees from countries other than Sweden.

Degree of activity and study funding

In 2023, 1,712 unique registered doctoral students had some activity in third-cycle education. Of these, 1,532 doctoral students had an activity rate of at least 50 per cent and 1,690 had an activity rate of at least 10 per cent.

At the end of the year, 1,306 – or 75 per cent – of KTH's doctoral students had study funding in the form of full-time or part-time doctoral studentships. Of students with doctoral studentships, 35 (35) per cent were women and 65 (65) per cent were men.

Of the doctoral students, 14 per cent funded their studies through gainful employment related to their study programmes, 2 per cent through other employment at higher education institutions, and 5 per cent through full-time or part-time scholarships. Four per cent of doctoral students funded their studies, either full-time or part-time, by other means during the year. The majority of doctoral students who fund their studies through scholarships receive these through KTH's cooperation with the China Scholarship Council.

KTH's doctoral programmes

KTH's doctoral programmes were established in 2011, and there are now 30 of them. Certain quality requirements have to be met in terms of purpose, target group and content, for example, in order to establish a doctoral programme. All new doctoral students are admitted to a doctoral programme or a programme offered by KTH in collaboration with one or more partners, in addition to a third-cycle subject. The purpose of doctoral programmes is to ensure the quality of the study programme through an organised study structure. In 2023, two doctoral programmes merged to form the new doctoral programme in vehicle and aerospace engineering in order to reinforce the research environment.

Student mobility in education at third-cycle level

There is a significant international element in KTH's education at third-cycle level, which includes many international doctoral students and supervisors. The UKÄ requests information on stays abroad for doctoral and licentiate graduates during the past year. The last survey conducted in 2022 showed that 39 per cent of graduates had spent time abroad as part of their education. In 2023, work began as part of the Unite! university alliance on developing joint agreements and graduate schools to further increase student mobility among doctoral students.

Degrees

In 2023, 242 (250) doctorates were awarded, of which 33 (28) per cent went to women and 67 (72) per cent to men. Of the 52 (38) students who completed Degrees of Licentiate during the year, 38 (29) per cent were women and 62 (71) per cent were men. Doctoral degrees awarded jointly with other universities totalled 4 (4). See *Figure 13*.

Completing a Degree of Licentiate as a stage in a third-cycle study programme is still relatively common at KTH.

Of graduate doctors in 2023, 17 (18) per cent have previously completed a Degree of Licentiate. KTH's assessment is that a technical Degree of Licentiate is highly relevant for employment in industry.

The actual period of study for doctoral students completing third-cycle qualifications in 2023 was 4.4 (4.4) years for Degrees of Doctor and 3.1 (3.5) years for Degrees of Licentiate. Women had a slightly shorter actual period of study than men for both doctoral degrees and Licentiate degrees. Programme length is calculated according to the procedures provided by the Ladok student registry.

Programme development

Future Education at KTH change programme

The Future Education at KTH change programme comprises 13 principles that form a framework for the development of KTH's courses and study programmes. The first part of 2023 mainly involved starting activities and consolidating the change programme within KTH. Based on the activities that were initiated, a programme organisation has been built up that will both reinforce KTH's ability to conduct systematic change management and strengthen cooperation between the various KTH schools. The guiding principle is that this is a KTH-wide change process and that an exchange of experience should be possible throughout the organisation on the basis of the activities in the change programme.

A number of technical universities around the world are undergoing similar change processes in the disciplinary domain. Extensive business intelligence was gathered by means of both incoming study visits and outgoing study trips prior to the 2022 decision on the framework for KTH's programme development. This continued in 2023 with the stakeholders such as the Norwegian University of Science and Technology, Chalmers University of Technology, Aalto University, Eindhoven University of Technology, the University of Twente and the University of Groningen.

A number of proposals were devised in spring 2023 for development projects within the framework of Future Education at KTH and its principles. Following prioritisation, around twenty development projects were launched in the autumn of

2023 with themes such as programme development, examination, sustainable development, digitalisation, educational development, and so forth. The exchange of experience between development projects is and will continue to be an important part of this initiative. The goal of several of these development projects is for them to be scaled up later and implemented throughout KTH.

KTH's management group is the steering committee for the change programme, and the programme management has regularly reported back to KTH's study programmes board during the year. The Future Education at KTH change programme is planned to run until 2027.

Partnerships

Cooperations should help KTH to develop in terms of both education and research. KTH has a large number of educational cooperations on both a national and an international level. KTH has previously developed a regulatory framework that is applied when planning educational cooperations.

Stockholm Trio

The Kar≈olinska Institute, KTH and Stockholm University jointly form the Stockholm Trio university alliance. According to the 2019 cooperation agreement, this alliance will remain valid for five years, after which it will continue for three years at a time. A new three-year period began in November 2023.

The presidency of the steering committee changes every academic year and was transferred from Stockholm University to KTH in mid-2023. The university alliance has a steering committee comprising the Presidents and the University Directors of the three universities.

In 2023, the steering committee made decisions on matters such as:

- Establishment of a working group for collaboration in research infrastructures. The group's mission is to coordinate and develop research infrastructure within the Stockholm Trio.
- Establishment of a joint Master's programme in Biostatistics and Computer Science.
- Extension of the agreement on common representation in Brussels, the Brussels Representation.

A number of activities were conducted in 2023 as part of the Stockholm Trio that link to the areas prioritised by the steering committee for 2022–2024. These activities are described below.

The Swedish Neutron Week 2023 – Sustainability & Health conference was organised by the Stockholm Trio together with Svenskt nätverk för systemsäkerhet (the Swedish Network for System Security) and the SwedNess graduate school. The aim was to bring together Swedish stakeholders and contribute to cooperation between participants.

The Stockholm Trio Alumni Mixer, an initial joint information and networking event for alumni, was organised.

Collaboration with the Stockholm Science City Foundation, where activities on the theme of knowledge resistance were planned.

The holding companies at the Karolinska Institute, KTH and Stockholm University established a new investment company under the name Trio Impact Invest. Its ambition is to meet the need for early capital for research-intensive companies which is currently lacking in Stockholm. The company was appointed by the Swedish Agency for Economic and Regional Growth as a fund manager for regional venture capital in Stockholm. This project is being co-funded by the European Regional Development Fund. Capital was raised during the autumn. Investment activities are expected to commence in the first six months of 2024.

The Brussels Representation has collected and distributed information on strategies and policy documents to universities, focusing on preparing for the next EU Framework Programme for Research and Innovation starting in 2028. Activities were conducted that related to Sweden's presidency of the EU. An EU course, as it is known, was organised for the second consecutive year. See the section entitled Research.

The Stockholm Trio maintains a collaboration with University College of London that was further developed and extended during the year.

A workshop was held in Tokyo and another in Stockholm as part of the partnership with the University of Tokyo. Biomaterials, education for sustainable development and the ageing population are the primary research themes for the partnership.

The Stockholm Trio for Sustainable Actions (STSA) is a partnership aimed at increasing the ability of the participating universities to contribute to the achievement of the Sustainable Development Goals. Activities in 2023 included the following:

The DG Forum is a platform for collaboration between public authorities for implementation of the 2030 Agenda. Their annual networking meeting was held at KTH, bringing together representatives from 85 public authorities to examine the criteria for increased collaboration between universities and other public authorities.

A joint seminar to achieve the STSA's goals was held in Brussels in cooperation with the Brussels Representation. Participants included representatives from the STSA and three research centres: the Bolin Centre for Climate Research at Stockholm University, the Centre for Health Crises at the Karolinska Institute and the KTH Climate Action Centre.

The Sustainability Forum conference was held with a view to extending the partnership by encouraging broader meetings, discussions and exchanges of experience between the academic community, the business sector, politics and civil society in order to actively bring about a sustainable societal transition.

A call for projects linked to the UN Sustainable Development Goals was launched during the year. A total of 14 applications were received, of which 2 received funding.

Educational partnerships with Swedish universities

KTH and Mid Sweden University have been collaborating on Master of Science in Engineering programmes since 2011. This cooperation means that students can continue to pursue certain two-year Master's programmes at KTH after completing the first three years of the Master of Science in Engineering programme for which Mid Sweden University is responsible. 24 (17) students from Mid Sweden University started a two-year Master's programme at KTH in the 2023 autumn semester. After completing the programme, students can obtain a Master of Science in Engineering and a Degree of Master from KTH and a Degree of Bachelor from Mid Sweden University.

This cooperation has been developed further, and a joint Master of Science in Engineering in technical chemistry was established in 2020. 3 (11) students started the programme at Mid Sweden University in the autumn semester of 2023. These students will spend their first three years of study at

Mid Sweden University for the most part, and the last two years at KTH. This study programme culminates in a joint Master of Science in Engineering from KTH and Mid Sweden University.

The two-year Master's programme in Sports Technology is an interdisciplinary cooperation with the Swedish School of Sport and Health Sciences (GIH), and 16 (16) students started the programme in the 2023 autumn semester. The programme leads to a Degree of Master at KTH. Together with the Swedish School of Sport and Health Sciences (GIH), KTH is also one of Sweden's five national sports universities. National sports universities make it possible for elite athletes among the student body to combine an elite programme with their university studies.

KTH already cooperates with the Stockholm Trio partners. A two-year Master's programme in Mathematics is being conducted in cooperation with Stockholm University, which had 20 (27) beginners in 2023. A two-year Master's programme in Molecular Techniques in the Life Sciences, with 29 (36) new students in 2023, is being run together with Stockholm University and the Karolinska Institute. There is also a joint third-cycle programme in the field of medical technology with the Karolinska Institute. Four doctoral degrees were awarded within the partnership during the year. The joint Stockholm Trio Master's Programme in Biostatistics and Computer Science was established in 2023: see the section entitled *Stockholm Trio*.

Strategic partner universities and networks

KTH has five strategic partner universities: Nanyang Technological University in Singapore, Shanghai Jiao Tong University in China, the Indian Institute of Technology Madras in India, Hong Kong University of Science and Technology in Hong Kong and the University of Tokyo in Japan.

In 2023, KTH extended its cooperation by visiting Hong Kong University of Science and Technology and Shanghai Jiao Tong University.

KTH also visited the Indian Institute of Technology Madras to discuss ongoing and future collaborations and student mobility. A new scholarship programme was established in 2023. Doctoral students are also jointly supervised as part of the partnership. Additionally, KTH hosted a staff week in August for research and administrative staff from the Indian Institute of Technology Madras.

The partnership with the University of Tokyo is being run together with the Karolinska Institute and Stockholm University within the framework of the Stockholm Trio. See the section entitled *Stockholm Trio*.

In 2023, KTH signed a renewed Joint PhD agreement with Nanyang Technological University in Singapore.

KTH has an initiative for joint doctoral students that began in 2022. Six doctoral students received funding for 2023.

KTH continued to engage in international networks during the year, including T.I.M.E, CESAER, Nordic Five Tech and CLUSTER.

European Institute of Innovation and Technology

KTH is involved in five of the EIT's knowledge and innovation programmes: EIT Digital, EIT InnoEnergy, EIT Raw Materials, EIT Health and EIT Urban Mobility. See the section entitled *Research*.

KTH is involved in eleven joint Master's programmes within the framework of the EIT. Interest in the Master's programmes remains high. The number of students applying for and being admitted to these programmes remains stable, despite increases in tuition fees and major cuts in the number of scholarships on offer.

Erasmus+

As in previous years, KTH has received a large number of mobility scholarships within Europe for studies, placements and staff exchanges. During the year, KTH has also been granted funding via Erasmus+ International Credit Mobility for exchanges with partner universities in Africa, Georgia, India and Thailand.

In 2023, KTH has been granted funding as a partner for three Erasmus+ capacity building projects. These projects are aimed at partner universities in Latin America, the Caucasus and Palestine, focusing on student recruitment, innovation, business-to-business sales and development of doctoral programmes.

Under the Erasmus+ Partnership for Excellence programme, KTH was awarded a project as a partner through the European Centre of Vocational Excellence in Accessibility with a view to improving social inclusion. KTH is already participating as a partner in two joint Erasmus Mundus Master's programmes as part of the programme. A total of 25 (19) Erasmus Mundus Joint Masters students were registered in 2023.

The Digital Europe Programme

The Digital Europe Programme is a new EU programme with a view to expanding courses and programmes offered in the digital domain. In 2023, KTH was granted two projects as a partner with a view to developing KTH's system chip and robotics programmes.

Unite!

KTH is part of the Unite! university alliance, which is part of the EU's European Universities initiative. Its aim is to create a new European university model where students at all levels can shape their degree programmes by means of virtual or physical mobility at any of the participating universities. The aim of this cooperation is also to create innovative educational methods and harmonised governance models, and to jointly develop models for collaboration with the surrounding community and dissemination of research findings to the same.

The alliance, which has received EU funding for the 2023–2026 period, is made up of nine European universities. Together with Aalto University, KTH is coordinating the Innovative Learning and Flexible Learning Provision work packages.

KTH Global Development Hub and partnerships in Africa

The KTH Global Development Hub, GDH, supports the development of challenge-driven education and builds innovation competence by contributing solutions and innovations that are implemented in the community. KTH applies this methodology in collaboration with partner universities in Kenya, Tanzania, Botswana and Rwanda, and is also developing partnerships with universities in South Africa.

KTH welcomes 15 incoming students within the scope of the initiative in 2023. Shorter mobilities for doctoral students have also been made possible in 2023.

KTH travelled to Rwanda to extend its partnership with the University of Rwanda. A declaration of intent was signed with the university and other stakeholders. A student exchange agreement was also signed.

China Scholarship Council

Ten doctoral students with scholarships from the China Scholarship Council (CSC) were admitted to KTH during the year. 14 visiting doctoral students and 3 visiting researchers were also awarded scholarships. KTH is also participating in the new CSC Innovation Programme.

Research

KTH conducts research in the fields of natural sciences, technology, architecture, industrial economics, urban planning, history and philosophy. This includes both basic and applied research.

External research funding

KTH has a high proportion of external funding, from both the public sector and other stakeholders in Sweden and elsewhere. External research funding accounted for about 62 per cent in 2023, while research with direct government funding accounted for about 38 per cent.

National research funding

During the year, KTH was successful in obtaining funding from the Swedish Research Council, which largely supports basic research, but also received significant grants from Vinnova and the Erling Persson Foundation. KTH conducted a large number of activities in the form of seminars, workshops and individual guidance in 2023 in order to increase national external funding.

Figure 17 shows this year's revenue from research grants from the main funding organisations. Grant income is made up of grants that have been utilised during the year to fund expenses. Income from grants is thus different to grants awarded, which have a forward-looking and multi-year perspective.

Some of the new developments during the year are described below. The amounts indicated are grants awarded.

The **Swedish Research Council** awarded KTH a grant of SEK 323 (263) million in 2023. Most of this funding was awarded as part of the major call for project grants in natural and technological sciences. In the call for research infrastructure of national interest, three applications were approved in which KTH is the accountable authority, and seven were approved in which KTH is involved. See the section entitled Research infrastructures.

One example of major funding is the SEK 30 million awarded for the 2024–2028 period for the Anthropocene History project. This project is focusing on the health of our planet and the role of humans as a geological force in the evolution of the Earth. This funding grant was obtained within the framework of the Swedish Research Council's call for centres of excellence. By way of further example, KTH was granted SEK 17 million for the 2024–2029 period for its Inclusive Digital Learning project, which forms part of the national research programme on the societal impact of digitalisation.

In 2023, **Vinnova** awarded KTH funding totalling SEK 275 (134) million. For instance, KTH was granted three new centres of excellence as a coordinator and a further three as a partner. Vinnova will be funding these centres of excellence between 2024 and 2028, with the possibility of a further five-year extension. See the section entitled Research centres. SEK 12 million for a precision health research project under the Digital Europe Programme is another example of funding awarded: see the section entitled SciLifeLab. KTH was also granted participations in other programmes such as the National Aeronautics Research Programme, Advanced Digitalisation, Strategic Vehicle Research and Innovation and a number of strategic innovation programmes.

The **Knut and Alice Wallenberg Foundation, KAW**, made a decision in 2023 to provide additional funding for the Wallenberg Wood Science Centre. SEK 18 million was awarded for the 2024–2028 period to fund an industrial postdoctoral programme. In 2023, researchers at KTH received 4 out of 17 grants (8 out of 15) announced as part of the KAW initiative for outstanding mathematicians. See the section entitled *KTH's involvement in Knut and Alice Wallenberg's strategic initiatives.*

Formas, the Swedish Research Council for Environment, Agricultural Sciences and Spatial Planning, has awarded KTH funding of SEK 97 (89) million in 2023. Around half of the grants awarded fall within the annual open call. Of the other half, most fall within a number of different targeted calls.

The **Swedish Energy Agency** granted KTH funding of SEK 89 (140) million. These projects fall within the scope of programmes such as the Battery Fund Programme, People, Energy Systems and Society, Electricity Systems of the Future, Bio+, Strategic Vehicle Research and Innovation FFI Zero Emissions, and within the RE:Source and Viable Cities strategic innovation programmes.

The **Swedish Agency for Economic and Regional Growth**, together with the EU, granted KTH and Luleå University of Technology SEK 41 million for their Green Steel for a Fossil-free Future project. This project aims to help the steel industry to make the transition to climate-neutral production and is focusing on research into climate-neutral steels and steels produced from recycled materials. Its goal is to support the iron and steel industry in the Norrbotten region and expedite the industry's transition to climate-neutral production with reduced carbon emissions.

In 2023, the **Erling-Persson Foundation** awarded SEK <66 million to KTH for the 2024–2028 period for its Atlas of Paediatric Diseases project.

The **Ragnar Söderberg Foundation** awarded KTH a sum of SEK 14 million in the Swedish Foundations' Starting Grant 2022 call for a project relating to complex systems and the physics of certain materials. This funding is awarded over a four-year period and aims to help researchers make applications to the European Research Council.

International funding

International research funding accounts for about 8 per cent of research revenue. The EU is the largest source of funding. KTH also receives research funding from other foreign funding bodies, mainly in Europe and the US.

EU funding, including Horizon Europe

In 2021, KTH adopted a strategy for participation in Horizon Europe, with the overall goal of achieving successful participation and increased research funding compared to earlier framework programmes. This strategy is based on the researcher and the fact that the path to successful participation is based on reinforcing the researcher's ability, willingness and circumstances to apply for and implement EU projects. KTH aims to utilise established partnerships and networks for strategic engagement, long-term influence, contacts for research projects, joint initiatives for reinforced operational support and best practice exchange. The strategy is allowing KTH to contribute to the goals in the national strategy for participation in Horizon Europe 2021–2027.

