## Content

### ABOUT KTH
- KTH in figures 2015 3

### ORGANISATION
- KTH management and the faculty 4
- KTH Schools with operating areas 4

### THE PRESIDENT'S FOREWORD 5

### EDUCATION
- Education at first and second cycle 6
- Recruitment of students to KTH programmes, starting at first cycle 6
- Demand for KTH's educational programmes 7
- Preparation courses between upper secondary school and university 11
- Student influence at KTH 11
- Careers 11
- E-learning 11
- Sfinx 11
- Doctoral studies 13
- Level of activity and financing of studies 14

### Collaboration in education 16
- Conditions for educational collaboration 16
- Master of Science in Engineering and Education 16
- Subject teacher education 16
- Collaboration with the University College of Arts, Crafts and Design 17
- Other collaboration 17

### INTERNATIONALISATION 20
- Objectives 20
- International mobility 20
- Tuition fees for third-country students 20
- Recruitment, admissions and scholarships 21
- Study Abroad Programmes 21
- Priority regions 21
- China 21
- India 21
- South East Asia 21
- Brazil 22

### Collaboration with foreign universities 23
- Strategic partners 23
- Cluster 23
- Nordic Five Tech 23
- Deans Forum 23
- Magalhães 23

### Participation in international programmes and projects 23
- EIT Digital 23
- KIC InnoEnergy 24
- Erasmus+ 24
- Erasmus Mundus 24
- Linnaeus-Palme 24
- Research Training Partnership Programme, SIDA 24
- Swedish Academic Collaboration Forum (SACF) 24
- Marie Skłodowska-Curie 24

### RESEARCH 25
- Objectives 25
- External research financing 25
- EU financing 25
- National external financing 26
- Strategic research areas 27
- Science for Life Laboratory (SciLifeLab) 27
- Research platforms 28
- European Institute of Technology (EIT) 28
- KIC InnoEnergy 29
- EIT Digital 29
- EIT Health 29
- EIT Raw Materials 29
- Centres 29
- External changes 30
- Research infrastructure 30
- Export control 30
- Honorary doctorates 30

### COLLABORATION 32
- Strategic collaboration 32
- Strategic partnerships 32
- Personal mobility 32
- Development projects and monitoring of effects 32
- Regional collaboration 33
- Arenas for collaboration 33
- Collaboration with small and medium-sized companies 33
- Commissioned and continuing education 33
- Alumni relations and KTH Opportunities Fund 34
- The innovation office 34
- Innovating-supporting activities 34

### QUALITY MANAGEMENT 36
- Development of the quality system 36
- Third cycle initiative 36
- Quality management work in the administration 36
- Evaluation of KTH's environment and sustainability organisation 37
- Teaching and learning in higher education 37
- Follow-up with alumni 37
- Ranking 37
- Annual bibliometric follow up 38
THE ENVIRONMENT AND SUSTAINABLE DEVELOPMENT 39
Education, research and collaboration 39
Sustainable Campus 40

STAFF 42
Leadership 42
Gender equality, diversity and equal opportunity 42
Competence and career development 42
Staff development 42
Recruitment initiatives for young researchers 43
Centrally financed sabbatical periods for teaching staff 43
KTH Relocation 43

Organisation 44
Case handling in the event of discrimination, persecution, sexual harassment and abusive treatment 44

Staff structure 44
Professors, visiting professors and adjunct professors 44
Doctoral students with employment 44
Technical and administrative staff 44

PREMISES 46
KTH is growing 46
Major building projects completed in 2015 46
Smaller rebuilding and renovation projects completed in 2015 46
Other ongoing building projects 46
Empty and available premises 46
Student and visiting researcher accommodation 46

FINANCES – PROFITS, RESOURCE UTILISATION AND FINANCING 48
Financial results and changes to capital 48
Income 49
Education at first and second style 49
Research and third education cycle 49
Costs 50
Education at first and second style 50
Research and third education cycle 50

FOUNDATION MANAGEMENT 51
Purpose management 51
Capital management 51

FINANCIAL STATEMENT 52

BALANCE SHEET 53

LICENTIATE THESES 54

DOCTORAL THESES 57
Since its founding in 1827, KTH has grown to become one of Europe’s leading technical and engineering universities, as well as a key centre of intellectual talent and innovation. As Sweden’s largest university for technical education and research, KTH attracts students, teachers and researchers from all over the world.

KTH is working with industry and society in the pursuit of sustainable solutions to some of humanity’s greatest challenges: climate change, future energy supply, urbanisation and quality of life for the rapidly-growing elderly population.

Education and research at KTH covers a wide area – science and technology of course, but also architecture, industrial economics, civil engineering and education, for example. The innovative climate promotes versatile solutions and creates a new generation of engineers, architects and teachers.

KTH participates in international research collaborations and participate in a large number of educational exchange or joint programmes with universities and colleges the world over. KTH’s collaboration with strategic partners such as commercial companies, the authorities and organisations gives students and researchers a wide network of contacts to make use of.

KTH’s educational and research activities are distributed across five campus areas in the Stockholm region. The central campus is in the Stockholm city centre beside Norra Djurgården.

KTH and Stockholm University jointly organise education and research in biotechnology and physics at AlbaNova, near Roslagstull. In Karolinska Institutet Science Park in Solna is the Science for Life Laboratory, which is operated together with Karolinska Institutet, Stockholm University and Uppsala University. Education and research in the field of IT is located at Kista in northern Stockholm, close to IT industry companies and research institutions. In Stockholm’s southern suburbs, KTH is represented in Haninge, Flemingsberg and Södertälje. A major initiative in Södertälje was commenced in 2015 in collaboration with Scania, AstraZeneca and the Municipality of Södertälje, with government support.

### KTH in figures 2015

**Educational activities**
- Master of Architecture and 15 Master of Science in Engineering
- programmes
- Master of Science in Engineering combined with Degree in Education
- Bachelor’s programmes
- Subject teacher programmes grades 7–9
- Master’s programmes (one- and two-year)
- Bachelor’s programmes and two-year university diplomas
- Further education, technical preparatory programme

- 12,815 full time students, of which 33 per cent are women and 67 per cent men (including fee-paying students)
- 10,777 annual performance equivalents (including fee-paying students)
- 1,839 active research students (at least 50 per cent activity), of which 31 per cent are women and 69 per cent men

- 2,621 new students on the first year of Master of Science in Engineering, Bachelor of Architecture and Bachelor of Science in Engineering programmes of which 33 per cent are women and 67 per cent men
- 812 admitted to the Technical Preparatory Programme, of which 36 per cent are women and 64 per cent men
- 2,235 new students on one- and two-year Master’s programmes, 34 per cent women and 66 per cent men, of whom 1,062 students previously on Master of Science in Engineering studies programmes
- and 1,193 students studying on a one- or two-year Master’s programme at KTH
- 284 newly-admitted students to doctoral studies programmes, of which 32 per cent are women and 68 per cent men
- 105 Master of Architecture, 46 per cent to women and 54 per cent to men
- 1,316 Master of Science in Engineering degrees, 29 per cent to women and 71 per cent to men
- 358 Bachelor of Science in Engineering degrees, 23 per cent to women and 77 per cent to men
- 1,487 Master/Master of Science (one- and two-year) degrees, 31 per cent to women and 69 per cent to men
- 328 PhDs, 31 per cent to women and 69 per cent to men
- 122 licentiate degrees, 31 per cent to women and 69 per cent to men

**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 four programme areas within the European Institute of Innovation and Technology (EIT);
- InnoEnergy
- EIT Digital
- EIT Health
- EIT Raw Materials

External financing, income from grants, 1,580 MSEK (excluding transfers):
- MSEK 345 the Swedish Research Council
- MSEK 277 EU
- MSEK 157 Vinnova
- MSEK 138 Wallenberg Foundations
- MSEK 365 other government agencies
- MSEK 298 other external financing including private funds

**Financial situation**

MSEK 4,786 in total turnover (of which MSEK 435 transfers)
- Government grants (excluding transfers);
- MSEK 1,070 First and second level (undergraduate) educational programmes
- MSEK 1,132 Research and third education cycle

**Employees**

- 5,233 employees, the equivalent of 3,656 full time positions, of which 1,347 are women and 2,309 men of which, 305 professors, 46 women and 259 men (including visiting and adjunct professors)
- 283 associate professors, 62 women and 221 men

**Floor Space**

- 276,000 m2
**Organisation**

**KTH management and the faculty**

*KTH* has educational and research activities in ten schools. Under each of these are a number of departments, centres of excellence and study programmes. The schools all report directly to the President. Each school is led by a Head of School and a Deputy Head of School and has a Management Group. There is also a Strategic Council for each school, which is an advisory body to the Head of School in certain issues.

The University Board monitors all *KTH* internal affairs and is responsible for ensuring that its tasks are fulfilled. The board consists of 15 members: the President, eight external members, three faculty members and three student representatives.

The President leads university activities, subject to the University Board. The Deputy President may deputise for the President. The President’s Group at *KTH* deals with general research, educational and quality issues. It consists of the President, Deputy President, Dean of Faculty, Vice Dean of Faculty, Vice Presidents for Research and Collaboration, University Director and a student representative. *KTH* also has Vice Presidents for faculty renewal and equal opportunity, international issues and sustainable development. The *KTH* Management Group deals with issues that concern all schools and is made up of the President, Deputy President, Vice Presidents, Dean of Faculty, Vice Dean of Faculty, University Director, Communications Director, all Heads of Schools and student representatives.

The Faculty Council represents the entire faculty and has overall responsibility for issues relating to the quality of education, research and collaboration. The Council is also an advisory body to the President. There is a faculty meeting group, the main task of which is to facilitate and reinforce the faculty’s access to information and influence on processes and decisions. The Education Committee of the Faculty Council has three main tasks: overall design of the educational offering at basic, advanced and research levels; preparing *KTH’s* work on quality development and monitoring education; and the preparation of the development of rules and guidelines for education for the whole of *KTH*. The Appointments Committee of the Faculty Council has three main tasks: preparation and decisions in promotion cases; preparation and decisions on matters relating to recruitment of teaching staff; and the preparation of *KTH’s* work on quality development and follow-up with regard to teaching staff appointments. The Faculty Council also has a promotions board and recruitment committees.

### KTH Schools with operating areas

- **School of Architecture and the Built Environment (ABE)**
  - Architecture
  - Civil and Architectural Engineering
  - Real Estate and Construction Management
  - Philosophy and History
  - Sustainable Development, Environmental Science and Engineering
  - Urban Planning and Development
  - Transport and Economics

- **School of Biotechnology (BIO)**
  - Genetic Technology
  - Glycotechnology
  - Industrial Biotechnology
  - Protein Technology
  - Proteomics and Nanobiotechnology
  - Theoretical Chemistry and Biology

- **School of Computer Science and Communication (CSC)**
  - Computational Biology
  - Computer Vision and Active Perception
  - High Performance Computing and Visualization
  - Media Technology and Interaction Design
  - Centre for Parallel Computers

- **School of Electrical Engineering (EES)**
  - Electrical Engineering
  - Fusion and Space Plasma Physics
  - Information and Communication Technology
  - Medical Engineering and Bio Micro Systems

- **School of Information and Communication Technology (ICT)**
  - Electronics and Embedded Systems
  - Industrial and Medical Electronics
  - Integrated Devices and Circuits
  - Communications Systems
  - Materials and Nano Physics
  - Software Engineering and Computer Systems

- **School of Chemical Science and Engineering (CHE)**
  - Fibre and Polymer Technology
  - Chemistry
  - Chemical Engineering

- **School of Technology and Health (STH)**
  - Health Systems Engineering
  - Basic Science and Biomedicine

- **School of Engineering Sciences (SCI)**
  - Aeronautical and Vehicle Engineering
  - Physics
  - Solid Mechanics
  - Mathematics
  - Mechanics
  - Theoretical Physics
  - Applied Physics
The President’s foreword

KTH’s educational programmes are resulting in more and more degrees being awarded at all levels. The figures show that the number of examinations has increased strongly in 2015. The number of master’s degrees in engineering increased from 1,141 in 2014 to 1,336 in 2015. This increase can be partly explained by the efforts that have been made to get students enrolled before 2007 to take the exams. Apart from this one-off effect, there is also an underlying positive trend in numbers taking this education.

In addition to engineers and architects, a further 764 KTH students were awarded master’s degrees in technology. These took their initial education at other universities in Europe or other parts of the world. The number of degrees awarded students were awarded master’s degrees in technology. These took their initial education at other universities in Europe or other parts of the world. The number of degrees awarded students were awarded master’s degrees in technology. These took their initial education at other universities in Europe or other parts of the world. These are impressive figures and represent a strong contribution to the provision of competence in Sweden.

In 2015, doctoral examinations reached a record level with 328 new PhDs, compared with 279 in 2014, which was itself a record. I forecast that figures for doctoral examinations will continue to be strong in 2016. This can be explained by the expansion that has taken place in research at KTH in recent years.

The positive trend in applications for education at KTH in engineering and architecture has continued in 2015. In spite of the reduction in numbers of 19 to 20-year-olds generally, the number of first-choice applications for Master of Engineering education at KTH increased by eight per cent and for Bachelor of Science in Engineering by twelve per cent compared with 2014. It is also very gratifying that the proportion of women is increasing.

Work on internationalisation of the education is progressing well. The number of paying non-European students and externally-recruited students on KTH’s distribution of Master of Engineering programmes increased from 1,091 in 2014 to 1,304 in 2015. There is now a 50/50 distribution of Master of Engineering students and externally-recruited students on KTH’s master programmes.

The number of outward exchange students (662) continues to increase and the development plan target of 700 in 2016 is within reach.

Research contributions from external financiers in 2015 included two major contributions from the Knut and Alice Wallenberg Foundation. These were SEK 150 million to the Wallenberg Wood Science Centre and SEK 320 million to the establishment of the Wallenberg Centre for Protein Research (WCPR) during the next eight years. AstraZeneca will also contribute SEK 80 million to the WCPR over the same period.

The Science for Life Laboratory has continued to show positive development in 2015. Two international evaluations by the Swedish Research Council have shown that its activities are at the very highest international level.

KTH has also emerged as the foremost Swedish university in the Swedish Research Council’s decisions on research funding in science and technology in 2015. During 2015, KTH has also been the most successful Swedish university in the Horizon 2020 programme. Trends in the number of women in the KTH faculty in 2015 have been mixed. The proportion of women among professors and associate professors has increased, but we can see a clear reduction among assistant professors. This is a particular concern, since many assistant professors will become the associate professors and professors of tomorrow. There is every reason to review the processes for the recruitment of assistant professors.

Given the availability of funding from KTH’s administrative capital, the board has decided to invest in twelve assistant professorships in a wide range of subjects, as well as strategic research and education initiatives. The assistant professorships have attracted highly-qualified applicants and most positions will be filled during the course of spring 2016. The new strategic initiatives are also planned to start in spring 2016.

Work to reinforce KTH’s collaboration with the community has continued intensively during the year. Ten strategic partnerships have been initiated thus far. Bombardier became a strategic partner in 2015. Positive developments can also be confirmed in KTH’s initiatives for innovation and entrepreneurship. KTH’s innovation office emerged very well from Vinnova’s 2015 evaluation, which has resulted in greater subsidy.

There is noticeably greater interest among students in starting their own business. The student incubator Student Inc. offers support to students with good ideas. I believe it is important that KTH uses various means to capture the increased interest in entrepreneurship, through both education and physical support.

The work of creating student accommodation on the KTH campus at Valhallavägen has been a high priority in recent years. During 2015 it became clear that approximately 1,000 student apartments would be ready in 2019.

Our premises are being extensively developed in line with KTH’s expansion. Special mention must be made here of the new Architecture building, which received the Kasper Salin award, as well as the rebuilding of the KTH entrance area. KTH also received a prestigious international award, together with Akademiska Hus, for the development of a sustainable campus.

KTH has a stable economy, demonstrates extremely positive examination trends, attracts applicants for its studies in increasing numbers and is successful in competition for external research funding. There is every reason to look forward to the years to come with great confidence.

Peter Gudmundson
Education

Education at first and second cycle

Recruitment of students to KTH programmes, starting at first cycle

Objectives for recruitment
The overall objective for recruitment activities is to interest young people in KTH’s educational programmes. KTH has a communication platform to promote and extend the recruitment of students, and this states what KTH should communicate to potential students. The platform also forms the basis for the activities and actions that are planned or commenced for the purpose of achieving a better gender balance, reducing socially uneven recruitment and stimulating diversity of ethnic origin. KTH also has long-term activities aimed at young people in upper secondary school.

Completed activities
Recruitment work prioritises the personal encounter between representatives of KTH and potential students. KTH works intensively with upper secondary schools. This work is mainly done by 45 so-called student ambassadors, who are KTH’s front-line representatives among upper secondary pupils. These student ambassadors represent most of KTH’s study programmes and campuses. They are chosen with great care, the greatest priority being their ability to inspire young people. The student ambassadors reflect diversity at KTH, in respect of gender, geographical origins, ethnicity and social background. All student ambassadors receive extensive training in communicating with young people, presentation technique, messages for student recruitment and information about the target group, as well as individual coaching.

The web is KTH’s most important communication channel; together with other digital means such as social media and student blogs, this is a way of making KTH accessible to many, wherever in Sweden they may live. A major initiative began in 2014 to change and improve the national and international educational web, and this work has continued through 2015. This has involved changes to both structure and content, based on systematic analysis of targets groups and traffic data.

Over two days in March every year, KTH organises an Open House for the purpose of informing about KTH’s educational programmes on site, in the university environment. The 2015 event attracted some 1,600 visitors, and according to a visitor survey, 94 per cent said that they received answers to their questions. The KTH student ambassadors also answered questions on the web during the course of the year.

Upper secondary students also had the opportunity to accompany a student during a normal day’s studies. During the first months of the spring semester, about 200 3rd-year upper secondary students visited KTH. 50 per cent of these were women. During the 2014/15 recruitment year, KTH also met potential students at the big educational fairs in Göteborg, Stockholm, Malmö, Umeå and Luleå, which attracted 46,000 visitors between them. According to a target group survey, 44 per cent of the academically ambitious 3rd year science and technology students visited KTH’s stands.

Collaboration with upper secondary schools
Every year, KTH produces a list of about 100 priority upper secondary schools for the purpose of visiting more of the KTH target group. The list is based on average marks, college entry, geographical location, number of pupils, importance given to technical education and previous experience/collaboration. Since 2014, KTH has been working with two different priority lists: a list of schools outside Mälardalen, where KTH offers meetings of different types in which the school is interested, and a list of schools within Mälardalen, where KTH primarily offers Student for a Day and Open House.

The House of Science is run by KTH and Stockholm University, with the City of Stockholm as long-term partner; its main purpose is to increase children’s and young people’s knowledge of and interest in technology, science and mathematics.

School pupils, from preschool to upper secondary, visit the premises at AlbaNova or in the Bergius Botanic Gardens to perform experiments or activities involving biology, physics, chemistry, mathematics or technology. Further teacher training in these subjects is also offered. The House of Science also hosts a number of other initiatives for the purpose of increasing knowledge of and interest in technology, science and mathematics. These include for example Technology Week, Researchers’ Night, First Lego League and Maths Coach on the internet. More than 60,000 pupils and teachers a year visit the House of Science.

KTH and tuition fees
Since the introduction of tuition fees for non-European students in 2011, student recruitment activities have had a new and wider mission.

According to KTH’s development plan for 2013–2016, the target for fee-paying students registered for the autumn semester 2016 should be 1,000. The target has thus been set of achieving the same number of non-European students as before the introduction of fees. KTH has established a number of priority regions for targeted action. These are still China, India, South East Asia and Brazil. For each region, a person in the faculty has been tasked with increasing student exchanges with the best universities in the region, spreading the reach of the KTH brand and creating opportunities for the recruitment of master’s students. Special efforts have been made in respect of China, so as to overcome technical and communication barriers. To reach fee-paying students in China, KTH has established a Chinese website with information on educational programmes, as well as an increased presence in Chinese social media such as Weibo, RenRen, WeChat and others.

The international student ambassadors have been tasked with acting as a point of contact for potential master’s stu-
Dents, representing their former seat of learning in various types of digital marketing activities, being hosts for visits to KTH and assisting in other forms of activity for the purpose of attracting paying students, with a clear focus in digital arenas.

**Demand for KTH’s educational programmes**

**First-cycle level**

Demand for KTH programmes starting at first cycle continues to be high and has once again increased compared with previous years. The number of first-choice applications for these programmes in 2015 was 6,592 (5,800). The number of planned places was 2,370 (2,360). In its development plan for 2013-2016, KTH has a target of at least 4,000 and 1,000 first-choice applicants for Master of Science and Bachelor of Science respectively in engineering. The numbers of first-choice applicants in 2015 were 3,718 and 1,061 respectively.

In the autumn semester of 2014, KTH started its first ever English speaking programme at first-cycle level, the bachelor degree programme in information and communication technology. In 2015 the programme had 205 (143) first-choice applicants in the national admissions round and 455 first-choice applicants in the admissions round for English speaking programmes, which indicates great interest in English speaking educational programmes, even at first-cycle level.

**Second-cycle level**

The number of applications at master’s degree level also increased this year. The number of applicants fell drastically with the introduction of tuition fees in 2011, but since 2011 has increased from approximately 5,000 to about 9,400 applicants in 2015.

Of 9,425 (8,153) web registrations for the English speaking programmes at second-cycle level before the autumn 2015 semester, 6,708 (5,858) were liable for fees and of these 2,602 (2,715) paid the registration fees. There were 121 (153) first-choice applicants for the (three) Swedish speaking one-year master’s programmes.

In addition to admissions to KTH’s own programmes, KTH also coordinates a master’s programme in Erasmus+, which means that KTH manages the whole admission process for the programme. KTH also coordinates admissions to the umbrella programme of eight different tracks, which is provided by EIT Digital within the framework of the European Institute of Innovation and Technology (EIT). Some enrolled students begin their studies at a seat of learning other than KTH and some do not study at KTH at all, only at partner universities.

655 applications were received for the programme in Erasmus+ and 1,590 (1,668) for the EIT programme. The number of applications for Erasmus+ in 2014 was 1,697; the great difference in numbers is because KTH formerly coordinated admissions for five programmes.

**Qualifying preparatory programmes**

The qualifying Technical Preparatory Year and Technical Preparatory Semester had 2,220 (2,097) first-choice applicants in 2015. These programmes start in both the spring and autumn semesters. The preparatory year on the KTH campus, starting in the autumn semester, had 1,338 (1,212) first-choice applicants, which makes it the most in-demand programme at KTH.

**Alternative selection, mathematics and physics test**

For autumn 2015 admissions, KTH used mathematics and physics tests as an alternative selection to the degree programmes in Engineering, Engineering Physics, Electrical Engineering and Vehicle Engineering. The mathematics and physics test is designed and administered by Chalmers and has been used as a selection model for admissions to degree programmes in engineering since 2007 at Chalmers and since 2011 at KTH.

Up to a third of the places in these programmes can be given to applicants with approved results in the mathematics and physics tests. A minimum result must be achieved in the test in order to gain acceptance. In the autumn semester of 2015, 42 applicants were accepted into engineering physics and one into vehicle engineering. There were no admissions into Electrical Engineering via the mathematics and physics test.

**Beginners**

In 2015 a total of 2,621 (2,634) beginners started year 1 studies in KTH’s traditional programmes that lead to vocational degrees, of which 1,944 (1,919) were on the Master of Architecture and Master of Science in Engineering programmes and 677 (715) on Bachelor of Science in Engineering programmes. See Figure 1 for further information.

The number of beginners on the Master’s programmes was 2,106 (1,920). Of these, 1,044 (877) were new students on KTH Master’s programmes while 1,062 (1,043) were previously students on a Master of Science in Engineering programme. The two final years of a Master of Science in Engineering programme are registered as a Master’s programme, meaning that Master of Science in Engineering students are registered as new students on a master’s programme when they start the fourth year of their engineering programme. One-year master’s programmes had 149 (119) beginners.

In addition to the admission of beginners in year 1, there were 176 (179) new students who started the later years of a KTH Master of Science in Engineering programme in 2015. There is also an option of starting the later years of a master’s program, which 118 (98) students did.