A number of activities and initiatives were held during the year to further reinforce KTH's criteria for successful participation. For instance, KTH began developing a support and mentoring programme for researchers applying for funding from the European Research Council (ERC). This programme includes enhanced coaching support for applications. Another example includes various targeted initiatives aimed at increasing the number of post-doctoral scholarships awarded to KTH under the Marie Skłodowska-Curie Actions (MSCA), while reinforcing the research base in the field of sustainability at KTH.

KTH also worked with jointly with the City of Stockholm to launch a joint series of workshops with a view to applying for funding from Horizon Europe for projects that are aligned with KTH's research and the actions in the City of Stockholm's Climate City Contract with the European Commission. Another example of an initiative involved the Stockholm Trio organising – for the second time – what is known as an EU course. This course is aimed at researchers with no previous experience of EU projects and comprises meetings in both Stockholm and Brussels.

KTH participated in 325 (303) applications in 2023 as part of the Horizon Europe framework programme. Horizon Europe has three main focal points, known as pillars:

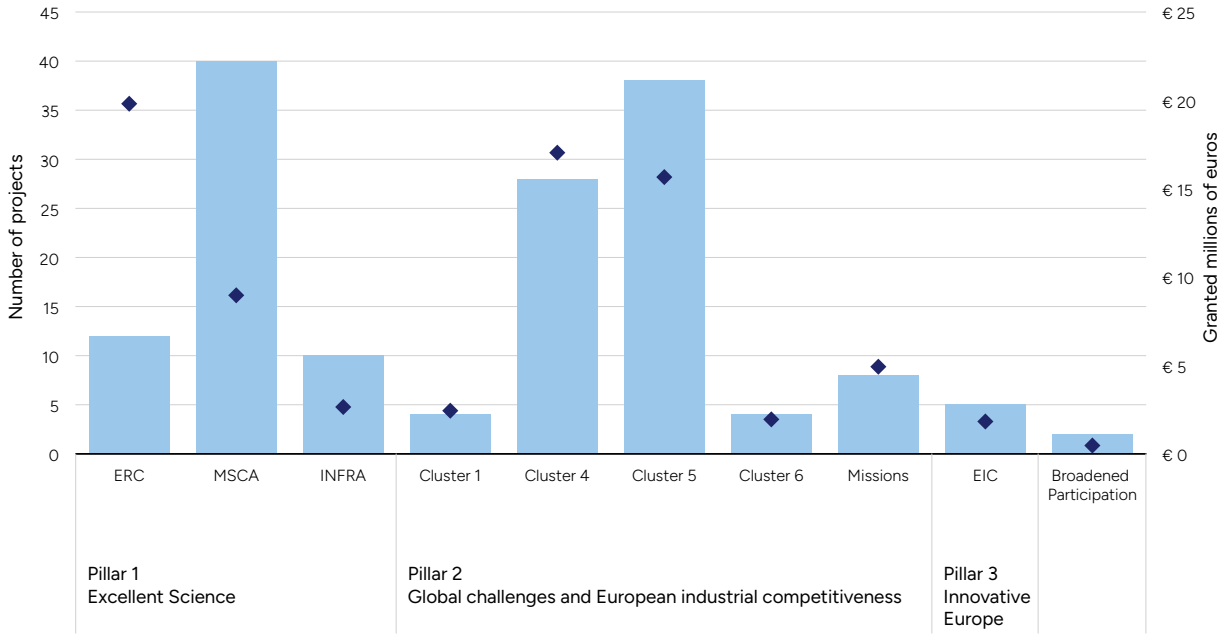
- pillar one – Excellent Science
- pillar two – Global Challenges and European Industrial Competitiveness
- pillar three – Innovative Europe.

In 2023, KTH was awarded funding for 61 (80) participations worth a total of about EUR 30 (38) million. The higher number of participants in 2022 is due in part to the backlog of EU decisions from 2021 at the start of the framework programme.

Of the projects awarded funding, 22 (33) come under pillar one. Of these, 15 fall under MSCA, the EU's researcher mobility programme. Of the projects awarded funding, five are in the field of incoming postdocs, Postdoctoral Fellowships, nine are Doctoral Networks projects and one is a Staff Exchange project.

Six direct government funding grants were awarded under the ERC call for groundbreaking research: one Starting Grant, two Proof of Concept grants, one Consolidator Grant and two Synergy Grants.

Figure 14. KTH's participation within Horizon Europe 2021-2023



ERC	European Research Council
MSCA	Marie Skłodowska Curie Actions
INFRA	Research Infrastructures
Cluster 1	Health
Cluster 4	Digital, Industry and Space
Cluster 5	Climate, Energy and Mobility
Cluster 6	Food, Bioeconomy, Natural Resources, Agriculture and Environment
Missions	Horizon Europe's Five Missions
EIC	European Innovation Council
Broadened Participation	Broadened participation and dissemination of cutting edge expertise

Source: EU Funding & Tenders Portal

The Starting Grant is awarded to promising researchers in the early stages of their careers to help them set up their own research groups and develop innovative projects in various scientific fields. As part of this call, KTH was awarded EUR 1.8 million for a project relating to personalised medications and delivery technology with a view to delivering medications to the right place at the right time, and as efficiently as possible.

Proof of Concept provides researchers who have already received ERC funding with the opportunity to develop their research results still further. KTH was awarded funding for two projects of EUR 150,000 each as part of this call.

The Consolidator Grant provides five years of funding of around EUR 2 million to researchers with the potential to become world leaders in their field. KTH was awarded a Consolidator Grant for a project aimed at developing energy-efficient advanced surface materials for use in fields such as healthcare and environmental technology.

Synergy Grants are awarded to researchers who work together and bring different skills and resources to the table in order to address complex research challenges. As part of this call, KTH was awarded EUR 2.9 million to identify how disruptions in interactions between microorganisms in the gut can result in inflammatory bowel disease and colorectal cancer. A further EUR 2.5 million was granted for a project that involves digitally transferring scents and recreating them elsewhere.

36 (44) projects were approved under pillar two: twelve in cluster five (climate, energy and mobility), and nine in cluster four (digital, industry and space). KTH is coordinating six of the projects awarded funding. KTH was awarded funding for three participations in the strategically focused initiatives, termed Missions, relating to selected societal challenges, and nine participations in the institutionalised European partnerships, one of which it coordinated.

Besides Horizon Europe, KTH was also granted funding for participations in other EU instruments. Funding for three participations was awarded under the Digital Europe Programme, along with one participation each under the European Research Fund for Coal and Steel, the European Defence Fund and the European Social Fund.

Strategic research domains

KTH is active in ten strategic research domains, and is the accountable authority for five. In 2023, funding for the strategic research domains where KTH is the accountable authority amounted to approximately SEK 331 (326) million. In total, KTH as an accountable authority has received almost SEK 3.3 billion in funding for strategic research domains between 2010 and 2023.

The five strategic research domains for which KTH is the accountable authority are transport, production, e-science, IT and mobile communication, and molecular bioscience.

The funding of the strategic research domains contributes

Figure 15. Professors 2023

During the year, KTH appointed professors in the following areas

Newly appointed professors (externally recruited)

- Speech communication with specialization on Phonetically-based interaction analysis
- Scattering Based Characterization Techniques in Fibre and Polymer Science

Promoted to professor

- Surface and corrosion science specializing in surface spectroscopy
- Cell wall biology
- Chemical engineering applied to natural systems
- Chemical engineering with focus on energy systems
- Environmental philosophy
- Public transport systems
- Optimization theory and systemtheory
- Sustainable urban development
- Rock mechanics
- Real estate planning an land law
- Urban and regional studies focusing on sustainable urban development
- Communication theory
- Geodesy
- Management of sustainable energy systems
- Electrical engineering with specialization in reliability of power systems
- Smart electricity grids - power systems components
- Interaction design
- Numerical lanalysis
- Mathematics with specialization in numerical analysis
- Mammalian cell-based bioprocess technology
- Communication theory with specialization in network coding
- High performance computing
- Human computer interaction with focus on computer graphics
- Microsystem technology with focus on photonics
- Cloud computing
- Computer science
- Fiber technology
- Smart grids with emphasis on transmission networks

Newly appointed visiting professors

- Signal processing
- Sustainable property and construction
- Fluid mechanics with specialization in wind energy
- Environmental physiology with special reference to adaptation to prolonged weightlessness
- Passenger transport system

Newly appointed adjunct professors

- Multiphase flow in fiber-based processes
- Computational aerodynamics
- Electrical engineering with focus on reliable information systems
- Fossilfree industrial processes

Source: HR+

to world-leading and interdisciplinary cooperations between different disciplines and has made it possible to create a number of world-leading interdisciplinary environments. The activities conducted in the strategic research domains are described in brief below; with the exception of molecular biosciences, which funds SciLifeLab activities. See the section entitled *SciLifeLab* and the separate annual report that KTH submits to the government for a description of SciLifeLab and the molecular biosciences strategic research domain.

IT and mobile communications

The IT and mobile communication strategic research domain has resulted in the establishment of Digital Futures by KTH, Stockholm University and RISE in 2020, with the ambition of shaping a sustainable society through digital transformation. The Digital Futures physical and virtual research environment conducts interdisciplinary, cross-sectoral and international research that focuses on societal challenges.

Research within the Digital Futures partnership focuses on smart urban development, digitalised industry, health and well-being, and education. Research themes include cybersecurity and reliability, connected and cyber-physical systems, machine learning and artificial intelligence (AI). Digital Futures includes more than 200 research teams and a research programme involving more than 100 research projects, as well as mobility and visiting researcher programmes.

Several major research projects are conducted within Digital Futures. These projects include digital assistants in elderly care, management of sensitive personal data, smart water distribution solutions and use of satellite data to monitor urban development.

The Digital Futures partnership programme expanded in 2023 and now includes eight public and private sector partners. The programme helps to bring about increased collaboration and dissemination of research. The project portfolio in collaboration with partners currently comprises some twenty industrial innovation projects, societal innovation projects and industrial postdoctoral projects. Themes include smart building, infrastructure for autonomous vehicles, life-cycle assessment and remote rehabilitation.

More than twenty interdisciplinary research pairs are working on a societal challenge from two different perspectives. These societal challenges range from cybersecurity and human-robot interaction to smart packaging and systems for optimising renewable energy sources. Fifteen demonstrator projects are being conducted with emphasis on applied research. Around thirty postdoctoral projects are being conducted within the framework of the international postdoctoral programme.

A summer research school was held for the second consecutive year, giving 29 first and second-cycle students the opportunity to conduct a research project on different themes under the supervision of a Digital Futures faculty, with a view to providing insight into the world of research and mentoring on academic career pathways. This programme included study visits to Digital Futures partners Xylem and Ericsson, career workshops and presentations of results from the research projects.

The annual Digitalize in Stockholm conference once again brought together about a thousand researchers and decision-makers from business, the academic community and public authorities to exchange knowledge. Young international researchers were given the opportunity to attend the Future DigiLeaders career development conference for the fifth consecutive year, and partners were involved in a day focusing on the topic of Stockholm Talents.

E-sciences

The Swedish e-Science Research Center (SeRC), the strategic e-science research domain, is run together with Stockholm University, Linköping University and the Karolinska Institute. SeRC research is conducted within what are known as multidisciplinary collaborative programmes.

The aim is to achieve added value through cooperation between research environments in applied research, methodology development and infrastructure. SeRC conducts research into modelling of the brain and nervous system, large-scale data analysis and patient data models in medicine, data-driven design of new materials, supercomputing software, visualisation, data analysis and machine learning. Climate is another important domain, and SeRC launched a new multidisciplinary partnership in the field of geophysics and climate in 2023. SeRC researchers achieved a number of noteworthy results during the year. For instance, new software code for fluid dynamics simulation was developed that allows the most advanced supercomputers to be used. This work is now a 2023 Gordon Bell Prize finalist – this award is sometimes known as the equivalent of the Nobel Prize in high-performance computing. SeRC teams also published papers in high-profile journals, relating to fields such as life sciences, materials science, fluid mechanics and visualisation.

Transport research

The strategic transport research domain, TRENoP, is run in cooperation with Linköping University and the Swedish National Road and Transport Research Institute. TRENoP recruited several new people and assessed a number of doctoral students in 2023. Since its inception, the TRENoP environment has assessed more than 60 doctoral students, most of whom have gone on to work at public authorities or in industry in Sweden. TRENoP is a multidisciplinary research partnership involving a number of several external partners and focuses on a sustainable, safe and resilient transport system. TRENoP research domains include transport, policy and user analysis, vehicle systems and their interaction, transport infrastructure and transport and logistics systems.

KTH is participating together with Linköping University and the Swedish National Road and Transport Research Institute in the Contingency Considerations in the Development and Long-Term Planning of Transport Systems project within the framework of TRENoP. This project is headed by the Swedish Defence Research Agency.

TRENoP has also been involved in the start-up of the Swedish Competence Centre in Road Technology: see the section entitled Research centre. TRENoP is also active in two of ten areas of excellence in the railway industry on which the Swedish Transport Administration will be focusing until 2030.

torander examinerades. Sedan starten har TRENoP-miljön examinerat över 60 doktorander varav flertalet har gått vidare till myndigheter eller industri i Sverige.

Production research

Excellence in Production Research (XPRES), the strategic production research domain, is run together with Mälardalen University, RISE and the Swerim metals research institute. The aim is to add value to Swedish industry and society with emphasis on sustainability that spans the fields of circular manufacturing and resource-efficient use.

XPRES research is focusing on discovery research of relevance to the manufacturing industry. Research activities in 2023 have focused on human-centred assembly, human-robot cooperation, AI and digital technology in production, circular manufacturing, additive manufacturing and 4D printing. Two EU-funded research projects are being used in collaboration with XPRES to address the challenges in respect of human-robot cooperation and circular manufacturing.

SciLifeLab

SciLifeLab is one of the government's major investments in research infrastructures in Sweden. It provides national research infrastructure in molecular life sciences, using advanced technologies and expertise to facilitate cutting-edge research and answer complex biological and medical questions. SciLifeLab's overall vision is to enable pioneering interdisciplinary research that would otherwise not be possible in Sweden, and to promote research that leads to societal benefits.

This organisation is run by the four founding universities – KTH, the Karolinska Institute, Stockholm University and Uppsala University – and through SciLifeLab's sites in Linköping, Lund, Gothenburg and Umeå. Cooperation within SciLifeLab is governed by procedural regulations and agreements between the founding universities. KTH is the accountable authority for SciLifeLab.

SciLifeLab has had an assignment from the government since 2021 in order to coordinate and establish national laboratory capacity that places Sweden in a better position to cope with future pandemics. Work on developing and testing these capabilities in the national network set up for this purpose continued in 2023.

The direct government funding for SciLifeLab amounted to about SEK 357 (343) million for infrastructure, including targeted funds for development of medications and pandemic preparedness in 2023. Activities at SciLifeLab are also funded via strategic research domains, including molecular bioscience, for SciLifeLab's four founding universities, which is helping to reinforce the research environments at each university linked to SciLifeLab. These amounted to some SEK 169 (166) million in 2023.

In 2023, the research infrastructure continued to serve researchers from all major universities conducting life science research in Sweden. Besides academic projects, the research infrastructure also provided service to and conducted joint development projects with the business sector and the healthcare sector.

In the precision medicine domain, SciLifeLab is running and participating in a number of national projects in close cooperation with the healthcare sector. The aim of this is to develop precision medicine for improved care based on large volumes of biological data from individuals.

The InfraLife project began in 2021 and is a partnership between the three large-scale research infrastructures SciLifeLab, MAX IV and ESS and the industry organisations SwedenBIO and Lif, the research-based pharmaceutical companies. This project holds funding from the Swedish Research Council and worked in 2023 on highlighting opportunities in the field of industrial collaboration projects.

The SciLifeLab partnership with the European Molecular Biology Laboratory is now in its third year, and in 2023 this resulted in research exchanges between the organisations.

SciLifeLab promotes strategic research partnerships with emphasis on open data sharing by making analytical methods and expert support available. SciLifeLab, together with the Swedish Research Council, built a data portal for COVID-19 research during the pandemic. This was then developed for wider application in 2023 and now operates under the name Pathogens Portal. SciLifeLab has also built a data portal to promote and enable data-driven life science research based on open data sharing.

SciLifeLab is involved in four major European health data-related projects within the scope of the Digital Europe Programme. Four years of funding have been awarded by Vinnova for a national coordination project for synergies between the projects and support for Sweden's development in the domain. This coordination project, which is being coordinated by SciLifeLab, is based on a pilot study that was conducted in 2023.

The infrastructure's technologies need to be at the forefront and relevant to the Swedish research community if they are to contribute to internationally competitive cutting-edge research. SciLifeLab's infrastructure units are monitored constantly and undergo regular international evaluation. An infrastructure needs assessment in respect of new technologies was conducted in 2023, and planning was initiated for the next international evaluation, which will be taking place in 2024.

Over the years, support from KAW has facilitated a number of major investments in the SciLifeLab infrastructure in order to assist with its development and expansion with financial support from the Foundation. KAW has also donated SEK 3.1 billion to the twelve-year Data-driven Life Science (DDLS) initiative, a data-driven life science research programme that began in 2021. SciLifeLab is coordinating this programme, which includes, besides KTH: the University of Gothenburg, Lund University, Linköping University, Umeå University, Chalmers University of Technology, the Swedish University of Agricultural Sciences, the Swedish Museum of Natural History, the Karolinska Institute, Stockholm University and Uppsala University. Twenty DDLS fellows, as they are known, have been recruited within the first phase of the programme.

Besides the research infrastructure and its users, SciLifeLab's scientific activities include unique research environments, which are made up of researchers affiliated to SciLifeLab. The research infrastructure, its users and the research community collectively create an ecosystem in which technologies and knowledge are utilised and developed to facilitate competitive research in molecular life sciences in Sweden. The SciLifeLab sites in Umeå, Gothenburg, Linköping and Lund were inaugurated in 2023, with conferences in all locations.

SciLifeLab's Stockholm site, Campus Solna, is the single biggest research environment where the three Stockholm universities and the national research infrastructure are co-located. In 2023, SciLifeLab continued its efforts to improve the coordination of the research environment at Campus Solna, and to streamline and enhance the quality of its service. The expansion of activities at SciLifeLab on account of new assignments and funding requires cooperation, continuous efforts

and reorganisation within existing spaces in order to meet new needs for premises.

SciLifeLab has what is known as a Fellows programme that is helping to improve the quality of research in the life science domains. The Fellows programme is funded through strategic research domains, such as molecular biosciences, at the founding universities where admitted SciLifeLab fellows are employed. 25 team leaders were active in the SciLifeLab fellowship programme during the year, of whom three fellows were appointed during the year and five completed the programme. This programme now has 21 alumni in total. In 2023, four new fellows were recruited to the programme, which is set to commence in 2024.

More information about activities at SciLifeLab is available in the separate annual report submitted by KTH to the government.

Strategic initiatives and special initiatives

KTH conducted a review of KTH's special research initiatives in the autumn of 2023. This includes research centres, KTH-wide research infrastructures, research platforms, strategic research domains and strategic partnerships.

Research centres

KTH has about 50 research centres. Research centres contribute to the development of competitive research environments together with external partners and offer networks for researchers and other stakeholders. Stakeholders included generate collaborative research where different partners agree on a common operational plan and contribute resources for its implementation. In 2023, KTH was awarded a number of grants for the establishment of new research centres.

The Swedish Competence Centre in Road Technology, a new centre of excellence in the field of road technology, was established at KTH together with the Faculty of Engineering at Lund University, coordinating, the Swedish National Road and Transport Research Institute, Chalmers University of Technology and Luleå University of Technology. This centre has received funding of SEK 40 million per year from the Swedish Transport Administration until 2034.

The Environmental Humanities Laboratory Centre of Excellence was established with the help of KAW funding. This centre focuses on the application of humanistic and social science methods and theories to issues relating to environment, nature and climate and their representations in society and culture. The term of office is five years, up to and including 2027.

Vinnova also granted KTH six new centres of excellence. Vinnova will be funding these centres of excellence with up to SEK 36 million each for the 2024–2028 period, with the possibility of an extension of a further five years. KTH is the coordinator for three of these:

- Dig-IT Lab Sustainable Industry for the digitalisation of smart and sustainable buildings that help to reduce energy use and carbon emissions from the construction and use of buildings.
- Neutron and X-ray science for industrial transformations. This centre focuses on sustainable materials technology and development of sustainable materials using large-scale neutron and X-ray sources.
- The Swedish Wireless Innovation Network, which focuses on sustainability and energy efficiency in wireless communications and the use of sustainable materials.

KTH is participating in three of the centres of excellence that have been awarded funding by Vinnova:

- Advanced Chip Technology, which focuses on development of processes and methods for semiconductor development.
- Advanced Computing for Sustainable Thermal Management in Industry, which focuses on heat transfer in industrial processes.
- Competence Centre for Bio-based Adhesives, which aims to accelerate the development of bio-based alternatives to fossil-based adhesives currently used in the furniture, construction and packaging industries.

A number of centres also received decisions on extended funding in 2023: the Centre for ECO2 Vehicle Design, CellNOva and the Centre for Mechanics and Materials Designs.

KTH's involvement in Knut and Alice Wallenberg's strategic initiatives

Wallenberg AI, Autonomous Systems and Software Program (WASP), is a research programme that began in 2015. This programme will run until 2031, with funding from KAW totalling SEK 4.9 billion. Linköping University is hosting the programme, and KTH is a partner together with Chalmers University of Technology, Lund University and Umeå University.

The research funded through WASP focuses on aspects such as:

- autonomous systems and AI in vehicles
- robots and other systems that will be autonomous and able to cooperate with one another and humans
- data-driven AI and advanced mathematics that can be used to interpret, analyse and present large data volumes for analysis and decision support in various sectors, for instance.

The Wallenberg Centre for Quantum Technology (WACQT), is a research centre with funding from KAW of SEK 1.2 billion for the period 2018–2029. This centre is hosted by Chalmers University of Technology. KTH is a partner, together with Lund University, Linköping University and Stockholm University. This centre consists of a main project with the goal of building a quantum computer at Chalmers University of Technology and three excellence programmes for different subfields: quantum communication led by KTH, quantum sensing led by Lund University, and quantum computing and algorithms led by Chalmers University of Technology.

Wallenberg Initiative Materials Science for Sustainability (WISE), is a research programme in materials science aimed at promoting a sustainable society. KAW is providing funding of SEK 2.7 billion to WISE between 2022 and 2033, and SEK 270 million has been reserved for the first three years. Linköping University is hosting the programme, and KTH is a partner together with Chalmers University of Technology, Lund University, Stockholm University and Uppsala University.

The Wallenberg Wood Science Center (WWSC), is a research centre that was established in 2009. WWSC focuses on making it possible to create new products from Swedish forest raw materials by utilising more of the timber. In 2022, WWSC was granted continued funding totalling SEK 380 mil-

lion for the period 2023–2028. KTH is hosting the centre, with Chalmers University of Technology and Linköping University as partners.

The Wallenberg Center for Protein Research (WCPR), is a research centre with funding of SEK 400 million for the period 2016–2023. This centre is hosted by KTH, with Chalmers University of Technology and Uppsala University as partner universities. The centre focuses on research into proteins and biopharmaceuticals. The aim is to build a leading international knowledge centre for protein research, focusing on the study of human proteins and the production of biopharmaceuticals. The research builds on the infrastructure and knowledge built up in the Human Protein Atlas project.

Research infrastructures

KTH is reliant on access to research infrastructure in order to conduct cutting-edge courses, study programmes and research. KTH continued to drive development work in 2023 with a view to providing long-term conditions for strategically important research infrastructures. During the year, activities were developed on the basis of the suggested improvements that emerged from the Research Assessment Exercise (RAE) that was conducted in 2021.

In the Swedish Research Council's call for research infrastructure of national interest, KTH was granted funding for three applications in 2023 for which KTH is the accountable authority:

- National Microscopy Infrastructure, which provides open access to state-of-the-art equipment and expertise in the field of microscopy and coordinates participation in international image processing infrastructures.
- National Genomics Infrastructure, which provides access to technology and computational tools for next-generation DNA sequencing, also known as massively parallel DNA sequencing.
- A Toroidal LHC Apparatus/A Large Ion Collider Experiment, ALICE/ATLAS, which are accelerator infrastructures used in high-energy physics.

Funding was also granted for a further seven research infrastructure applications involving KTH as a party. KTH also submitted 16 proposals for the Swedish Research Council's needs assessment for research infrastructure of national interest.

KTH has what are known as established research infrastructures that are of particular strategic importance to KTH. For these, KTH has long-term plans for organisation, quality development and funding. In 2023, KTH distributed some SEK 20 million to the established KTH research infrastructures so that they could invest in new instruments or upgrade existing ones.

Within Unite!, a handbook on research infrastructures was completed during the year: Handbook for Effective Access Management of Research Infrastructures – Insights, Strategies, and Best Practices.

KTH participated in the Vinnova-funded collaboration project Swedish Collaboration for Access to Lab Infrastructure. The aim of this project is to gather together universities and research institutes in Sweden around unified, legal and functional guidelines for making research infrastructure available. The project also aims to ensure consistent implementation of the new fee regulation for research infrastructures that came into force in 2022. The new regulation for fee charges was implemented at KTH in the autumn by means of a decision indicating which research infrastructures are to be included. Every research infrastructure was also tasked with listing criteria for access to the infrastructure.

A Stockholm Trio research infrastructure working group was formed in 2023. This group has been tasked with coordinating and developing research infrastructure within the three universities.

European Institute of Innovation and Technology

KTH is continuing its participation in five of the EIT's knowledge and innovation programmes in the fields of information and communication technology, energy, materials, health and mobility. The level of involvement has varied over the years, mainly on the basis of the circumstances and development plan for each programme. KTH has been the main partner in all programmes to date, but during the year a decision was made to change the membership in EIT Health and EIT Raw Material to "associated partner". These changes will come into force on 1 January 2024 and 1 January 2025 respectively.

In 2023, KTH was part of a fusion power initiative together with EIT InnoEnergy and the start-up company Novatron Fusion Group AB. Within EIT Raw Materials, KTH participated in three scale-up projects. These projects relate to the recycling of magnets and batteries, valorisation of industrial waste and resource efficiency in metallurgical processes. Within EIT Urban Mobility, KTH participated in Hub North, the regional innovation hub, which increased its efforts during the year to support and facilitate various forms of collaboration.

See the section entitled *Courses and study programmes*.

KTH's research platforms

KTH has six research platforms in the fields of digitalisation, energy, industrial transformation, materials, life science and transport. These research platforms are linked to KTH's interdisciplinary research domains and aim to promote organisation-wide activities and strategic initiatives in various research domains. In 2023, KTH organised a large number of activities within the platforms that were aimed at both external and internal participants with a view to facilitating and enabling various collaborations.

Focus on sustainable production in Södertälje

KTH's direct government funding for research and third-cycle education includes SEK 10 million for running operations in Södertälje. The research activities in Södertälje have three specialisations: production management, industrial reliability and production logistics. Operations in Södertälje are conducted in close collaboration with partners Scania, AstraZeneca and the municipality of Södertälje. This initiative includes three externally employed doctoral students from Scania and one from AstraZeneca, as well as joint projects with funding of SEK 3 million from Scania, SEK 1 million from AstraZeneca and almost SEK 4 million from the municipality of Södertälje. The funding from the municipality of Södertälje includes targeted financial support for the KTH Lean Centre, which promotes sustainable business development through courses and study programmes, seminars and coaching for the business sector and the public sector.

In November 2023, the University Board decided to relocate KTH's operations in Södertälje to KTH Campus and KTH

Flemingsberg by 2027. This decision also means that KTH will be further developing its collaboration with KTH's partner in Södertälje by means of targeted education and research initiatives. See the section entitled *Premises*.

Specific areas of support

Ethics in research

KTH continued to develop its ethics and compliance system in 2023. This includes offering support on ethical review, handling of sensitive personal data, research funding bodies' requirements, as well as authorship issues and other aspects of good research practice. The Faculty Council's ethics committee assesses research projects at the request of researchers. Three research projects were assessed in 2023. A network for research ethics in ethnographic studies was established on the initiative of researchers.

Export control

KTH has an export control function in order to support researchers with export control classification of hardware, software and technical information in projects. This function also supports the organisation with applying for permits from the authorised public authorities, informing the organisation and conducting due diligence processes for partners and others. The world's geopolitical situation and the increased sanctions mainly targeting Russia and Iran meant that strong focus on export controls continued in 2023. During the year, KTH increased its focus on collaborations and assessments of the risk of deflection of sensitive technology.

Publishing and bibliometrics

Bibliometric indicators can be used to analyse the research footprint and citation impact of universities, as well as ongoing quality enhancement activities and follow-up. For several years, KTH has conducted an annual bibliometric follow-up that provides an overview of KTH's publications, citation impact and co-authorship with other universities. All figures presented in this section are taken from the annual follow-up. Definitive data for 2023 in respect of volume and open access articles can only be presented next year due to delays in recording such data in the publication databases. For citations, it makes sense to initially measure these a few years after the research results have been published.

KTH's publication volume of peer-reviewed articles has remained relatively constant in recent years at between 4,200 and 4,400 articles. The number of articles in journals has been increasing slightly, but this appears to be levelling off. The number of papers has been decreasing for a time, particularly in 2020 and 2021: this was probably an effect of the pandemic. Some recovery was seen in 2022, although the long-term trend is a declining volume.

KTH's field-normalised citation rate (cf) stands at 1.10 for 2021, where a value of 1 represents the average value in the various subject areas on a global level. KTH's value shows a citation rate 10 per cent above the world average. The value is 1.15 over the entire evaluation period 2013–2021. The citation impact varies more at department level, from values below one to above three. The proportion of articles in the top 10 per cent in their respective subject areas is 11.3 per cent in the last year. The top 10 per cent indicator is relatively stable over time for KTH as a whole.

KTH's value for the field-normalised journal citation indicator (jcf) for 2022 is 1.22, which corresponds to 22 per cent above the global average. This indicator is relatively sluggish at university level, and KTH has been in the 1.21–1.30 range over the last five years. This indicator is traditionally interpreted as visibility among the publication channels.

Open access publications

In 2022, KTH issued more than 79 per cent of its peer-reviewed research results as open access publications. KTH is thus well on the way to achieving the goals of the bill Forskning, frihet, framtid – kunskap och innovation för Sverige (Research, Freedom, Future – Knowledge and Innovation for Sweden) (Government Bill 2020/21:60), which indicates that all published material should be openly accessible immediately upon publication. About 99 per cent of KTH's doctoral and licentiate theses are openly accessible. Figure 21 shows the number of open access journal articles at KTH between 2013 and 2022.

Scholars at Risk

KTH has been a member of the Scholars at Risk (SAR) organisation since 2017, and actively participates in the Swedish section, SAR Sweden. SAR works on issues relating to academic freedom and helps researchers at risk by providing them with refuge during a brief period of employment.

KTH's efforts to host researchers at risk within the framework of its membership of the SAR organisation continued in 2023. These positions are financed by funds from KTH and external funding bodies such as KAW, the Swedish Foundation for Strategic Research, the Riksbank's Jubilee Fund and the Swedish Research Council. Some of the six Ukrainian researchers who were welcomed by KTH in 2022 have been employed in 2023 as well. Some have since continued employment by other means. KTH welcomed three more Ukrainian researchers within the scope of SAR in 2023.

Cooperation

The goal of KTH's strategic collaborations is to enhance the quality and relevance of education and research while also generating benefits for external parties and the world. KTH is constantly focusing on promoting and reinforcing a systematic approach to collaboration through support functions comprising expertise in strategic partnerships, as well as collaboration with small and medium-sized enterprises and regional stakeholders.

Strategic partnerships

KTH has 14 established long-term strategic partnerships with major global corporations, the public sector and leading research institutes that are of particular significance to KTH's activities.

Strategic partnerships help to enhance the quality of KTH courses, study programmes and research, increase opportunities to obtain research funding, increase opportunities for the university's students to work on relevant projects and increase co-utilisation of research infrastructure. Strategic partnerships provide a structured way of developing collaboration with the surrounding community both nationally and internationally. Examples of initiatives in 2023 are as follows:

- Construction of the Future Education External Advisory Forum (FEEAF), which was established in 2022. This forum is an advisory body for programme development and skills supply, with representatives from KTH's strategic partnerships as well as the Association of Swedish Engineering Industries, the Federation of Swedish Innovation Companies, Architects Sweden and the Swedish Association of Graduate Engineers. FEEAF has shaped its programme statement in 2023 and identified priority areas on which it needs to work.
- International study visit from and collaboration between KTH and The Wharton School, University of Pennsylvania. This study visit involved a number of site visits to industrial companies and strategic KTH partners.
- Workshop at Digital Futures, with researchers from KTH and Purdue University together with Saab AB and Saab Inc, US, on the topic of autonomy. This workshop resulted in a number of proposals for joint projects.
- Establishment of a fair together with THS and its sections with a view to facilitating dialogue and contact between the sections and the strategic partner companies.
- Degree projects, degree project fair, guest lectures, project courses, study visits and participation in programme councils.

The work with the strategic partnerships is followed up regularly by KTH's management together with the management of each partner. KTH's management met with the majority of the strategic partnerships in management dialogues during the autumn.

Personal mobility

Personal mobility between the academic community and other organisations such as companies and the public sector is an important element in KTH's strategic collaboration. Personal mobility helps to increase knowledge transfer between different organisations and is therefore a feature of the dialogue within the strategic partnerships. KTH offers several forms of personal mobility: adjunct professor, affiliated faculty and employed doctoral student.

The Adjunct and Affiliated Faculty Forum is held in order to maintain a dialogue with, and offer the opportunity for, Adjunct Professors and affiliated faculties to meet one another in a KTH environment. Two forums were held in 2023: one involving a discussion on collaboration, and one involving a study visit to the KTH visualisation studio.

Efforts to increase the societal impact of KTH's courses, study programmes and research

KTH has a clear ambition to be a leader in terms of societal impact, particularly through collaboration.

Several of KTH's schools have clarified their management responsibility for collaboration issues in 2023 by integrating the impact manager's assignment into the Deputy Head of School role. Impact work includes laying the foundation for increased societal impact, capturing results and effects and communicating about impact.

In late 2023, impact managers participated in KTH's work with the UKÄ's thematic evaluation of collaboration at Swedish universities. A number of areas in which development is needed have been identified in connection with this work. These will be taken further in 2024 in order to further reinforce KTH's collaboration with the surrounding community. See the section entitled *Systematic quality enhancement activities*.

KTH joined the Coalition for Advancing Research Assessment, CoARA, in the spring of 2023. This coalition focuses on developing and broadening what is assessed and recognised in research and research organisations in terms of outcomes, practices and activities that maximise the quality and societal impact of research. See the sections entitled *Systematic quality enhancement activities* and *Staff*.

Other collaboration

KTH promotes collaboration with small and medium-sized enterprises and regional development by making it easier for both companies and KTH teachers and researchers to initiate and implement collaborative projects.

In 2023, KTH collaborated with Science Parks in Region Stockholm with particular emphasis on collaboration with small and medium-sized enterprises. KTH has been involved in initiatives such as the Frontrunners for Sustainable Innovation project funded by Structural Funds: this project is run by Kista Science City and Södertälje Science Park in collaboration with KTH. The aim is to identify and make available regional

resources in respect of cybersecurity and secure digitalisation for small and medium-sized enterprises. KTH is also collaborating in the Fordonsdalen REACT project, which is aiming to create growth and employment in Sweden with emphasis on the automotive and transport industry.

KTH has collaborated with the municipality of Oskarshamn for a number of years. Matchmaking of degree projects, study visits and other activities linked to the programmes have been undertaken with companies in the region within the framework of this cooperation. Bengt Karlsson from the municipality of Oskarshamn's Nova business and education initiative was awarded an honorary doctorate at KTH during the year in recognition of the value to KTH of the municipality's efforts.

KTH has also worked actively during the year to develop formats for pilot activities together with local study centres all over the country. These pilot projects aim to test ways to use infrastructures for laboratory sessions and projects in courses and study programmes using local study centres as a platform. These activities also involve specialised contacts and further opportunities for cooperation with the business community that operates in the municipalities in which the pilots are conducted.

In 2023, KTH has launched a new digital degree project portal as part of an initiative to increase ease of use and facilitate contact between students and employers still further. The degree project portal allows companies, organisations, institutes and institutions to publish proposals for degree projects, as well as seasonal work and spare-time jobs.

Fundraising

KTH's fundraising activities are a long-term initiative with a view to increasing private external funding for KTH. This activity is complementary to traditional funding. Major funding bodies with a multi-year commitment include the Erling-Persson Family Foundation, the Promobilia Foundation and Spotify founder Daniel Ek. A complementary and important part of this work involves arranging seminars to increase awareness of KTH's activities and strengthen relations with the surrounding community.