34 per cent of the total number of beginners in 2015 were women and 66 per cent were men. KTH’s target for 2016 is that the proportion of women beginners on Master of Science in Engineering programmes and Bachelor of Science in Engineering programmes should be at least 35 per cent and 25 per cent respectively. Out of the beginners on Master of Engineering programmes, a total of 34 (33) per cent were women.
**Figure 1**

Total number of new students 2012–2015

<table>
<thead>
<tr>
<th>Master of Science in Engineering and Master of Architecture, Degree Programme 300 HE credits</th>
<th>2015 Proportion (%) of women/men</th>
<th>2014 Proportion (%) of women/men</th>
<th>2013 Proportion (%) of women/men</th>
<th>2012 Proportion (%) of women/men</th>
</tr>
</thead>
<tbody>
<tr>
<td>Architecture</td>
<td>106 61/39</td>
<td>110 64/36</td>
<td>112 65/35</td>
<td>140 49/51</td>
</tr>
<tr>
<td>Biotechnology</td>
<td>69 58/42</td>
<td>70 56/44</td>
<td>64 52/48</td>
<td>68 54/46</td>
</tr>
<tr>
<td>Engineering and Education</td>
<td>58 43/57</td>
<td>57 51/49</td>
<td>49 45/55</td>
<td>50 40/60</td>
</tr>
<tr>
<td>Computer Science and Engineering</td>
<td>206 15/85</td>
<td>190 16/84</td>
<td>192 11/89</td>
<td>176 13/87</td>
</tr>
<tr>
<td>Design and Product Realisation</td>
<td>115 52/48</td>
<td>120 51/49</td>
<td>117 51/49</td>
<td>112 48/52</td>
</tr>
<tr>
<td>Electrical Engineering</td>
<td>80 11/89</td>
<td>82 13/87</td>
<td>79 8/92</td>
<td>72 11/89</td>
</tr>
<tr>
<td>Energy and Environment</td>
<td>82 56/44</td>
<td>84 55/45</td>
<td>81 49/51</td>
<td>86 48/52</td>
</tr>
<tr>
<td>Vehicle Engineering</td>
<td>121 18/82</td>
<td>110 9/91</td>
<td>107 17/83</td>
<td>113 13/87</td>
</tr>
<tr>
<td>Industrial Engineering and Management</td>
<td>159 29/71</td>
<td>170 33/67</td>
<td>173 36/64</td>
<td>162 32/68</td>
</tr>
<tr>
<td>Information and Communication Technology</td>
<td>78 22/78</td>
<td>70 24/76</td>
<td>77 16/84</td>
<td>91 15/85</td>
</tr>
<tr>
<td>Chemical Science and Engineering/Engineering Chemistry</td>
<td>71 38/62</td>
<td>80 45/55</td>
<td>71 52/48</td>
<td>70 50/50</td>
</tr>
<tr>
<td>Mechanical Engineering</td>
<td>165 30/70</td>
<td>157 22/78</td>
<td>157 27/73</td>
<td>157 17/83</td>
</tr>
<tr>
<td>Materials Design and Engineering</td>
<td>47 43/57</td>
<td>50 50/50</td>
<td>47 28/72</td>
<td>45 33/67</td>
</tr>
<tr>
<td>Medical Engineering</td>
<td>59 58/42</td>
<td>57 44/56</td>
<td>56 61/39</td>
<td>58 59/41</td>
</tr>
<tr>
<td>Media Technology</td>
<td>70 47/53</td>
<td>70 30/70</td>
<td>69 51/49</td>
<td>69 45/52</td>
</tr>
<tr>
<td>Civil Engineering and Urban Management</td>
<td>180 53/47</td>
<td>173 49/51</td>
<td>162 40/60</td>
<td>157 48/52</td>
</tr>
<tr>
<td>Engineering Physics</td>
<td>137 20/80</td>
<td>130 16/84</td>
<td>142 13/87</td>
<td>127 13/87</td>
</tr>
<tr>
<td>Open entrance</td>
<td>141 28/72</td>
<td>139 37/63</td>
<td>137 28/72</td>
<td>124 32/68</td>
</tr>
<tr>
<td><strong>Sub-total</strong></td>
<td><strong>1,944</strong> 35/65</td>
<td><strong>1,919</strong> 35/65</td>
<td><strong>1,892</strong> 33/67</td>
<td><strong>1,875</strong> 32/68</td>
</tr>
<tr>
<td>Bachelor of Science in Engineering, Degree programme 180 HE credits</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Constructional Engineering and Design</td>
<td>174 29/71</td>
<td>173 42/58</td>
<td>167 35/65</td>
<td>163 32/68</td>
</tr>
<tr>
<td>Computer Engineering</td>
<td>142 15/85</td>
<td>135 13/87</td>
<td>136 7/93</td>
<td>137 9/91</td>
</tr>
<tr>
<td>Electronics and Computer Engineering</td>
<td>34 6/94</td>
<td>49 4/96</td>
<td>34 21/79</td>
<td>55 7/93</td>
</tr>
<tr>
<td>Electrical Engineering</td>
<td>47 11/89</td>
<td>45 7/93</td>
<td>39 8/92</td>
<td>46 11/89</td>
</tr>
<tr>
<td>Chemical Engineering</td>
<td>47 60/40</td>
<td>48 56/44</td>
<td>48 42/58</td>
<td>49 43/56</td>
</tr>
<tr>
<td>Mechanical Engineering</td>
<td>113 20/80</td>
<td>119 11/89</td>
<td>121 10/90</td>
<td>101 18/82</td>
</tr>
<tr>
<td>Medical Engineering</td>
<td>35 46/54</td>
<td>34 6/94</td>
<td>46 31/69</td>
<td>45 51/49</td>
</tr>
<tr>
<td>Engineering and Economics</td>
<td>85 27/73</td>
<td>82 32/68</td>
<td>83 29/71</td>
<td>90 31/69</td>
</tr>
<tr>
<td><strong>Sub-total</strong></td>
<td><strong>677</strong> 25/75</td>
<td><strong>715</strong> 25/75</td>
<td><strong>674</strong> 22/78</td>
<td><strong>676</strong> 23/77</td>
</tr>
<tr>
<td>Masters programmes</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Masters programmes 120 HE credits</td>
<td>2 106 33/67</td>
<td>1920 33/67</td>
<td>1652 30/70</td>
<td>1574 32/68</td>
</tr>
<tr>
<td>of which within Master of Science in Engineering programmes</td>
<td>1 062 32/68</td>
<td>1043 33/67</td>
<td>969 30/70</td>
<td>967 34/66</td>
</tr>
<tr>
<td>Masters programmes 60 HE credits</td>
<td>149 56/44</td>
<td>119 43/57</td>
<td>146 49/51</td>
<td>141 43/57</td>
</tr>
<tr>
<td><strong>Sub-total</strong></td>
<td><strong>2,255</strong> 34/66</td>
<td><strong>2,039</strong> 33/67</td>
<td><strong>1,798</strong> 31/69</td>
<td><strong>1,715</strong> 33/67</td>
</tr>
<tr>
<td>Subject Teacher Education in Technology, Secondary Education, 270 HE credits</td>
<td>5 60/40</td>
<td>11 55/45</td>
<td>4 25/75</td>
<td>-</td>
</tr>
<tr>
<td>Bachelors programmes 180 HE credits</td>
<td>115 35/65</td>
<td>139 36/64</td>
<td>162 35/65</td>
<td>161 43/57</td>
</tr>
<tr>
<td>University Diploma programmes 120 HE credits</td>
<td>40 13/87</td>
<td>40 43/57</td>
<td>49 22/78</td>
<td>42 26/74</td>
</tr>
<tr>
<td>Technical Preparatory Year, Technical Preparatory Semester</td>
<td>812 36/64</td>
<td>894 33/67</td>
<td>818 30/70</td>
<td>816 33/67</td>
</tr>
<tr>
<td><strong>TOTAL</strong></td>
<td><strong>5,848</strong> 34/66</td>
<td><strong>5,757</strong> 33/67</td>
<td><strong>5,397</strong> 31/69</td>
<td><strong>5,285</strong> 32/68</td>
</tr>
</tbody>
</table>

Source: Ladok
and 66 (67) per cent were men. Out of the beginners on Bachelor of Engineering programmes in 2015, a total of 35 (56) per cent were women and 75 (79) per cent were men, which is in line with development plan targets. However the distribution of men and women differs greatly between the different KTH programmes. See Figure 1 for gender distribution by programme type and programme and Figure 2 for developments over the last ten years.

The median age for beginners on Master of Architecture and Master of Engineering programmes in 2015 was 20, for both women and men. For beginners on Bachelor of Engineering programmes the median age was 21 for both women and men. The median age for both women and men on the master’s and one-year master’s programmes was 24. Students on the Technical Preparatory programmes had a median age of 21 for both genders. These are essentially the same levels as in 2014.

**Degrees**

In KTH’s Strategic Plan for 2013–2016, the targets for the numbers of degrees are 4,120 Master of Science in Engineering, 380 Master of Architecture, 1,750 Master’s degrees without previous studies on the Master of Science in Engineering programme at KTH and 1,110 Bachelor of Science in Engineering degrees during the period. In 2015, KTH issued a total of 1,316 (1,141) Master of Science in Engineering degrees, 105 (100) Master of Architecture degrees, 764 (744) Master’s degrees without previous studies on the Master of Science in Engineering programme at KTH and 358 Bachelor of Science in Engineering degrees. This means that, in KTH’s assessment, the development plan targets will be achieved for all degrees.

In total KTH awarded 1,344 (1,244) Master of Science degrees in technology, 580 (493) of these also received Master of Science in Engineering degrees in 2015 or previously. The one-year Master of Science degree in technology, 60 HE credits, was awarded to 106 (102) persons.

The number of Bachelor of Science degrees continues to increase. Of the 873 (757) Bachelor of Science degrees awarded, 711 (594) were gained by students on the Master of Science in Engineering programmes and 72 (82) by students on the Master of Architecture programme.

The figures above show that many students at KTH choose to take several degrees based on the same studies. The most common combination is a Master of Science in Engineering with a Master of Science degree or a Bachelor of Science degree. Approximately 40 per cent of those who took a Master of Science in Engineering in 2015 also took one or two other degrees based on the same studies.

The proportion of women graduating as Master of Science in Engineering was 29 (30) per cent and the proportion of men 71 (70) per cent. For Master of Architecture women made up 49 per cent (54) and men 51 per cent (46) For Master of Architecture women made up 49 (54) per cent and men 51 (46) per cent. See Figure 3 for gender distribution by programme type and programme.

KTH also jointly awards master’s degrees with other universities. The number of degrees issued jointly with other universities in 2015 was 25 (7). Our assessment is that this type of degree will continue to increase.

According to the transitional rules of SFS 2006:1053, students who began a programme of education before 2007, in accordance with the old provisions of the Examination Scheme (university college regulations, appendix 2), were able to take their degrees up to the end of June 2015. For KTH, this mainly referred to students on a Master of Science in Engineering programme comprising 270 HE credits. KTH performed a great deal of active information work before the deadline both on the web and in the form of letters and study guidance. In KTH’s assessment, these efforts contributed to the number of degrees in this group significantly increasing from 169 in 2014 to 397 in 2015.

**Performance**

In first and second cycle education in 2015 there were a total of 12,224 (12,004) state-funded, full year students and 10,289 (10,207) full year performance students who had gained credits on their courses. A certain number of examinations for the autumn term are still in hand in late December. For the outcome in 2015, this means that 246 full year performances that were registered in January 2015 relate to examinations that took place in December 2014.

93 per cent of the total number of full year students were connected with the science and technology educational areas. KTH can receive funds for a maximum of 123 full year students and full year performances in the subject area of design. However, the design area had 357 full year students and 333 full year performances in 2015. The full year students and full year performances that exceed 123 are counted in the technology education area.
The performance rate for KTH first and second cycle studies is 84 (85) per cent calculated as the number of full year performances in relation to the number of full year students. In addition to state funded performance students, the paying students generated 571 full year students and 488 full year performances in 2015. The performance rate corresponds to that of the state funded students.

The proportion of women full year students is 33 per cent, with 67 per cent men. This is the same level as in recent years. In Master of Engineering and Architecture programmes, the proportion of women is 33 per cent and in the Bachelor of Engineering programmes it is 25 per cent. The
master’s programmes have 32 per cent women and 68 per cent men.

**Preparatory courses between upper secondary school and university**

Once again in 2015, KTH offered internet based preparatory courses to applicants for science and technology programmes. The courses are intended to support beginners and ease the transition from upper secondary level to university.

KTH works with several other universities and colleges in the preparatory courses in mathematics. The students are registered at and examined by the seat of learning to which they apply. The courses in mathematics had 1,748 (1,329) participants, which is an increase of 32 per cent. In 2015, KTH also offered courses between upper secondary school and university in other subjects. These were physics, computer science and engineering, civil engineering and urban management and architecture. The preparatory courses had a total of 3,548 (2,740) participants. Qualifying preparatory programmes

The Technical Preparatory Year is a one-year qualifying course aimed at students who did not fully achieve the qualifications required for KTH programmes while at upper secondary school. The Technical Preparatory Year is run over two terms and provides additional studies at upper secondary school level in mathematics, physics and chemistry. It is also possible to apply for only the second term of the preparatory year, which is especially suitable for those who took the technology programme at upper secondary level. Passing the Technical Preparatory Year or Technical Preparatory Semester guarantees the student a place on one of KTH’s Master or Bachelor of Science in Engineering programmes. 812 students started on these courses in 2015, compared to 814 the previous year 36 (33) per cent of these beginners were women and 64 (67) per cent were men. The outcome for 2015 was 696 (661) full year students and 466 (440) full year performances.

Of those who started the Technical Preparatory Programme in the autumn term of 2014 or the spring term of 2015, 44 (44) per cent or a total of 389 (576) students (30 per cent women, 70 per cent men) continued to take a Master of Science in Engineering programme or a Bachelor of Science in Engineering programme in 2015. The majority, 78 per cent, of those who continue at KTH join a Master of Science in Engineering programme.

**Student influence at KTH**

The University Board decided in 2013 that Tekniska Högskolans Studentkår (THS) would be awarded continued status as the student union for the entire university from 1 July 2013 until 30 July 2016. KTH and THS have a long history of collaboration and KTH students are represented in all decision-making bodies and in almost all drafting committees and working groups. These include the University Board, the Faculty Council, the KTH Management Group, the President’s Group, the Education Committee, the Appointments Committee, the Disciplinary Board, the School Strategic Councils, the Recruitment Committees and working groups for various investigations. KTH’s experience is that THS selects students representing different parts of KTH and also, as far as possible, reflecting the university’s social, ethnic and cultural diversity.

One important student activity in which KTH and THS work together is welcoming new students. This is organised by senior students and members of staff. The welcoming activities are conducted in collaboration with the students in the student union sections. In recent years, special efforts have been made to arrange welcoming activities for international students.

**Careers**

At KTH, careers activities are aimed at two main areas. One is to offer direct career development for students and the other is to support KTH schools in providing career development for their programme students. This indirect career support mainly occurs in collaboration with KTH’s study counsellors. Activities in 2015 included the development and commencement of tailored further training for study counsellors, individual career coaching for national and international students and lunch seminars on career development, in both English and Swedish.

**E-learning**

One of the goals of the KTH development plan for 2013–2016 is that e-learning should form a self-evident part of KTH’s educational programmes. There is rapid development in this area. KTH has adopted a vision for e-learning at KTH in 2016. The KTH development plan particularly emphasises the connection between educational development work and net-based learning. Global competition for the best students means that courses, or parts of courses, must be made available on the internet. This in turn requires knowledge of, and the development of, adapted educational methods. Many teachers have been active in e-learning for a number of years and they are continuing with the implementation of e-learning in the educational programmes. The primary emphasis must be on increasing the quality of the programmes, and digital resources must be beneficial and easy to use. KTH is also investing in infrastructure to support the development of e-learning. In 2015, KTH established an administration unit to organise support for e-learning, completed the procurement of a new learning platform and began work on producing KTH’s first Massive Open Online Course (MOOC). The university’s educational support during the year included the production of a communications plan, the launching of a teacher support web on the intranet, extending user support in connection with IT support and performing activities for teaching staff. Within the framework of the administration unit, KTH has developed system support for course evaluation, procured a plagiarism control system and initiated work on a mentometer system.
### Figure 5

**Full year students 2012–2015**

<table>
<thead>
<tr>
<th>Programme Type</th>
<th>2015</th>
<th>2014</th>
<th>2013</th>
<th>2012</th>
</tr>
</thead>
<tbody>
<tr>
<td>FYS</td>
<td>Proportion (%) of women/men</td>
<td>Proportion (%) of women/men</td>
<td>Proportion (%) of women/men</td>
<td>Proportion (%) of women/men</td>
</tr>
<tr>
<td>Master of Architecture</td>
<td>466</td>
<td>58/42</td>
<td>521</td>
<td>54/46</td>
</tr>
<tr>
<td>Master of Science in Engineering 270/300 HE credits</td>
<td>5,384</td>
<td>32/68</td>
<td>5,297</td>
<td>31/69</td>
</tr>
<tr>
<td>in addition, within Master programmes</td>
<td>1,865</td>
<td>33/67</td>
<td>1,754</td>
<td>32/68</td>
</tr>
<tr>
<td>Bachelor of Science in Engineering 180 HE credits</td>
<td>1,556</td>
<td>25/75</td>
<td>1,532</td>
<td>23/77</td>
</tr>
<tr>
<td>Masters Programmes 120 HE credits</td>
<td>2,869</td>
<td>34/66</td>
<td>2,643</td>
<td>32/68</td>
</tr>
<tr>
<td>of which within Master of Science Engineering programmes</td>
<td>1,865</td>
<td>33/67</td>
<td>1,754</td>
<td>32/68</td>
</tr>
<tr>
<td>Masters Programmes 60/90 HE credits</td>
<td>102</td>
<td>50/50</td>
<td>102</td>
<td>45/55</td>
</tr>
<tr>
<td>Subject Teacher Education in Technology, Secondary Education, 270 HE credits</td>
<td>2</td>
<td>65/35</td>
<td>4</td>
<td>52/48</td>
</tr>
<tr>
<td>Bachelors Programmes 180 HE credits</td>
<td>294</td>
<td>42/58</td>
<td>336</td>
<td>44/56</td>
</tr>
<tr>
<td>University Diploma 120 HE credits, Applied Technology</td>
<td>77</td>
<td>34/66</td>
<td>72</td>
<td>30/70</td>
</tr>
<tr>
<td>Technical Preparatory Year, Technical Preparatory Semester</td>
<td>693</td>
<td>34/66</td>
<td>661</td>
<td>33/67</td>
</tr>
<tr>
<td>Exchange students arriving at KTH</td>
<td>590</td>
<td>31/69</td>
<td>609</td>
<td>30/70</td>
</tr>
<tr>
<td>Further Education</td>
<td>195</td>
<td>39/61</td>
<td>207</td>
<td>38/62</td>
</tr>
<tr>
<td>Other</td>
<td>15</td>
<td>71/29</td>
<td>19</td>
<td>70/30</td>
</tr>
<tr>
<td>Total</td>
<td>12,244</td>
<td>33/67</td>
<td>12,004</td>
<td>32/68</td>
</tr>
</tbody>
</table>

Source: Ladok

### Figure 7

**Full year students and performance rate, fee-paying students 2012–2015**

<table>
<thead>
<tr>
<th>Programme Type</th>
<th>2015</th>
<th>2014</th>
<th>2013</th>
<th>2012</th>
</tr>
</thead>
<tbody>
<tr>
<td>FYS performance rate</td>
<td>FYS performance rate</td>
<td>FYS performance rate</td>
<td>FYS performance rate</td>
<td></td>
</tr>
<tr>
<td>Master of Architecture, Master of Science in Engineering 300 HE credits</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>68</td>
</tr>
<tr>
<td>Bachelor of Science in Engineering 180 HE credits</td>
<td>2</td>
<td>64</td>
<td>1</td>
<td>48</td>
</tr>
<tr>
<td>Candidate education</td>
<td>1</td>
<td>71</td>
<td>0</td>
<td>46</td>
</tr>
<tr>
<td>Masters Programmes 120 HE credits</td>
<td>530</td>
<td>86</td>
<td>389</td>
<td>85</td>
</tr>
<tr>
<td>Masters Programmes 60 HE credits</td>
<td>9</td>
<td>110</td>
<td>12</td>
<td>104</td>
</tr>
<tr>
<td>Further Education</td>
<td>0</td>
<td>85</td>
<td>0</td>
<td>212</td>
</tr>
<tr>
<td>Science without Borders</td>
<td>28</td>
<td>72</td>
<td>18</td>
<td>80</td>
</tr>
<tr>
<td>Total</td>
<td>571</td>
<td>85</td>
<td>420</td>
<td>85</td>
</tr>
</tbody>
</table>

Source: Ladok
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
**Sfinx**

The course called Swedish for Engineers in Stockholm County (Sfinx) started in project form in 2008 and is now a joint programme included in standard courses.

Sfinx is a unique joint venture between KTH, the Municipality of Järfälla, the City of Stockholm, Stockholm County Administrative Board and the Swedish Association of Graduate Engineers. For 18 months, engineers study Swedish from the immigrant course level through to upper secondary level, as well as English. They also learn about Swedish industry and the Swedish labour market. The students make observation visits or gain credits in their engineering area at KTH in parallel with the opportunity to participate in a mentorship programme organised by the Swedish Association of Graduate Engineers.

The combined purpose of the programme is to ease the entry into the Swedish labour market.

One trend during 2015 has been for industry to begin to contact Sfinx to recruit people with relevant competence. One explanation for this may be that Sfinx has now become established as a concept over the seven years that the programme has been running.

Approximately 120–140 students participate in the programme each year and more than 650 students in total have participated in Sfinx. As in 2014, students in 2015 have mainly made classroom observation visits at first and second cycle rather than taking whole courses. Reporting was in the form of written accounts integrated into the Swedish course, and contributed to students’ Swedish grades.

After completing the programme, approximately 45 per cent of the members of the most recent group have found employment in engineering.

**Doctoral studies**

**Recruitment**

There is great interest in doctoral student positions at KTH, which means that many people apply for the positions advertised. High competition for places is good for the quality of education. In 2015, as in 2014, KTH carried out coordinated advertising of research places in daily newspapers on five different occasions, the latest being in December. The aim of such coordinated advertising is to give KTH a high profile and increase interest in KTH as both a workplace and a university.

In 2015, a total of 183 doctoral student positions were advertised. 8,802 people applied for these, 1,783 of them women and 6,826 men. 193 of the total number of applicants did not state their gender. Recruitment to doctoral candidate positions also occurs without prior advertising. This relates to doctoral students funded via scholarships, partnerships with industry etc., as well as doctoral students in primarily international collaboration.

**Admissions**

According to the KTH strategic plan for 2013–2016, a total of 1,750 doctoral students are to be admitted during the period. 284 (50) doctoral students were admitted in 2015. The proportion of women admitted in 2015 was 32 (59) per cent and of men 68 (71) per cent. Of the new doctoral students, 13 per cent were admitted to take a licentiate degree. 42 per cent of these were women and 58 per cent were men. A total of 44 (41) of the new doctoral students, 32 per cent women and 68 per cent men, have their primary work outside the university and are taking their doctorates within the framework of their employment (industrial doctoral students). The employer may be private or public.

Of those who were admitted to doctoral studies in 2015, 34 (40) per cent or 96 (120) persons held a KTH degree. The most commonly held degree among them was Master of Science in Engineering. Of those newly admitted with a KTH degree, 46 (58) per cent held a master’s or one-year master’s degree and 53 (62) per cent held a Master of Science in Engineering. 47 (41) per cent of those newly admitted in 2015 held a degree from a country other than Sweden.

The number of newly admitted doctoral students has fallen, which is not in line with KTH’s development plan. The most probably explanation for this is the increased cost of financing studies. KTH also has considerably fewer students on master’s programmes without previous admission to Master of Science in Engineering programmes since the tuition fees were introduced. The number of new doctoral students with a master’s or one-year master’s degree from KTH has decreased from 90 in 2012 to 44 in 2015. The number of new admissions with a Master of Science in Engineering degree from KTH has also fallen.

**Level of activity and financing of studies**

Of a total of 2,074 registered doctoral students at KTH in 2015, 1,839 have worked at least 50 per cent of full time, and 2,056 have worked at least 10 per cent.

In 2015, employment as a doctoral student continued to be the predominant form of financing studies. At year end, 1,096 or 61 (63) per cent of doctoral students at KTH had this form of financing on a full or part-time basis. Of those who had doctoral employment, 29 (50) per cent were women and 71 (70) per cent were men.