In 2023, support has been received through donations for the Climate Action Centre, the KTH Baltic Tech Initiative and the KTH Ukraine Scholarship Programme. Collaboration on student project scholarships has been established with the Swedish Association of Graduate Engineers organisation and Stiftelsen Grosshandelssocietetet (the Wholesale Society Foundation) within Stockholms Borgerskap (Stockholm Citizenship).

Innovation office

KTH has worked closely with universities in Region Stockholm since the innovation office was established. These partnerships have deepened over the years. KTH is allocated funding to provide support to other universities, in particular the Stockholm School of Economics (HHS), the Swedish School of Sport and Health Sciences (GIH) and Södertörn University (SH). KTH has collaborative agreements with these universities to provide services for innovation development and the transfer of funds to build up basic recipient expertise and own innovation support at each university. Innovation development services include support and advice on business development, funding, patents and recruitment. Together with KTH, the three universities have developed an action plan for activities and initiatives to strengthen innovation support on a local level. At the same time, KTH has opened its innovation support activities to individual researchers and students at the three universities.

In 2023, GIH and the Innovation Office jointly planned and implemented the GIH Innovation Day for alumni, students, researchers and staff at GIH. The aim of this was to capture and encourage interest in innovation at the university and show how they can take their innovations further.

The Innovation Office implemented a joint programme, IDEATE, in 2023 together with the SSE Business Lab at HHS. This aims to bring together students interested in innovation from the two universities and provide them with inspiration, tools and coaching to form teams around an idea and turn it into reality. This year's twelve-week programme involved 30 students.

During the year, SH has established Innovation Station Flemingsberg, a co-working environment, innovation hub and meeting venue where SH's innovation activities with students and researchers meet both regional and international partners.

The Brighter Startup internationalisation programme took place for the eleventh consecutive year, this time with visits to Germany and the US. The programme was open to innovation projects from KTH, HHS, GIH and SH and includes ten projects. The aim of this programme is to increase participants' knowledge of entrepreneurship in an international context and create encounters between Swedish start-up companies and international stakeholders.

The innovation office at KTH has worked closely with Uppsala University on patent support and participated in experience sharing with other innovation offices since it was formed. In 2023, increased cooperation between the innovation offices at KTH, KI and SU has also begun within the framework of the Stockholm Trio university alliance.

Innovation support activities at KTH

KTH Innovation helps researchers, students and staff at KTH to commercialise their research results and business concepts in the earliest phases.

The overall objectives for KTH Innovation are to:

- Create conditions that will allow innovations to emerge and develop throughout KTH in order to strengthen KTH's competitiveness and attractiveness as an innovative and entrepreneurial university.
- Make it possible for more ideas and results from KTH students, researchers and staff to meet market needs and become successful innovations helping to bring about sustainable social development.
- Run and advance an effective and inclusive innovation process that will develop and support people with ideas and their path towards the market in the best way possible.

Further develop a strong, complementary ecosystem for innovation support at KTH with international connections.

In 2023, KTH Innovation has continued its efforts to highlight and follow up how individual innovation projects relate to the UN Sustainable Development Goals. These activities are also in line with KTH's sustainability goals. The ambition of more than 80 per cent of active ideas in the KTH Innovation

Process is to actively contribute to one or more of the UN's Sustainable Development Goals.

Ten new winners of the Global Change Award have been selected during the spring and are now participating in a twelve-month accelerator programme in which KTH is a partner.

In June 2023, as part of its EU presidency, Sweden organised a European policy conference on deep tech, i.e. technologies based on groundbreaking progress in research. This conference focused on the conditions needed for deep tech companies to establish themselves and grow in Europe. KTH Innovation organised a parallel event for delegates on the topic of The Swedish Model for University Spin-offs.

KTH Innovation has expertise in process-oriented innovation development. The proprietary tool KTH Innovation Readiness LevelTM is made available through a creative commons licence via the website that KTH Innovation has set up. This website describes the tool and how it can be integrated into innovation development at companies, public authorities and organisations. By the end of 2023, 2,618 people from 2,503 unique organisations had registered. The organisations that have registered range from incubators, science parks and innovation offices to universities, global companies, charities, banks, public authorities and start-ups.

The third recipient of the KTH Innovation Award was announced in July 2023. This is an award established by KTH with donations from Professor Mathias Uhlén and Spotify founder Daniel Ek. The award recognises individuals from KTH who have tackled global challenges by exhibiting creativity, perseverance and courage. This year's recipient, Padideh Kamali-Zare, a KTH alumnus and founder of the biotech company Darmiyan, was presented with the award "For tackling dementia, one of the biggest health challenges of our time. Watching her grandmother suffer from Alzheimer's disease ignited a spark that took her through studies and research in Biological Physics at KTH Royal Institute of Technology to found and build a company that develops groundbreaking solutions for early detection of neurodegenerative disease. Her work is on the way to becoming an important piece of the puzzle in the fight against dementia."

Sundar Pichai, global CEO of Google and Alphabet, visited Sweden in May 2023. He visited KTH at that time and took part in a panel discussion on the topic of AI.

KTH Innovation received 424 new ideas in 2023, of which about 35 per cent came from researchers and 65 per cent from students. See Figures 24 and 25 for more details and Figure 26 for definitions and boundaries. The commercialisation projects supported by KTH Innovation have attracted a total of just over SEK 67 million in funding from parties such as Vinnova's Verification for Growth programme. 32 new companies were created during the year, of which 17 are research companies, and 17 patent applications were filed. 38 projects were admitted to the pre-incubator programme at KTH Innovation during the year, and 9 companies were admitted to Swedish and international incubators. Stockholm's innovation ecosystem is one of the most developed in the world, and there are many alternative routes to market that mean that most companies undergo further development in ways other than via a traditional incubator.

Digitalisation

KTH conducts leading research in the field of digitalisation. This also forms a natural part of the majority of KTH's courses and study programmes.

Digitalisation strategy

KTH's digitalisation strategy between 2023 and 2027 includes four overall goals that will help to enhance quality in education and research:

- Strengthening the digital skills of staff and students.
- The right digital conditions for the management, planning and monitoring of operations.
- Simplified and efficient administration through user-oriented operational support.
- Digital infrastructure ensuring that data is made available internally and externally in the right way at the right time.

Portfolio management

In 2023, KTH continued to develop its work on portfolio management for IT development. Support functions were established in order to manage and coordinate various IT initiatives in education, research and administration, for instance. The work was also underpinned with an IT controller during the year.

Long-term development is planned in three areas within the education IT development portfolio: learning support, examination and decision support. The IT development portfolio for research prioritises research data and research support for analysis of research publications. The IT development portfolio for administration focuses on developing system support for HR, planning, budgeting, follow-up and staffing.

Digitisation of research data

KTH offers services and support for research data management. This is done to facilitate research, where data needs to be documented and shared between different collaborating parties, and also to ensure that the research data on which the research results are based is searchable and usable. A decision was made during the year to establish an administration relating to KTH's research data, where user-centred methods are key to guiding KTH's researchers to appropriate digital services in order to enable good management of research data. Digital service offerings are undergoing further development within the framework of the IT portfolio for research.

Digitalisation in education

The IT development portfolio for education forms the basis for the digitalisation of education.

Canvas is KTH's digital learning platform. Figure 27 shows the number of page views in Canvas per year for the period 2019–2023. The use of KTH's digital education environment has doubled since before the pandemic and is continuing to grow steadily. Canvas had a total of 148 million page views in 2023, compared to 131 million page views in 2022. The Zoom digital meeting tool was used for 1.2 million call hours in 2023, compared to the peak of 4.3 million hours in 2021.

One technological development that affected the digitalisation of education in 2023 was the launch of more user-friendly generative artificial intelligence (AI) services that are capable of producing texts and images, for example, based on input from users and data used to train the system. Information on how generative AI can be used as a learning tool was compiled for both teachers and students during the year.

In the spring, a decision was made to create procedures, develop user support and examine the conditions for anonymous assessment for legally secure examination. Anonymous assessment means that students' identities are hidden from the teacher at the time of assessment, which counters the risk of teachers' preconceptions influencing their assessment of students' performance. The approach is that anonymous assessment should be applied wherever possible and appropriate, but it should not jeopardise the pedagogical rationale of the examination. Comprehensive efforts relating to anonymous assessment in digital environments were implemented, technical solutions, educational administrative processes, educational materials, continuing professional development activities and opportunities for one-on-one supervision with an educational developer now being available for teachers who wish to use anonymous assessment in their courses.

Significant changes in the digital education environment were made by switching to the Canvas learning platform for programme-wide information, communication and collaboration. A solution developed locally was used previously. Additionally, the personal menu in Canvas was updated with new functionality to facilitate navigation in the digital environment.

Two major initiatives were started during the year. As regards study administration, KTH is participating in the national development of functionality for programme planning as part of the Ladok system. In November, a decision was made to develop a new pedagogical and technical solution for evaluation and analysis of all KTH courses.

Digital accessibility to public services

The Access to Digital Public Service Act (2018:1937) (DOS Act) contains provisions on requirements for access to digital services provided by a public stakeholder. KTH produces an annual accessibility report that describes the accessibility of the KTH website in accordance with the requirements of the DOS Act.

A project aimed at ensuring KTH's compliance with legal requirements for digital public service accessibility was completed in 2023. According to international standards, there are more than 50 criteria for accessibility. KTH's accessibility report for 2023 shows that KTH meets the criteria by some margin, but that there are a number of shortcomings as well. An employee training programme on digital accessibility was launched in 2023.

External digitalisation initiatives

Expert Learning Lab

KTH has initiated the Expert Learning Lab together with Chalmers University of Technology, Linköping University, Örebro University, ABB, Ericsson, Saab and the Volvo Group. The aim of this is to support learning in critical areas of advanced technology and reinforce the role of the academic community in lifelong learning.

The Expert Learning Lab is enabled and funded by the industry together with the Advanced Digitalisation programme initiated by ABB, Ericsson, Saab, the Association of Swedish Engineering Industries and Vinnova. This programme includes almost 200 stakeholders who are working together to make it possible for Sweden and Swedish industry to accelerate the development and use of new technologies such as AI, autonomy, collaborative systems and extended reality. The lab aims to serve as an innovative environment for cross-organisational learning in which industry and the academic community work together to ensure Sweden's future competitiveness.

Skills development for advanced digitalisation of industry

Vinnova's Advanced Digitalisation programme is funding a project to study the effects of various policy changes in the higher education sector. KTH is leading the project, and Chalmers University of Technology, Linköping University and Örebro University are also participating. This project aims to explore and test the opportunities that amendments to policies such as funding, legislation, culture and incentives could contribute as regards the skills development offering for advanced digitalisation.

AI Competence for Sweden

In 2018, the government commissioned KTH – together with six other universities – to establish a knowledge platform for AI. This cooperation between universities has continued and expanded, with more universities participating. This has also resulted in AI Competence for Sweden, a cooperation for lifelong learning on applied AI. AI Competence for Sweden has been maintained in 2023, and its future will be decided by the consortium in the coming years. KTH has offered lifelong learning courses in 2023 in which digitalisation and AI are key elements. These programmes have been conducted together with parties such as KTH Executive School AB for a large number of professional participants.

Health Data Sweden

KTH is coordinating the new national Health Data Sweden (HDS) initiative, which comprises 18 partners from universities, regions, innovation environments and research institutes. Expertise and service offerings will transfer knowledge to the public sector, the business community and the general public through HDS.

Sharing knowledge and experiences from the best initiatives will allow the use of health data to be accelerated in order to help bring about more effective healthcare. To meet the high demand for services, it is made possible for small and medium-sized enterprises to develop new digital health and welfare services in collaboration with the public sector. Besides improving health for individuals, these services may help to resolve major demographic societal challenges, such as making healthcare more accessible and equitable.

Information security

KTH has for a number of years identified risks linked to information security and digitalisation in its risk analysis. The internal audit has also reviewed and followed up on the development of KTH's ongoing efforts in respect of information security. KTH is working to complete the measures decided upon by the University Board as a result of the reviews conducted by the internal audit function. The risk analysis for 2023 identifies a number of risks related to ongoing work. See the section entitled *Systematic quality enhancement activities*.

The operational plan for operational support for 2023 includes a number of assignments aimed at reinforcing KTH's information security. These include GDPR compliance, IT security reviews, information security management systems and handling of access rights.

A security department has been established within the operational support function following an overall assessment, which included consideration of previous audits and reviews. Besides information security and data protection, this department will be working with physical security, security protection and preventive efforts to avoid exposing staff to various forms of influence. Contract law, export control, ethical review and administrative law are other important functions that contribute to IT and information security. See the sections entitled Systematic quality enhancement activities and Research.

There are many challenges in the field of research that relate to information security, such as information management and funding. KTH has a guideline that regulates the handling of research data in accordance with international good research practice principles and in accordance with current legislation for various types of data in the research domain. The security situation is actively being monitored, and one area that has been specifically identified is continuity planning, where electricity supply, data connections and physical security are vital components.

Gender Equality, Diversity and Equal Opportunities

KTH's ethical policy states that gender equality between men and women and rejection of all forms of discrimination are both a quality matter and a natural element in the university's core values. KTH's development plan for 2018–2023 states that in-depth efforts to raise awareness and develop skills in terms of gender equality and the core values are required if the university is to achieve its goal of being an open and welcoming place.

Greater gender equality at KTH means:

- more equal representation of men and women in activities and on decision-making bodies
- gender-aware leadership
- gender mainstreaming in courses, study programmes and research promoting gender equality outside KTH as well
- allocation of resources with a gender equality perspective and equal conditions for staff within various parts of KTH.

The KTH operational plan describes how the university will be working with gender equality in education, research and collaboration over the year. The plan has been followed up as follows:

More equal gender distribution among KTH professors. The heads of school were tasked with identifying environments in which there are gender imbalances among professors. This was part of a strategic investment in female visiting professors in order to achieve more even gender balance in the long term. Two appointments were made during the year.

Resource allocation from a gender equality perspective. The final report on the review of KTH's resource allocation models describes the process and recommendations for continued efforts from a gender equality perspective as well.

Unite! KTH has contributed to gender equality, diversity and equal opportunities work within the Unite! collaboration within the framework of both Horizon 2020 and Erasmus+.

KTH's gender mainstreaming work is based on the Plan for continued work for a gender-equal KTH. This plan has four priority areas: collective organisation, knowledge and awareness, equal conditions and inclusive cultures.

Collective organisation

Collective organisation refers to a structure for systematic gender equality, diversity and equal opportunities work, linking together discrimination legislation, working environment legislation, gender mainstreaming and work on the core values and pursuing these aspects in the same way throughout KTH. KTH Equality Office coordinates and supports the university's work with gender mainstreaming and work on the core values to promote an inclusive culture and equal conditions and to counter discrimination. KTH conducts research-based proactive work at both strategic and practical levels with a view to increasing gender equality, diversity and equal conditions from an intersectional perspective throughout the entire university organisation. This is based on legal requirements, government assignments and KTH's own regulations. Gender equality enhancement activities is targeted at staff and students at all levels and focuses on both structural and cultural aspects of inequality and gender inequality.

The JMLA Group

There is a gender equality, diversity and equal opportunities officer (JMLA) in each school's management team, in joint operational support and in the student union. The JMLA group is a strategic group for gender equality, diversity and equal opportunities issues at KTH. A gender equality, diversity and equal opportunities partner at the schools' University Administration supports the JMLAs.

The JMLA group is responsible for coordinating and driving local gender equality, diversity and equal opportunities initiatives, with emphasis on both the working environment and the study environment. Each JMLA group organises at least one local gender equality, diversity and equal opportunities group in their own organisation. As of 2023, KTH does not have a Vice President for Gender Equality and Core Values. The remit of the JMLA group has been expanded as a result. The plan for continued work for a gender-equal KTH has been revised to reflect the organisational changes.

Integration of gender equality, diversity and equal opportunities into the Sustainable Development Goals

The fact that gender equality, diversity and equal opportunities are integrated into sustainability efforts at KTH was clarified when a decision was made on KTH's sustainability goals for the 2021–2025 period. Emphasis has been placed on this in the integration of gender equality, diversity and equal opportunities aspects in all degree programmes, highlighting sustainable development as an entry point for gender equality, diversity and equal opportunities knowledge in education.

Knowledge and awareness

Knowledge and awareness involves raising awareness about gender and gender equality throughout the organisation. This must be done in such a way that the knowledge can be put into practice, both in society and at KTH, in fields such as leadership development, teaching and learning in higher education and student education. Research-based gender knowledge forms a basis for problem description and analysis, while knowledge of change work in organisations is crucial for gender equality work in practice.

Integration of gender equality, diversity and equal opportunities in education

Various initiatives have been implemented over a number of years to integrate knowledge of gender equality, diversity and equal opportunities into courses and study programme at KTH. Work on integration of gender equality, diversity and equal opportunities has continued in 2023 through dialogues, workshops and other initiatives.

Gender equality, diversity and equal opportunities must be integrated into all degree programmes at all levels so that students can help ensure the sustainable development of society after they graduate.

Gender equality must be reflected in processes, decisions and regulations. KTH has a compulsory module involving a basic knowledge of gender equality, diversity and equal opportunities, known as Spår 1 (Track 1), in order to achieve KTH's core values, the gender equality policy goals and the government's gender mainstreaming assignment. This module must be included in all programmes at all levels and examined within the course that includes the module. Track 1 provides the following information about gender equality, diversity and equal opportunities:

- what the terms gender equality and equality mean
- how they are linked to sustainable development
- how gender inequality and inequality may be expressed
- that gender equality and equality require change work.

Third-cycle education also provides a research perspective on gender. Teaching and learning in higher education must also include knowledge of gender awareness and inclusive teaching and learning.

When designing track 1, there is a clear structure in place indicating when and how integration takes place in each programme, and a clear structure for follow-up via programme analyses in the quality system. Support for Programme Directors and teachers with regard to implementation is provided through Necessären, a web-based resource, other training materials, a higher education pedagogy course entitled *Gender research and gender equality in technical higher education*, and workshops. The course on teaching and learning in higher education was offered to doctoral students as well for the first time in 2023. The examination for the course consists of work with the participant's own courses and programmes taught by the teacher, from a gender equality or gender perspective.

Teachers work through integration work to promote a gender-equal and equal educational environment that is free of discrimination by means of procedures and information to counteract harassment and sexual harassment, for example, and by practising gender-aware and inclusive teaching and learning as part of their work with KTH's core values.

A level playing field

Equal opportunities refers to equal conditions in terms of pay, power and career. In 2023, KTH has continued its efforts to increase the proportion of women among newly recruited professors: see the section entitled *Staff*. Efforts have also continued on increasing the proportion of women in other senior academic positions, in leadership positions, among students and among teachers and researchers. KTH is constantly working to develop gender-equal processes in respect of recruitment and employment and criteria for gender-equal resource allocation.

Partners in Learning (PIL)

The PIL programme is a career support programme for assistant professors. This programme is delivered regularly. It is led by two expert researchers and always includes modules on gender equality, diversity and equal opportunities aspects and core values. See the section entitled *Staff*.

Continuous follow-up and the quality system

Gender mainstreaming and active anti-discrimination measures are integrated into the quality system, including the schools' faculty renewal and faculty development plans. This work has involved analysing problems and identifying and implementing active measures. The work is being followed up within the quality system. See the sections entitled *Systematic quality enhancement activities* and *Staff*.

Extended salary survey

KTH conducts an annual salary survey that is finalised before the salary review in order to provide information for managers who set salaries. KTH monitors the occurrence of excessive salaries and pays attention to unequal pay structures in budget and payroll processes. In 2023, there was also a degree of extended analysis of men's wages in relation to women's, following joint discussions on the need for broader pay expertise in certain areas.

Inclusive cultures

Inclusive cultures are based on an awareness of core values, codes of conduct and how to create an inclusive culture. It also includes awareness of the relationship between sustainable development and gender equality, diversity and equal opportunities issues, a clear zero tolerance approach to harassment and discrimination, and transparency and clarity in communication about gender equality, diversity and equal opportunities initiatives at KTH.

Prevention of sexual harassment and gender-based vulnerability

KTH initiated the Research and Collaboration Programme against Sexual Harassment and Gender-based Vulnerability together with the Karolinska Institute, Malmö University and the Swedish Secretariat for Gender Research at the University of Gothenburg. A comprehensive national prevalence study on the occurrence of sexual harassment in the Swedish higher education sector was conducted in 2021 within the framework of the collaboration programme. A report on the results was published in 2022. A report on KTH's findings from the study was produced in 2023, with suggestions on how they can be discussed at workplace meetings, for example.

Orientation of new students

In 2023, KTH has continued to work on the systematic integration of gender equality, diversity and equal opportunities in the orientation activities through a partnership with THS. Around 700 students who arrange orientation activities received training during the year on gender equality, diversity and equal opportunities, and also on dealing with sexual harassment and racism.

Environment and Sustainable Development

KTH's ambition is to be a leading technical university in respect of the environment and sustainable development, and to have an identity and a brand associated with these matters. As a technical university, KTH has a key role to play in influencing social development in a positive direction in order to contribute to the UN's 17 Sustainable Development Goals.

KTH's courses and study programmes provide the next generation with the knowledge and skills they need to address current and future challenges. If the university is to contribute to a sustainable society, it is vital for research to be passed on and put into practice. That is why KTH places great emphasis on collaboration with various societal stakeholders, and on highlighting new research findings.

KTH has the commitment and leadership to go on developing and enhancing environmental and sustainability work. KTH's strategic efforts in respect of these issues are based on the KTH sustainable development policy, the Sustainable Development Goals for the period (2021–2025) and the climate goals for the 2021–2045 period. In November 2023, the University Board adopted a Vision and Overall Goals for KTH that show the way and direction for KTH's development and sustainable development efforts for the 2024–2028 period.

Organisation and working methods

KTH Sustainability Office is tasked with offering support in KTH's efforts to integrate sustainable development into operations. KTH Sustainability Office must support and coordinate efforts to implement and follow up on KTH's sustainability and climate goals and associated action plan. The KTH Sustainability Office works with sustainability rankings, participates in national and international meetings and networks, and is responsible for coordinating and managing KTH's certified environmental management system. The KTH management structure was amended in 2023, which meant that the appointment of the Vice President for Sustainable Development ceased at the halfway point of the year.

One of KTH's sustainability goals aims to ensure that sustainable development and gender equality are integrated into the organisation, and that staff and people working on behalf of KTH have knowledge and are given the prerequisites to participate on the basis of their roles. In 2023, KTH completed and launched the new digital internal training programme entitled Sustainable Development at KTH. This course is aimed at all staff with a view to ensuring that all staff are familiar with the sustainability goals and know how they can contribute to them on the basis of their roles.

Environmental management system and ranking

KTH is driving the implementation of the 2030 Agenda and the Sustainable Development Goals within the framework of its environmental management system by linking KTH's degree programmes to the Sustainable Development Goals and ensuring that research projects describe how they are addressing the Sustainable Development Goals, for example. The work with the 2030 Agenda is set out annually in a report describing how KTH contributes to all 17 of the Sustainable Development Goals. For each goal, the report provides good examples of how KTH contributes to sustainable development in education, research and collaboration, and how we are working to reduce the environmental impact of our activities. Under Goal 7, Affordable and Clean Energy, examples are given of interdisciplinary research partnerships through KTH's energy platform, the Master's programme in sustainable energy technology and how we are working with our landlords to reduce energy consumption from our buildings and premises.

KTH's environmental management system has held accreditation to the international environmental management standard ISO 14001 since 2015, and is compliant with the requirements of the Environmental Management in State Agencies Ordinance (2009:907). KTH's environmental management system covers sustainable development in education, research and collaboration. It also includes impacts from its own operations, such as sustainable meetings, use of space and energy in buildings, procurement, chemical and waste management, food and catering, and biodiversity.

KTH conducts annual internal and external environmental audits where suggestions for improvement are highlighted so as to go on improving environmental and sustainability work. KTH follows up this work on the sustainability goals and the environmental management system twice a year at different management levels. This includes following up the results from the Swedish Environmental Protection Agency's reporting to the government.

The annual internal environmental audit reviewed two departments in each school and their work on the Sustainable Development Goals and the environmental management system. The audit also covered schools' waste management and safety data sheets for chemicals.

In connection with the management dialogues in 2023, the following areas have been prioritised for further work in 2024 with a view to achieving the Sustainable Development Goals by 2025:

- Mainstreaming of sustainable development within the scope of lifelong learning and the Future Education at KTH change programme.
- Mainstreaming of sustainable development in recruitment and promotion processes.
- Skills development of staff knowledge in the field of sustainable development so that they can help to bring about a sustainable societal transition in their daily work.
- How sustainable development is to be integrated into the remit of the schools' new faculty boards from 2024 onwards.
- How researchers address sustainability issues in their

- research and strengthening interdisciplinary research to enhance the ability to resolve complex societal problems.
- Go on working within the framework of the Stockholm Trio for Sustainable Actions to map and visualise research and education at the three universities, alongside work that has begun on increasing collaboration with the City of Stockholm and Region Stockholm.
- Increased visibility for KTH research in sustainable development and improved placements in rankings.
- Reducing KTH's climate impact through sustainable meetings, more efficient use of premises and energy, better waste management and improved resource management by developing circular flows in respect of the goods and services used to conduct education and research.

KTH was ranked 46th (42nd) of 1,591 participating world universities in the THE Impact Rankings, which focus on the UN's 17 Sustainable Development Goals and the implementation of the 2030 Agenda. This result is slightly worse than the previous year. This should be regarded against the fact that the number of participants had increased from 1,406 universities to 1,591. KTH participates in the QS World University Rankings: Sustainability and was ranked 58th (98th) out of 1,403 participating universities worldwide. See the section entitled *Systematic quality enhancement activities*.

KTH improved its QS ranking in the field of Environmental Sciences to 58th (78th) during the 2022 to 2023 period. However, KTH's ranking declined in the Academic Ranking of World Universities, Environmental Sciences and Engineering, to 301–400 (201–300) and to 232 (218) in the Environmental Science and Engineering subject in the National Taiwan University Ranking.

Education

KTH has university-wide sustainable development goals in education that are systematically followed up in both the environmental management system and the quality system. There are a number of courses on teaching and learning in higher education in order to develop the skills of KTH's teachers in the mainstreaming of sustainable development in education. As well as integrating sustainable development into all KTH programmes, there are also programmes that focus specifically on sustainable development. These programmes remain the same as in recent years: two Master of Science in Engineering programmes, ten two-year Master's programmes and one doctoral programme. The number of courses categorised as relating to the environment and sustainability has fallen from 990 in 2022 to 985 in 2023.

A sustainable development education initiative ran from 2020 to 2023. Funding was allocated to 24 education projects during this time, including new second-cycle courses, first and second-cycle courses, programme development and development of various teaching tools. Seven projects were approved in the 2023 call. These included a mathematics-related project entitled *A Mathematical Approach to Complex Systems and Sustainability*, and a second-cycle course entitled *Sustainable Energy Transitions – Technology and Management Perspectives*.

At the beginning of the year, as part of the government's Open for the Climate programme, KTH worked together with eight other universities to launch short, open online courses to support climate transition in society. The platform now includes a large number of courses from the participating universities, five of which are from KTH. All courses are free of charge and accessible to all, and require no prior knowledge. There has been cooperation during the year with the DG Forum, which is a platform for collaboration between public authorities in order to implement the 2030 Agenda, the Sustainable Development Goals, in central government. The cooperation took place with a view to exploring the possibility of packaging and launching these courses for heads of public authorities and staff within the network.

Research

Research promoting sustainable development is key to KTH and can be found at all five KTH schools. There is strong basic and applied research that contributes to new knowledge and resolving societal challenges in the immediate future. Research to address both the climate challenge and other sustainability goals is conducted in many disciplines. Some strong areas that are important for societal transformation are represented in the interdisciplinary research platforms, such as energy, transport and industrial transformation. These, together with the formation of centres in different fields, also interact with other societal stakeholders to ensure the relevance of research and increase the pace of the implementation of results.

KTH FOOD is a food research centre that aims to engage and align education, research and collaboration at KTH towards a healthy, sustainable food system. A number of food-related events with links to research were held during the year.

The year saw the establishment of Dig-IT Lab, a new Vinnova-funded centre of excellence at KTH, which aims to reduce the environmental impact of buildings by means of digitalisation. This is a collaboration between industrial companies, research organisations and universities in Sweden, as well as a number of international research centres.

In 2023, eight research and collaboration initiatives were awarded seed funding of up to SEK 100,000 each within the scope of an Environment and Sustainable Development Across the Board initiative to encourage initiatives in respect of sustainable development research. Several of the research platforms and centres have funded new projects in similar ways in order to develop new research domains in sustainable development.

In 2023, 28 per cent of advertised teaching positions were related to sustainable development, down 16 percentage points from the previous year.

Cooperation

KTH's collaboration takes place through education, research and innovations, and helps to bring about sustainable development, gender equality and climate transformation. KTH has arranged more than 180 events, workshops, seminars and other activities focusing on sustainable development during the year in order to develop collaboration and discussions with existing and new partners, stakeholders and students.

News, events and information for staff, students and other stakeholders are communicated via the external website, the intranet and external and internal newsletters. The external newsletter is aimed at the business community, policy makers, public authorities and organisations. Sustainable development at KTH is a recurring theme on social media. In 2023, KTH was

mentioned in about 6,850 national and international editorial media in respect of sustainable development. This represents a slight increase from 6,450 in 2022. For 2023, 39 (42) per cent of KTH's total national media exposure and 45 (25) per cent of KTH's total international media exposure is linked to sustainable development.

KTH has led a working group as part of the International Sustainable Campus Network (ISCN), an international network for sustainable development in higher education. During the year, this working group sent out a network survey to examine how universities are working with sustainability reports. The initial results from the survey were presented at the annual ISCN conference. An in-depth analysis of the results and a report will be presented at next year's conference.

KTH was elected to the board of DG Forum during the year and, together with Formas, has taken over responsibility for coordination of the annual operational plan within DG Forum.

KTH, together with most universities, is part of a working group on business travel within the framework of the climate network for higher education institutions. A project was launched in 2023 with the aim of ensuring that universities use similar computational methods so that comparisons can be made between universities. This project is being conducted under the leadership of researchers at KTH.

KTH researchers are members of several state councils and delegations with links to sustainable development, such as the City of Stockholm's Scientific Council for Sustainable Development and the Circular Economy Delegation.

Since 2022, KTH has been participating in the sustainability group within the framework of the Stockholm Trio, under the name Stockholm Trio for Sustainable Actions. In 2023, the group awarded funding to various research projects, collaborated with the Brussels Representation of the Stockholm Trio, arranged the Sustainability Forum conference, launched a network for researchers and public authorities on sustainable fashion and textiles, and co-organised the annual GD Forum networking event that was held at KTH. See the section entitled *National cooperations*.

Resource management

Travel and transport

After the pandemic, KTH has continued to work on the transition to digital forms of meeting. KTH is continuing to offer opportunities for remote working. Support for staff for more sustainable travel has been developed and communicated on the KTH intranet and in the travel booking system.

Workshops were held during the year for production of action plans for climate-efficient meetings. A pilot study was conducted at the ABE school as part of a research project in order to investigate how climate space, known as a climate budget, can be used as a policy instrument.

Calculation methods and quality assurance of data received from the travel agency, which was not transparent, were reviewed during the year. A new procurement procedure for a travel agency and travel management system was launched, defining requirements for improvements in data management and access to the travel agency's services in respect of visualisation tools and extraction of statistics.

KTH's sustainability goals for travel and transport must be achieved by the end of 2025 at the latest, with a base year of 2015. KTH has also selected 2019 for comparison over the years, given methodological developments and increased access to data. A new method has been applied retroactively to 2019 in order to calculate emissions from business travel. KTH's climate impact from business travel (carbon dioxide equivalents per full time equivalent) must be reduced by 40 per cent by the end of 2025.

The climate impact of business travel by air has been reduced in 2023. Compared to 2015, the climate impact of business travel by air has fallen by about 24 per cent (carbon dioxide equivalents per full time equivalent); and compared to 2019, the climate impact of business travel by air has fallen by almost 15 per cent (carbon dioxide equivalents per full time equivalent). See the KTH report on the 2023 environmental management programme to the government and the Swedish Environmental Protection Agency.

Procurement and waste

A project has been in progress during the year to increase the service life of purchased furniture in accordance with KTH's sustainability and climate goals, thereby economising on both environmental and financial resources. A general procedure has been devised for the work, and a procurement procedure for a tool for furniture stocktaking has been initiated. KTH researchers published an article during the year that described a case study relating to KTH's implementation of circular furniture flows.

KTH has defined sustainability requirements in a procurement procedure relating to everyday catering that began in 2023. KTH has also worked together with suppliers to follow up on sustainability requirements in contracts, such as a procurement procedure for bus transport for KTH staff.

During the year, KTH has increased recycling opportunities in its operations thanks to greater collaboration with THS and property owners. This has resulted in the provision of recycling facilities for glass and corrugated cardboard from the students' chapter halls. During the year, KTH has worked to develop a central environmental station at KTH Campus due to more stringent legal requirements for the separation of waste. In 2023, Akademiska Hus has worked together with KTH to launch a pilot project on campus where five waste bins have been fitted with deposit tubes.

A comprehensive waste plan was devised in 2023. There was also a review of the current methodology for managing and following up waste statistics. Students and staff received information and guidance on waste management during the Campus Fair, an annual welcoming day for new students. A new geographic information system (GIS) map of the waste sorting stations at KTH Campus was produced in 2023. This map shows where recycling facilities can be found and is available on the KTH staff intranet.

Sustainable buildings

During the year, KTH worked in collaboration with Akademiska Hus on running a project aimed at developing new working methods and devising a joint energy saving plan with actions designed to achieve KTH's climate goals. A number of energy-saving measures were implemented at KTH Campus in 2023, such as adapting ventilation operating times to changes in operations, adding energy glass and installing new, more energy-efficient fume cupboards. KTH worked with Akademiska Hus on a night walk to find out how energy

consumption can be reduced during the evening and at night. There are a number of improvements to be made as lights and equipment are left on unnecessarily when staff and students are not on the premises, for example. In 2023, Akademiska Hus installed some 1,450 sensors at KTH Campus premises so as to gain more of an insight into actual needs on the premises and obtain better information for future optimisation of operations at KTH premises.

Several of the buildings used by KTH for its activities hold environmental certification according to Miljöbyggnad. Pyramiden in Södertälje was awarded Miljöbyggnad Silver certification in 2023. Solar panels have been fitted on the roof of the building.

KTH Campus was used for various research and educational activities during the year in collaboration with Akademiska Hus and various corporate partners. KTH students and researchers have, for instance, helped to implement an energy analysis and modelling of selected KTH Campus buildings. This has resulted in a number of non-conformances being identified which are being addressed by the property owner Akademiska Hus in collaboration with KTH.

Projects have been ongoing during the year within the framework of KTH Live-In Lab that have investigated user behaviour and observations from student accommodation at KTH Campus. Other KTH Live-In Lab projects examined the link between solar panels and energy storage, and also how solar panels affect the power grid. A new test facility has been built so that research can be conducted on black and grey water.

Food and catering

During the year, KTH made a decision to reduce the environmental and climate impact of food by introducing One Planet Plate, OPP, by default. This means that when purchasing food, One Planet Plate – which produces no more than 0.5 kg of carbon dioxide equivalents per meal – should be used as the default. Cooperation for the implementation of OPP has been ongoing during the year with the World Wide Fund for Nature (WWF) and various KTH groups such as KTH FOOD.

Biodiversity and ecosystem services

Helping to increase biodiversity has guided the development of the new Albano campus, which opened in 2023. This is the first campus in Sweden to be certified according to Citylab, a form of sustainability certification that not only covers a single building but includes an entire urban development project. Albano has new water systems for managing stormwater, an improved microclimate and outdoor environments designed to reinforce the distribution pathways for plants and animals between the Royal National City Park and Haga Park. Thanks to green roofs with large open roof terraces to which students, staff and even the public have access, the university buildings become an integral part of the park environment.

The number of planters at KTH Campus was increased during the year, and 90 kg of honey was produced by bees in KTH's hives. Akademiska Hus opened a new meadow area at KTH Campus in 2023.

A tree walk headed by professional arborists was organised at KTH Campus for the very first time in 2023. The people who took part reflected on the great species diversity of trees on campus.

Systematic Quality Enhancement Activities

KTH's quality system

KTH's quality system is based on the quality requirements set out in the Higher Education Act, the Higher Education Ordinance and European standards and guidelines for quality assurance in higher education. The quality enhancement activities are designed to achieve the goals set out in the KTH development plan for 2018–2023. The quality system is divided into two parts: one for education at all levels, and one for research, which also includes monitoring academic skills supply.