13 per cent of doctoral students financed themselves by means of paid work connected with the study programme (industrial doctoral students), four per cent by means of other services within the university and 14 per cent through full or part-time scholarships. 8 per cent financed their studies, full or part-time, through other means. Funding through study grants has been entirely phased out during the year. Very many of the doctoral students who finance their studies through scholarships receive these from the China Scholarship Council. KTH has an agreement with the China Scholarship Council and has prepared a process for handling the admission and registration of these doctoral students.
Figure 9

Newly admitted and registered research students 2012–2015

<table>
<thead>
<tr>
<th>New students per research field</th>
<th>2015</th>
<th>2014</th>
<th>2013</th>
<th>2012</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Total Proportion (%) of women/men</td>
<td>Total Proportion (%) of women/men</td>
<td>Total Proportion (%) of women/men</td>
<td>Total Proportion (%) of women/men</td>
</tr>
<tr>
<td>Biological Sciences</td>
<td>1 0/100</td>
<td>1 0/100</td>
<td>1 0/100</td>
<td>8 63/38</td>
</tr>
<tr>
<td>Computer and Information Science</td>
<td>32 22/78</td>
<td>35 14/86</td>
<td>49 20/80</td>
<td>49 27/73</td>
</tr>
<tr>
<td>Economics and Business</td>
<td>3 67/33</td>
<td>12 58/42</td>
<td>12 33/67</td>
<td>38 47/53</td>
</tr>
<tr>
<td>Electrical Engineering, Electronic Engineering</td>
<td>39 18/82</td>
<td>41 12/88</td>
<td>62 23/77</td>
<td>53 26/74</td>
</tr>
<tr>
<td>Philosophy, Ethics and Religion</td>
<td>2 50/50</td>
<td>1 0/100</td>
<td>1 0/100</td>
<td>3 0/100</td>
</tr>
<tr>
<td>Physical Sciences</td>
<td>14 57/43</td>
<td>28 7/93</td>
<td>31 16/84</td>
<td>21 33/67</td>
</tr>
<tr>
<td>History and Archaeology</td>
<td>1 100/0</td>
<td>0 0</td>
<td>4 75/25</td>
<td>0 0</td>
</tr>
<tr>
<td>Health Sciences</td>
<td>1 100/0</td>
<td>3 100/0</td>
<td>2 50/50</td>
<td>8 38/63</td>
</tr>
<tr>
<td>Industrial Biotechnology</td>
<td>14 50/50</td>
<td>20 50/50</td>
<td>14 57/43</td>
<td>15 53/47</td>
</tr>
<tr>
<td>Chemical Sciences</td>
<td>15 40/60</td>
<td>9 44/56</td>
<td>7 57/43</td>
<td>24 42/58</td>
</tr>
<tr>
<td>Chemical Engineering</td>
<td>24 38/63</td>
<td>34 32/68</td>
<td>20 35/65</td>
<td>30 60/40</td>
</tr>
<tr>
<td>Arts</td>
<td>2 0/100</td>
<td>4 75/25</td>
<td>1 100/0</td>
<td>4 75/25</td>
</tr>
<tr>
<td>Mechanical Engineering</td>
<td>45 36/64</td>
<td>34 29/71</td>
<td>28 18/82</td>
<td>41 22/78</td>
</tr>
<tr>
<td>Mathematics</td>
<td>9 22/78</td>
<td>12 25/75</td>
<td>6 67/33</td>
<td>7 14/86</td>
</tr>
<tr>
<td>Materials Engineering</td>
<td>30 13/87</td>
<td>25 20/80</td>
<td>35 34/66</td>
<td>51 25/75</td>
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<td>0 0</td>
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<td>4 25/75</td>
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<td><strong>Total new research students</strong></td>
<td><strong>284 32/68</strong></td>
<td><strong>305 29/71</strong></td>
<td><strong>316 30/70</strong></td>
<td><strong>420 34/66</strong></td>
</tr>
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</table>

| Total number of students registered | 2,074 31/69 | 2,168 30/70 | 2,184 30/70 | 2,160 29/71 |

Source: Ladok
KTH doctoral programmes and collaboration within third cycle education

Doctoral programmes were established at KTH in 2011 and there are now 30 of them. All new doctoral students are admitted to a doctoral programme or a programme that KTH provides in collaboration with one or more other parties. The purpose of the doctoral programmes is to ensure the quality of education through an organised study structure. In order to be permitted to set up a doctoral programme, a number of quality requirements must be fulfilled with respect to purpose, target group, content etc. KTH’s doctoral studies scheme was completed in 2015. Among other things, this has shown that the doctoral programmes are supported by the organisation and that the work of introduction has been beneficial for the quality of education at doctoral level.

More information about this may be found in the section entitled Quality management.

KTH has started a short postgraduate licentiate degree programme in close collaboration with industry. These activities will be conducted as a research school, using a model developed in the Netherlands. In 2014 the Blekinge Institute of Technology and the University of Örebro were added as partners. The Professional Licentiate of Engineering School is primarily aimed at professionals who wish to train for leadership positions in research and development. The KF Foundation has granted financing for a first pilot round of the programme, which started in November 2014. There are thirteen participants in total, of which seven have been admitted to KTH, two women and five men. Three of these were admitted in 2015, one woman and two men. The participants are employed at different companies and spend two thirds of their working hours studying at the research school.

Degrees

The KTH strategic plan for 2013–2016 states the target for the number of doctoral degrees awarded during the period is 1,000. In 2015, 328 (279) doctoral degrees and 122 (123) licentiate degrees were awarded. 31 (26) per cent of these doctoral degrees were women and 69 (74) per cent were men. Of those who were awarded licentiate degrees, 31 (30) per cent were women and 69 (70) per cent were men. Of the total doctoral degrees awarded, 4 (5) were awarded jointly with another university.

Awarding a licentiate degree as a step in doctoral studies, and thus providing a natural check of studies to date, is normal at KTH. Of those awarded a doctoral degree in 2015, 39 (38) per cent had previously been awarded a licentiate degree. A technical licentiate degree is also extremely relevant for employment in industry.

Calculations of the study period for students who are awarded doctoral degrees show that the net study period for a doctoral degree in 2015 was 4.3 (4.3) years and 2.7 (2.6) years for a licentiate degree. Women have somewhat shorter net study periods than men for both types of degree.

Collaboration in education

Conditions for educational collaboration

KTH’s development plan for 2013–2016 states that KTH will develop structures for educational collaboration. KTH has developed internal rules, as well as support documents and a processing arrangement. KTH has also set up a working group for educational collaboration.

Master of Science in Engineering and Education

The teacher education programme is run in collaboration with Stockholm University. The Master of Science in Engineering and Education programme leads to an MSc degree as well as subject-related teaching qualifications for upper secondary school in mathematics and one of physics, chemistry or technology. KTH is authorised to set both examinations.

Recruitment to the programme has been stable and in 2015 the programme had 87 first-choice applicants. 58 (57) students began the programme in autumn 2015. The proportion of women beginners was 43 per cent, with 57 per cent men. 24 (27) students were awarded degrees from the programme in 2015. A survey of alumni that has been performed since 2008, within a year after award of degrees from the programme, shows that approximately 30 per cent work in upper or lower secondary schools or similar.

Subject teacher education

KTH’s strategic plan for 2013–2016 emphasises the technology teacher’s role in making technical subjects interesting for young people. Since 2010, KTH has been authorised to award degrees in education for technology subject teachers in years 7–9 of compulsory school. Thus, in autumn 2013 KTH started a new educational programme in collaboration with Stockholm University aimed at training year 7–9 teachers at compulsory schools in the subjects of technology, mathematics and one subject out of physics, chemistry or English.

Recruitment to the programme has been very low. In addition to inclusion in KTH’s general recruitment activities, the following activities have been performed: issue of post cards aimed at potential students in the region, totalling 10,000 recipients in the 20–27 age group in Stockholm County, information meetings for all those who applied for the programme, three advertisements in the specialist publication Skolvärlden, Facebook advertising with a link to a description of the programme, information to study and vocational counsellors and participation in an open house at Stockholm University. There were three first-choice applicants for autumn 2015 and five students began the programme, three women and two men. The total number of applicants was 43. Many courses are taken together with students on the Master of Science in Engineering and Education programme, as well as other engineering programmes. Students can choose to have a Bachelor of Science degree specialising in technical communication after three years of study. With effect from the autumn term 2016, the programme will be dormant and
no new admissions will occur. KTH will continue to contribute to teacher education in technology in collaboration with Stockholm University.

**Collaboration with the University College of Arts, Crafts and Design**

The KTH strategic plan for 2013–2016 states that collaboration will be developed with artistically-oriented universities, in particular the University College of Arts, Crafts and Design. In 2011, a declaration of intent was signed regarding extended collaboration in education and research between KTH and the University College of Arts, Crafts and Design. In 2013 a doctoral programme was established at KTH in which the University College of Arts, Crafts and Design is responsible for a considerable part of the teaching.

The programme focuses on the intersection of art, technology and design. The first doctoral students were admitted in 2014. Five doctoral students are currently taking the programme. Courses under the programme are given at both KTH and the University College of Arts, Crafts and Design. Extended collaboration has also begun in first and second cycle education. In order to provide doctoral students, supervisors and researchers with a good shared environment, a central programme is also planned in collaboration between KTH, the University College of Arts, Crafts and Design and other arts universities. This will commence during 2016.

**Other collaboration**

In 2012, KTH and Stockholm University signed an agreement on a joint programme at master’s level in mathematics, leading to a joint degree. In autumn 2015, 41 (16) students began the programme and 7 KTH students were awarded degrees.

A three-party collaboration project between KTH, Karolinska Institutet and Stockholm University has been established for the Science for Life Laboratory (SciLifeLab) in Stockholm. The collaboration project is taking place within the framework of a master’s programme, leading to a joint degree. The first six students were admitted to the programme in autumn 2015.

In January 2011, KTH and Mid Sweden University signed an agreement to collaborate on strengthening the Master of Science in Engineering programmes. This agreement runs up to and including 2017 and means that students can continue on certain master’s programmes at KTH after the first three years of an engineering programme at Mid Sweden University. 6 (14) students from Mid Sweden University started master’s programmes at KTH in autumn 2015.
## Licentiate and doctorate degrees 2012–2015

### Licentiate degrees per research field

<table>
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<tr>
<th>Field</th>
<th>2015 Total</th>
<th>Proportion (% of women/men)</th>
<th>2014 Total</th>
<th>Proportion (% of women/men)</th>
<th>2013 Total</th>
<th>Proportion (% of women/men)</th>
<th>2012 Total</th>
<th>Proportion (% of women/men)</th>
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### Doctorate degrees per research field

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<th>Proportion (% of women/men)</th>
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<td><strong>25/75</strong></td>
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Source: Ladok
Figure 11
Licentiate and doctorate degrees 2004–2015

Source: Ladok
Internationalisation

Objectives
It is stated in KTH’s development plan for 2013–2016 that KTH must strengthen its position as one of Europe’s foremost technical universities. KTH is active on an international market and must compete with other excellent universities for the best researchers and students. KTH is already a multicultural seat of learning at which nationalities and cultures meet. KTH must also work actively to ensure that increasing numbers of its students take part of their education abroad.

The development plan states the following quantitative targets for what KTH should achieve in the internationalisation of education during 2013–2016:

- The number of KTH students spending at least one term at an exchange university: 700 (2015: 662)
- Efforts will be made to achieve a balance in the number of incoming and outgoing exchange students
- The number of fee-paying students registered in the autumn term 2016: 1,000 (2015: 440 new fee-paying)
- The number of externally-recruited new admissions for second cycle studies from the EU/EEA/Switzerland registered in the autumn term 2016: 700 (2015: 814)
- The number of international strategic university partners: 12 (2015: 6)

International mobility
In recent years, KTH has made intensive efforts to achieve a better balance of student exchange. The number of incoming exchange students has been reduced, while better conditions have been developed for KTH students to study abroad. Great efforts to review the processing of exchange agreements have been implemented and a number of prioritised contractual partners have since been identified, both within and outside Europe. KTH schools now receive instructions on the numbers of incoming and outgoing exchange students the school is expected to have and in recent years exchanges have been much better balanced.

The largest single project to increase the number of outgoing exchange students was the KTH Global Event, which was held for the fourth consecutive year. The KTH Global Days offered a fair with invited partner universities, information meetings, talk shows and other activities. Various information meetings and a blog, presenting selected students who are studying abroad, also helped to give an insight into what studying abroad involves.

The administrative processes for incoming and outgoing students have been reviewed in order to increase uniformity and transparency for students and staff at the schools, primarily linked to the Mobility Online system support. Agreements have been entered into with universities in Singapore and elsewhere, so as to increase the number of attractive places at English speaking universities.

KTH’s target is that 700 students should study for at least one term abroad as part of their educational programme. In 2015, a total of 662 (635) students began studies abroad. 51 (50) per cent of these studied at a university outside the EU/EEA/Switzerland. The commonest countries for foreign studies were Singapore, France, the USA, Australia and Germany. 962 (946) exchange students began studies at KTH during the year. From Europe, most students were from universities in Germany, France and Switzerland. 38 (39) per cent of all incoming exchange students were from countries outside the EU/EEA/Switzerland, mostly from Singapore, the USA and China. KTH has the benefit of collaborating with respected universities and there is great interest in exchange studies at KTH.

In addition to the exchange students, KTH has a relatively large group of incoming double degree students in specific collaboration agreements with universities in Europe and Japan. These students study at KTH for one and a half to two years and then take a Master of Science in Engineering degree from KTH and an equivalent degree from their home university. 159 (117) students began double degree studies at KTH during the year.

Interest in various types of projects abroad, such as writing a degree project, remains keen and KTH is endeavouring to offer more scholarships for these purposes. During the year 37 (31) students started on Erasmus internships at a company or organisation in Europe.

In 2015, KTH was awarded more scholarships from the Swedish Council for Higher Education (UHR) under the Sida-financed programme Minor Field Studies (MFS). 76 applications were received, of which 50 were granted, compared with 40 the previous year. The destinations to which most scholarship students travelled were Tanzania, India, Uganda, Mozambique and Cuba.

Student mobility in doctoral studies
There are many international students engaged in doctoral studies at KTH. Approximately 50 per cent of those newly admitted as doctoral students in 2015 held a qualifying degree from a country other than Sweden. Approximately 200 doctoral students spent at least a week abroad during the year and approximately the same number of foreign doctoral students spent at least a week at KTH.

Tuition fees for third-country students
Tuition fees for the majority of KTH programmes and courses at second cycle are SEK 145,000 per academic year, and SEK 245,000 per academic year for architecture. Tuition fees for programmes and courses at first cycle are SEK 115,000 per academic year in all areas except architecture, where the fee is SEK 195,000 per academic year. There may be different levels of fees for programmes that are given in collaboration with other universities.

In the KTH strategic plan for 2013–2016, the target is 1,000 fee-paying students registered in the autumn term 2016. Major efforts are being made to achieve this target, including recruitment and the construction of efficient administration and services for fee-paying students. This has meant that activities relating to fee-paying students have shown a
cumulative loss to date. Income is steadily growing however, while efficiency-improving work is going on to reduce costs. In KTH’s assessment, the activities will be operating in balance within a couple of years.

Recruitment, admissions and scholarships
KTH has intensified recruitment work during the year, including with the aid of more student ambassadors and bloggers to communicate with potential students. Work on maintaining contact with applicants and new admissions has also been developed, with regular newsletters, telephone calls and more events for those who have been admitted but have not yet commenced their studies.

During the autumn term 2015, 440 new fee-paying students were registered at KTH, 127 of them women and 313 men, which represents an increase of 24 per cent over the previous year (353).

38 (89) of these students had been awarded scholarships financed by Swedish or KTH-affiliated scholarship programmes: 29 (34) Swedish Council for Higher Education scholarships, two financed by ABB, two financed by Axson Johnson and 5 (53) through the Swedish Institute. KTH, like many other seats of learning, has been affected by the severe reduction in the number of scholarships from the Swedish Institute.

Of the remaining 402 students, 93 (63) and 34 (20) respectively came via the EU knowledge and innovation groups EIT Digital and KIC InnoEnergy, while 35 (54) studied on course packages.

Study Abroad Programmes
Study Abroad Programmes have been implemented for the purpose of finding new markets, extending recruitment to master’s programmes and contributing to an international campus. They are aimed at fee-paying students who are interested in studying for a term at KTH without this leading to a degree. Through the use of separate admissions, this student group can apply for existing courses at second cycle level as independent courses. The School of Computer Science and Communication participated with nine courses in this year’s admissions round. Admissions were finalised at the start of 2016.

Priority regions
Since 2011, KTH has focused its internationalisation activities on the priority regions Brazil, India, China and South East Asia. The purpose is to spread the KTH brand, establish student exchanges with top universities, recruit fee-paying students and develop collaborative research activities.

KTH does not register the nationality of its students, so the information about students’ origins is based on the country where the earlier, qualifying education was taken.

China
In March 2015, KTH organised conferences on the theme Energy Transitions, together with Eindhoven University of Technology, Zhejiang University and Shanghai Jiao Tong University (SJTU). China C02 free by 2040 in Hangzhou and Shanghai. Researchers and doctoral students from a number of subject areas gathered to find solutions in fields such as renewable energy and structural changes to the energy system.

As part of the scholarship collaboration with the China Scholarship Council (CSC), KTH welcomed 31 doctoral students, 7 guest doctoral students, 2 master’s students, 2 post-doctors and 4 researchers during the year.

In 2015, student recruitment activities focused on strengthening the partnership with Chinese universities, so as to achieve long-term recruitment of students with good study results. The recruitment activities that have been conducted for a number of years with selected universities, according to a so-called 3+2 model, have been evaluated with successful results; these will therefore be continued using the existing approach in which students’ previous knowledge is assessed after three years’ study at candidate level in China.

During the year, almost 600 students from China applied for master’s programmes at KTH (excluding EIT). 118 began studies at KTH, 109 of them fee-paying. There were a further 26 students through recruitment agreements (3+2). It total, 144 (100) students from China commenced master’s programme studies at KTH, of whom 135 (79) were fee paying.

India
KTH’s strategic focus in the region is concentrated on nine partner universities in India. During the year, KTH participated in two Erasmus Mundus Action 2 projects (INDIA4EU II and Svagata) that are primarily aimed at recruitment of scholarship holders from India at third cycle level.

For the third year running, the competition KTH Master’s Challenge was organised with the aim of attracting students to master’s programmes in wireless systems, electric power technology and industrial product development. The competition was organised in collaboration with ABB, Formulate IP and Scania. The prize consisted of three scholarships for studies at master’s level at KTH and practice or examination work at one of the companies.

University visits and participation at student fairs also took place with the aim of recruiting students and discussing collaboration opportunities, including in Erasmus+.

During the year, approximately 830 students with an education in India applied for master’s programmes at KTH (excluding EIT). 110 began studies, 89 of them fee-paying.

South East Asia
KTH signed new student exchange agreements with Singapore Management University and Singapore University of Technology and Design during the year. KTH also renewed a Memorandum of Understanding (MOU) for NUS College in Stockholm.

In Indonesia, KTH signed an MOU with the scholarship
organisation LPDP and renewed an MOU and signed a collaboration agreement in the field of railways with the Institut Teknologi Bandung.

Considerable student exchange continues with the National University of Singapore (NUS) and Nanyang Technological University (NTU) comprising about 80 term places in each direction in total. There was also exchange through the iLead programme with the NUS, which involved company practice and courses in entrepreneurship, with 9 outgoing and 13 incoming students during the year. The NUS and NTU are thus still KTH’s largest exchange partners.

KTH participated in recruitment fairs in Indonesia, Singapore, Thailand and Vietnam. KTH also arranged events for newly accepted students from Indonesia and Thailand before they travelled to Sweden to begin their studies.

Approximately 100 students with education in South East Asia applied for ordinary master’s programmes in 2015. 20 began studies, all of them fee-paying.

Brazil

KTH participated for the third time in the Brazilian government scholarship programme Science without Borders and accepted 41 students, 6 of them at doctoral studies level, which is a marked increase over 2014 (24). In addition, five students from Brazil were registered on master’s programmes, three of them fee-paying.

A number of trips were made during the year to recruit students and cement academic contacts. KTH also initiated a number of new research projects within the collaborative framework with the research authority of a Brazilian state. The President of Brazil also visited KTH in connection with KTH’s role in the increasing bilateral collaboration between Sweden and Brazil.
Collaboration with foreign universities

Strategic partners
One of the objectives in the KTH strategic plan for 2015–2016 is to have twelve international strategic university partners by 2016. At present, KTH has decided to collaborate with six strategic partners: University of Illinois at Urbana-Champaign in the USA, Aalto University in Finland, Nanyang Technological University in Singapore, Shanghai Jiao Tong University in China, The Hong Kong University of Science and Technology in Hong Kong and the University of Tokyo in Japan. An academic coordinator has been appointed for each partnership and joint projects have been initiated in both education and research.

As part of the strategic alliance with the University of Illinois at Urbana-Champaign, which also includes Karolinska Institutet and Stockholm University, there is collaboration in the form of joint courses, online teaching and research into regional development and sustainability, mechanics, railways, media technology and energy, among other things.

Continuing collaboration was also discussed at a visit to Stockholm at President level of delegations from all the seats of learning.

In partnership with Nanyang Technological University, a joint doctoral programme was launched during the year, initially in urban systems, and the first student was admitted in December.

CLUSTER
The cluster network consists of twelve technical universities in Europe. The network is a platform and skills base for the development of future joint master’s programmes and for applications to various EU programmes and it also acts as a unifying entity in relations with the European Commission. In 2015, collaboration with the university networks idea League and Eurotech was intensified for the purpose of coordinating lobbying activities at EU level and creating joint projects in education and research.

Collaboration between CLUSTER and 18 Chinese universities in the Sino-European Engineering Platform (EP) has been further developed. Universities in EP met in October at the Eindhoven University of Technology as part of a symposium to celebrate the network’s 25-year jubilee.

Two sub-groups within CLUSTER, International Dimension and the Grants and Applications Support Team, supported joint project applications in Erasmus+ during the year and created a framework for international education weeks in various areas for the staff of the member universities.

Nordic Five Tech
The goal of Nordic Five Tech (N5T), a network of the Nordic region’s five largest universities of technology, is to utilise mutual strengths and create synergies in education, research and innovation. The network collaborated on five master’s programmes in 2015.

Among other things, the collaboration has led to educational development work, peer review of programmes, the exchange of experience and collaboration between students’ unions.

Deans Forum
KTH participates in the Deans Forum together with the University of Tokyo, Massachusetts Institute of Technology (MIT), University of California, École Polytechnique Fédérale de Zurich, Imperial College, a group of French Grandes Écoles and the IBM Watson Research Centre. The network was initiated by the University of Tokyo to promote collaboration at global level over the future issues that are common to technical universities. The President of KTH visited the University of Tokyo in October to discuss the development of collaboration within the network. The President also attended the meeting of the Deans Forum at IBM Watson Research Centre in the USA.

Magalhães
The Magalhães network was formed in 2008 to market student exchanges in technology between Europe and Latin America. It now comprises 35 universities. During the year, a project group coordinated by KTH was formed to promote joint project applications for external financing, in Erasmus+ International Credit Mobility among others. The network’s ambitions have now been extended and also cover research collaboration and joint educational programmes.

Participation in international programmes and projects
European Institute of Innovation and Technology (EIT) KTH participates in four of EIT’s knowledge and innovation groups (KIC) in the fields of ICT (EIT Digital), energy (KIC InnoEnergy), materials (EIT Raw Materials) and health (EIT Health).

The last two of these were granted in 2014 and the activities are being prepared. For more information, see the section on Research.

EIT Digital
During the year, ICT Labs changed its name to EIT Digital. KTH is coordinator for the 20 universities included in the collaboration on master’s school in EIT Digital and is entrusted with coordinating admissions, handling scholarships and developing the master’s programme.

During the year, 771 (777) students were admitted and 292 (234) chose to register and begin their studies at one of the partner universities. In 2015, EIT Digital awarded several scholarships, which meant that the proportion of self-financing students fell to 13 (20) per cent. Other students receive some form of scholarship or are students from the EU/EEA/Switzerland and thus released from paying tuition fees.

The students come from 40 different countries, thus confirming that there is a wide recruitment base. The proportion of women is 24 (30) per cent and of men 76 (70) per cent. EIT Digital is actively working to increase the proportion of...
women in 2016. Of the total of 292 students, 74 (50) began their studies at KTH. The remainder began their studies at one of the other 19 universities in the consortium. After completing the first year of study at another university, 45 (33) students commenced their second year at KTH in 2015. During the year there was a total of 235 students registered at KTH in EIT Digital.

KIC InnoEnergy
KIC InnoEnergy offers seven Master’s programmes, of which KTH participates in five. In autumn 2015, 73 (56) students started their first year at KTH and 24 (12) students started their second year of studies. During the year a total of 145 students were registered at KTH as part of KIC InnoEnergy.

Erasmus+
From the 2015 announcements, KTH was awarded a number of projects as coordinator or partner. In the field of capacity building, KTH will coordinate two new projects and participate in seven projects as partner. KTH was also granted 34 mobility scholarships for non-European exchanges of students and staff with universities in Argentina, Egypt, Kazakhstan and Russia. KTH will also coordinate a strategic partnership involving six CLUSTER universities. The project is aimed at studying the extra value and increased employability that is linked to programmes with double degrees. As in previous years, KTH obtained a number of scholarships for mobility within Europe for studies, practice and the exchange of staff.

The EU programme Tempus, which ran until 2013, enabled collaboration between EU countries and a number of countries that border Europe. The activities and projects that were started are now included in Erasmus+ capacity building. KTH is currently participating in 12 Tempus projects in Asia, North Africa, the Middle East and the western Balkans. The projects cover the development of new educational programmes in technology, the environment and sustainable development, geographical information systems, geoinformatics and company systems, as well as support for students, innovations and university administration.

Erasmus Mundus
Altogether, KTH participates in eight master’s programmes and five doctorate programmes. There were a total of 245 (262) Erasmus Mundus Action 1 students registered in 2015. Of the five master’s programmes that KTH coordinated in 2015, one is continuing with finance from KIC InnoEnergy. Two are continuing as joint master’s programmes without EU financing, one of which declined to continue as an Erasmus Mundus programme because of the economic risk that participation would have involved. Two master’s programmes have discontinued the collaboration.

Two of the three doctoral programmes that KTH coordinates have now had their final admissions. The first disputations took place in the autumn.

Representatives of the EU’s Education, Audiovisual and Culture Executive Agency (EACEA) visited KTH in December.

The purpose of the visit was to spend two days meeting the persons involved in Erasmus Mundus and Tempus/Capacity Building for discussions and to take note of good examples.

During the year, KTH presented the final report on an Erasmus Mundus Action 2 project for mobility of students, doctoral students and researchers between about twenty universities in Europe and Central Asia. KTH also participates as partner in a further two projects.

Linnaeus-Palme
Linnaeus-Palme is a Sida-financed exchange programme, the purpose of which is to stimulate bilateral exchanges between universities in Sweden and developing countries. For the period 2015–2016, KTH has been granted eight projects totalling approximately SEK 1.7 million within the framework of the project.