The Faculty Council bears overall responsibility for ensuring the quality of all education, research and collaboration. The Faculty Council is also responsible for managing and developing the KTH quality system.

Continuous monitoring of research

In the spring, the continuous monitoring of research focused on monitoring the implementation of the schools' action plans in response to the Research Assessment Exercise (RAE) that was conducted by national and international experts in 2021. The RAE focused on the development of various aspects that are of fundamental significance for scientific activities, such as societal impact, research profile and the research and working environment.

KTH worked in 2023 on implementing the recommendations made by the expert panels. However, it is too early to draw any conclusions about the impact of the evaluation.

In 2023, a pilot study was conducted on quality systems for research at KTH. The purpose of this pilot study was to produce data for decisions on further efforts on developing the quality system for research at KTH. The pilot study focused on compiling an inventory of the processes and structures already in use at KTH for monitoring and evaluating research, what has previously been investigated or is planned to be introduced, and on systematically collecting data on models and considerations from other universities. A review was also conducted of the requirements defined for a quality system for research by external parties, such as the UKÄ.

KTH also aims to live up to the international commitments signed by the university in the European Charter for Researchers and the principles signed when KTH joined the Coalition for Advancing Research Assessment (CoARA) during the year.

As a result of this pilot study, the Faculty Council decided – following discussion with KTH's management group and others – that KTH needs to further develop its quality system for research.

Continuous monitoring of faculty renewal and faculty development

The faculty's continuing professional development and subject specialisation are important prerequisites if KTH is to be able to maintain high quality in its courses, study programmes and research. The faculties are analysed within the framework of the quality system in order to promote development of both research and education as well as the development of staff composition and skills.

This year's monitoring of the schools' faculty renewal and faculty development plans focused on summing up monitoring in previous years in order to summarise developments in the field and note any challenges remaining. It also included an analysis of the recruitment processes for academic staff, which showed that there is a need to shorten recruitment times. Efforts to address this began towards the end of 2023.

The faculty renewal and faculty development plans used by KTH to monitor and provide opportunities for academic staff to develop their careers, have not functioned optimally as either planning or monitoring tools. This is why a review of the plans has begun in 2023. This review will result in better adaptation of the purpose of the plans, their role at school and KTH-wide level and their content to the needs of the organisation and the management.

See the section entitled *Staff*.

Revised quality system for education

A new guideline on systematic quality enhancement activities in education was adopted in 2023.

The starting point for this review included evaluation of whether the system is efficient and appropriate, is adapted to KTH's operations and organisation, and creates value for KTH's management, teachers and students. The objectives of the revised quality system for education are to place clearer responsibility for the work at school level, to ensure that the quality system provides better support for the strategic development of education programmes, and to address recurring quality deficiencies at course level. There also needs to be greater scope for action and development work, which is why the programme follow-ups will be conducted every two years going forward, instead of every year.

The following elements are included:

- Annual follow-up.
- Programme follow-up, which takes place every two years and includes evaluation with external peer review at least every six years.
- Focus evaluation of a particular area or group of programmes can be implemented and may include external review.
- Dialogues on the outcomes of follow-ups and evaluations are conducted at school and KTH level. At KTH level, the dialogue on general quality issues is integrated into the operational dialogues conducted by KTH's management as part of the operational planning process.

Preparatory work has been carried out in 2023 to ensure that the revised quality system is implemented as effectively as possible. The schools have starting working on developing processes, procedures and working methods for systematic quality enhancement activities in accordance with the new guidelines. All programme coordinators have devised a framework for a target matrix and performed an analysis of the examination formats and learning activities used in the programme's courses. Programme managers have also analysed student completion on their programmes on the basis of a number of new reports developed during the year. There has been no continuous follow-up of education in 2023 due to the work on the review and the new guideline.

International cooperations

Unite! quality enhancement activities

KTH is part of the European university alliance Unite!. The quality assurance working group, which includes KTH, has devised a model for quality assurance and development of the alliance's activities. This model ensures fulfilment of goals, quality development and collective responsibility for quality enhancement activities within the alliance. The model is based on a PDSA cycle, which is a method whereby an organisation systematically and continuously works with small modifications in order to improve operations. Every project team is responsible for monitoring, developing and reporting on its own activities. The Unite! quality assurance group plays an advisory role and supported the project groups with their implementation of quality enhancement activities in 2023. The first reports are set to be received in 2024. The quality assurance group also provides support to the Unite! steering committee in developing the strategic level within the alliance and cooperates with it on how to develop quality enhancement activities within Unite!.

Quality enhancement activities within Nordic Five Tech

The cooperation between the five biggest technical universities in the Nordic region, Nordic Five Tech, has a working group that focuses on quality issues. During the year, the group began working on further development of a model for peer evaluation of programmes. One starting point has involved developing a model that is so flexible that it can be adapted to the quality systems in place at each university. The peer evaluation model focuses on development of the participating programmes. The second area on which the working group is focusing involves the exchange of experience and knowledge in various areas related to quality enhancement activities.

Examinations and evaluations conducted by the Swedish Higher Education Authority

Coordinated review

In 2023, the UKÄ conducted a pilot project involving coordinated review of contract education at all universities and university colleges. This coordinated review included the UKÄ reviewing contract education and conducting a programme evaluation of real estate broker courses and study programmes. KTH was included in the evaluation with both contract education programmes and the Bachelor's programme in real estate development with real estate brokerage. As this work was carried out, it became clear that KTH needs to review its guideline for contract education and further develop certain processes and procedures related to contract education. KTH was also included in the in-depth review, where the questions focused primarily on the learning formats used by KTH for certain contract education programmes. The evaluation of the Bachelor's programme mainly includes a self-evaluation and interviews with programme representatives and students. A decision with a rating is expected from the UKÄ in the early spring of 2024.

Programme evaluation at third-cycle level

In late 2022, KTH submitted action reports on account of two third-cycle programme evaluations that were judged to be of debatable quality: one in chemistry specialising in physical chemistry, and one in chemistry specialising in organic chemistry. In March 2023, the UKÄ decided to award an overall high quality rating to both programmes.

Thematic evaluation

During the autumn, the UKÄ has started work on a thematic review of collaboration in education and research. KTH has been working on finalising the self-evaluation that forms a basis for the review and that will be submitted to the UKÄ in early 2024. Decisions and recommendations are expected in the early autumn of 2024.

Ranking

KTH is compared with other universities in various rankings on the basis of research, education and collaboration, which can be viewed as a measure of a university's international competitiveness. Visibility and rankings affect student recruitment, recruitment of international researchers and international cooperations, for instance. Whether to use ranking lists, and if so how, is a matter for discussion in the higher education sector. Work is in progress at KTH on reviewing KTH's approach to rankings going forward, and also on monitoring developments within CoARA where ranking issues are discussed. The 2023 rankings included a number of methodological changes that made it difficult to compare this year's results with previous years. Nevertheless, KTH's rankings can – with a degree of caution – be interpreted as confirmation that KTH is an internationally prominent university that is holding its own in an increasingly competitive international environment.

KTH improved its standing in a number of rankings in 2023. In the QS World University Rankings, KTH has moved up 16 places compared to the previous year and is ranked as the world's 73rd best university. KTH is also the highest ranked university in the Nordic region. This is KTH's best ever result in these rankings since they began in 2004. This improvement is due in part to a number of major methodological changes. Employment opportunities, international research networks and sustainability are completely new indicators that have been included, which in turn has also altered the weighting of some of the indicators included previously. This makes it difficult to draw comparisons with results in previous years, but in general KTH has performed best in respect of sustainability, the proportion of international researchers and teachers, and the citation rate.

In the THE World University Rankings, KTH rose 58 places

from 155th to 97th in the world, making it the second highest ranked university in the Nordic region. This is also KTH's best ever position in the THE's rankings since the start in 2011. Like QS, the THE made major methodological changes. For instance, the citations indicator is now termed research quality and is measured on the basis of more parameters than just citations; and the revenue from industry indicator is now termed industry and also includes a patent measure. The THE's ranking includes a total of five indicators, and of these, KTH has performed best in industry.

KTH was ranked 46th in the world in the THE Impact Rankings, which focus on the UN's 17 Sustainable Development Goals and the 2030 Agenda. This is four places lower than last year. KTH has chosen to participate in eight selected goals and performs particularly well in respect of Goal 11 Sustainable Cities and Communities, Goal 13 Responsible Consumption and Production and Goal 17 Partnerships for the Goals. This ranking is based on extensive documentation on how KTH works with the sustainability goals, bibliometrics and other quantitative data. QS has also produced a sustainability ranking, QS Sustainability, for the second time. QS Sustainability compares universities' work on environmental, social and governance issues on the basis of a total of nine indicators. KTH is ranked 58th in the world in QS Sustainability, which is 40 places better than last year. As with the QS World University Rankings, major methodological changes have been implemented, which makes it difficult to draw comparisons with previous years. Research in the field of sustainability is the indicator in which KTH has performed best.

KTH has had varying results in subject area and subject rankings. KTH dropped 16 places in the QS subject area ranking for engineering and technology and went from being ranked 28th to the 44th best university in the world. KTH dropped 23 places in the QS subject area ranking for natural sciences and went from being ranked 78th to the 101st best university in the world. KTH rose 14 places in the THE subject area ranking for engineering and went from being ranked 53rd to the 39th best university in the world. KTH climbed 16 places in the THE subject area ranking for computer science and went from being ranked 77th to the 61st best university in the world. KTH was ranked highest among Swedish universities in all of these subject area rankings. The fact that KTH is dropping in QS but climbing in the THE is mainly due to the fact that the rankings are based on different indicators. In the QS subject rankings, KTH appears in the top 200 in 14 subjects. KTH was ranked highest in materials science, electrical engineering, and mechanical, aerospace and manufacturing engineering, all at 23rd place in the world.

Staff

KTH is a technical and international university that creates knowledge and expertise for a sustainable future. People with different backgrounds and experiences work together with the common objective of administering, renewing and communicating knowledge for the society of today and tomorrow.

A number of activities conducted in 2023 in respect of staff are presented below, based on KTH's development and operational plans.

Skills supply

One crucial competitive factor for KTH is its ability to work actively on attracting, recruiting, briefing and developing staff. The development of the strategic skills supply process for all staff categories is a work in progress. This will also be harmonised with the tasks initiated by the President in order to build an organisation for peer influence and responsibility, as well as a reinforced line organisation.

The strategic skills supply must ensure that KTH has access to the right skills in order to achieve the organisation's vision and goals. KTH's strategic and structured approach to skills supply is crucial to the quality of its operations, as its staff are its most important asset.

The faculty renewal and faculty development plans are followed up annually as part of ensuring that the right skills are available to perform KTH's tasks: these are the tools that KTH has used to follow up and develop the skills of its staff. The implementation of the schools' action plans with feedback and activities for further work are also followed up. A review of the faculty renewal and faculty development plans has begun. The aim of this review is to align the plans more accurately with the needs of the organisation and the management.

School-wide discussions with faculty renewal officers and experts were held during the year in order to create opportunities for dialogue and exchange of experience on the basis of identified needs, challenges and good examples in the faculty development plans for the year. The areas analysed are courses on teaching and learning in higher education, leadership courses, recruitment and skills development, and gender equality. Common and recurring issues relate to the recruitment process and whether it would be possible to make it more efficient. The issue of the limited opportunities for lecturers and researchers to develop at KTH and have a career is also raised. See the section entitled *Systematic quality enhancement activities*.

Recruitment

Effective recruitment processes for teachers and researchers are important as a basic prerequisite for maintaining the mission of the core activities and the quality of the organisation as a whole. In 2023, KTH completed its review of the appointments procedure and related policy documents that began in 2022. The University Board subsequently decided to revise the appointments procedure, and the President made a decision on the associated revised guidelines for the appointments procedure. The review also identified issues that require further investigation. These issues will be addressed in continued work on the KTH strategic skills supply model.

In 2023, the internal audit function audited the recruitment processes at KTH and the compliance of the appointments procedure. The purpose of the review conducted by the internal audit function was to examine whether KTH operates in compliance with an external regulatory framework and fulfils its obligation to provide information about positions. The internal audit function reviewed appointments made in 2022. This review covered teaching positions as well as appointment of technical and administrative staff.

The report shows improvements since 2017, when a similar review was carried out.

This report has been accompanied by an action plan in order to address the overall recommendations of the internal audit function. One of the measures began in 2023 and is part of a coordinated staffing assignment that is included in the KTH action plan for the development of operational support 2023–2026. This assignment aims to create better conditions for staffing in a number of ways in addition to external calls. The assignment will develop and present support and tools that are applicable to operational support staffing over the next three to five years.

The European Charter for Researchers and guidelines for recruitment of researchers

KTH joined the EU Charter & Code, the European charter for researchers, in 2021 and was awarded HR Excellence in Research certification. This certification is a hallmark of quality and means that KTH has fulfilled many of the EU's demands for a responsible and professional employer, and has undertaken regular quality enhancement activities in the fields of ethical and professional responsibility, recruitment, skills development, career support and working conditions for researchers. The quality and development work is monitored by the European Commission every three years.

In accordance with the requirements for maintaining certification, KTH has been working on the activities in the initial action plan since joining the EU Charter & Code and prepared an interim report containing a description of the current situation, self-evaluation and a revised action plan with activities linked to identified development areas. In 2023, the President made a decision to adopt KTH's interim report and the revised action plan for 2023–2026. These documents were sent to the European Commission for review in June, and KTH received feedback on the development work in September. It was concluded that the revised action plan has been secured in a robust and systematic manner, and that implementation is progressing with the assistance of appropriate and improved quality measures as described in the action plan. The next follow-up will take place in 2026.

Skills supply and development within Unite!

KTH is part of the European university alliance Unite!, which participated in the Horizon 2020 framework programme in 2020–2023. This work was divided into nine packages, of which skills supply was included in the fifth. The overall aim of this work package was to develop common strategies for researchers' skills and career development within the framework of Unite!

universities. The work and workshops implemented by work package five were based on analyses of best practices from the respective partner universities, and on existing principles in the HR strategy for researchers, HRS4R, focusing on research and the academic community, policies to prevent brain drain, reinforce the dissemination of knowledge, promote equal inclusion, and strategies to attract, assess and promote researchers. In line with the project's remit, this work resulted in a handbook aimed at supporting researchers early on in their careers, a guide to gender equality plans, a guide to organising mentoring programmes for researchers early on in their careers, and a guide to evaluation and assessment of researchers.

The European university alliance Unite! also participates in the Erasmus+ programme. Erasmus+ projects are conducted in nine working groups, one of which deals with professional development and training. Examples of assignments that began in 2023 include the creation of joint courses and study programmes for young researchers, a common guide to support the mobility and careers of young researchers, a common annual training programme for staff, and a common programme of measures to promote staff well-being.

Briefing for new staff

At KTH, new staff are welcomed with a university-wide induction that brings together new staff regardless of organisational affiliation and role. This programme includes addresses on management goals and the organisation and activities of the university. The induction also provides a number of opportunities for networking between representatives of the organisation and new staff. Two university-wide induction sessions were offered during the year, both in English.

Skills and career development

Work that had already begun on establishing a coordinating function for strategic career and skills development continued during the year. This work includes developing support in leadership and organisational development, as well as a platform for the development of staff, managers and leaders.

Working together with representatives of the organisation, the current situation was mapped and future needs were identified, including the need to identify coordination gains, ensure access to relevant data for follow-up, automate case flows, reduce dependence on individuals and eliminate unnecessary demand. This work is extensive and complex and will continue in 2024.

Based on existing IT support, work began on creating a collective online portal for services and development initiatives linked to staff, managers and leaders. Services and development initiatives are devised iteratively and adapted on the basis of demand and strategic initiatives.

Subject-specific training programmes on rules, processes and practices were offered during the year in order to meet legal and regulatory requirements, but also to provide information about KTH's mission, vision, strategic goals, values and culture. Examples of areas in which training was provided include safety, the working environment, the environment and sustainable development, gender mainstreaming, operational development and project management, change management, leadership and the role of the employer.

Activities relating to teaching and learning in higher education

In 2023, 12 (12) courses on teaching and learning in higher education for teachers were conducted with 239 (290) participants, of whom 97 (111) were women and 142 (179) men. These courses are designed in a way that enables participants to achieve SUHF's recommended goals for qualifying courses in higher education pedagogy. The courses aim to develop participants' pedagogical skills, facilitate the development of courses, learning environments and degree programmes and contribute to networking between KTH schools. Examples of courses include *Digital learning in higher education and Gender research and gender equality in technical higher education*.

For a number of years, there has been increasing demand for an introduction to higher education pedagogy for doctoral students. This is why the number of course offerings was increased to 6 (4) in 2023. A total of 213 (190) doctoral students participated in the course, of whom 81 (78) were women and 132 (112) men.

Two major conferences were held and eight thematic groups, known as PriU groups, were coordinated in order to promote continuous dialogue on teaching and learning in higher education and networking among teachers, staff and students. The groups' work and questions are based on the interests of teachers, students and staff in relation to educational issues. The themes of the groups' discussions include examination formats and AI in teaching. The KTH-wide network meetings of the Directors of Studies and Programme Directors were arranged once a month in 2023, with topics such as new schedule management, faculty renewal and programme analyses.

Additionally, cooperation within the Stockholm Trio university alliance was reinforced in the field of higher education pedagogy by making courses on teaching and learning in higher education mutually available to all three universities.

The national partnerships within UHR and Swednet, the Swedish network for educational development in higher education, were extended.

KTH has a representative in SUHF's national expert group for issues relating to higher education pedagogy, and during the year this group focused on the formulation of the guidelines for teaching and learning in higher education for the member universities.

Continuing professional development for collaborative research leaders

Research funding bodies and partners are increasingly demanding that KTH work towards sustainable development, gender equality, open data, privacy issues, utilisation, management of intellectual assets, etc. In 2023, KTH created a series of seminars in the form of programme modules in these areas. The aim is to increase the skills and opportunities for exchange between collaborative leaders and other relevant staff.

A new online course, *Ethics and good research practice*, was developed during the year for directors of centres, research platforms, strategic innovation programmes and major EU projects. Work also began on a course focusing on gender equality, diversity and equal opportunities and sustainability, as well as another course focusing on managing research centres and other major initiatives.

Career support

A position within tenure track, the academic career path, involves a long-term commitment from KTH in terms of resources and development opportunities. Career development support clarifies what is required for qualification as an associate professor or professor and offers opportunities for development in relevant areas. Skills support for active career planning and leadership development for Assistant Professors and Associate Professors is offered as part of the *Partners in Learning and Leadership for Associate Professors* programmes. In 2023, Partners in Learning had 8 participants, 7 men and 1 woman, and *Leadership for Associate Professors* had 46 participants, 30 men and 16 women.