Research Training Partnership Programme, Sida
KTH has been granted a number of projects in Sida’s research efforts for bilateral collaboration, during the programme period 2015–2020. KTH will be active in three projects together with Makerere University in Uganda. KTH will be active in seven projects together with Ardhi University and the University of Dar es Salaam in Tanzania. As part of the bilateral programmes, KTH will receive and supervise doctoral students from Tanzania and Uganda and work on the development of master’s programmes in both countries.

Swedish Academic Collaboration Forum (SACF)
KTH is involved in the Swedish Academic Collaboration Forum (SACF) project together with Lund University, Chalmers, Uppsala University, Linköping University and Stockholm University. The project is part financed by the Swedish Foundation for International Cooperation in Research and Higher Education (STINT) and its purpose is to promote collaboration in research with partners in selected countries. During 2015, research seminars were held in South Korea, Singapore and China. In 2016, seminars will be held in Indonesia, Brazil and Stockholm.

Marie Skłodowska-Curie
Marie Skłodowska-Curie is part of the EU’s Horizon 2020 programme and is the most important mobility programme for doctoral students and researchers. In 2015, KTH researchers were invited to a number of applications in Marie Skłodowska-Curie, thanks to their well-established network of contacts and acknowledged expertise. In 2015, seven new projects were granted with KTH participation. In total, KTH was involved in 40 programmes during the year in this programme, 10 of them as coordinator. At institutional level, KTH has collaborated with approximately 140 foreign universities and industry partners, both within and outside Europe, through projects financed by Marie Skłodowska-Curie.
Research

Objectives
The KTH development plan for 2013–2016 states that KTH must strengthen its position as one of Europe’s foremost technical universities, by means of excellence in research and education and in close collaboration with the community.

The following concrete targets are given for what KTH should achieve in research in 2013–2016:
- SEK 400 million annually in international research financing. (2015: SEK 311 million)
- SEK 270 million annually in research financing from Swedish and foreign companies. (2015: SEK 168 million in grant income and SEK 64 million in assignment income received)
- 25 per cent increase in citation and publication. (Publications, fractionalised: 2012: 1,324, 2014: 1,500. Citation level 2012: 1.15, 2015: 1.11)

Interdisciplinary and multi disciplinary research facilitated by strategic research platforms, central educational programmes and other constellations, as well as first-class support for handling administrative research issues contribute to the fulfilment of the targets.

International research financing accounts for approximately 11 per cent of the research income. The main source of finance is the EU. The EU Horizon 2020 (H2020) programme entered its second year in 2015 and the number of funded projects remains at a high level. KTH is the Swedish university that has received both the most projects and the highest income from H2020 during the first year and a half of the programme. Many granted projects will commence during the coming year.

In 2015, KTH successfully attracted research funding thanks to our excellent research environments and cutting-edge research. In the Swedish Research Council’s main announcements in the field of science and technology, KTH was the university with the most projects granted. KTH continued to receive contributions from the Knut and Alice Wallenberg Foundation, amounting to SEK 150 million for the Wallenberg Wood Science Centre and SEK 320 million for the establishment of the new Wallenberg Centre for Protein Research (WCPR), together with Uppsala University and Chalmers University of Technology.

KTH has a high proportion of external financing, both from the public sector and from Swedish and foreign industry. There is also finance from foundations such as the Knut and Alice Wallenberg Foundation, with an expressed intention to support excellent research.

Swedish and foreign companies contribute a large percentage of the external financing through commitment to many research projects. However direct financing by companies, assignment research, represents only a small proportion, corresponding to about one per cent of KTH’s income. In most project collaboration with companies, there is no direct financing by the companies, but instead the companies contribute working input to the projects. This means that growing collaboration with the corporate sector does not necessarily mean increased income from this sector. For a number of years, KTH has been working on creating strong strategic partnerships with companies in which financing of research is part of the collaboration, such as through centres or research projects. Another way of strengthening finance from companies is through the fund raising performed by KTH within the Development Office framework; see the section on Collaboration. There is also a great deal of collaboration with companies in EU research projects. In these projects, KTH’s research is directly financed by the EU.

External research financing

EU financing
During the first year of the EU Horizon 2020 programme, KTH has been the most successful Swedish university in obtaining finance, based on statistics from the European Commission. KTH was the 16th most successful European university.

Horizon 2020 places greater emphasis than previous general programmes on research that contributes to innovations, economic growth and jobs. The possibilities of research projects achieving this are thus a significant component for success. During the year, KTH has worked at building up more support for how the parts of research applications concerning effects on and collaboration with society can be improved. This support is given in the form of courses, thematic workshops organised by the research platforms in collaboration with KTH’s schools, so as to raise the impact perspective and as support for individual researchers in their own applications, primarily those who intend to coordinate H2020 projects.

During 2015, approximately 360 applications were submitted and 30 were granted. KTH coordinates four of these projects. The coordinators are Erwin Laure at the School of Computer Science and Communication, who coordinates two of the projects, Lihui Wang at the School of Industrial Engineering and Management and Mark Howells at the School of Industrial Engineering and Management. Divided into the various programmes within Horizon 2020, three of the projects granted during 2015 are in ERC (for individual pioneering research), seven in the Marie Skłodowska Curie project (researcher mobility) and 40 in more traditional research collaboration focusing on societal issues and developments in technology.

The KTH development plan for 2013–2016 includes the goal that 20 new ERC grants should go to KTH researchers. With one year remaining, KTH has received 14 ERC grants. In addition, another researcher has chosen to move the Starting Grant to KTH in 2015. After the Management Report for 2014 was produced, Johan Hoffman of the School of Computer Science and Communication received a grant under the 2014 announcement for Proof of Concept.
No KTH researchers have received a Starting Grant in 2015. Jonatan Lenells of the School of Engineering Sciences received a grant in the Consolidator Grant 2015 announcement. In the announcement for Advanced Grant 2015, four KTH applicants have advanced to stage 2 and the result will be announced in March. One KTH researcher, Frank Niklaus at the School of Electrical Engineering has received a Proof of Concept grant.

One development noted in 2015 is that ERC applications for Starting Grants have received the highest grades without consequent financing by the EU. One researcher at KTH received the highest evaluation grades but no finance. During the coming year, four private Swedish foundations will provide the opportunity for equivalent funding.

KTH is involved in the H2020 Flagship Initiative Human Brain Project. In 2015 this took a major step towards moving from the preparatory phase to the operational phase when the contract was signed by the parties in October. This means that the one billion euro budget that has been assigned for the project can start to be used next year.

National external financing

In 2015 the Swedish Research Council granted KTH funding of SEK 254 million, SEK 196 million of which was in the major science and technology announcement. KTH thus became the university with the most funding from the science and technology announcement and has a higher than average level of grants for project contributions. Fewer framework projects were announced by the Swedish Research Council in 2015 and KTH has only received framework funding for the Röntgen Ångström project, for which Hans Hertz of the School of Engineering Sciences received SEK 7 million. In the announcement for research infrastructure, KTH was granted funding for NGI – National Genomics Infrastructure: SEK 21 million for the years 2016 and 2017. KTH is also included in the Myfab research infrastructure, where the main applicant was Chalmers University of Technology, which was granted SEK 72 million for 2016–19, NBIS, where the main applicant was Uppsala University, which was granted SEK 23 million for 2016-17 and SEIBER, where the main applicant was the Swedish Museum of Natural History, which was granted SEK 20 million for 2016–19.

In the MSC International Career Grant announcement, Jian tong Li of the School of Information and Communication Technology and Sumithra Velupillai of the School of Computer Science and Communication received SEK 6 million. In 2015, KTH was awarded a number of large grants by the Knut and Alice Wallenberg Foundation. In December 2015, the foundation decided to grant SEK 320 million to the Wallenberg Centre for Protein Research (WCPR), in collaboration with Uppsala University and Chalmers University of Technology, based on an application submitted by Mathias Uhlen of the School of Biotechnology. In November, the Knut and Alice Wallenberg Foundation granted an application from Lars Berglund of the School of Chemical Science and Engineering for continuing contributions to the Wallenberg Wood Science Centre. The Knut and Alice Wallenberg Foundation also awarded a SEK 25 million project grant to Karl Henrik Johansson of the School of Electrical Engineering for the project Engineering the Interconnected Society: Information, Control, Interaction, as well as a further contribution of SEK 25 million to Joakim Lundeborg of the School of Biotechnology for the project Spatial transcriptomics of the brain. Bo Wahlberg of the School of Electrical Engineering and Danica Kragic Jensfelt of the School of Computer Science and Communication were awarded funding up to SEK 24 million for their respective projects Automatic Transport Systems and Interaction and Communication with Autonomous Agents within the framework of the Wallenberg Autonomous Systems Programme. This ten-year project, which includes Linköping University, Chalmers and Lund University, will receive a total of SEK 1.5 billion in support from the Knut and Alice Wallenberg Foundation. Finally, three young KTH researchers have been appointed as Wallenberg Academy Fellows and will receive between five and nine million SEK over five years for concentrating on their research. The three researchers are Josefin Larsson and Jonas Strandberg, both of the School of Engineering Sciences, and Dimos Dimarogonas of the School of Electrical Engineering.

In 2015, the Foundation for Strategic Research (SSF) had an announcement aimed at key persons for the operation and development of activities in research infrastructure. This is a new form of subsidy, intended to increase the use of research infrastructure. Universities are invited to submit up to three applications and, out of the total of 15 grant recipients, Nils Nordell of the School of Information and Communication Technology, Erwin Laure of the School of Computer Science and Communication and Hans Blom of the School of Engineering Sciences received SEK 15 million each.

Two KTH researchers received grants in the Foundation for Strategic Research’s announcement of framework contributions in additive manufacturing, electronics, materials, robotics and data. Göran Stemme of the School of Electrical Engineering was awarded SEK 34 million for the project Next Generation Laser 3D – Microprocessing Methods and Danica Kragic Jensfelt of the School of Computer Science and Communication was awarded SEK 23 million for the project Factories of the Future: Human-Robot Collaboration Systems. In addition, KTH researchers are involved in a further three funded projects with other universities as the main applicants.

The Swedish Energy Agency is an important financier of many smaller research projects. Lennart Söder of the School of Electrical Engineering was awarded SEK 6 million for the project Flexible Electricity Customers’ Role in a Future Renewable Power System. Formas is another important financier and granted, for example, Berit Balfors of the School of Architecture and the Built Environment SEK 7 million for the project Integration of Sustainability Strategies in
Strategic research areas
Since 2010, KTH has been responsible for five strategic research areas (SFOs), and has also participated in a further five where other universities have the main responsibility. A total of 43 defined research environments in 20 strategic research areas receive funding directly from the government. The five year initiative was evaluated in 2014 and the report Evaluation of the Strategic Research Area Initiative 2010–2014 (ISBN: 978-91-7307-282-3) was presented in April 2015 together with recommendations for the government from the evaluating authorities, which were the Swedish Research Council, the Swedish Energy Agency, Formas, Forte and Vinnova. Each of the five SFOs was evaluated by two external experts on the basis of research results, ability to influence society, collaboration both within and outside academia, the integration of the research into education and internal control of the strategic research environment. They were then evaluated by a general panel, which focused on how each SFO created added value, the outcome of the added value for Swedish research and the success of each SFO’s strategy.

Among other things, the authorities recommended that SFO support should continue, that the relationship between the host and co-applicant universities should be kept and that a redistribution of funding should occur from some of the weaker environments to the strongest. KTH’s SFO environments emerged relatively well from the evaluation, but did not receive any additional funding from the redistribution that occurred. The evaluation of KTH’s control and use of SFO funding showed that the internal processes and the choices that were made for how the funding should be used worked well and that the added value for society was high. However it was felt to be unclear how management used the SFO financing to strategically strengthen the weaker environments.

A further recommendation given to the government by the evaluating authorities was that the government should task the universities with submitting action programmes based on the evaluation results – with specific focus on how collaboration outside academia, connections between SFO research and education and the benefit of the research for society and industry could be improved. In the budget proposition, the government chose not to comment on the results and recommendations of the SFO evaluation. However within the framework of an internal process, KTH’s SFOs were asked to submit action plans during the autumn, which could lead to improvement measures during the coming year. General development work on KTH’s effect on society, which also includes the educational perspective, is occurring within the framework of the project Impact 3C. See the section on Collaboration.

Science for Life Laboratory (SciLifeLab)
SciLifeLab is a national centre for molecular, life science research in two areas: health and the environment. The centre includes nine technical platforms with national status that include 35 facilities, as well as a further nine regional facilities. This facilities develop and provide advanced techniques and expertise to researchers in life sciences from all over Sweden. SciLifeLab also represents a multi-disciplinary life science research environment with a wide geographical and scientific range in Sweden.

Within the framework of SciLifeLab’s activities there is also considerable work on education and collaboration. SciLifeLab started in 2010 with the support of strategic research funding in molecular biosciences. Further financing came with effect from 2013 to establish a national centre for life science research, including a national focus on drug development (regulation 2013:118). The establishment of SciLifeLab is one of the largest research initiatives in Sweden and it is mainly located in Stockholm and Uppsala. SciLifeLab is operated in collaboration between the four host universities KTH, Karolinska Institutet (KI), Stockholm University (SU) and Uppsala University (UU), with KTH acting as principal.

The largest initiative is in DNA analysis (genomics) but proteomics, bioinformatics, bioimaging and pharmaceutical development are also strong areas. The use of the facilities is usually regulated with a direct queue system, after the feasibility of the project has been checked. In 2015, a total of 3,848 projects have been performed by research groups around the country. A total of 441 people work on the platforms, but the total in terms of full-time equivalents is somewhat lower.

The most explicit measure of scientific production is the number of publications produced by researchers connected with SciLifeLab. The total number of publications in 2015, 605, is an increase from previous years, 514 in 2014 and 458 in 2013. Many of the articles are of high class internationally; in 2015, 27 articles were published in the very best international periodicals. In 2015, SciLifeLab’s platforms generated data and analyses to a great many research projects run by researchers all over the country, which led to 417 publications.

SciLifeLab collaborates with many different organisations in industry and health care, for example, as well as the authorities. During 2015, interest in collaborating with SciLifeLab grew in industry, and in addition to the existing collaboration with AstraZeneca, a partnership was initiated between the drugs company Ferring Pharmaceuticals and SciLifeLab’s Clinical Diagnostics platform, as well as collaboration between KTH, UU, Chalmers University of Technology and AstraZeneca in the form of the new Wallenberg Centre for Protein Research.

In 2015, the government’s funding of SciLifeLab amounted
Figure 14

Professors 2015
Newly appointed professors (externally recruited)
- Functional materials
- Medical imaging and visualization
- Organic chemistry
- Proteomics with specialization in experimental oncology
- Visualization

Promoted to professor
- Physics

Direct appointed
- Communication
- Communication networks with specialization in stochastic optimization and learning
- Electromagnetic field
- Energy technology
- Experimental astroparticle physics
- Functional materials, specialization in materials chemistry
- Industrial information and control systems
- Large scale control systems
- Mathematical statistics

Media technology
- Microsystems technology
- Numerical analysis
- Theoretical physics
- Urban and regional studies

Newly appointed visiting professors
- Applied plasma physics
- Highway and railway engineering
- Industrial management with specialization in sustainable co-creation
- Research policy

Newly appointed adjunct professors
- Chemical engineering with specialization in thermal energy processes
- Cyber-physical systems
- Engineering acoustics
- Engineering network and system security
- Environmental strategies research
- High temperature oxidation
- Industrial product development
- Urban planning specializing in policy and sustainability transitions

Source: HR+

KTH’s research funding for 2015 totalled SEK 345 million, made up of SEK 154 million for national infrastructure, SEK 41 million for drugs development and SEK 150 million in strategic research funding. SEK 45 million of the strategic research funding was awarded directly to UU.

More information about activities at SciLifeLab may be found in the separate annual report submitted to the government by KTH.

Research platforms
KTH’s five research platforms (energy, information and communication technology, materials, medical and biomedical technology and transport) are connected with KTH’s strategic research area. This activity is now in its sixth year and has become an integral part of KTH’s research structure. The platforms work in particular to stimulate or initiate interdisciplinary research activities. Several major activities have been performed during the year in the different platforms and some examples are shown here to demonstrate the wide range of activities.

The energy dialogue organised by the energy platform in November gathered very many internal and external participants at KTH. This year’s theme was Research and Development in Energy Technology: Future Pathways and participants discussed national and global visions for energy technology, as well as how collaboration between academia and strategic industry partners can pave the way for development in energy research. The ICT platform day was on the theme of Influence and Engagement with Society and was mainly aimed at junior researchers in the ICT field.

The platform for medical and biomedical technology Life Science and Technology (LST) organised the inspiration day Technologies for Ageing and Well-being with speakers from Johns Hopkins University in the USA and the eHealth Authority, among others, discussing technologies for future ageing and well-being. In 2015 the LST platform has also been extensively engaged in building up EIT health, while the materials platform was engaged in building up EIT Raw Materials. For more information, see under each KIC below.

The materials platform also continued work on coordination of research infrastructure. Finally, the transport platform, together with the Road2Science Centre, has been a driving force in the work that resulted in the strategic innovation programme infraSweden2030 being granted by Vinnova, the Swedish Energy Agency and Formas. The programme gathers together the key national players in the field and its aim is to increase sustainability in the Swedish transport infrastructure and to make Sweden a leader in innovative infrastructure solutions. For the first three-year period the programme will have a budget corresponding to approximately SEK 130 million for proposal announcements, half of it financed by Vinnova, the Swedish Energy Agency and Formas and the rest coming from co-financing from partners.

During the year the platforms began work on producing a new strategy for each platform to cover the period 2016–2020.

European Institute of Technology (EIT)
EIT has five Knowledge and Innovation Communities (KICs), three of which have been in the areas ICT, energy and climate since 2010. The other two in materials and health were granted funding at the end of 2014 and began their establishment in 2015. KTH participates in all the KICs except in the climate area.

KTH’s engagement in EIT KICs is an important tool for promoting KTH researchers’ networks and collaborating with
European research groups and industry partners. This also enables an improved ability to strengthen EU applications and a higher level of EU finance for KTH.

During most of 2015, negotiations continued between EIT and all KICs on a new overall collaboration agreement, not least to harmonise the KIC programme with Horizon 2020 in which EIT is already included.

By the end of the year the negotiations led to a new agreement that will apply until 2021. KTH has formally committed itself to an agreement for establishment work for the new KICs in materials and health.

**KIC InnoEnergy**

Total activities in InnoEnergy have continued at almost the same pace as in previous years in the areas innovation, education and business development. On the other hand, the Swedish main partners’ commitment in innovation projects has declined as the earlier projects have been concluded and fewer new projects have started. This also applies to KTH, which, in spite of this, is still one of the most active partners in InnoEnergy with commitments in all the theme areas. Several of the projects moved on into a commercialisation phase through the KTH researchers who were involved in these projects since the Swedish teaching exemption gives IP rights to the researchers.

At the end of the year, KTH was involved in 16 ongoing innovation projects, four of which started during the year and with others in the final phase. This year too, KTH researchers and students are behind several start-up companies that have received establishment support via InnoEnergy Highway Ventures, such as Lead Cooled, Sci Break and Sol Angel.

**EIT Digital**

During the year EIT ICT Labs changed its name to EIT Digital. The activities themselves largely continue as before. During the year, the number of partners in EIT Digital increased from 136 to 156 and the projects within EIT Digital became focused on fewer and larger projects in each sub-programme, with increased competition for resources as a consequence. KTH remains the largest single partner, but its proportion of the activities has been reduced, as has the combined technical range. The Future Networks area represents the strongest focus and during the year KTH began a three-year High Impact Initiative, largely based on commitments by Swedish and Finnish partners.

This area is also strongly linked with EIT Digital’s programme for business development at European level, in which KTH also participates together with SICS and STING.

Together with Swedish partners in EIT Digital, KTH also this year organised a successful event in Kista, with a demonstration of project results and the final of the innovation competition Idea Challenge on the theme of the Internet of Things.

**EIT Health**

In 2015, KTH took part in the work of establishing EIT Health, for innovations for healthy life and active ageing. KTH, together with the universities KI, SU, UU and Copenhagen University, represent the academic parties in the Scandinavian node. KTH researchers from various areas (including modelling and simulation, imaging systems, data analysis, micro and nano systems, biotechnology and logistics) have contributed to the application and participated in identifying the thematic areas that are now in focus for EIT Health. The Vice President for International Issues also headed large parts of the strategically important work of designing the organisation for EIT Health, at both European and Scandinavian level. KTH’s commitments are now focused on bringing forward the innovation potential of the strong research environments at KTH in these areas.

**EIT Raw Materials**

During 2015, KTH participated in the work of establishing EIT Raw Materials, which covers the sustainable prospecting, recovery and preparation of raw materials, as well as recycling and the replacement of certain substances. KTH is one of the main parties in this KIC and is part of the Baltic node. During 2015, Raw Materials had announcements in Matchmaking and Networking, Validation and Acceleration and Learning and Education. The largest budget is in Validation and acceleration, while KTH is felt to have a good chance of receiving funding in Learning and education to develop new courses and programmes and later give scholarships to students.

**Centres**

Centres are important for KTH in its development of competitive research environments with industrially relevant issues and to help contribute networks for senior researchers and doctoral students. A centre is a neutral collaboration platform where different parties agree on a common operations pan and contribute with resources for its implementation. In 2015 there were 48 centre programmes at KTH, the majority being financed by long-term commitments from Vinnova, the Swedish Energy Agency or the Swedish Transport Administration.

Three centres have been granted extended financing from Vinnova during the year: The Centre for Transport Studies received SEK 21 million ProNova vinn Excellence Centre for Protein Technology receives SEK 14 million and Wireless@kth receives approximately SEK 5 million. The number of centres financed by Vinova is expected to fall during the coming year, since fewer centres will be given financing in Vinnova’s announcement for competence centres that opened in autumn 2015.

A new Centre for Sustainable Aviation has been established in collaboration between KTH and the Swedish Transport Administration, as well as a number of future parties.
The purpose of the centre is to create world-leading Swedish research into the control and operation of aviation with regard to the environment, and especially noise.

KTH and Scania have started a joint centre for transport research, the Integrated Research Lab (iTR), for the purpose of coordinating and operating long-term and integrated transport research so as to arrive at sustainable transport solutions. A new interim centre, the Centre for Quantum Materials, has been established at Nordita. The purpose of the centre is to bring together research into quantum materials both within and outside KTH.

**External changes**

Universities’ research funding is facing major changes in the coming years. Government financing will increasingly be linked to national evaluation of research and collaboration. Financing of large research infrastructures will be based on national needs assessment and collaboration within consortia. There is a need to demonstrate that research funding goes to projects that can provide the greatest societal impact.

**Research infrastructure**

In December 2014, the Swedish Research Council decided on a new model for prioritising, financing and organising national and international research infrastructure to replace the former processing. The model is based on all universities assessing the needs that exist in large national research infrastructures and that the proposals that emerge are supported by at least three universities or organisations, which will regulate responsibilities and costs in future consortium agreements.

The first stage in the new model occurred in 2015, when KTH performed an internal inventory of future needs for strategic research infrastructure initiatives, where there is support from several universities or organisations. The initiatives that were identified were registered in September in the Swedish Research Council’s needs inventory. A total of 153 research infrastructures were registered nationally, which were then prepared by an infrastructure reference group consisting of vice presidents of the ten largest universities. During the preparation work, the infrastructures were classified on the basis of priority and degree of maturity and a small number were assessed as high priority and mature for announcement in 2017.

**Export control**

KTH is the first university in Sweden to produce and develop an export control programme. Because of external changes, it has become increasingly relevant to illustrate and handle issues in the field of export control. On the basis of current legislation, KTH must determine whether research projects can lead to products with a second area of use, such as war materials, or whether they effect the university’s compliance with sanctions. During the year, therefore, there has been development work on KTH’s handling of export controls for new research projects. The programme includes proposals for organisational and responsibility distribution in work on export control-related issues, which is expected to continue and be further developed over the coming years. Competence development of KTH’s own personnel has meant that two research officers are now so-called export control managers.

During the year, the heads of schools have also received internal training in export control. KTH is also the only university that has been asked to provide input for proposed new war material legislation.

Approximately 35 projects have been involved in export control, in the form of various types of investigation. Two cases during the year have led to requests for prior notification from supervisory authorities. Permit applications have been submitted for the two cases and these are expected to be concluded in 2016. In one case, KTH ended its participation, since it proved impossible to form a collaboration that included compliance with current sanctions.

**Honorary doctorates**

The Faculty Council appointed honorary doctorates in autumn 2015 with the following justifications:

Edward L. Glaeser, professor of economics at Harvard University, USA, is considered to be the world’s leading urban economist and one of the world’s most outstanding economists generally. He is the most outstanding researcher into the global condition in cities in relation to issues of the environment, health, economics, urbanism and new technologies. His work can be said to comprise how to apply economic theory (especially price and game theory) to explain people’s economic and social behaviour.

Edward L. Glaeser is published in the leading economic periodicals in many subjects in the research area of urban economics. He is editor of several scientific periodicals and has received many awards.

Stefan Hell, professor at the Max-Planck Institute for Biophysical Chemistry, Göttingen, Germany, is a pioneer in ultra high resolution light microscopy. He was the first to propose how diffraction limitations in light microscopy could be circumvented and the first to realise the concept experimentally. With new light microscopic methods, images can be obtained of objects with almost molecular resolution. KTH and Sweden are, thanks to the collaboration with Stefan Hell and colleagues, not least because of their generous way of sharing their competence and experience, well equipped to participate in and even be at the forefront of this development.

Stefan Hell is a very productive and internationally recognised researcher with a number of awards. In 2014, Stefan Hell received the Nobel Prize for Chemistry together with
Eric Betzig and W.E Moerner for their pioneering development of fluorescence based super-resolution microscopy.

Harald Ludanek, Dr.Ing., has been Director of Research and Development (CTO) at Scania since 2012. He has a background of leading positions at Volkswagen and Skoda. He received his doctorate at the University of Clausthal.

Since coming to Sweden, he has been involved in intensive work with KTH, including operationally contributing to the creation and management of ITRL, the Integrated Transport Research Lab. Dr. Ludanek also frequently participates in teaching for students and doctoral students and, thanks to his many years of experience and holistic approach, has made a particular contribution to coming generations of developers of transport technology. One aspect that he frequently mentions is the industry’s responsibility for developing transport solutions with less environmental impact. He often acts as main speaker and has published a number of articles in several fields. His commitment to close and long-term collaboration between industry and academia impresses and inspires both KTH and other companies.

Jane Walerud, entrepreneur, plays a vital role in the ecosystem around Swedish start-up companies, especially in the IT sector. She has succeeded as few others with the companies she has started and become engaged in, and many of them are now extremely successful. Jane Walerud often takes on the role of hard working business angel in the companies, contributing both capital in a company’s critical first stage and also her real experience of leading companies and people. Among other things, her achievements have brought her IVA’s gold medal for 2014.

Jane is active in company start-up activities at KTH and has been a course leader at Stockholm Innovation & Growth (STING) and is currently a member of the network STING Business Angels (SBA). She gave some of the first advice en route to one of KTH’s most recently recognised start-ups, Volumental, for which she still acts as adviser. Jane Walerud is a fantastic role model for all of us and a guiding light for female entrepreneurs.
Collaboration

Strategic collaboration
Strategic collaboration contributes to better quality and relevance in KTH’s development as a leading player in education and research. KTH’s strategic collaboration involves establishing and running partnerships, initiating various forms of personal mobility, finding new arenas for collaboration and developing methods for monitoring effects.

Strategic partnerships
Under the strategic plan, KTH has worked on the establishment of strategic partnerships with companies and organisations. A new partnership has been established with Bombardier in 2015. KTH has already developed nine successful partnerships with ABB, Ericsson, Saab, Sandvik, Scania, Skanska, Stockholm County Council, the City of Stockholm and Vattenfall. Each partnership is monitored every year by KTH management, together with operational management at the respective partner. The work is headed by the Vice President for Collaboration and the university administration assists with partner managers for each partnership. The formal decision was taken during the year that KTH's strategic partnerships are to be run in the long term in the university KTH. A so-called Director Strategic Partnership has been appointed with responsibility for the quality and stability of the partnership process.

During 2015, Ericsson became a partner in the largest joint initiative to date between KTH and Scania, the Integrated Transport Research Lab (ITRL).

The seminar Together for Competitiveness was organised during the politicians’ week at Almedalen 2015. KTH and its strategic partners discussed joint initiatives and future opportunities for initiatives between the university, business and the public sector. The Minister for Enterprise took part in the dialogue.

Personal mobility
An important part of KTH’s strategic collaboration takes the form of personal mobility between academia and the community. There are 64 adjunct professors, 12 women and 52 men (2014: 64, 9 women and 55 men). The number of persons in the affiliated faculty category is 28 (7 women and 21 men). These are not employees of KTH and so are not included in the staff summary in the annual report.

The Forum for Adjunct Faculty at KTH is for the discussion of collaboration between academia, industry and society. The forum acts as an advisory body to KTH management and a programme council prepares three meetings a year. These are chaired by the Vice President for Collaboration with project management from KTH Business Collaboration.

During 2015, approximately 220 of KTH’s teachers and researchers have taught or researched abroad over a period of at least a week. Similarly, approximately 260 teachers, researchers and postdocs have spent a period of at least a week at KTH to teach or perform research. KTH teachers and researchers participate to a great extent in international collaboration with universities all over the world. In some cases, collaboration is part of a programme financed by Sida, the Swedish Institute or the EU. Many of KTH’s teachers and professors are also visiting professors at other universities.

Development projects and monitoring of effects
Projects for development and methods for impact follow-up during the year were carried out in-house (Impact 3C) and with external partners (KLOSS and KLOSS Acute).

Impact 3C is a development project that Vinnova partially funds. Impact 3C continues the systematic work of strengthening KTH’s impact externally through collaboration. As part of this work responsibility for impact has been given to KTH’s schools. Their responsibility at each school is to develop and establish strategies and implement priority activities.

KLOSS (knowledge exchange and learning about strategic collaboration) was a national development project initiated by KTH. The project was part financed by Vinnova and was concluded in 2015. The steering group included representatives at management level from the participating universities and colleges (Umeå University, Uppsala University, the Swedish University of Agricultural Sciences, Stockholm University, KTH, Mälardalen University College, Linköping University, Jönköping University College and Lund University). The purpose of KLOSS was to increase the relevance and quality of education and research by strengthening Swedish universities’ and colleges’ ability to work strategically on collaboration with the community.

KLOSS Acute is a continuation of KLOSS that started in spring 2015. In addition to the nine universities and colleges involved in KLOSS, KLOSS Acute also includes Chalmers University of Technology and the University of Gothenburg. The project intends to open up opportunities for teachers and researchers to work in an organisation away from their university or college. 33 people work on the project part-time. A research manager is responsible for monitoring and analysis of all the material. The project is part financed by Vinnova and will be concluded in 2016.

In December 2014, Vinnova decided on a model for evaluation of collaboration. The model is being tested in two pilot studies for which the university was able to advise of its interest in participating. KTH chose to participate in both projects, of which 1 pilot was performed during 2015. Pilot 1 focused on the university’s collaboration strategy and the implementation and building of self-assessment, as well as background information provided by the university. KTH received the highest possible scores based on performance and quality of collaboration with regard to collaboration strategies and implementation. Pilot 2, covering activities and results together with a collaboration assessment, will be performed in 2016.
Regional collaboration

Arenas for collaboration
Openlab is a challenge-driven innovation environment for collaboration between bodies such as the City of Stockholm, Stockholm County Council, Stockholm County Administrative Board, Karolinska Institutet, Stockholm University, Södertörn University College and KTH. The aim of the activity is to work with other organisations, companies and citizens to find new ways of contributing to societal innovations in the Stockholm Region. During the year, the operation moved into new premises at Valhallavägen 79, where interdisciplinary master’s courses are run together with workshops and hackathons. Openlab offers bookable premises, prototype workshops and flexible workplace environments. About 1,000 people have taken part in seminars and workshops there. The concept is that KTH students, doctoral students and researchers can together contribute to solutions that make our daily lives in the Stockholm area easier. KTH students, together with students from other knowledge areas, have produced innovation solutions for, for example, future sports facilities, sustainable purchasing in health care, new ways of travelling by public transport and more attractive urban environments.

Dome of Visions in Stockholm is operated as a collaboration between NCC and KTH. Other partners include Openlab, IVL Swedish Environmental Research Institute, the City of Stockholm and Stockholm University of the Arts.

The design itself is an experiment in which materials and technologies are tested in a climate zone – a third room that in principle is only heated by the sun, heat from the technical equipment and from the people there. The idea is to acquire knowledge about how a seasonal, energy-efficient indoor climate works. The project is being documented by researchers and specialists who are constantly monitoring and measuring factors such as indoor climate, acoustics and carbon dioxide concentration.

Digital Demo Stockholm is a declaration of intent for a programme that was signed during the year by Ericsson, the City of Stockholm, Skanska, Vattenfall and KTH. Digital Demo Stockholm is intended to help 1) strengthen Stockholm’s attractiveness and so attract people and companies to the region, 2) develop and demonstrate the opportunities that exist in digital technology and study the consequences of the connected society for citizens and the city and 3) enable inter-industry system solutions for Stockholm’s needs to increase the region’s attraction.

Innovation Power Stockholm is a coordinating and collaborative initiative in the region that is headed by the County Governor.

During the year, KTH has played an active part in the work on action plans for the regional innovation strategy. KTH is running one of five action programmes, Research and Innovation Infrastructure. Other participants in the action programme are Stockholm University, Karolinska Institutet, Research Institutes of Sweden (Risø) and Stockholm County Council. A number of activities have been performed during the year for the purpose of increasing the opportunities for municipalities and companies to collaborate in the region’s research environments.

The EU’s regional structural fund partnership in Stockholm is the organisation that distributes the regionally-linked funding that is channelled from the EU to the Stockholm region via the European Social Fund and The Swedish Agency for Economic and Regional Growth. Increased connection with the region’s seats of learning is demanded and is the reason for KTH’s collaboration here. Since the beginning of 2015, KTH’s Vice President for Research has been a member of the structural fund partnership, and the head of KTH Business Collaboration is a member of its working group.

Collaboration with small and medium-sized companies
A strategy for collaboration with small and medium-sized companies was implemented during the year. The strategy, which is linked to the plan and the objectives of the Innovation Office, includes input of knowledge by KTH to meet the development needs and challenges of small and medium-sized companies and thereby enhance their growth. This form of cooperation is emphasised in the EU framework programme Horizon 2020, which means that good relations and collaboration with small and medium-sized companies are necessary for KTH to remain successful in obtaining research funds in competition with other European organisations. Collaboration with company networks and research institutes is felt to increase opportunities to reach more small companies and has been a priority in 2015. In this field there is now a developed collaboration with IVL Swedish Environmental Research Institute and Stockholm Cleantech, a regional company network the purpose of which is to increase growth and exports in environmental technology. KTH is a member of the network and also has a place on the board. Contact was also initiated during the year with the company network Norra Djurgårdssstaden.

Commissioned and continuing education
The task of collaboration includes providing continuing education for professionals. KTH offers courses in a number of areas aimed at broadening or deepening skills, primarily for professional engineers and architects, but also for other groups in need of professional development, such as teachers. KTH offered courses and course packages during the year, both in the ordinary activities, financed by government grants, and in the form of specially designed commissioned courses. The courses are intended to be combined with pro-
professional activity, as several of them are distance courses and internet-based. Some courses are held in English.

The number of full year students taking continuing education at KTH in 2015 was 195 (207). The number of full year performances was 109 (124). The performance rate is 60 (60) per cent, which is considerably lower than the average at KTH. Many courses are given at a distance and are internet-based, and it is also these that have the most participants.

The number of full year students in credit-providing commissioned education was 42 (43) in 2015. Income from commissioned education amounted to SEK 29 million, compared with SEK 23 million in 2014. Many courses are aimed at the property industry. KTH has also given courses as part of the government initiative Lärarlyftet which aims to give continuing education to teachers in primary, lower secondary and upper secondary schools.

Alumni relations and KTH Opportunities Fund
KTH Alumni facilitates continuing contact between alumni and students, between alumni and the KTH faculty and between alumni themselves. This activity is intended to demonstrate the impact made for KTH’s former students in business and society, develop collaboration so as to create added value for today’s students and facilitate the alumni’s continuing commitment – the KTH Opportunities Fund.

The network of KTH alumni currently consists of approximately 69,000 individuals, of whom about 16,000 are outside Sweden. International alumni activities continue to expand and during the year new networks were started in Spain, Turkey, Colombia, Nicaragua and Chile. Today there are 24 established networks globally.

Alumni events are organised both nationally and internationally and altogether 1,124 (1,050) alumni, students and staff participated.

KTH Opportunities Fund has been created to take better care of the alumni’s continued commitment to students and researchers at the start of their careers. During 2015, approximately 600 (509) alumni, students, staff and companies chose to make a financial donation to the KTH Opportunities Fund. Together they have contributed approximately SEK 585,000, about twice as much as in the previous year. Many of the financial donations came during the spring telephone campaign, an annual activity for the purpose of maintaining contact with KTH’s alumni and generating support for the KTH Opportunities Fund. Over a four-week period, about 1,700 alumni were contacted in Sweden, the USA, Switzerland and Norway. The campaign produced 455 (299) donors, 68 (52) of whom were monthly donors. The largest single gift was SEK 20,000.

At the end of 2015, the total amount collected amounted to almost SEK 2 million. During the year, fifteen student and researcher projects were performed and two international students have scholarships supported by the fund. Alumni can also support KTH by giving their time at various events. A total of 115 (66) alumni contributed about 2,100 (1,000) voluntary hours as mentors, inspirational lecturers, experts and coordinators of alumni activities.

The innovation office
The government appropriations document for 2008 stated that KTH should open a so-called innovation office. Work in the innovation office is led by the department KTH Innovation within the university administration.

The government required universities that were appointed to invite other universities to collaborate within the framework of the innovation office. As part of this task, KTH has therefore established a partnership named InterAct. Mälardalen University College and Stockholm University also participate, in addition to KTH. During 2015, KTH Innovation started work on increasing the number of seats of learning include in the innovation office, which led to two concrete pilot studies being started, one with Stockholm School of Economics and one with the Swedish School of Sport and Health Sciences. The purpose of the pilots is to investigate how a future collaboration might appear and to offer full participation in the partnership from 2016.

Stockholm University has had its own innovation office since 2012, but has continued to participate in the InterAct partnership. Since it began, KTH’s innovation office has worked closely with Uppsala University on patent support.

KTH has supported Mälardalen University College and a concrete action plan for activities that occur locally at Mälardalen University College has been created. This work led to Mälardalen University College performing a comprehensive investigation in 2014, which resulted in their starting an independent ideas lab in 2015 with a stronger connection with the college’s research. KTH participated in the investigation and gave access to processes, methods, tools and good examples. KTH also contributed operational support to Mälardalen University College in 2015 and supported the Swedish School of Sport and Health Sciences with an innovation competition.

Innovation-supporting activities
KTH Innovation works to ensure that research results and business ideas from researchers and students at KTH are developed and encounter the market.

The overall objectives to: for KTH Innovation are to:
• increase the number of ideas and results from KTH’s researchers and students that encounter the market and become successful innovations
• ensure an effective support process, in an international perspective, (with the right networks and conditions) to support the ideas’ path to the market in the best possible way
• enable the creation of a strong, complementary ecosystem for innovation support of internationally top class at KTH

The strategy for 2015 has been to maintain high inflow of ideas, while resources have been given to activities so as to achieve a qualitative and quantitative increase in the outflow.
In 2015, KTH Innovation received 272 new ideas, relatively evenly divided between researchers and students. This is an increase of 17 per cent over 2014. The commercialisation project supported by KTH Innovation has altogether received approximately SEK 33 million in financing, including from the Vinnova-financed Verification for Growth (VFT) programme handled by KTH Holding AB. 38 companies were formed during the year, 12 student companies, 22 commercial agreements were signed with customers based on KTH research, 50 patent applications were submitted and 40 patents were granted. During the year, four companies were included in the STING business incubator and 11 in other Swedish, European and American incubators.

KTH Innovation and KTH Holding AB have a very close collaboration which resulted during the year in the holding company investing in five new companies from KTH. KTH Innovation does not use any selection process for new ideas, but accepts all ideas that fulfil the basic requirements for KTH authorisation and a connection with KTH’s activities. The innovation support process is based on the idea receiving support to test itself for the market; based on the result a decision is taken whether to take the idea further. Evaluating an idea’s feasibility can take up to two years.

Work on Student Inc., KTH’s student incubator, was further developed during the year. Under KTH Innovation’s communication plan, one focus area has been to increase visibility among KTH students. Student Inc. has nursed 18 student projects during the year.

Armada Startup was organised for the third time, together with the students’ union. This is a fair intended to promote entrepreneurship as a possible career path after finishing studies at KTH.

By means of collaboration between STING and KTH Innovation, commercialisation projects have been enabled to recruit competence through STING’s Search for Talents. Four recruitments were initiated or performed during 2015, which helped to strengthen the project’s team and improve the conditions for success in taking ideas to the market.

In addition to these efforts, a number of inter-partnership activities have been performed. Examples of these include the exchange of information and the programme Brighter Startup 2015, a tailor-made development programme for those with ideas that are judged to have potential for the American market. The programme is open to ideas that emerge from the InterAct partnership for the purpose of increasing participants’ knowledge of entrepreneurship in an international context.

KTH Innovation has developed expertise in process-oriented innovation development. Within the framework of the innovation office, there has been active work on sharing processes, tools and models, primarily with innovation offices and incubators. Staff from KTH Innovation have lectured and taught on these processes and tools on seven occasions during 2015. There have also been discussions with Vinnova to strategically disseminate the models produced by KTH to the country’s incubators.
Quality management

The KTH quality policy, Quality through continuous improvement, contains principles and priority activities for quality management. The quality policy has an associated action plan. Quality management is largely controlled by the goals of KTH’s development plan for the period 2013–2016.

The starting point for quality work at KTH is the idea that responsibility for quality lies with every student, teacher and staff member in their everyday work. In addition, a formal division of responsibilities and an administrative support organisation are in place for quality activities. The Faculty Council, headed by the Dean, is the collegiate body with overall responsibility for the quality of (first, second and third cycle) education, research and interaction with society at large. At each school there is a member of the faculty in charge of education at first and second cycle, called Director of First and Second Cycle Education, and one responsible for third cycle studies called Director of Third Cycle Education. Each education and doctoral programme has a Programme Director.

The KTH quality policy and action plan are based on the areas of education, research, competence supply and collaboration. The work performed in these areas in 2015 is largely described under each section. Most quality activities occur on an ongoing basis, while there are also joint strategic initiatives.

Development of the quality system

The significance of the European standards and guidelines (ESG) for the quality assurance of higher education is increasing. Among other things, the government has announced that ESG will be taken into account in the coming national evaluation system. For KTH, this will mean a need to develop and clarify its quality system. During 2015 KTH has therefore made an inventory of its quality activities in relation to the ESG standards 1.1-1.10.

This has shown that KTH has most of the documents, roles and systems that are required, but that more can be done in terms of implementation, dissemination and monitoring. As a result of the inventory, it is further proposed that existing systems for activity planning and monitoring, as well as regularly repeated seminar activities, are more clearly brought forward as part of the quality management system.

A priority area of the quality system the continuous monitoring of educational programmes (ESG 1.9). KTH has previously carried out a comprehensive assessment project, the Education Assessment Exercise, EAE 2011, but does not have an established process for continuous programme monitoring. The inventory also shows up the need for reforming the system for course analysis. In 2015, the Education Committee of the Faculty Council began work on developing routines for monitoring education. Work is going on in parallel with this to improve processes for the establishment of programmes (ESG 1.2).

Like other universities in Sweden, KTH undergoes evaluation by the Swedish Higher Education Authority (ESG 1.10).

The KTH programmes that were judged to be lacking in quality in the most recent round of assessment (2012–2014) have been monitored by the Swedish Higher Education Authority in 2015 and are no longer in question. KTH has decided on an internal action plan that includes the goal that all educational programmes must be able to comply with the requirements that correspond to the assessment “very high quality”.

Third cycle initiative

KTH performed a specific third cycle initiative during 2014-2015. The quality of education at third cycle has not been examined in any of the earlier self-initiated evaluations, Research Assessment Exercise, RAE, in 2008 and 2012, EAE in 2011 and AAE in 2014 (see below). One reason for this is that a new organisation for third cycle education in the form of doctoral programmes was introduced at KTH as recently as 2011. The other major evaluation projects also took a lot of time and effort from the organisation. A partly different methodology was therefore chosen for the third cycle initiative.

The project was performed as three sub-projects: an analysis of strengths and weaknesses in third cycle education, a review of routines for quality assurance and follow-up that involved the harmonisation of doctoral programmes to date, given the original purposes. The sub-projects were complemented by a series of seminars. The aims were to make use of existing data for further work and to stimulate discussion at local and central level.

The project was concluded in December 2015 with a final report that includes general conclusions and recommendations. This indicates that KTH’s third cycle initiative project has come closer to a common understanding of quality and quality management work in third cycle education, which can be further built on in a strategic context. Doctoral programmes have support in the organisation and further development of the doctoral programmes with the doctoral students at the centre is desirable. Many good examples were also identified, not least within KTH, that should be disseminated more widely.

A recurring question in the project has been assurance that the doctoral students fulfil the learning goals. The third cycle initiative indicates that awareness has increased but that many supervisors and doctoral students still lack knowledge about the goals and their meaning. There are also some defects in the selection of courses at research level. The final report therefore recommends initiatives to increase knowledge about the learning goals, strengthen the range of courses and improve the quality and scope of information to doctoral students.

Quality management work in the administration

KTH has for many years had annual quality development projects in its administration. During 2014, KTH carried out a
major Administrative Assessment Exercise (AAE) on a total of 15 key administrative processes on the basis of the quality aspects cost, service and competence. The project included self-assessment and external peer review.

The conclusions of the project have been followed up on in 2015 in the form of a large number of concrete activities in the ordinary line organisation in KTH’s schools and university administration. There have also been specific follow-up projects in the focus areas dialogue, agreement handling, international students and IT support. The follow-up continues in 2016.

Evaluation of KTH’s environment and sustainability organisation
Since 2011, KTH’s strategic work on the environment and sustainable development has been run in parallel by the academic council KTH Sustainability, led by the Vice President for Sustainable Development, and Sustainable Campus in the university administration, headed by the Head of Environment. The KTH Sustainability project was evaluated in 2013.

The evaluation used a combination of interview studies, self-assessment and external benchmarking. KTH engaged an external evaluation group consisting of John Holmberg (Chalmers University of Technology), Christina Lindbäck (NCC Group) and John Robinson (University of British Columbia). The evaluation shows that KTH has made important progress in its sustainability activities in recent years and that the Vice Presidency, the support from management and the administrative back-up have had great significance. There is also great support in the organisation for making KTH a leader in sustainability. At the same time, the evaluation indicates that KTH still has some way to go before sustainability is integrated into all activities. Continuing strategic initiatives are therefore recommended, partly in new forms.

Based on the evaluation, the President decided to extend the assignment as Vice President with responsibility for KTH’s sustainable development work up to and including 2018. The conclusions of the evaluation will be taken up in an action plan for KTH’s work on sustainable development during the period 2016–2018.

Teaching and learning in higher education
KTH is making large investments in quality work in the form of educational development, and teaching and learning in higher education plays an important role. The initiative has three parts: courses in teaching and learning in higher education, including courses for postgraduate supervisors and courses in leadership, university teaching support for programme and course development, including educational leaders, and university teaching research, development and business intelligence.

Follow-up with alumni
In 2015, KTH carried out a survey aimed at all alumni who took a first or second cycle degree in 2010, 2011 and 2012. The survey shows that an education at KTH leads to jobs, relevant working tasks and a relatively high salary. In spite of turbulent economic cycle, 94 per cent of those surveyed have been in employment since they took their degrees. More than one in two had job offers before they took their degrees and a further quarter within three months afterwards. Most jobs take the form of permanent employment.

More than one in ten, 13 per cent, have attained a management position and 48 per cent control others at work as project managers and supervisors. Those with a Master of Science in Engineering especially have achieved supervisory or project management positions or managerial positions.

Most of the alumni, 66 per cent, earn SEK 25,000 to 39,900 a month. Those who underwent a five-year programme have the highest salaries. Swedish citizens earn more than non Swedish citizens, which is probably explained by the fact that a high proportion of the latter work in countries with a lower salary level than Sweden.

The results of the survey clearly indicate that the alumni have found jobs in the fields in which they were educated. As many as 67 per cent got the job they had in mind when they took their degrees. A clear majority of alumni consider that the education has great relevance in day-to-day work and lives up to the competence requirements.

Ranking
Ranking measures excellence in research, education and collaboration. In recent years the significance of the visibility and location of ranking lists for student recruitment, recruitment of international researchers, international collaboration, impact opportunities and influence on various policies, excellence initiatives and expressions of national prestige for example has increased. A number of advocates, including the European Commission, see rankings as an incentive to increase quality in research and higher education. Rankings can be looked upon as a measure of a university’s international competitiveness.

KTH performed strongly in 2015. In spite of a fall in the proportion of international students, KTH advanced from 112th to 92nd in the QS World University Rankings. This is the first time that KTH has been in the top 100 in a leading international ranking. The main reason for the advancement is that QS now field-standardises citations, which favours KTH and other technical universities. KTH’s international reputation among both employers and academics also remains strong.

In the World University Rankings on the other hand, KTH fell from 126th to 155th. KTH fell back in the reputation of education indicator, where the loss was substantial. Generally KTH has approximately the same value as previously, while other universities have moved their positions forward. In terms of placings, KTH has lost ground in all of THE’s dimensions: citations, research, education, internationalisation.
and income from industry.

KTH still has to perform better in subject area and subject rankings. In the THE’s subject area ranking for engineering and technology, KTH was ranked as 42nd best university in the world, which is a loss of 12 positions since 2014, and in the corresponding QS ranking, the university was ranked as 36th best. In the NTU and QS subject rankings, KTH performed particularly well in electrical engineering, mechanical engineering, chemical technology and materials science. In the QS subject ranking for electrical engineering, KTH ranked as high as number 16 in the world, which is KTH’s top position in a leading subject ranking. KTH is represented in 13 subjects in the QS subject rankings, five of them in the top fifty. KTH’s main strength in this type of evaluation is a very high production of publications per member of teaching staff and researcher, as well as a very high proportion of co-publication with researchers from other international universities and industry. KTH has a high proportion of international researchers, teachers and students.

The university also has a high percentage intake from industry and is successful in obtaining research funding from external financiers. KTH is relatively strong in reputation measurements and performs better than other Nordic technical universities.