Since 2008, KTH has given its staff the opportunity for life and career planning, partly to promote personal development and partly to support internal and external mobility. Life and career planning, which includes one-on-one guidance and coaching, is funded by local joint transition funds. During the year, a total of 23 staff – 12 women and 11 men – completed life and career planning.

Career support is offered to anyone who comes to Sweden in connection with their partner's position as Professor, Associate Professor or Assistant Professor at KTH. This support is provided in the form of a procured career support programme.

In 2023, KTH has reviewed opportunities for increased career support in order to meet staff needs in connection with a period of intense change and the development facing KTH. Proposals for joint activities involving the parties will be presented in 2024.

Management and leadership

There was further development of the work on management and leadership development in 2023. The leadership programme *Leading as a manager at KTH* was held during the spring and involved 26 participants, 14 women and 12 men. This programme was followed by a study trip to the Technical University of Denmark in Copenhagen as part of the Nordic Five Tech cooperation. As there was a major need to train newly appointed managers following the pandemic, two rounds of the programme began in the autumn, with 22 and 23 participants respectively.

The *Inclusive leadership* programme was implemented at school level. The aim of this programme is to provide managers with greater awareness and knowledge of gender, intersectionality and culture, and how this can be translated into action. The basic programme provides specific leadership tools that help staff to work in the organisation on equal terms. The supplementary programme aims to provide more of an ability to lead processes for changes in the organisation's culture to provide a socially sustainable working environment, greater shared responsibility for gender equality, diversity and equal opportunities work, and for staff members' individual development and organisational performance.

KTH is undergoing a period of intense change, and there has been a major need for leadership development and change management support in 2023. The initiatives have been implemented by means of both training and coaching for management groups and groups of managers throughout much of the organisation.

Management forums are held for operational support managers where participants have the opportunity to create awareness, understanding, dialogue and experience exchange on development work in progress. In 2023, lectures were held on topics such as motivation, sustainability and mental strength for leaders, and on communicative leadership linked to change management.

Eighteen leaders from various parts of the organisation participated in the Generative change management programme in 2023. This programme aims to give managers and leaders the ability to confidently and safely lead complex change processes based on generative dialogue, inclusion and creativity. Attending the programme together with other KTH leaders gives participants the opportunity to share insights, ideas and experiences.

72 operational support managers completed the new course *Staff collaboration – dialogue for development* in 2023. This programme aims to provide the right conditions to lead development work according to the collaborative process applied at KTH in order to develop operations and the working environment in dialogue and collaboration with staff.

In the field of operational support, 63 managers participated in a newly developed working environment programme during the year. This includes the basics of health and safety responsibility, criteria for the allocation of health and safety duties, the organisation of occupational health and safety at KTH and basic health and safety law. This programme will be undergoing further development and will be implemented for managers throughout KTH in 2024 and beyond.

Development of a KTH-wide induction programme for new managers was ongoing in 2023. This induction programme aims to make it possible for managers to cope with their responsibilities and duties in the role of manager with responsibility for staff. The management induction will be launched in 2024.

Working environment

KTH Employee Pulse, KTH's university-wide staff survey, started at the beginning of the year. The Employee Pulse survey is made up of short questionnaires asking ten recurring core questions. It also includes questions on one topic per questionnaire round: how to treat people, organisation and leadership, the physical working environment or systematic occupational health and safety. The results are used as a basis for dialogue, and every group, together with their manager, has to implement measures to maintain good results and make improvements. In the autumn of 2023, a support system was developed for managers in dealing with the results of staff surveys. This support will be trialled and evaluated in 2024.

Systematic occupational health and safety at KTH also involves regular health checks, safety inspections, training programmes and digital support material. The schools compile annual working environment plans in which physical, organisational and social working environment activities are documented, implemented and followed up. A survey on teachers' digital working environment was conducted at all schools during the year. A random sample of KTH's teachers were interviewed and observed according to the digital safety inspection method. This survey resulted in a number of proposals for action. The KTH safety committee has to assess which of the measures are prioritised for implementation.

Preparations for the introduction of safety inspections in the digital working environment information system continued in

2023, with a view to starting implementation in some parts of the organisation in the spring of 2024. The system continues to be used to report risk observations, incidents and accidents. The reporting rate is on a par with last year. The number of incidents reported fell, while risk observations reported increased compared to 2022. Despite this, the assessment is that the reporting of risk observations is on the low side.

Collaboration – pilot project on how to treat people

During the year, KTH conducted a pilot project on how to treat people as part of its systematic occupational health and safety. The background to this is the fact that it has been recognised that there is a need to work on staff development and leadership development in order to improve the way in which people are treated. A pilot study on internal communication reveals problems in day-to-day working. The aim of this work is to develop and strengthen collaboration as regards staff treating one another well, preventing unwelcome behaviour and enhancing general job satisfaction.

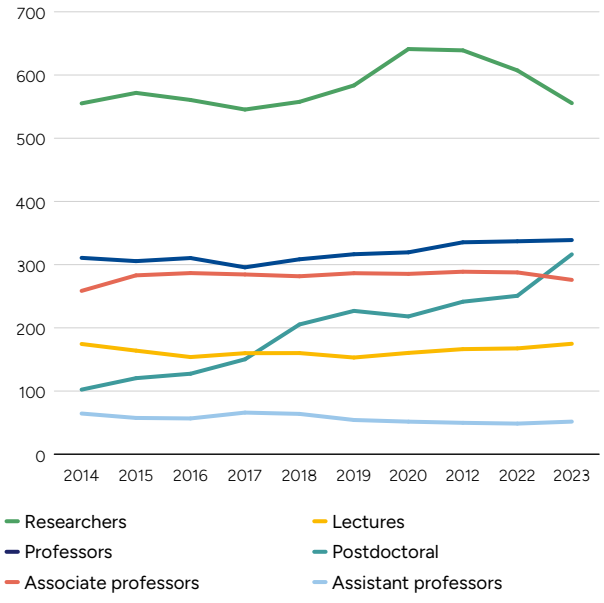
The project held three lunchtime lectures that were open to all staff in order to recognise good ways of treating people. Communication and feedback basics as a tool for reinforcing cooperation with colleagues were addressed during these lectures. An introduction to domination techniques, promotion techniques and counterstrategies was also given. The three lectures were well attended, with 166, 223 and 68 attendees respectively.

To extend this work, 20 staff members underwent training in leading group exercises on how to treat people.

13 group exercises were conducted, with 243 participants.

This pilot project will be evaluated in the first quarter of 2024, and after that KTH will decide whether parts of the work can be included in KTH's systematic occupational health and safety and its work on active measures against discrimination.

Figure 16. Number of teachers and researchers 2014-2023
Per staff category



Source: HR-system.

Professors, visiting professors and adjunct professors

The number of full time equivalents in the professor group, which includes professors, visiting professors and adjunct professors, is still 339 as in 2022, 75 (72) women and 264 (267) men. The proportion of women increased by 1 percentage point compared to the previous year, to 22 per cent, and by 3 percentage points compared to 2021. The number of visiting professors in terms of full time equivalents remains at three, one woman and two men.

35 new professors and visiting professors were appointed in 2023. The proportion of women among these was 26 per cent. The proportion of new recruits in this category was 44 per cent in 2022, 36 per cent in 2021 and 14 per cent in 2020. This means that the proportion of women among newly recruited professors for the 2021–2023 period was 33 per cent.

The number of adjunct professors remained unchanged in 2023, numbering 46 (46) at the end of the year, 8 (7) women and 38 (39) men. All adjunct professors are employed by KTH, but their primary activities are conducted outside KTH. The position comprises at least 20 per cent and no more than 30 per cent of full time hours, and hardly any of the adjunct professors receive a salary from KTH. The number of full time equivalents for people receiving salaries was rounded to zero full time equivalents in 2023.

Associate professors and lecturers

The number of associate professors fell to 276 (288), 78 (80) women and 198 (208) men. The proportion of women was 28 (28) per cent. 15 new associate professors were recruited during the year, 3 women and 12 men. The proportion of women among new recruits fell by 12 percentage points compared to the previous year, to 20 per cent. The number of lecturers increased compared to 2022, to 175 (167) full time equivalents. The proportion of women in this category was 39 (38) per cent.

Career development positions: assistant professors and postdocs

At KTH, assistant professors and postdocs jointly form the Career-development position category. The number of career development positions increased to 368 (300) full time equivalents in 2023, 124 (96) women and 244 (204) men. The proportion of women increased by 2 percentage points to 34 compared to 2022.

20 new assistant professors were recruited during the year, 8 women and 12 men. The proportion of women among new recruits was thus 40 per cent, compared to 50 and 37 per cent in 2022 and 2021 respectively. The number of associate senior lecturers in terms of full time equivalents was 52 (49), 20 women and 32 men, while all teaching and research staff numbered 1,714 (1,701), 537 women and 1,177 men. The proportion of assistant professors among all research and teaching staff thus stood at just under 3 (3) per cent.

The number of postdocs increased to 316 (251) full time equivalent students compared to the previous year, 104 (79) women and 212 (172) men. The proportion of women increased by 2 percentage points to 33 per cent.

Researchers and research engineers

The number of researchers and research engineers fell to 556 (607) full time equivalent students compared to the previous year, 192 (211) women and 364 (396) men. The proportion of women remained at 35 per cent, as in 2022.

Doctoral students with employment

The number of doctoral students with employment fell to 1,035 (1,080) full time equivalent students in 2023, 354 (364) women and 681 (716) men. The proportion of women among doctoral students with employment was 34 (34) per cent.

Technical and administrative staff

The technical and administrative staff, including library staff, increased to 1,160 full time equivalents in 2023 (1,155 full time equivalents in 2022 and 1,145 full time equivalents in 2021), 752 (741) women and 408 (414) men. The proportion of women increased by 1 percentage point compared to 2022 and 2021, to 65 per cent.

Docents

KTH admitted 31 (23) docents in 2023, 9 (7) women and 22 (16) men. The proportion of women among those admitted was thus 29 (30) per cent. Admission as a docent is part of an academic career in which teachers and researchers can build up their own research teams through principal supervision of doctoral students. Anyone who has been admitted as a docent is expected to be the principal supervisor of doctoral students, act as an external reviewer and participate in examining committees for public defence of doctoral theses in the subject area, contribute to teaching in the subject area at second and third-cycle level, and conduct research activities at an international level.

Premises

The cost of premises for KTH increased significantly in 2023. This meant that many planned redevelopment projects had to be reprioritised and postponed to a future date. The measures implemented were either ongoing or mission-critical.

At the end of 2023, KTH had approximately 281,800 sq m of premises at its disposal. Accommodation for students and visiting researchers is not included in this area. More than 31,800 sq m are sublet to parties such as the Swedish Red Cross University College, Stockholm University, the Karolinska Institute and Södertälje Science Park.

A number of concentration measures were implemented in 2023 in order to achieve greater control over the cost of premises. All schools and operational support streamlined the use of premises, and this work will continue in the coming years. By way of example, the School of Industrial Engineering and Management combined a number of activities in the machine blocks at KTH Campus.

Educational environments across KTH Campus were renovated and upgraded, which involved implementing new technologies and improvements for KTH students. The premises at Teknikringen 74 were adapted for accessibility in order to provide permanent premises for Funka, the organisation providing support for students with disabilities.

The extensive renovation of the chemistry blocks at KTH Campus was completed in order to meet the demands made of chemistry research laboratories. This project also included offices and other premises for the Department of Chemistry and the 2MILab research infrastructure, totalling around 2,760 sq m.

Redevelopment was completed and new fittings for offices and laboratories were implemented for the robotics, perception and learning and speech, music and hearing divisions at the School of Electrical Engineering and Computer Science. This covered a total of around 1,800 sq m.

The University Board made a decision in November 2023 on the location of KTH's campuses. This decision means that KTH's current operations in Södertälje will be relocated to KTH Campus and KTH Flemingsberg. KTH's current operations in Kista, with the exception of the Electrum Laboratory, will be relocated to KTH Campus. These moves must be completed by the end of 2027 at the latest.

Accommodation for students and visiting researchers

KTH provided accommodation to around 500 exchange students and 950 international Master's students in 2023. The rental portfolio comprises a total of 880 apartments with a total of about 1,100 beds, divided over 371 studio apartments, 287 corridor rooms and about 440 beds in shared apartments. The occupancy rate was 87 per cent over the whole year. The occupancy rate was 98 per cent in the autumn semester and 93 per cent in the spring semester. Maintenance and cleaning are carried out during the summer, when many homes are empty. The occupancy rate was 41 per cent in the summer of 2023.

KTH also arranges accommodation for foreign doctoral students and visiting researchers. KTH had a total of 280 homes available for the target group in 2023, distributed across Greater Stockholm. The occupancy rate over the year was 90 per cent. More than 620 new foreign guest researchers and doctoral students received accommodation through KTH in 2023. It is deemed necessary to prioritise doctoral students and postdocs, as well as people who will be staying at KTH for longer. Only a small number of people who applied for short-term accommodation had their applications rejected. The need for accommodation remains high for the coming years as well. However, KTH estimates that the need for accommodation for foreign doctoral students and visiting researchers will be covered for the next few years, and that no increase in stock is necessary.

The loss on rental of accommodation amounted to SEK 14.8 million. Details on income and expenditure can be found in note 2 to the financial statements.

According to KTH's assessment, KTH has nothing to report in respect of the information required by Article 9 of Commission Decision 2012/21/EU.

Financial Summary

Finance – earnings, use of resources and funding

Earnings and change in capital

The financial performance for KTH in 2023 amounted to SEK -258 (-137) million, which means that KTH's performance deteriorated by a further SEK 121 million compared to 2022. Revenue for 2023 increased by 3.7 per cent or SEK 195 million compared to 2022, while costs have increased by 5.8 per cent, corresponding to SEK 316 million. The operational outcome for 2023 was forecast at SEK -191 million in the budget documentation, and the difference from the final outcome amounts to SEK 67 million. The difference can be explained by higher costs, in particular costs relating to staff and depreciation, and revenue that was slightly lower than expected. Furthermore, KTH has to make a repayment of SEK 34 million to the state in 2024, which relates to and has affected performance for 2023. This repayment relates to direct government funding for education at first and second-cycle level. KTH had the maximum permitted direct government funding savings for 2023, and KTH was unable to offset the entire allocated funding cap in the final offset for 2023.

The deficit in education at first and second-cycle level was SEK 137 million for 2023, down by almost SEK 23 million compared to 2022. The deficit within research and education at third-cycle level amounted to SEK 121 million in 2023, compared with a deficit of SEK 23 million in 2022.

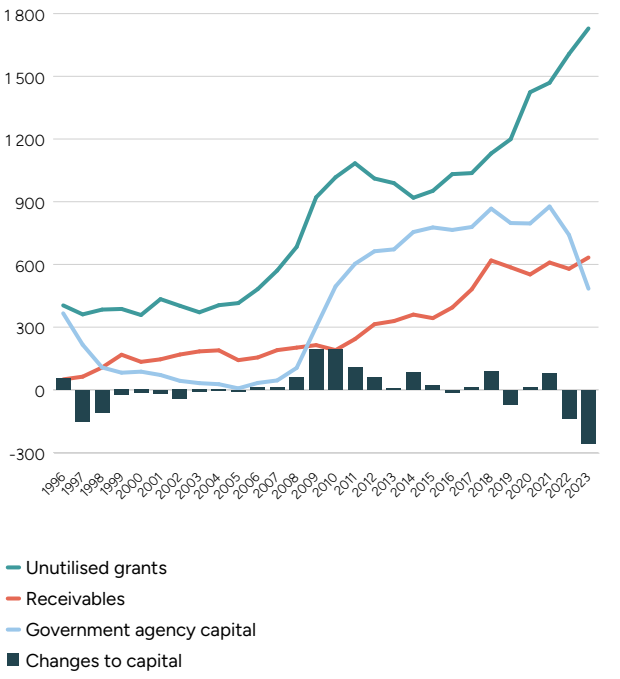
This result is largely due to the increased costs resulting from high inflation during the year, which led to general price increases. This has mainly affected the cost of premises through indexation of rents. Electricity costs also rose sharply in 2023. The total costs for premises increased by 9.2 per cent in 2023, corresponding to just over SEK 91 million compared with 2022. Staff costs also increased, mainly due to annual salary reviews. Costs for 2023 increased by 4.3 per cent, corresponding to an increase of SEK 145 million compared to 2022. Collectively, costs for staff and premises account for almost 75 per cent of the total cost increases. Revenues did not increase to the same extent and direct government funding, for example, increased by just 1.36 per cent for 2023. Turnover increased by just over SEK 300 million compared to 2022 and amounts to SEK 6,367 (6,065) million, measured as operating revenue including funds for funding transfers. Transfers account for around SEK 105 million of the increase in turnover. KTH's turnover has increased by 37 per cent in ten years, with operating revenue increasing by 29 per cent and transfers by 124 per cent. KTH's involvement in SciLifeLab affects KTH's finances in several ways. For example, activities conducted within SciLifeLab generated revenue in the form of direct government funding,

Figure 17. Surplus/deficit
MSEK

	2023	2022
Revenues	5 484	5 289
Costs	5 742	5 426
Profit/loss	**-258**	**-137**
Revenues for transfers	883	776
Grant issued (costs for transfers)	-883	-776
Profit/loss	**-258**	**-137**

Source: Financial system

Figure 18. Earnings and Capital Trend
MSEK



Source: Financial system

Figure 19. Capital development
MSEK

	Balance carried 2023	Profit/ loss 2023	Profit/ loss 2022	Balance brought 2022
First and second level studies	-282	-136	-114	-31
Purchased courses	5	0	0	6
Commissioned courses	-1	-1	0	0
Research and doctoral studies	750	-114	-18	880
Commissioned research	11	-7	-5	23
Total	**484**	**-258**	**-137**	**877**

Source: Financial system

contributions and fees of SEK 260 (259) million, corresponding to just under 5 per cent of KTH's total revenue. Further information on SciLifeLab's activities and funding can be found in the section entitled *Research*, and also in the annual report submitted by KTH to the government in connection with the annual report.

Government capital amounted to SEK 484 (741) million at the end of 2023, corresponding to 8 (12) per cent of turnover according to the above definition and 9 (14) per cent of operating revenue. Of KTH's total agency's capital, SEK 196 (202) million relates to SciLifeLab. This amount includes both agency's capital in respect of direct government funding received but not yet allocated and previously allocated direct government funding for KTH's activities that has not yet been utilised.