KTH’s reputation is certainly stronger than the university’s performance in the bibliometric indicators that measure the impact and excellence of research. KTH’s challenge is precisely the values in indicators that measure the impact and excellence of research. This is shown by the relatively low field-standardised citation level, where KTH is in 299th place in the World University Rankings. There is potential for improvement in the question of the proportion of publications found for the ten per cent highest ranked for citations in the same subject areas. KTH also has relatively few quoted researchers and relatively few articles in high impact journals.

Annual bibliometric follow up

The KTH development plan states that KTH should be counted among the foremost technical universities in Europe and perform world-leading research. Citations should increase by 25 per cent, there should be more spearheads in KTH’s research and KTH should advance in the rankings that are most relevant for KTH. Bibliometry is now a self-evident part of rankings and research evaluation and is used to measure degree of production and impact, as well as a basis for allocating resources.

Rankings also have increasing significance in a number of areas that are of strategic importance for KTH.

For the purpose of strengthening KTH’s position, annual bibliometric monitoring was introduced in 2015. The aim is that bibliometric data is to be monitored and evaluated on an annual basis at school, department and individual level.
The environment and sustainable development

A large majority of the engineers and architects who graduate from KTH are faced with duties at work where they need to deal with sustainability issues and make trade-offs. This issue came up in the regular career survey of alumni that are carried out, most recently in 2014. This illustrates how sustainability issues often drive forward technological developments and the challenges that students will work with after graduation.

It is one of the objectives at KTH to be among Europe’s leading technical universities in the field of the environment and sustainable development. KTH’s identity and brand must be associated with first class work in these areas.

KTH contributes to sustainable development and collaboration with the community through education and research. KTH’s activities affect the environment. Examples of environmental impact areas are energy consumption, use of materials and chemicals, construction, travel and transportation made on KTH’s behalf.

KTH’s strategic activities relating to the environment and sustainable development are performed in parallel by KTH Sustainability and Sustainable Campus. KTH Sustainability is a council formed in 2011 to work on the environment and sustainable development in KTH’s education, research and collaboration. It is an advisory body for the President and a preparatory body for the Faculty Council. KTH Sustainability is led by the Vice President for Sustainable Development and consists of teacher and student representatives, as well as the environmental manager. With effect from 1 January 2016, the council is being replaced by another organisation with a wider range of representation. Sustainable Campus is led by KTH’s environmental manager and is responsible for the university’s environmental management system and internal environmental activities.

In 2015, the University Board adopted a new policy for sustainable development to replace the former environmental policy. According to the policy, KTH must make an active and responsible contribution to sustainable development through education, research, collaboration, by reducing its own environmental impact and by working for the acceptance of social responsibility.

This means that KTH must:
- integrate ecological, economic and social sustainability into all levels of strategic and operational activity
- have an identity and brand that is associated with sustainable development
- have an organisation that is characterised by openness, democracy and respect for people’s equal value and equal conditions of life
- offer education of the highest quality so as to equip the professionals of the future with knowledge, commitment, critical thinking and practical tools that will enable them to contribute to a sustainable society
- produce research of the highest quality that contributes sustainable and innovative solutions to societal challenges
- create benefits by means of disseminating and supporting the application of technology, methods and approaches, as well as actively participating in social debate so as to contribute to sustainable development
- systematically work at continuously improving sustainability activities and preventing the pollution of the environment
- comply with applicable legislation and other requirements to which the organisation is subject
- encourage, educate and create conditions for employees and students to contribute to sustainable development within and outside the organisation
- work with partners that contribute to sustainable development and work towards sustainable development in collaboration with others, locally and globally

Education, research and collaboration

Work continues in the field of education to integrate sustainability issues into engineering and architectural education. In 2012, evaluation was performed of the fulfilment of goals for sustainability in master’s and bachelor engineering and architecture programmes at KTH. The self-assessments were used as a basis for discussion in meetings with the management of all schools in 2013. This resulted in each school producing an action programme for programme development in the environment and sustainable development during 2013 and 2014. A further follow-up was performed in 2015 in the form of interviews with those responsible for all engineering and architecture programmes, as well as analysis of the learning goals and leaning activities of relevant courses. The follow-up shows that much has happened in recent years, but that there is still a need for continued integration and improved progression in many areas. A brief summary report is being presented in early 2016.

Course modules relating to economic and social sustainability have been further developed, adapted and integrated into many programmes, with good results. The web-based toolbox for teaching sustainable development has a new appearance and has been updated, work that is continuing. An initial proposal for precise learning goals for sustainable development, as a means of concretising the overall national goals, was produced in 2012 and revised in 2014. In 2015 the decision was taken that the precise learning goals should be the guidelines for programme and course development.

During the year, KTH Sustainability arranged seminars and other meetings for teachers, researchers and students. This year’s KTH Sustainability Education Day focused on education, with presentations and good examples of successful integration at course and programme level, as well as inspiration from what business and research institutes demand from graduate engineers and doctors. KTH Sustainability Research Day consisted of discussions and panel
debates with researchers, representatives of industry and of the authorities on how the sustainable society of the future can be realised and what role KTH has in this development. In the autumn, KTH hosted the Whole Earth photographic exhibition, which is being exhibited at universities all over the world to draw attention to global environmental problems and illustrate the role of students and universities in creating a sustainable society. A number of events were organised in connection with the exhibition.

In 2015, KTH Sustainability part-financed a number of projects that were intended to encourage more collaboration within KTH, in both education and research. Examples of projects that were financed during the year include the development of new courses at second and third cycle level, series of seminars on various topics, organising international conferences and support for coordination in connection with major announcements.

A number of meetings of the KTH doctoral student forum were organised on the subject of the environment and sustainable development, including the annual doctoral student dialogue with participation from many universities in the region. A review and needs analysis was commenced of education in connection with sustainable development at researcher level in several parts of KTH and this will form a basis for continued development of courses offered.

KTH’s partnership agreement, focusing on the environment and sustainable development, with IVL Swedish Environmental Research Institute, Stockholm Environment Institute and Akademiska Hus has continued and developed. During the year a number of seminars and events were organised for internal and external participants on topics such as future water purification, the circular economy and sustainable urban planning. Quantitative follow-up of these partnership agreements shows that there is collaboration in both research and education.

KTH’s involvement in international networks in the environment and sustainable development has continued and developed. Among Nordic collaboration, a two-year project with finance from the Nordic Council of Ministers was concluded in 2015. The purpose of the project was to use a survey and workshops to investigate how well Nordic universities and colleges have implemented sustainable development in their internal work and in core activities, as well as what obstacles and opportunities may exist. A new Nordic project has begun to develop and test run a knowledge test on sustainable development aimed at students. The Swedish partner universities are KTH and the University of Gothenburg. KTH will also be a member of the Sustainable Development Solutions Network, a UN-initiated network of academics, companies, financiers and the civil society for the purpose of together finding solutions for achieving the global sustainability goals.

Before any decisions on KTH’s continuing work on the environment and sustainable development, an evaluation has been performed of KTH Sustainability’s work by means of a combination of interview studies, self-assessment and benchmarking by an external assessment group. General conclusions from the various parts of the evaluation are that KTH has made important progress in its work on sustainability in recent years and that the strategic initiative has played an important role in this. The Vice Presidency and support from KTH management have been significant, as has the administrative support. There is great support in the organisation for making KTH a leader in sustainability. At the same time, KTH still has some way to go before sustainability is integrated into all activities. The specific initiative should therefore continue. The future approach should be changed however, given the work that has already been done and the progress already made. The assessment group points in particular to the need to develop a more dialogue-based way of working and to make more use of the students’ commitment.

The interview studies identified three priorities for the future: continued work on educational development in dialogue with students and teaching staff, planning for future integration of sustainability in the line organisation and creating fora for debate and strategic policy development. The self-assessment report points out the need to institutionalise sustainability, for example in organisational structure, faculty services, educational programmes and decision making. Against the background of the conclusions of the evaluation, the President has decided that KTH’s strategic initiative on the integration of the environment and sustainable development into education, research and collaboration should continue for a further three years and an action plan for this has been prepared.

Many of the initiatives made with administrative capital have a clear specialisation in sustainable development. This is the case with four of the assistant professorships decided in 2015, as well as initiatives aimed at the circular economy and a water centre.

Both a project plan and a communication plan have been prepared for KTH Sustainability. Examples of communication activities during the year are the monthly KTH internal newsletter and a summary of information about research announcements in the field of the environment and sustainable development. The external newsletter, which is aimed at business, decision makers, the authorities and organisations, has been issued five times during the year.

**Sustainable Campus**

The focus of Sustainable Campus work during the year has been the environmental certification of activities. In August, KTH received environmental certification in accordance with ISO 14001. According to government authorities’ regulations on environmental management, KTH must have an environmental management system and this should be certified where there is a significant environmental impact, which KTH is deemed to have. An annual report on environmental management work is submitted to the Environmental Protection Agency. With the report for 2014, KTH received the highest score in the report points assessment. This means
that both central and school environmental activities have brought results. In February 2015, the University Board adopted a new policy for sustainable development to replace the environmental policy that was adopted in 2012. KTH is a member of ISCN (the International Sustainable Campus Network) and in 2015 received the ISCN award for the campus plan that was produced in collaboration with Akademiska Hus in 2014. According to the justification this was “an outstanding example of an excellent sustainable campus plan ...” which was formulated according to BREEAM (urban environmental certification) on the theme of sustainable development.

The following has been done during the year:
• continuing documentation of working methods both centrally and in the schools, so as to get the environmental management system into place
• the schools and the university administration have worked on local environmental goals so as to fulfil KTH’s joint and overall goals for environmental work
• communication initiatives via the internet, seminars and events
• training for employees, such as in handling chemicals
• work on producing new sustainability goals for 2016–2020 proceeded during the year and was decided on by the President in December

Other activities performed included:
• a number of workshops for KTH’s environmental representatives
• a bike day at KTH together with Akademiska Hus at KTH’s main Campus
• web training for employees in the environment and sustainable development, which 60 per cent have completed
KTH is a university where people from different backgrounds and with different experiences work together with a common purpose to manage, innovate and deliver knowledge for the society of today and tomorrow. KTH should be a workplace where the desire for personal development and personal responsibility is stimulated.

Presented below is a selection of staff and work environment activities performed during 2015.

Leadership
In 2015, KTH was charged by the University Board with producing a staff policy and associated guidelines for leadership.

An overview of the content of KTH’s leadership training has been performed from a gender perspective. The integral gender adaptation has helped to increase awareness of how structures and cultures influence our leaders in day-to-day work. This is a measure designed to improve equality at KTH. 106 persons took part in the centrally financed leadership development activities offered by KTH in 2015 (52 women and 74 men). Examples of activities include the KTH leadership programme, the mentor programme and supervisory interviews. In addition to new programmes, there are annual follow-up meetings with former students.

It is KTH’s strategy to give all new managers a mentor to help them develop good leadership in an academic environment. The need for discussion partners differs among KTH managers and various possibilities are therefore offered to meet the needs. Among other things, managers have access to a managerial network and guidance through the leadership programme. Two structured mentor programmes are organised each year, involving parties from the university sector and industry. Since needs for internal and external mentors differ, the demand for mentors is individually adapted in consultation with the schools. Central support and tools are offered to managers who wish to enter a mentor/adapt relationship outside the scope of the programme.

The manager’s role in the line organisation is clarified in the guidelines. Competence development in the managerial role was offered in 2015. The training modules are part of the preventive support that has been developed for managers, to help them handle complex situations in the HR area. 148 persons have participated in eleven training programmes (102 women and 46 men).

Gender equality, diversity and equal opportunity
During 2015 the Vice President for Faculty Renewal and Equal Opportunity received an extended mandate with overall responsibility for the work on equality that now covers both staff and students. As a consequence of this, a gender equality, diversity and equal opportunity group has been formed for the strategic work, chaired by the Vice President. The group includes representatives of the faculty, technical/administrative staff, the student union, gender researchers, local employee organisations and the gender equality, diversity and equal opportunity coordinator.

In accordance with the recommendations of the report on work on equality, which was presented in 2015, the President decided on an action plan with specific actions for gender equality, diversity and equal opportunity in the faculty. The activities were monitored and reported to the University Board in the autumn.

A new process for faculty recruitment was introduced in 2015. From the point of view of equality, the most important impact of this is to clarify the initial application work and set requirements that lead to well-qualified male and female candidates being identified. The new recruitment committees and recruitment boards that have been appointed during the year undergo a training programme in which equality and diversity are important aspects.

Work on developing equality in education and study groups has commenced during the year. This is intended to lead to work on equality being developed and intensified, in terms of both education and the content of educational programmes. The Vice President for Faculty Renewal and Equal Opportunity is running this in collaboration with the Vice Dean, those responsible in the schools for first cycle education and educational programmes and the student union. The work emphasises gender equality, but it also covers diversity and equal opportunity. Challenges, problems, opportunities and ongoing initiatives were reviewed during spring 2015. During the 2015/16 academic year, several projects are being initiated that will involve students, teaching staff, programmes and school management.

A working approach was decided on in 2014 to produce proposals for persons for management assignments, one of the aims of which was to improve the gender balance in KTH management. The implementation of this has been followed up on in 2015.

During the development plan period up to 2016, all management groups at KTH will have training in gender equality, diversity and equal opportunity issues. This began in 2015 and its implementation has been followed up on.

The annual equal treatment plan for students has been updated in line with follow-up on what had been achieved from previous plans. New goals and activities have been added.

Competence and career development

Staff development
Competence development and the transfer of competence and expertise must be a continuous and natural part of the work. All competence development is based on the needs of the organisation in relation to the conditions for each individual. Creating opportunities for employees to develop and move on in their careers is a strategy to ensure that KTH continues to be an attractive employer.
Support for career development, which is offered to staff in the Tenure Track academic career path, includes the following activities: The Partners in Learning programme (37 participants), scientific seminars (35 participants) and leadership development (20 participants in both the spring and autumn term). The purpose of this support is to identify what is needed for further qualification as lecturer or professor and to offer support for development in areas that are relevant for a further career at KTH.

35 participants have been admitted into the programme for life and career planning (15 in spring and 20 in autumn). The purpose of the programme is to give all employees the opportunity to develop their competence and further develop their professional role.

Together with Cambridge University, KTH has produced a language course for employees and the first course has been completed. Competence development in the English language is a strategic issue for achieving the ambition of a bilingual university in 2027.

In order to increase staff mobility at KTH, job shadowing is organised where possible to stimulate dialogue and collaboration. KTH also encourages teaching and administrative staff to apply for international exchanges through Erasmus+. 32 (20) administrators have been granted funding for exchanges or courses in Erasmus+ and 8 (12) teachers have performed exchanges in the programme. Increasing numbers of invitations to staff exchange weeks are also being received from KTH’s partner universities and it is positive that a number of professional areas are involved, including those that do not primarily work on international issues. KTH has also applied for and received mobility opportunities outside Europe in the Erasmus+ project International Credit Mobility; this has led to several projects being started and participants in both the spring and autumn). The purpose of this support is to identify what is needed for further qualification as lecturer or professor and to offer support for development in areas that are relevant for a further career at KTH.

Centrally financed sabbatical periods for teaching staff
In 2015 KTH introduced the opportunity for teaching staff to apply for a sabbatical period. Sabbatical periods differ in type and may be taken partly at other universities and partly in companies. They can be taken as a long continuous period or as a number of short sabbaticals over an extended period. The initiative is organised through central allocations during the period 2015–2017. KTH has defined increased mobility to and from the university as a strategic activity in its plans for the future. The initiative is to strengthen both the development of the individual and KTH’s exchange of knowledge with the outside world. Eight of the teaching staff were allocated funding in 2015.

KTH Relocation
The purpose of KTH Relocation is to streamline the reception of all staff who are recruited from abroad. KTH Relocation is responsible for the entire flow of information to those who come from abroad and thus ensures a good and consistent level in the information that new employees receive. During 2015, KTH Relocation assisted about 800 persons with accommodation and other practical details during all or part of their stay at KTH. As well as accommodation, KTH Relocation is also aimed at accompanying family members, estimated at approximately 300 persons a year. It is important that this group also feels included in the recruitment process if KTH is to be perceived as a modern and attractive employer. Individual career support is offered to accompanying family members of those who are given any form of employment. KTH Relocation participates in KTH’s central introduction, so as to help bridge cultural barriers that might arise in a multicultural workplace such as KTH. Regular social events are also offered, with the opportunity to meet and learn both useful and fun things about KTH, Stockholm and Sweden.

KTH Relocation is an information channel that is present in all activities through about a hundred administrators in the network who are regularly provided with relevant infor-
Information on international recruitment, external and internal rules and news.

Organisation

**Staff policy and guidelines**

At the beginning of 2015, the University Board decided that a review of KTH’s policies should be performed in 2015. In this connection, it was also decided that the staff policy should be rewritten based on KTH’s basic values and that it should be concrete and usable. As employer, KTH makes clear in the policy the requirements and expectations for the staff.

The staff policy, with associated guidelines, covers the areas being an employee, leadership, equal conditions, work environment, competence provision and pay structure and is a governing document for day-to-day work. Like other policies, the staff policy is updated annually. In spring 2016 directions will be prepared for the various guidelines, as well as a communication plan for the implementation of the policy and its guideline.

**Case handling in the event of discrimination, persecution, sexual harassment and abusive treatment**

A decision on new guidelines for handling experienced/observed discrimination, persecution, sexual harassment and abusive treatment was made in autumn 2014 and communicated to all schools. The decision covers everyone who works at KTH, including students. Training for the schools’ appointed supervisors/contact persons was given in autumn 2014 and spring 2015.

A competence network was created comprising the schools’ appointed supervisors/contact persons and HR specialists from the HR department. The purpose of the network is further training, method development and the exchange of experience.

In spring 2016, the guidelines will be updated on the basis of the Work Environment Authority’s new regulations on the Organisational and Social Work Environment.

**Staff structure**

The numbers below may be affected by being rounded off.

In 2015 the average number of employees increased by 76 to 5,233 (2,021 women and 3,212 men), compared with 5,157 in 2014 and 4,906 in 2013. The average is calculated based on measurements each month during 2015. When converted to full-time equivalents (FTEs), there is a reduction of 16 to 3,656 in 2015 compared with 3,672 in 2014 and 3,621 in 2013. Measured in FTEs the proportion of women is unchanged compared with 2014 at 37 per cent.

The number of teachers is unchanged at 810 (women have decreased by two to 170 and men have increased by two to 640). The teacher group includes professors, visiting professors, adjunct professors, associate professors, assistant professors, lecturers and guest teachers. The proportion of women among teachers is 21 per cent, which is unchanged since 2012.

**Professors, visiting professors and adjunct professors**

In 2015 the number of FTEs in the professor group (professors, visiting professors and adjunct professors) declined by six to 305 (women by one to 46 and men by four to 259).

The number of professors declined by three FTEs to 277 (women increased by one to 38 and men fell by five to 239). During the year the proportion of women increased by one percentage point to 14 per cent. 20 new professors were appointed during the year (four women and 16 men). 20 per cent of newly appointed professors in 2015 were women.

Visiting professors declined by two FTEs to 14 (women fell by three to six and men remained unchanged at eight). The proportion of women among visiting professors is 46 per cent.

The number of adjunct professors is unchanged at 64 (women have increased by three to 12 and men have fallen by three to 52). In terms of FTEs this corresponds to 14, which is the same as 2014 (women unchanged at two and men unchanged at 12). The proportion of women in terms of numbers increased by five percentage units to 19 per cent. In terms of FTEs, the proportion increased by two percentage units to 16 per cent. Eight persons were recruited as adjunct professors during the year (four women and four men). All adjunct professors are employed by KTH but their main employment is outside KTH.

The employment ranges from 20 per cent to 50 per cent of full time and most of the adjunct professors receive no salary from KTH.

The number of assistant professors declined by six FTEs to 58 (women fell by six to 13 and men fell by one to 45). The proportion of women fell by eight percentage points to 22 per cent compared with 2014. 16 assistant professors were appointed during the year (no women and 16 men). In 2016 KTH will follow up on the 2015 recruitment of assistant professors against the background of the considerably weaker gender balance. 1,018 (women fell by nine to 642 and men increased by four to 376). The proportion of women fell by one percentage point to 63 per cent compared with the previous year.

**Doctoral students with employment**

The number of doctoral students with employment fell in 2015 by 10, FTEs to 1,005 (women down by 14 to 288 and men by 24 to 717). For doctoral students with employment, the proportion of women was 29 per cent, which is unchanged from 2014.

**Technical and administrative staff**

Technical and administrative staff including library staff, fell by six FTEs to 1,018 (women fell by nine to 642 and men increased by four to 376). The proportion of women fell by one percentage point to 63 per cent compared with the previous year.
**Fig 17**

**Staff 2015**

<table>
<thead>
<tr>
<th>Category</th>
<th>Women</th>
<th>Men</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Professors</td>
<td>1347</td>
<td>2309</td>
<td>3656</td>
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<tr>
<td>Visiting professors</td>
<td></td>
<td></td>
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<tr>
<td>Adjunct professors</td>
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<tr>
<td>Associate professors</td>
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<tr>
<td>Assistant professors</td>
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<tr>
<td>Lectures</td>
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<td></td>
<td></td>
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<tr>
<td>Guest teachers</td>
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<td></td>
<td></td>
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<tr>
<td>Researchers</td>
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<td></td>
<td></td>
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<tr>
<td>Postdoctoral</td>
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<td>Ph.D. student employment</td>
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<tr>
<td>Technicians</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Administrators and library staff</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Other</td>
<td></td>
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</tbody>
</table>

Source: VIS
Premises

KTH is growing
At the end of 2015, KTH had at its disposal approximately 276,000 m² of floor space, which is an increase of approximately 4.5 per cent over the previous year (264,000 m²). Over the past three years, as a consequence of expansion of operations at KTH, several large projects related to premises have been started. The increase in premises is partly due to KTH moving into the rebuilt premises in the entrance building of Drottning Kristinas väg 4–8 and the newly built building for the School of Architecture in August. At the end of 2015, the proportion of empty or unused premises is still too low, about two per cent of the total leased area. To meet the growing requirement for premises and ongoing changes in premises, the proportion of space at KTH’s disposal should be about three per cent.

Major building projects completed in 2015
- The premises in building 43:1 at Valhallavägen 79 were ready to move into at the beginning of January. Tenants are Openlab, Stockholms Akademiska Forum (STAF) and KIC InnoEnergy who share approximately 2,400 m² between them.
- In August, the School of Architecture vacated its premises in Östermalmsgatan and moved into a new building at Osquars backe 5. The floor area of the building is approximately 7,000 m² and a 15-year lease has been signed. The building received the Kasper Salin award in November.
- In August the student service and IT support department moved into the rebuilt entrance building of Drottning Kristinas väg 4–8. These premises have a floor area of 4,000 m² and also house a small café run by the student union and a number of study places and exhibition space.
- The street and square outside the entrance building and architecture building are now a pedestrianised area, with appropriate traffic and speed restrictions. The buildings and square were opened with speeches and music in October.
- In October KTH took over building 43:12 with the new address Brinellvägen 22, which has been completely rebuilt. The premises will house the tuition of building technique and design, which will move from KTH Haninge to KTH Campus in spring 2016. These premises have a floor area of approximately 3,900 m².

Smaller rebuilding and renovation projects completed in 2015
During the summer period it is possible to carry out fairly extensive rebuilding and renovation work on classrooms and study areas and in 2015 this affected the following premises:
- In building 50:16 in Osqudas väg 6 room QT has been renovated. The room has new surfaces and new permanent auditorium equipment.
- Six computer rooms in Teknikringen 14 have been renovated and rebuilt with a new technical solution.
- Premises that formerly housed KTH Post were rebuilt in the autumn to section premises for the machine section of THS. Refurbishing section premises will continue in 2016.

Other ongoing building projects
- In summer 2015, work started on the new teaching building in Brinellvägen 26–28. To mark the start, the building was inaugurated with the first concrete pouting in September. The new building of approximately 2,800 m² will be ready to move into in October 2016.
- Construction of a new building for the School of Technology and Health in Huddinge has continued throughout 2015. The premises will be shared with the Red Cross College and the building will be immediately adjacent to Karolinska University Hospital. The building will be ready to move into in June 2016. In total the project covers approximately 12,000 m².
- Next to the existing building at Teknikringen 10, construction has now commenced of new offices and meeting space for The Department of Transport Science and the Department of Sustainable Development, Environmental Sciences and Engineering (SEED). The building should be ready to move into in the autumn 2017.
- Preparations for renovation and minor tenant adaptations have begun at Teknikringen 29–33, the School of Electrical Engineering. Most of the tenants have moved to replacement premises. It is planned to move back for the spring term 2017.

Empty and available premises
At year end 2015 there are fewer vacant premises than ever before. At a couple of addresses there are small office units for 50–300 m² and individual lab premises. At Brinellvägen 23 the Institution for Building Sciences is leaving a larger hall.

Student and visiting researcher accommodation
Under a government decision, KTH is allowed to sub-let apartments to students and visiting researchers. KTH currently provides a large number of student rooms and apartments for exchange students, foreign master’s students and visiting researchers.

In 2015 KTH was able to provide accommodation to 1,486 students. The rental portfolio comprises 1,101 rooms and apartments. The occupancy rate has been around 81 per cent during the whole year. Maintenance and cleaning of the accommodation is done in summer.