Revenue

Operating revenue increased by almost SEK 195 million compared to 2022 and amounted to SEK 5,484 million in 2023.

Education at first and second-cycle level

Compared to 2022, revenue increased by SEK 66 million and amounted to SEK 1,636 million, representing 30 (30) per cent of total revenue.

Income from direct government funding for education at first and second-cycle level increased by 3 per cent and amounts to SEK 1,280 (1,243) million. This increase is explained by the price and salary conversion of the direct government funding, but also by the fact that the offset against direct government funding with the number of full time equivalent students and annual performance equivalents increased compared to 2022. KTH offset SEK 1,291 (1,251) million for 2023, which was SEK 37 (109) million below the funding cap. The opening direct government funding saving for 2023 was SEK 136 million, but a further SEK 6 million was reversed during the year, which reduced the direct government funding saving by a corresponding amount. After the 2023 offset, the total direct government funding saving amounted to SEK 166 million, which gave an direct government funding saving above the maximum permitted 10 per cent of the direct government funding. KTH therefore needs to return the difference of SEK 34 million of the allocated funding cap in respect of 2023. See Note 1 Revenue from direct government funding for more information on direct government funding savings.

Revenue from fees and other remuneration in education increased by 5 per cent, SEK 13 million, and amounted to SEK 296 million in 2023. This increase was due to higher income activities funded by tuition fees, where income amounted to SEK 158 (148) million in 2023. The remainder can be explained by increased income from the renting of premises. Tuition fees accounted for about 10 (10) per cent of total education revenue in 2023. See the section entitled *Activities funded by fees*.

Income from grants in education increased marginally from SEK 40 million in 2022 to SEK 42 million in 2023.

Income from contract education fell by SEK 1 million compared to 2022 and amounted to SEK 16.3 million in 2023. Revenues have remained relatively stable between 2021 and 2023.

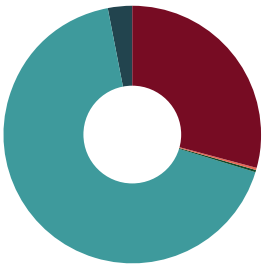
Research and education at third-cycle level

KTH's income for research and education at third-cycle level amounted to SEK 3,848 (3,719) million in 2023, which is an increase of just under 3.5 per cent compared to 2022. Income from research and education at third-cycle level accounts for just over 70 per cent of KTH's total revenues.

Income from direct government funding for research and education at third-cycle level increased by SEK 44 million compared to 2022. This change is due to price and salary conversion of direct government funding and an additional SEK 10 million for operations at SciLifeLab. Of the direct government funding for research, SEK 430 million has been used to fund transfers, primarily within the strategic research domains, and in particular in respect of SciLifeLab activities. Hence this element of the direct government funding is recognised as transfers and not within operating revenue.

Income from grants amounted to SEK 1,901 (1,858) million in 2023 and constitutes just under half of the total income for research and education at third-cycle level. KTH's three largest funding bodies in respect of research and education at third-cycle level, alongside direct government funding, have not changed compared to 2022. As before, the Swedish Research Council is KTH's largest external funding body, with revenue from grants totalling SEK 381 (337) million, followed by the EU with SEK 271 (253) million and the Wallenberg Foundations with SEK 252 (235) million. These three external funding bodies account for just under 48 per cent of total research grant income. See the section entitled *Research*.

Figure 20. Field of activity 2023 (2022)
Total MSEK 5,484 (5,289)



In percent

	2023	2022
First and second level studies	29,4	29,2
Purchased courses	0,2	0,1
Commissioned courses	0,3	0,3
Research and doctoral studies	67,2	67,7
Commissioned research	2,9	2,7

Source: Financial system

Figure 21. Sources of income 2023 (2022)
Total MSEK 5,484 (5,289)

In percent

	2023	2022
Government grants for education first and second level studies	23,3	23,5
Government grants for research and doctoral studies	26,6	26,8
Research Council	8,4	7,6
Other government agencies	16,8	17,1
Strategic foundations	2,7	3,2
EU	5,4	5,1
Private / Other	16,8	16,7

Source: Financial system

Income from fees and other remuneration has increased by SEK 23 million, almost 5 per cent, and amounts to SEK 444 million in 2023.

Expenses

Operating expenses amounted to SEK 5,742 (5,426) million, which is an increase of almost 6 per cent compared with 2022.

Staff costs increased by SEK 145 million, corresponding to an increase of 4.3 per cent compared to 2022. The increase in expenses between 2023 and 2022 is explained mainly by the annual salary review. The number of full time equivalent students has decreased by 20 compared to 2022. See the section entitled *Staff*.

The cost of premises increased by just over 9 per cent compared to the previous year, from SEK 987 million to SEK 1,079 million, which is an increase of SEK 91 million. This cost increase is mainly due to the sharp indexation of rental costs for 2023 and increased energy costs.

Other operating expenses have increased by almost SEK 33 million, corresponding to an increase of almost 4 per cent compared to 2022. This is explained mainly by an increase in expenses for travel and conferences. Consultancy costs also increased, mainly in IT.financial expenses increased by just over SEK 13 million due to the increase in interest costs.

Education at first and second-cycle level

Expenses for education at first and second-cycle level constituted 31 per cent of the total operating expenses, amounting to SEK 1,773 million in 2023. Total expenses have increased by 5 per cent or SEK 88 million compared to 2022. This increase can be largely explained by increased salary costs and increased costs for premises. Staff costs have increased by 4.4 per cent, which is largely the same as for KTH as a whole. Expenses relating to premises have increased by SEK 59 million compared to 2022. Other operating expenses, on the other hand, fell by almost 7 per cent, SEK 20 million, compared to 2022. This is mainly due to lower costs for repairs and maintenance, which fell by SEK 16 million compared to 2022. That said, travel costs increased slightly, but remain at a lower level than before the pandemic. Depreciation costs remain relatively stable compared to 2022, with an increase of 1 per cent. Financial expenses increased by almost SEK 5.8 million compared to 2022 on account of higher interest rates.

Research and education at third-cycle level

Total expenses for research and education at third-cycle level amounted to SEK 3,969 million, representing 69 per cent of total operating expenses. These costs increased by SEK 227 million, 6 per cent, compared to 2022. Staff costs increased by 4.3 per cent, which is the same as the total increase for KTH. The costs for other operations increased by almost SEK 53 million, corresponding to an increase of 9 per cent compared to 2022. In particular, travel and conference costs and consultancy costs have increased. Depreciation costs have increased by 21 per cent compared to 2022, and amounted to SEK 192 million in 2023. KTH has made a number of decisions on infrastructure initiatives and applied for external funding for investments in equipment, etc., which affects depreciation costs. Expenses relating to premises have increased by SEK 32 million compared to 2022. This is lower than KTH's total cost increase of more than 9 per cent in respect of premises.

Relocation of operations

In November 2023, KTH's University Board made a policy decision to relocate operations from Kista and Södertälje. Planning will take place in 2024 with regard to when different parts of the organisation are set to relocate. Current planning indicates that operations in Södertälje will be relocated in the autumn of 2025, and that operations in Kista will be relocated in the autumn of 2026. The financial impact is dependent on factors such as the length of the rental contracts, negotiations with landlords on potential early termination of contracts and opportunities for subletting. This means that KTH may incur rental costs for some premises even after the operations have been relocated. Relocation will also incur costs for certain adaptations of premises at KTH Campus.

Management of foundations

KTH currently manages 94 private foundations via related management.

The foundations have been formed via various donations to KTH. The oldest foundation originated in a gift dating back to 1874, which was donated to KTH's predecessor, Kongl. Teknologiska Institutet (the Royal Technical Institute). The purpose of the Hultqvist Foundation is to award scholarships to poor or less well-off and diligent students at the university who have earned them through diligence and good behaviour. The Samuel Owen Scholarship Foundation also has the purpose of awarding scholarships to students at KTH. Both foundations still award scholarships to students at KTH.

The fundraising foundation for international student

Figure 22. Costs 2023 (2022)

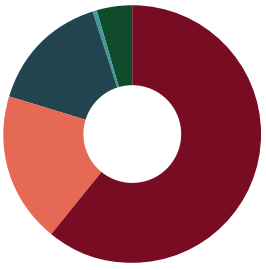
MSEK

	2023	2022
Staff	3 502	3 357
Premises	1 079	987
Other operating costs	885	852
Financial cost	24	11
Depreciation	252	219
Total	**5 742**	**5 426**

Source: Financial system

Figure 23. Costs 2023 (2022)

Total MSEK 5,742 (5,426)



In percent

	2023	2022
Staff	61,0	61,9
Premises	18,8	18,2
Other operating costs	15,4	15,7
Financial cost	0,4	0,2
Depreciation	4,4	4,0

Source: Financial system

Figure 24. Outcome for education at first and second cycle

MSEK

	2023	2022	2021
Operating revenues			
Government grants	1 280	1 243	1 304
Revenues from tuition fees and other charges	296	283	268
Revenues from grants	42	40	77
Financial income	18	5	0
Total operating revenues	**1 636**	**1 570**	**1 650**
Operating costs			
Staff costs	1 024	981	970
Costs for premises	415	356	367
Other operational costs	267	287	271
Financial costs	7	2	0
Depreciation	60	59	65
Total operating costs	**1 773**	**1 684**	**1 673**
Total operating outcome	**-137**	**-115**	**-24**

Source: Financial system

Figure 25. Outcome for research and education at third cycle

MSEK

	2023	2022	2021
Operating revenues			
Government grants	1 461	1 417	1 406
Revenues from tuition fees and other charges	444	421	411
Revenues from grants	1 901	1 858	1 847
Financial income	42	22	4
Total operating revenues	**3 848**	**3 719**	**3 668**
Operating costs			
Staff costs	2 479	2 377	2 356
Costs for premises	663	631	606
Other operational costs	618	565	454
Financial costs	16	9	3
Depreciation	192	159	146
Total operating costs	**3 969**	**3 741**	**3 564**
Total operating outcome	**-121**	**-23**	**103**

Source: Financial system

exchange at KTH and the Professor Odelstierna Scholarship Foundation distributed their entire foundation capital for their respective purposes in 2023 and were closed.

Management for the purpose of the foundations

The charter sets out the purpose of each foundation. The KTH-affiliated foundations distributed SEK 25 (22) million in 2023.

Of the 94 KTH-affiliated foundations, 41 provide scholarships to students at first and second-cycle level. Just over SEK 9 million was distributed through 294 scholarships, of which almost SEK 4 million came from the Henrik Göransson's Sandviken Scholarship Fund, the largest of the foundations managed by KTH. This foundation has capital amounting to SEK 236 million.

Travel grants for teachers, researchers and doctoral students are awarded by 28 foundations. From these, just over SEK 5 million was distributed through 191 grants in 2023.

The other 25 foundations contribute to research activities at KTH. A decision was made during the year to award grants for such activities totalling almost SEK 11 million over 85 scholarships.

The second largest foundation managed by KTH is the KTH Great Prize Foundation from a donation made in 1944. The donor stipulated that the prize should be awarded to a Swedish citizen who has been of major significance to Sweden through epoch-making discoveries, ingenious applications or artistic endeavours. This year's prize was worth SEK 1.3 million and will be awarded in connection with KTH's professorial inauguration in April 2024. The 2023 recipient of the prize is Tilde Björfors, founder of Cirkus Cirkör. The University Board's citation is as follows: "By taking play and adventurous creativity very seriously indeed, Tilde Björfors has raised contemporary circus to new levels, created a school and established the genre in Sweden. With elegance, equilibrism and persistence, she has opened new doors to an artistry that pushes the boundaries of what is possible both in the imagination and in the ring. Tilde Björfors is a highly deserving recipient of the KTH Grand Prize."

KTH receives compensation from the foundations for the costs incurred in connection with their management. This remuneration for 2023 amounted to SEK 2.1 million.

Asset management

The capital of the affiliated foundations is managed on a discretionary basis by two external asset managers. This means that the asset managers are authorised to make reallocations in the portfolio, within the framework specified in the University Board's guidelines for the investment of capital for KTH's affiliated foundations. Total foundation assets at the end of the year amounted to SEK 1,040 (959) million.

Figure 26. Size and number of foundations

Capital, MSEK at end of December 2023

	Number	Capital, MSEK
Foundations, 15-250 MSEK	16	715
Foundations, 5-15 MSEK	23	206
Foundations, 1-5 MSEK	46	113
Foundations, up to 1 MSEK	9	6
Total	**94**	**1 040**

Source: Bank statements of the foundations

Financial Statement

SEK thousand

	2023	2022	2021	2020	2019
Operating revenues					
Government grants	2 741 228	2 660 597	2 710 769	2 556 455	2 409 564
Revenues from tuition fees and other charges	739 783	703 808	678 842	674 633	670 376
Revenues from grants	1 942 865	1 898 095	1 923 698	1 840 929	1 878 724
Financial income	59 724	26 301	4 075	1 738	2 908
Total operating revenues	**5 483 600**	**5 288 801**	**5 317 385**	**5 073 756**	**4 961 571**
Operating costs					
Staff costs	3 502 420	3 357 468	3 325 956	3 173 160	3 027 200
Costs for premises	1 078 503	987 230	972 857	963 441	944 574
Other operational costs	884 842	852 007	724 670	704 745	845 588
Financial costs	23 859	10 549	2 963	834	4 754
Depreciation	252 057	218 718	211 212	220 945	210 442
Total operating costs	**5 741 681**	**5 425 973**	**5 237 658**	**5 063 126**	**5 032 557**
Total operating outcome	**-258 081**	**-137 172**	**79 727**	**10 630**	**-70 986**
Outcome from shares of subsidiary companies and other interests	**0**	**0**	**0**	**0**	**2 072**
Transfers					
Funds allocated from government budget for financing of grants	429 621	435 058	427 799	372 472	353 460
Funds allocated from government agencies for financing of grants	209 634	181 636	169 998	153 025	158 431
Other funds received for financing of grants	244 098	159 457	152 036	83 370	92 664
Grants made	-883 353	-776 151	-749 833	-608 867	-604 555
Outcome of transfers	**0**	**0**	**0**	**0**	**0**
Changes to capital for year	**-258 081**	**-137 172**	**79 727**	**10 630**	**-68 914**

Financial Statement per operational area

		Education at first and second cycle			Research and education at third cycle	
	Total	First and second level studies	Purchased education	Commissioned education	Research and doctoral studies	Commissioned research
Operating revenues						
Government grants	2 741 228	1 280 210	0	0	1 461 018	0
Revenues from tuition fees and other charges	739 783	270 972	8 388	16 260	283 107	161 056
Revenues from grants	1 942 865	42 324	0	0	1 900 542	0
Financial income	59 724	17 632	0	4	42 030	57
Total operating revenues	**5 483 600**	**1 611 138**	**8 388**	**16 265**	**3 686 697**	**161 113**
Operating costs						
Staff costs	3 502 420	1 013 455	2 906	7 430	2 428 094	50 535
Costs for premises	1 078 503	415 011	0	0	663 314	178
Other operational costs	884 842	251 715	5 516	9 531	515 890	102 190
Financial costs	23 859	7 447	0	1	16 005	406
Depreciation	252 057	59 969	0	0	177 665	14 422
Total operating costs	**5 741 681**	**1 747 597**	**8 422**	**16 963**	**3 800 969**	**167 731**
Total operating outcome	**-258 081**	**-136 460**	**-34**	**-698**	**-114 271**	**-6 618**
Outcome from shares of subsidiary companies and other interests	**0**	**0**	**0**	**0**	**0**	**0**
Transfers						
Funds allocated from government budget for financing of grants	429 621	11 417	0	0	418 204	0
Funds allocated from government agencies for financing of grants	209 634	26 896	0	0	182 738	0
Other funds received for financing of grants	244 098	3 122	0	0	240 976	0
Grants made	-883 353	-41 435	0	0	-841 918	0
Outcome of transfers	**0**	**0**	**0**	**0**	**0**	**0**
Changes to capital for year	**-258 081**	**-136 460**	**-34**	**-698**	**-114 271**	**-6 618**

Balance Sheet

SEK thousand

	2023-12-31	2022-12-31
ASSETS		
I. Intangible fixed assets	**38 973**	**14 462**
Capitalised expenditure for development	62	87
Intellectual rights and other intangible assets	38 910	14 375
II. Tangible fixed assets	**881 994**	**873 869**
Improvements to non-owned real estate	271 524	286 164
Machines, inventory items, installation etc.	564 770	554 186
Construction in progress	45 700	33 518
III. Financial fixed assets	**30 014**	**29 014**
Interests in wholly and partially owned companies	29 925	28 925
Other investments held as fixed assets	90	90
VI. Receivables	**143 797**	**183 463**
Receivables - costomers	31 200	35 911
Receivables - other government agencies	112 271	146 529
Other receivables	325	1 023
VII. Cut of items	**1 035 733**	**885 431**
Prepaid expenses	355 155	299 823
Accrued grant revenues	632 935	579 224
Other accrued revenues	47 643	6 384
VIII. Settlement with Government	**-166 379**	**-199 946**
Settlement with Government	-166 379	-199 946
X. Cash and cash equivalents	**1 829 735**	**2 090 469**
Balance and interest-bearing account at Swedish National Debt Office	1 616 382	1 823 583
Other credit balances at Swedish National Debt Office	213 353	266 885
Total assets	**3 793 867**	**3 876 760**
CAPITAL AND LIABILITIES		
I. Agency capital	**483 904**	**740 985**
Government Capital	31 363	30 363
Changes to capital brought forward	710 622	847 795
Changes to capital according to Financial Statement	-258 081	-137 172
III. Provisions	**51 092**	**47 167**
Provisions for pensions and similar commitments	10 378	9 900
Other provisions	40 713	37 267
IV. Liabilities etc.	**1 358 883**	**1 377 458**
Loans from Swedish National Debt Office	651 572	676 195
Accounts payable - other government agencies	118 567	81 661
Accounts payable - suppliers	225 696	206 340
Other accounts payable	363 435	413 782
Deposits	-387	-520
V. Cut-off items	**1 899 987**	**1 711 150**
Accrued expenses	104 722	82 878
Unutilised grants	1 729 217	1 606 542
Other prepaid revenues	66 048	21 730
Total capital and liabilities	**3 793 867**	**3 876 760**
CONTINGENT LIABILITIES		
Government guarantees for loan and credits	none	none
Other contingents liabilities	8 000	11 100