KTH Relocation started at the end of 2012 and organises accommodation for visiting researchers. KTH Relocation has a portfolio of 190 accommodation units all over greater Stock-
holm. The occupancy rate is 98 per cent. Exceptions to the high occupancy rate are 31 student rooms in Flemingsberg and 40 apartments on Campus Roslagen. These have an occupancy rate through the year of about 80 per cent.

There are also two guest houses: Matsällskapet in Solna, with an occupancy rate of about 65 per cent through the year and Wallqvistska Huset, with an occupancy rate of about 70 per cent. About 800 incoming visiting researchers and newly employed foreign visiting researchers and doctoral students obtained their accommodation through KTH Relocation in 2015. Costs for the Nordita research institute, which previously accommodated all doctoral programme guests in hotels, decreased significantly after they started using the two KTH guest houses in 2015. In 2015, everyone who contacted KTH Relocation with a request for accommodation received an offer.

A new student building at Drottning Kristinas väg 43 was ready in February 2015 on the central KTH Campus, with apartments for both students and visiting researchers. The central location and creative architecture make the building a popular accommodation alternative among students and researchers.

Work continues on creating student accommodation in KTH’s central campus area and in November ByggVesta began work on Drottning Kristinas väg 32. The plan is to build almost 700 student apartments at the KTH campus at Valhallavägen, with room for about 960 students to move in from 2017.

For the coming years, KTH forecasts an increase in students from abroad, which means that the need for more student accommodation is likely to increase. Income from charges for these apartments is reported together with other charges in the annual accounts. There has been no direct offset of grants.
Financial results and changes to capital
The profit for the year of SEK 22 million is less than the previous year when profit amounted to SEK 83 million and is somewhat better than forecast for the year. The forecast for the year was on activities in a loss of SEK 15 million. The SEK 22 million is made up of a profit on basic university education of SEK 41 million and a loss on research and doctoral education of SEK 19 million.

Part of the explanation for the 2014 profit was that KTH had SEK 34 million in funding in connection with the Science for Life Laboratory (SciLifeLab) that was not distributed between the participating universities Karolinska Institutet, Stockholm University and Uppsala University. The corresponding amount for 2015 was SEK 15 million. During the year, KTH has transferred part of previous years’ undistributed funding to the participating universities, which had a negative effect on profit of SEK 10 million.

Turnover increased by three per cent to SEK 4,786 million, measured as income and funding received for financing transfers. Over the last ten years, SEK’s income according to this definition has increased by almost 71 per cent.

Administrative capital amounts to SEK 777 million, which still represents approximately 16 per cent of turnover according to the above definition. The long-term aim is that administrative capital should represent ten per cent of turnover. Decisions on investments using the administrative capital were taken during the year and these investments will begin during the coming year.

<table>
<thead>
<tr>
<th>(msek)</th>
<th>2015</th>
<th>2014</th>
</tr>
</thead>
<tbody>
<tr>
<td>Revenues</td>
<td>4,352</td>
<td>4,243</td>
</tr>
<tr>
<td>Costs</td>
<td>4,329</td>
<td>4,158</td>
</tr>
<tr>
<td>Profit/loss</td>
<td>23</td>
<td>84</td>
</tr>
<tr>
<td>Profit/loss subsidiaries</td>
<td>-1</td>
<td>-2</td>
</tr>
<tr>
<td>Revenues for transfers</td>
<td>435</td>
<td>394</td>
</tr>
<tr>
<td>Grant issued (costs for transfers)</td>
<td>435</td>
<td>394</td>
</tr>
<tr>
<td>Profit/loss</td>
<td>22</td>
<td>83</td>
</tr>
</tbody>
</table>

Source: Agresso

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>First and second level</td>
<td>135</td>
<td>35</td>
<td>41</td>
<td>59</td>
</tr>
<tr>
<td>studies</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Purchased courses</td>
<td>9</td>
<td>2</td>
<td>0</td>
<td>6</td>
</tr>
<tr>
<td>Commissioned courses</td>
<td>-1</td>
<td>3</td>
<td>-5</td>
<td>1</td>
</tr>
<tr>
<td>Research and doctoral</td>
<td>620</td>
<td>-22</td>
<td>48</td>
<td>592</td>
</tr>
<tr>
<td>studies</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Commissioned research</td>
<td>15</td>
<td>4</td>
<td>2</td>
<td>14</td>
</tr>
<tr>
<td>Total</td>
<td>777</td>
<td>22</td>
<td>83</td>
<td>672</td>
</tr>
</tbody>
</table>

Source: Agresso
Income
Operating income increased by three per cent and is now SEK 4,352 million, SEK 109 million more than in 2014.

Education at first and second cycle
This income makes up 31 per cent of total revenue and amounts to SEK 1,363 million, which is an increase of approximately 3 per cent compared with the previous year. Income from grants for first and second cycle education increased by about one per cent and amounted to SEK 1,070 million. During the year KTH had an overproduction of performance in education at first and second cycle level and therefore offset the entire ceiling amount and also the SEK 3 million that represented the opening transfer amount. During the year, KTH also received approximately SEK 10 million through quality-based resource distribution.

Income from charges and other compensation increased by 16 per cent and amounted to SEK 224 million. The main explanation for the increase is that income from tuition fees increased by SEK 16 million compared with the previous year and an additional SEK 5 million from rental of student accommodation. 440 new paying students were registered during the autumn term 2015, which is an increase of 24 per cent compared with the previous year. Many of the paying students rent accommodation through KTH. For the second consecutive year the tuition of fee paying students shows a surplus of SEK 1 million. The cumulative deficit on fee-financed education is now approximately SEK 6 million. During the year, KTH has intensified recruitment work, which has increased costs.

Research and third education cycle
This income represents about 69 per cent of total revenues and amounts to SEK 2,988 million, which is an increase of approximately two per cent compared with the previous year.

Income from research and grants for third cycle education fell by approximately SEK 9 million compared with 2014, which is mainly because during the year KTH transferred SEK 9 million of the previous year’s undistributed funding for SciLifeLab, while the current year’s funding has been distributed to a greater extent than in 2014. Income from charges and other compensation increased by SEK 39 million. Among other things, income relating to KTH’s accommodation service for staff recruited from abroad increased by SEK 6 million. During the year, approximately 200 more people than the previous year received assistance in organising accommodation. SciLifeLab activities continue to increase income in this group and compared with the previous year the increase is SEK 9 million.

Income from contributions increased by SEK 40 million and the greatest increase is linked with the 2014 initiative for a new super computer, where the contribution increased income by SEK 24 million.
Costs  
Costs increased by 4 per cent and amounted to SEK 4,329 million.

*Education at first and second cycle*  
Once again this year, costs represent 31 per cent of total costs and amount to SEK 1,323 million, which is an increase of SEK 39 million compared with the previous year. It is mainly cost of premises that account for the increase, partly because of new and renovated premises such as the new School of Architecture building coming into use, but there is also a link with the expanding activity of KTH Accommodation with more paying students.

*Research and third education cycle*  
Costs still represent 69 per cent of total expenses and amount to SEK 3,006 million, which is an increase of SEK 131 million or four per cent over the previous year.

Staff costs increased by SEK 78 million. During the year the number of FTEs fell by 16. The increase in staff costs is a direct result of the annual pay review.

Costs for premises increased somewhat due to extended activities and new and renovated premises coming into use, but also because KTH Relocation’s activities increased during the year.

Depreciation costs increased by SEK 44 million as a consequence of investments made, such as SEK 32 million for the new super computer, SEK 4 million for SciLifeLab and new and renovated premises.
Foundation management

There are currently 113 private foundations with legal requirements for administration by KTH. The foundations have been formed through various donations to KTH.

The two oldest foundations managed by KTH have their origin in donations from 1866, when they were deeded to KTH’s predecessor, Kongl. Teknologiska Institutet. These gifts came from manufacturer Joh. Michaelson and Wällolliga Borgareständet and were intended to create scholarship funds for destitute students who distinguished themselves through hard work, aptitude and honest behaviour. These foundations continue to distribute scholarships to students at KTH.

Purpose management
The purpose of every foundation is stated in the Foundation Regulations. KTH-affiliated foundations distributed a total of SEK 20 million in 2015. The largest group of these foundations, 55 in all, award scholarships to students at first and second cycle. It was decided to distribute SEK 7 million through 365 scholarships from these foundations. Of these, about SEK 4 million is from the largest foundation, the Foundation Henrik Göransson Sandviken Scholarship Fund. The Foundation has capital of SEK 99 million, which is primarily invested in securities related to Sandvik AB. 25 foundations award travel grants to teachers, researchers and doctoral students and from these contributions totalling about SEK 4 million were distributed through 212 grants. Other foundations contribute to research activities at KTH. During the year it was decided to distribute grants totalling approximately SEK 9 million in 80 grants for such activities.

The second largest foundation managed by KTH is the KTH Great Prize Foundation, coming from a donation in 1944. The donor, who wished to remain anonymous, stipulated that the prize should go to a Swedish citizen who had great significance for Sweden through historical discoveries, ingenious applications or artistic effort. The prize for 2015 was SEK 1.2 million and was awarded in connection with the KTH conferment and inauguration ceremony. The prize was awarded to cosmologist Max Tegmark. The University Board’s justification was “Our knowledge of the cosmos is increased by expanding and developing our perspective of both mathematics and the universe. The physicist and cosmologist Max Tegmark combines a real researcher’s achievement with equal amounts of courage, sharp-wittedness and creativity in developing newly-created ideas and tools. His theories put our planet into a greater and, for the future, decisive context.”

The foundation pays an annual administration fee to KTH for the costs that arise from administration. In 2015 this amounted to SEK 1.5 million.

Capital management
Capital in the affiliated foundations is managed by two external discretionary investment managers. These managers are entitled to carry out transfers in the KTH portfolio within the framework outlined in the KTH investment policy for these foundations. Total foundation assets at year-end were SEK 647 million (SEK 648 million in 2014).

Figure 30
Size and numbers of foundations total 647 MSEK at end of December 2015

<table>
<thead>
<tr>
<th>Number</th>
<th>Capital</th>
</tr>
</thead>
<tbody>
<tr>
<td>Foundations, 15–102 msek</td>
<td>10</td>
</tr>
<tr>
<td>Foundations, 5–15 msek</td>
<td>23</td>
</tr>
<tr>
<td>Foundations, 1–5 msek</td>
<td>40</td>
</tr>
<tr>
<td>Foundations, up to 1 msek</td>
<td>40</td>
</tr>
<tr>
<td><strong>Sum</strong></td>
<td><strong>113</strong></td>
</tr>
</tbody>
</table>

Source: Foundations annual reports
## Financial Statement

### Operating revenues

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Government grants</td>
<td>2,202,935</td>
<td>2,204,918</td>
<td>2,021,228</td>
<td>2,011,781</td>
<td>1,970,901</td>
</tr>
<tr>
<td>Revenues from tuition fees and other charges</td>
<td>497,627</td>
<td>426,998</td>
<td>423,844</td>
<td>384,963</td>
<td>328,890</td>
</tr>
<tr>
<td>Revenues from grants</td>
<td>1,647,845</td>
<td>1,603,381</td>
<td>1,576,814</td>
<td>1,522,060</td>
<td>1,431,031</td>
</tr>
<tr>
<td>Financial income</td>
<td>3,164</td>
<td>7,528</td>
<td>16,236</td>
<td>29,035</td>
<td>24,563</td>
</tr>
<tr>
<td><strong>Total operating revenues</strong></td>
<td><strong>4,351,571</strong></td>
<td><strong>4,242,825</strong></td>
<td><strong>4,038,122</strong></td>
<td><strong>3,947,839</strong></td>
<td><strong>3,755,385</strong></td>
</tr>
</tbody>
</table>

### Operating costs

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Staff costs</td>
<td>2,643,190</td>
<td>2,565,289</td>
<td>2,460,926</td>
<td>2,372,901</td>
<td>2,197,870</td>
</tr>
<tr>
<td>Costs for premises</td>
<td>761,362</td>
<td>737,816</td>
<td>698,343</td>
<td>643,665</td>
<td>621,401</td>
</tr>
<tr>
<td>Other operational costs</td>
<td>697,741</td>
<td>679,637</td>
<td>684,704</td>
<td>678,153</td>
<td>630,460</td>
</tr>
<tr>
<td>Financial costs</td>
<td>5,762</td>
<td>4,175</td>
<td>5,527</td>
<td>7,655</td>
<td>15,420</td>
</tr>
<tr>
<td>Depreciation</td>
<td>220,756</td>
<td>171,463</td>
<td>181,860</td>
<td>188,791</td>
<td>182,205</td>
</tr>
<tr>
<td><strong>Total operating costs</strong></td>
<td><strong>4,328,810</strong></td>
<td><strong>4,158,380</strong></td>
<td><strong>4,031,359</strong></td>
<td><strong>3,891,163</strong></td>
<td><strong>3,647,357</strong></td>
</tr>
<tr>
<td><strong>Total operating outcome</strong></td>
<td><strong>22,761</strong></td>
<td><strong>84,445</strong></td>
<td><strong>6,762</strong></td>
<td><strong>56,676</strong></td>
<td><strong>108,029</strong></td>
</tr>
</tbody>
</table>

### Outcome from shares of subsidiary companies and other interests

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Outcome from shares of subsidiary companies and other interests</td>
<td>-1,011</td>
<td>-1,806</td>
<td>1,337</td>
<td>1,091</td>
<td>-463</td>
</tr>
</tbody>
</table>

### Transfers

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Funds allocated from government budget for financing of grants</td>
<td>257,783</td>
<td>231,449</td>
<td>249,144</td>
<td>131,048</td>
<td>92,368</td>
</tr>
<tr>
<td>Funds allocated from government agencies for financing of grants</td>
<td>128,269</td>
<td>118,301</td>
<td>90,320</td>
<td>101,428</td>
<td>93,573</td>
</tr>
<tr>
<td>Other funds received for financing of grants</td>
<td>48,465</td>
<td>43,937</td>
<td>41,288</td>
<td>34,001</td>
<td>42,354</td>
</tr>
<tr>
<td>Grants made</td>
<td>434,516</td>
<td>393,687</td>
<td>380,751</td>
<td>266,478</td>
<td>228,296</td>
</tr>
<tr>
<td><strong>Outcome of transfers</strong></td>
<td><strong>0</strong></td>
<td><strong>0</strong></td>
<td><strong>0</strong></td>
<td><strong>0</strong></td>
<td><strong>0</strong></td>
</tr>
</tbody>
</table>

### Changes to capital for year

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Changes to capital for year</td>
<td>21,750</td>
<td>82,639</td>
<td>8,099</td>
<td>57,767</td>
<td>107,565</td>
</tr>
</tbody>
</table>

### Financial Statement per operational area

<table>
<thead>
<tr>
<th></th>
<th>Total</th>
<th>Education at first and second cycle</th>
<th>Research and education at third cycle</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>First and second level studies</td>
<td>Purchased education</td>
</tr>
<tr>
<td>Operating revenues</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Government grants</td>
<td>2,202,935</td>
<td>1,070,459</td>
<td>0</td>
</tr>
<tr>
<td>Revenues from tuition fees and other charges</td>
<td>497,627</td>
<td>176,957</td>
<td>17,922</td>
</tr>
<tr>
<td>Revenues from grants</td>
<td>1,647,845</td>
<td>68,031</td>
<td>0</td>
</tr>
<tr>
<td>Financial income</td>
<td>3,164</td>
<td>579</td>
<td>0</td>
</tr>
<tr>
<td><strong>Total operating revenues</strong></td>
<td><strong>4,351,571</strong></td>
<td><strong>1,316,026</strong></td>
<td><strong>17,922</strong></td>
</tr>
<tr>
<td>Operating costs</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Staff costs</td>
<td>2,643,190</td>
<td>755,410</td>
<td>2,708</td>
</tr>
<tr>
<td>Costs for premises</td>
<td>761,362</td>
<td>288,479</td>
<td>763</td>
</tr>
<tr>
<td>Other operational costs</td>
<td>697,741</td>
<td>203,961</td>
<td>12,194</td>
</tr>
<tr>
<td>Financial costs</td>
<td>5,762</td>
<td>1,182</td>
<td>0</td>
</tr>
<tr>
<td>Depreciation</td>
<td>220,756</td>
<td>31,844</td>
<td>0</td>
</tr>
<tr>
<td><strong>Total operating costs</strong></td>
<td><strong>4,328,810</strong></td>
<td><strong>1,280,877</strong></td>
<td><strong>15,665</strong></td>
</tr>
<tr>
<td><strong>Total operating outcome</strong></td>
<td><strong>22,761</strong></td>
<td><strong>35,149</strong></td>
<td><strong>2,257</strong></td>
</tr>
<tr>
<td>Outcome from shares of subsidiary companies and other interests</td>
<td>-1,011</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Transfers</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Funds allocated from government budget for financing of grants</td>
<td>257,783</td>
<td>2,705</td>
<td>0</td>
</tr>
<tr>
<td>Funds allocated from government agencies for financing of grants</td>
<td>128,269</td>
<td>28,661</td>
<td>0</td>
</tr>
<tr>
<td>Other funds received for financing of grants</td>
<td>48,465</td>
<td>43,937</td>
<td>41,288</td>
</tr>
<tr>
<td>Grants made</td>
<td>434,516</td>
<td>393,687</td>
<td>380,751</td>
</tr>
<tr>
<td><strong>Outcome of transfers</strong></td>
<td><strong>0</strong></td>
<td><strong>0</strong></td>
<td><strong>0</strong></td>
</tr>
<tr>
<td>Changes to capital for year</td>
<td>21,750</td>
<td>35,149</td>
<td>2,257</td>
</tr>
</tbody>
</table>
## Balance Sheet

### ASSETS

<table>
<thead>
<tr>
<th>Category</th>
<th>2015-12-31</th>
<th>2014-12-31</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>I. Intangible fixed assets</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Intellectual rights and other intangible assets</td>
<td>0</td>
<td>43</td>
</tr>
<tr>
<td><strong>II. Tangible fixed assets</strong></td>
<td>705,843</td>
<td>658,054</td>
</tr>
<tr>
<td>Improvements to non-owned real estate</td>
<td>215,476</td>
<td>190,168</td>
</tr>
<tr>
<td>Machines, inventory items, installation etc.</td>
<td>479,319</td>
<td>447,797</td>
</tr>
<tr>
<td>Construction in progress</td>
<td>11,048</td>
<td>20,089</td>
</tr>
<tr>
<td><strong>III. Financial fixed assets</strong></td>
<td>21,821</td>
<td>21,981</td>
</tr>
<tr>
<td>Interests in wholly and partially-owned companies</td>
<td>21,731</td>
<td>21,891</td>
</tr>
<tr>
<td>Other investments held as fixed assets</td>
<td>90</td>
<td>90</td>
</tr>
<tr>
<td><strong>VI. Receivables</strong></td>
<td>125,921</td>
<td>136,986</td>
</tr>
<tr>
<td>Receivables - customers</td>
<td>25,251</td>
<td>34,295</td>
</tr>
<tr>
<td>Receivables - other government agencies</td>
<td>98,271</td>
<td>100,149</td>
</tr>
<tr>
<td>Other receivables</td>
<td>2,399</td>
<td>2,542</td>
</tr>
<tr>
<td><strong>VII. Cut of items</strong></td>
<td>504,610</td>
<td>508,299</td>
</tr>
<tr>
<td>Prepaid expenses</td>
<td>157,646</td>
<td>145,444</td>
</tr>
<tr>
<td>Accrued grant revenues</td>
<td>342,760</td>
<td>359,977</td>
</tr>
<tr>
<td>Other accrued revenues</td>
<td>4,204</td>
<td>2,877</td>
</tr>
<tr>
<td><strong>VIII. Settlement with Government</strong></td>
<td>0</td>
<td>-2,952</td>
</tr>
<tr>
<td>Settlement with Government</td>
<td>0</td>
<td>-2,952</td>
</tr>
<tr>
<td><strong>X. Cash and cash equivalents</strong></td>
<td>1,364,417</td>
<td>1,296,584</td>
</tr>
<tr>
<td>Balance and interest-bearing account at Swedish National Debt Office</td>
<td>1,274,169</td>
<td>1,201,640</td>
</tr>
<tr>
<td>Cash and cash equivalents</td>
<td>90,248</td>
<td>94,943</td>
</tr>
<tr>
<td><strong>TOTAL ASSETS</strong></td>
<td>2,722,611</td>
<td>2,618,994</td>
</tr>
</tbody>
</table>

### CAPITAL AND LIABILITIES

<table>
<thead>
<tr>
<th>Category</th>
<th>2015-12-31</th>
<th>2014-12-31</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>I. Agency capital</strong></td>
<td>777,454</td>
<td>754,853</td>
</tr>
<tr>
<td>Government Capital</td>
<td>22,521</td>
<td>21,521</td>
</tr>
<tr>
<td>Outcome from shares of/in subsidiary companies and other interests</td>
<td>817</td>
<td>2,773</td>
</tr>
<tr>
<td>Changes to capital brought forward</td>
<td>732,366</td>
<td>647,921</td>
</tr>
<tr>
<td>Changes to capital according to Financial Statement</td>
<td>21,750</td>
<td>82,639</td>
</tr>
<tr>
<td><strong>III. Provisions</strong></td>
<td>34,332</td>
<td>31,764</td>
</tr>
<tr>
<td>Provisions for pensions and similar commitments</td>
<td>10,418</td>
<td>8,942</td>
</tr>
<tr>
<td>Other provisions</td>
<td>23,914</td>
<td>22,822</td>
</tr>
<tr>
<td><strong>IV. Liabilities etc.</strong></td>
<td>859,547</td>
<td>795,405</td>
</tr>
<tr>
<td>Loans from Swedish National Debt Office</td>
<td>524,441</td>
<td>465,420</td>
</tr>
<tr>
<td>Accounts payable - other government agencies</td>
<td>81,468</td>
<td>77,907</td>
</tr>
<tr>
<td>Accounts payable - suppliers</td>
<td>69,965</td>
<td>76,871</td>
</tr>
<tr>
<td>Other accounts payable</td>
<td>183,645</td>
<td>175,207</td>
</tr>
<tr>
<td>Deposits</td>
<td>28</td>
<td>0</td>
</tr>
<tr>
<td><strong>V. Cut-off items</strong></td>
<td>1,051,278</td>
<td>1,036,971</td>
</tr>
<tr>
<td>Accrued expenses</td>
<td>89,390</td>
<td>109,438</td>
</tr>
<tr>
<td>Unutilised grants</td>
<td>952,499</td>
<td>918,815</td>
</tr>
<tr>
<td>Other prepaid revenues</td>
<td>9,389</td>
<td>8,718</td>
</tr>
<tr>
<td><strong>TOTAL CAPITAL AND LIABILITIES</strong></td>
<td>2,722,611</td>
<td>2,618,994</td>
</tr>
<tr>
<td>Contingent liabilities</td>
<td>none</td>
<td>none</td>
</tr>
<tr>
<td>Government guarantees for loan and credits</td>
<td>none</td>
<td>none</td>
</tr>
<tr>
<td>Other contingents liabilities</td>
<td>none</td>
<td>none</td>
</tr>
</tbody>
</table>
Licentiate Theses

Degrees awarded during 2015

**BIOLOGICAL SCIENCES**

**Biological Physics**

Turdalieva, Azat
Synthesis and Optical Properties of ZnO and CdSe Nanoparticle Based Biomarkers

**CHEMICAL ENGINEERING**

**Fibre and Polymer Science**

Djahed, Cyrus
Deformation of cellulose allomorphs studied by molecular dynamics

Fagerland, Jenny
Synthesis and Characterization of Self-Assembling Low Molecular Weight Copolymers for Bioengineering Applications

Li, Wangshu
LDPE/Al2O3 Nanocomposites and Reduced Graphene Oxide Filled PDMS Used as Insulating and Electric Field Grading Materials in HVDC Cable Systems

Maleki, Laleh
Chemical Pathways to Hemicellulose-rich Biomass Hydrogels

Morais De Carvalho, Danila
Study on the structure and properties of xylan extracted from eucalyptus, sugarcane bagasse and sugarcane straw

Tavast, Daniel
Improved Usage of Wood Raw Material through Modification of the Kraft Process

Torron Timhagen, Susana
Telechelic polymers derived from natural resources as building blocks for polymer thermostets

Wu, Duo
Closed-loop strategy for recycling of starch and poly (lactic acid) into new materials

**CIVIL ENGINEERING**

**Civil and Architectural Engineering**

Albrektsson, Joakim
Durability of fire exposed concrete – Experimental Studies Focusing on Stiffness & Transport Properties

Källbom, Susanna
Surface characterisation of thermally modified spruce wood and influence of water vapour sorption

Lingwanda, Mwajuma Ibrahim
In-situ Penetration as Alternative to Extensive Boreholes and Lab Testing for Exploration in Sandy Soils

Penaloza Corredor, Diego Fernando
Exploring climate impacts of timber buildings – The effects from including non-traditional aspects in life cycle climate impact assessment

Wadi, Amer Hossein Hossein
Flexible culverts in sloping terrain – Research advances and application

Wallin, Joakim
Systematic planning and execution of finite element model updating

Geodesy and Geoinformatics

Alizadeh Khameneh, Mohammad Amin
On Optimisation and Design of Geodetic Networks

Planning and Decision Analysis

Arushanyan, Yevgeniya
LCA of ICT solutions: environmental impacts and challenges of assessment

Nyblom, Åsa
Making travel sustainable with ICT? The social practice of travel planning and travel information use in everyday life

Real Estate and Construction Management

Iqbal, Asifa
Assessment of crime and safety issues in parks

Transport Science

Almström, Peter
Three essays on transport CBA uncertainty

Bastian, Anne
Peak Car in Sweden?

Bjurstöm, Henrik
Air-coupled microphone measurements of guided waves in concrete plates

Chen, Feng
The Future of Smart Road Infrastructure – A Case Study for the eRoad

Dinégdæ, Yared Hailegiorgis
Reliability-based Design Procedures for Flexible Pavements

West, Jens
Congestion Effects in Transport Modelling and Forecasting

Vigren, Andreas
Costs in Swedish Public Transport – An analysis of cost drivers and cost efficiency in public transport contracts

Zhu, Jiqing
Towards a Viscoelastic Model for Phase Separation in Polymer Modified Bitumen

**COMPUTER AND INFORMATION SCIENCE**

Computer Science

Aguilar Fruto, Javier
Towards Scalable Performance Analysis of MPI Parallel Applications

Bodriagov, Oleksandr
Social Networks and Privacy

Greschbach, Benjamin
Privacy Analysis and Protocols for Decentralized Online Social Networks

Polacek, Lukas
Efficient Use of Exponential Size Linear Programs

Information and Communication Technology

Apanasevic, Tatjana
Challenges Related to the Introduction of Innovative Services in the Market – Mobile Payment Services in the Swedish Retail Industry

Kargarrazi, Saleh
Bipolar Silicon Carbide Integrated Circuits for High Temperature Power Applications

Katic, Janko
Efficient Energy Harvesting Interface for Implantable Biosensors

Liu, Ying
Towards Elastic High Performance Distributed Storage Systems in the Cloud

Moeen, Mahdi
Design, Modelling and Characterization of Si/SiGe Structures for IR Bolometer Applications

Paul, Ruma Rani
An Empirical Study of the Global Behavior of Structured Overlay Networks as Complex Systems

Smedfors, Katarina
Ohmic Contacts for High Temperature Integrated Circuits in Silicon Carbide

Speech and Music Communication

Selamzis, Andreas
Electroglottographic analysis of phonatory dynamics and states

**EDUCATIONAL SCIENCE**

Education and Communication in the Technological Science

Isaksson Persson, Helena
Bridging the boundaries between D&T education and working life – A study of views on knowledge and skills in product development
Communication Systems
Solso, Belenguer, Jordi
Topics in engineering methods for IT – Moving towards an interdisciplinary design space

Electrical Engineering
Amin, Shoaib
Characterization and Linearization of Multi-channel RF Power Amplifiers
Ebadat, Afroz
On Application Oriented Experiment Design for Closed-loop System Identification
Everitt, Niklas
Identification of Modules in Acyclic Dynamic Networks: A Geometric Analysis of Stochastic Model Errors
Liljebald, Elisabet
Structures and Processes at the Mercury Magnetopause
Magnusson, Jesper
On the design of hybrid DC-breakers consisting of a mechanical switch and semiconductor devices
Setiadi, Agung Chris
Model predictive control of resistive wall models in the reversed-field pinch

Electronic and Computer Systems
Malik, Omer
Pragma-Based Approach For Mapping DSP Functions On A Coarse-Grained Reconfigurable Architecture

Telecommunication
Ramachandran, Prasad
Impedance matching of terminal antennas for energy efficient radio performance

ENVIRONMENTAL ENGINEERING
Industrial Ecology
Sinha, Rajib
Industrial Ecology Approaches to Improve Metal Management - Three Modeling Experiments
Zhou, Guanghong
Low-Carbon City Initiatives in China – Planning Approaches, Dilemmas and Opportunities

Land and Water Resource Engineering
Bakyayita, Grace Kizito
Equilibrium and Kinetic Batch Studies of Cadmium and Lead sorption using Low Cost Biosorbents
Earon, Robert
Water supply in hard rock coastal regions: The effect of heterogeneity and kinematic porosity

Sultana, Razia
Partial Nitritation/Anammox Process in a Moving Bed Biofilm Reactor Operated at Low Temperatures

HEALTH SCIENCES
Technology and Health
Renström, Jonas
Senior Managers and Lean – The importance of becoming a practitioner

MATERIALS ENGINEERING
Engineering Mechanics
Brynjell Rahkola, Mattias
Global stability analysis of three-dimensional boundary layer flows
Futrynski, Romain
Drag reduction using plasma actuators
Imani Jajarmi, Ramin
Acoustic separation of submicron particles in gaseous flows
Lacis, Ugis
Nature-inspired passive flow control using various coatings and appendages
Patil, Amit
Inflation Mechanics of Hyperelastic Membranes
Sattarzadeh Shirvan, Sohrab
Attenuation of Boundary Layer Disturbances by Means of Streamwise Vortices
Svarén, Miklás
Experimental Test Setups and Simulations in Skiing Mechanics
Vernet, Julie
Plasma actuators for separation control – design and application
Yadav, Priti
Modelling loading and growth of long bones
Zhou, Yang
Parametric stability analyses for fluid-loaded thin membranes

Materials Science and Engineering
Technological Science
Arzpeyama, Nilofar
Chen, Rongzhen
Exploring the Electronic and Optical Properties of Cu(In,Ga)Se2
Dong, Zhihua
Temperature dependent mechanical properties of as-cast steels – Experimental and theoretical studies
Hosseinzadeh Delandar, Arash
Numerical Modeling of Plasticity in FCC Crystalline Materials using Discrete Dislocation Dynamics

LI, Ruihuan
First-principles study of the multiple He trapping in defects in vanadium and SiC
LI, Wei
First-principles description of planar faults in metals and alloys
Médioni, Charlotte
Influence of Stirring on the inclusion characteristics during Vacuum Degassing in a Ladle
Safavi Nick, Seyed Arash
Relationship between motion of bubbles and agglomeration of inclusions into clusters during solidification of continuously cast steel
Tian, Liyun
Density Functional Study of Elastic Properties of Metallic Alloys
Xu, Yonggui
A study of bubble behaviors in a liquid steel bath
Zguns, Pjotrs
First Principles Modelling of Clean Energy Materials

Solid Mechanics
Abdulamir Sadek, Salar
Improved Models for the Probability of High Cycle Fatigue
Grytsan, Andrii
Computational model of abdominal aortic aneurysm inception and evolution
Linville, Eric
Development of Finite Element Models for 3-D Forming Processes of Paper and Paperboard
Sandberg, Daniel
Use of Experiments, Computations and Models for HCF Design
Srinivasa, Prashanth
Non-linear mechanics of nanocellulose foams

Mathematics
Applied and Computational Mathematics
Hallgren, Jonas
Continuous time Graphical Models and Decomposition Sampling
Kadir, S M Ashraful
Error Estimation and Adaptive Methods for Molecular Dynamics
Westborn, Johan
On particle-based online smoothing and parameter inference in general hidden Markov models
Mathematics
Behm, Gustav
Carleman-Sobolev classes and Green’s potentials for weighted Laplacians
Saédén Ståhl, Gustav
Rees algebras of modules and Quot schemes of points
Öberg, Sebastian
Modeling mapping spaces with short hammocks

MECHANICAL ENGINEERING
Energy Technology
Khan, Mohammad Ershad Ullah
Feasibility Analysis of Biogas Based Polygeneration for Rural Development in Bangladesh
Kliatsko, Aleh
Energy Conservation and Service Efficiency in Buildings Explored as Situations of Opportunity for City Transformation
Topel Capriles, Monika
Steam Turbine Thermal Modeling for Improved Transient Operation
Zhang, Xiaoxiang
Numerical Study on Combustion Features of Gasified Biomass Gas

Industrial Economics and Management
Abid, Muhammad
Global Supply Chain Design – Exploring configuration and coordination factor
Khalatina, Maria
Strategic Oil and Gas Alliances at the Present Stage of the European Gas Market Development By the Nord Stream Example
Morgunova, Maria
Arctic Offshore Hydrocarbon Resource Development – Past, Present and Vision of the Future

Machine Design
Sosa Torres, Mario
Running-in of gears from a surface transformation and efficiency point of view

Production Engineering
De Sousa Dias Ferreira, Joao
Bio-Inspired Self-Organisation in Evolvable Production Systems
Fahlkrans, Johan
Effects of manufacturing chain on mechanical performance – Study on heat treatment of powertrain components
Fu, Qilin
Joint Interface Effects on Machining System Vibration

PHYSICAL SCIENCES
Physics
Claisse, Antoine Julien
Open porosity fission gas release model applied to nuclear fuels
Leong, Miu Yoong
DSP-based Coherent Optical Systems: Receiver Sensitivity and Coding Aspects
Malkki, Pertti
The manufacturing of uranium nitride for possible use in light water reactors
Mirsakiyeva, Amina
Quantum Mechanical Calculations of Thermoelectrical Polymers and Organic Molecules
Pan, Fan
Gilbert damping of doped permalloy from first principles calculations
Sellin, Karl
Phase transitions and vortex structures in multicomponent superconductors

Khodae Kalatehbal, Alireza
Gear Rolling for Production of High Gears
Ratanathavorn, Wallop
Development and evaluation of hybrid joining for metals to polymers using friction stir welding
Tolf, Erik
Challenges in Resistance Welding of Ultra High Strength Steels

Technical Acoustics
Kårekull, Oscar
Predicting flow-generated noise from HVAC components

Vehicle and Maritime Engineering
Davari, Mohammad Mehdı
A tyre model for energy studies in vehicle dynamics simulations
Gil Gomez, Gaspar
Towards Efficient Vehicle Dynamics Evaluation using Correlations of Objective Metrics and Subjective Assessments
Hoşsein Nia, Saeed
An Investigation of the Iron-Ore Wheel Damages using Vehicle Dynamics Simulation
Liu, Zhendong
Numerical study on multi-pantograph railway operation at high speed
Olausson, Katrin
On Evaluation and Modelling of Human Exposure to Vibration and Shock on Planing High-Speed Craft
Parra Martinez, Juan Pablo
On the ECO2 multifunctional design paradigm and tools for acoustic tailoring
Pignier, Nicolas
Sound propagation from sustainable ground vehicles from aeroacoustic sources to urban noise
Qazizadeh, Alireza
Development and On-Track Tests of Active Vertical Secondary Suspension for Passenger Trains
Rynell, Anders
Acoustic characterization of an underhood cooling module for a heavy-duty vehicle
Song, Yubao
Properties of vibration and sound transmission of plates with stop bands

PHILOSOPHY, ETHICS AND RELIGION
Philosophy
Jerkert, Jesper
Philosophical Issues in Medical Intervention Research
Doctoral Theses

Degrees awarded during 2015

ARTS

Architecture

Nobel, Andreas

A Dimmer on the Enlightenment – text, form and design

BIOLICAL SCIENCES

Biological Physics

Christakis, Athanasia

Ultrastrong interactions of nanovesicles with natural killer cells

Innocenti, Nicolas Jean-Amédée

Data Analysis and Next Generation Sequencing – Applications in Microbiology

CHEMICAL ENGINEERING

Chemical Engineering

Andersson, Robert

Catalytic conversion of syngas to higher alcohols over MoS2-based catalysts

Gonzalez Arcos, Angelica Viviana

RhPt and Ni Based Catalysts for Fuel Reforming in Energy Conversion

Guan, Tingting

Biomass-fuelled PEM Cell System for small and medium-sized enterprises

Karlsson, Rasmus

Theoretical and Experimental Studies of Electrode and Electrolyte Processes in Industrial Electrolysis

Klass, Verena

Battery Health Estimation in Electric Vehicles

Larsson, Mårten

The role of methane and hydrogen in a fossil-free Swedish transport sector

Lundgren, Henrik

Toward a retro-structural design of degradable aliphatic polyester-based materials

Arias Goa, Veluska

Future Reactions and Their Applications

Azhar, Shahla

Preparation and characterization of nanoporous cellulose fibres – Preparation, Structure and Properties

Prakobna, Kasinee

Microstructural and Functional Degradable Polymers From the Monomeric Point of View

Nemanova, Vera

Biomass Gasification in ABFB: Analysis of the Process

Ovaskainen, Louise

Future Reactions and Their Applications

Velasco Calsina, Jorge

Catalytic partial oxidation of methane over nickel and ruthenium based catalysts for CTL applications

Wekström, Martina

Electric vehicles in action

Ziethén Granlund, Moa

Fuel Reforming for Hydrogen Production in Heavy-Duty Vehicle Applications

Fibre and Polymer Science

Ankerfors, Mikael

Microfibrillated cellulose: Energy-efficient preparation techniques and applications in paper

Tchang Cervin, Nicholas

Porous Materials from Cellulose Nanofibrils

Zhao, Weifeng

Engineering and Functionalization of Hemicellulose Hydrogels

Zhao, Yadong

Towards Large-scale and Feasible Exploitation of Tunicate Cellulose and Cellulose Nanocrystals for Different Applications

Chemistry

Allipour, Yousef

Furnace Wall Corrosion in a Wood-fired Boiler

Asiimwe, Savina

Nanomaterials used in the management of HIV/AIDS opportunistic infections in western Uganda: documentation, phytochemistry and bioactivity evaluation

Björkbacka, Åsa

Hydrophobic and superhydrophobic coatings for corrosion protection of steel

Ejenstam, Jesper

Corrosion resistant alumina-containing alloys for lead-cooled fast reactors

Ejenstam, Lina

Hydrophobic and superhydrophobic coatings for corrosion protection of steel

Ferreira Fernandes, Ricardo Manuel

Dispersing Carbon Nanotubes: Towards Molecular Understanding

Hertzberg, Robin

Understanding the Self-assembly of Polyelectrolyte Micelles

Kharkov, Boris

Molecular Order and Dynamics in Nanostructured Materials by Solid-State NMR

Kong, Na

Carbohydrate-Functionalized Nanomaterials: Synthesis, Characterisation and Biorecognition Studies

Laurell Nash, Anna

Development and Studies of the Processes Involved in Minor Enantiomer Recycling

KTH MANAGEMENT REPORT 2015 | 57
Li, Jing
Understanding corrosion protection mechanisms of nanocomposite polymer coatings on carbon steel – A combination of in-situ AFM and electrochemical studies

Lindell, David
Process-microstructure-corrosion interrelations for stainless steel

Liu, Xiaoyan
Surface Forces and Friction – Effects of adsorbed layers and surface topography

Neranon, Kitjanit
Synthesis and Applications of Dynamic Multivalent Nanostructures

Norrfors, Karin
Stability and sorption capacity of montmorillonite colloids – Investigation of size fractional differences and effects of γ-irradiation

Oko, Asaf
Spontaneous imbibition and colloidal aspects of inkjet printing

Sedighi Moghaddam, Maziar
Wettability of modified wood

Wang, Lei
Artificial Photosynthesis. Molecular Catalysts for Water Oxidation

Wang, Xin
Protein Interactions with Metal Surfaces – Adsorption and Metal Release

Xie, Sheng
Perfluorooaryl Azides – Reactivities, Unique Reactions and Their Applications in the Synthesis of Theranostic Agents

Xu, Bo
Advanced Organic Hole Transport Materials for Solution-Processed Photovoltaic Devices

Yang, Miao
Radiation Induced Processes at Solid-Liquid Interfaces

Zhang, Yang
Dynamic Systems. Enzymatic Synthesis, Exchange Reactions and Applications in Materials Science

Zhou, Juan
Multifunctional Glyconanomaterials: Applications in Biorecognition and Drug Delivery

Materials Chemistry

Wahlberg, Sverker
Tungsten-Based Nanocomposites by Chemical Methods

Theoretical Chemistry and Biology

Cao, Xinrui
First-Principles Modeling of Selected Heterogeneous Reactions Catalyzed by Noble-Metal Nanoparticles

Jamshidi Zavarak, Asghar
Engineering Multicomponent Nanostructures for MOSFET, Photonic Detector and Hybrid Solar Cell Applications

Liang, Lijun
Computational studies of DNA sequencing with graphene nanopores

Rosal, Jaime Axel
New efficient integral algorithms for quantum chemistry

Sun, Xiaoniang
Theoretical Studies of G-Protein-Coupled Receptors

Wang, Yan
Exploring Biopolymer-Clay Nanocomposite Materials by Molecular Modelling

CIVIL ENGINEERING

Civil and Architectural Engineering

Ahmed, Lamis
Models for analysis of young cast and sprayed concrete subjected to impact-type loads

Bergman, Niclas
Aspects of probabilistic serviceability limit state design of dry deep mixing

Du, Guangli
Life cycle assessment of bridges, model development and case studies

Gram, Annika
Modelling of Bingham Suspensoidal Flow – Influence of Viscosity and Particle Properties Applicable to Cementitious Materials

Hesaraki, Arefeh
Low-Temperature Heating and Ventilation for Sustainability in Energy-Efficient Buildings

Lazzarotto, Alberto
Development in Ground Heat Storage Modeling

Phungslip, Aummad
Modeling urban energy flows at macro and district levels – towards a sustainable urban metabolism

Rahman, Md. Mashuqur
Rheology of cement grout – Ultrasound based in-line measurement technique and grouting design parameters

Rahman, Mohammad Shafiqur
Characterising the Deformation Behaviour of Unbound Granular Materials in Pavement Structures

Sanggiorgio, Filippo
Safety Format for Non-linear Analysis of RC Structures Subjected to Multiple Failure Modes

Sattari, Amir
Investigations of Flow Patterns in Ventilated Rooms Using Particle Image Velocimetry – Applications in a Scaled Room with Rapidly Varying Inflow and over a Wall–Mounted Radiator

Yaghoobi Rafi, Jalaloddin
Study of Pumping Pressure and Stop Criteria in Grouting of Rock Fractures

Åkesson, Anna
Peakflow response of stream networks: implications of physical descriptions of streams and temporal change

Geodesy and Geoinformatics

Sseggendo, Ronald
A height datum for Uganda based on a gravimetric quasigeoid model and GNSS/levelling

Yousif, Osama A Rahman
Urban Change Detection Using Multitemporal SAR Images

Infrastructure

Bin Nasir, Shahrin
Intermodal container transport logistics to and from Malaysian ports – Evaluation of Customer requirements and environmental effects

Gashu Adam, Achamyeleh
Peri-Urban Land Tenure in Ethiopia

Sipilä, Hans
Railway capacity analysis – Methods for simulation and evaluation of timetables, delays and infrastructure

Palm, Peter
Challenges of Commercial Real Estate Management: An analysis of the Swedish commercial real estate industry

Ahmadi Achachlouei, Mohammad
Exploring the Effects of ICT on Environmental Sustainability From Life Cycle Assessment to Complex Systems Modeling

Ejigu, Alazar Gedamu
Places on Becoming – An Ethnographic Case Study of a Changing City and its Emerging Residential Environments

Gorton, Dan
Aspects of Modeling Fraud Prevention of Online Financial Services

Noring, Maria
Valuing ecosystem services – linking ecology and policy

Sarraf, Mohammad
Spatiality of Multiculturalism

Svensson, Tony
Varför gör vi inte som vi säger? Realitet, retorik och dialektik i svensk stadslivsevandling med fokus på energi och fysiska strukturer
Wärnhjelm, Mathias
Sustainable Shopping Journeys – Developing Cities and Retail in collaboration

Real Estate and Construction
Management
Högberg, Lovisa
Building Sustainability – Studies on incentives in construction and management of real estate

Staffansson Pauli, Karin
Gender structures in the real estate industry

Real Estate Economics
Brunes, Fredrik
Essays on behavioural economics and cost overruns

Transport Science
Butt, Ali Azhar
Life Cycle Assessment of Asphalt Roads

Gudmarsson, Anders
Resonance Testing of Asphalt Concrete

Khassefat, Parisa
Vehicle-Pavement Interaction

Mirzadeh, Iman
More Roads for the Money

Mwesige, Godfrey
A Methodology for Operations-Based Safety Appraisal of Two-Lane Rural Highways – Application in Uganda

Rahmani, Mahmood
Urban Travel Time Estimation from Sparse GPS Data – An Efficient and Scalable Approach

Salour, Farhad
Moisture Influence on Structural Behaviour of Pavements – Field and Laboratory Investigations

COMPUTER AND INFORMATION SCIENCE

Computer Science
De Carvalho Gomes, Pedro
Automatic Extraction of Program Models for Formal Software Verification

Huang, Sangxia
Hardness of Constraint Satisfaction and Hypergraph Coloring – Constructions of Probabilistically Checkable Proofs with Perfect Completeness

Kaplan, Bernhard
Modeling prediction and pattern recognition in the early visual and olfactory systems

Maboudi Afkham, Heydar
Improving Image Classification Performance using Joint Feature Selection

Pieropan, Alessandro
Action Recognition for Robot Learning

Steinert, Rebecca
Probabilistic Fault Management in Networked Systems

Terelius, Björn
Some aspects of cryptographic protocols with applications in electronic voting and digital watermarking

Human–computer Interaction
Frank, Anders
Gamer mode – Identifying and managing unwanted behaviour in military educational wargaming

Ståhl, Anna
Designing for Interational Empowerment

Tobiasson, Helena
Traces of Movement – Exploring physical activity in societal settings

Information and Communication Technology
Afonso Nunes Sanches, Pedro
Health Data – Representation and (In)visibility

Hamid, Mohamed

Kounelis, Ioannis
Secure and Trusted Mobile Commerce System based on Virtual Currencies

Li, Nan
Improvements in High-Coverage and Low-Power LBIST

Mahloo, Mozghan
Transport Solutions for Future Broadband Access Networks

Podobas, Artur
Improving Performance and Quality-of-Service through the Task-Parallel Model – Optimizations and Future Directions for OpenMP

Shalmashi, Sereh
Device-to-Device Communications for Future Cellular Networks: Challenges, Trade-Offs, and Coexistence

Shen, Jue
Interactive RFID for Industrial and Healthcare Applications

Stirparo, Pasquale
Mobile Leak: Security and Privacy of Personal Data in Mobile Applications

Tao, Sha
Power-Efficient Continuous-Time Incremental Sigma-Delta Analog-to-Digital Converters

Zhao, Xueqian
Network on Chip: Performance Bound and Tightness

Özyagci, Ali Nazmi
Capacity analysis of densely deployed wireless LANs

Media Technology
Enoksson, Fredrik
Adaptable metadata creation for the Web of Data

Picha Edwardsson, Malin
Towards a sustainable media system – Explorative studies of emerging media consumption trends and media processes for content production

Unander-Scharin, Carl
Extending Opera – Artist-led Explorations in Operatic Practice through Interactivity and Electronics

Speech and Music Communication
Dubus, Gaël Serge
Interactive Sonification of Motion – Design, implementation and control of expressive auditory feedback with mobile Devices

ECONOMICS AND BUSINESS

Business Studies
Hermannsson, Cecilia
Understanding the relationships between bank-customer relations, financial advisory services and saving behaviour

Economics
Halvarsson, Daniel
Firm Dynamics: The Size and Growth Distribution of Firms

Nabavi Larijani, Pardis
Innovation and Productivity – A Microdata Analysis

EDUCATIONAL SCIENCE

Education and Communication in the Technological Science
Hartell, Eva
Assidere Necesse Est – Necessities and complexities regarding teachers’ assessment practices in technology education

Rolandsson, Lennart
Programmed or Not – A study about programmed teachers’ beliefs and intentions in relation to curriculum

Stenbom, Stefan
Online coaching as a Relationship of Inquiry – Exploring one-to-one online education

ELECTRICAL ENGINEERING, ELECTRONIC ENGINEERING, INFORMATION ENGINEERING

Automatic Control
Demirel, Burak
Architectures and Performance Analysis of Wireless Control Systems
DOCTORAL THESIS

60 | KTH MANAGEMENT REPORT 2015

Electrical Engineering

Alm, Love
Cluster investigations of the extent and altitude distribution of the auroral density cavity

Bissal, Ara
Modeling and Verification of Ultra-Fast Electro-Mechanical Actuators for HVDC Breakers

Huang, Sheng
Linear Coding, Applications and Supremum Typicality

Mombor, Ian

Picciarielli, Angela
Impact of Economic Regulation on Distributed Generation Integration in Electricity Distribution Grids

Richstein, Jörn Constantin
Interactions between carbon and power markets in transition

Schlatter, Nicola Manuel
Radar Signatures of Plasma Instability

Shayesteh, Ebrahim
Efficient Simulation Methods of Large Power Systems with High Penetration of Renewable Energy Resources – Theory and Applications

Zenteno Bolanos, Efrain
Digital Compensation Techniques for Transmitters in Wireless Communications Networks

Electrical Measurements

Gatty, Hithesh Kumar
MEMS-based electrochemical gas sensors and wafer-level methods

Sandström, Niklas
Integrating Biosensors for Air Monitoring and Breath-Based Diagnostics

Zenteno Bolanos, Efrain
Digital Compensation Techniques for Transmitters in Wireless Communications Networks

Electrical Systems

Antonopoulous, Antonios
On the Internal Dynamics and AC-Motor Drive Application of Modular Multilevel Converters

Baradar, Mohamadreza

Chompoobutrgool, Yuwa
Aspects of Wide-Area Damping Control Design using Dominant Path Synchrophasor Signals

Ghaffarian Niasar, Mohamad
Mechanisms of Electrical Ageing of Oil-impregnated Paper due to Partial Discharges

Hamon, Camille
Probabilistic security management for power system operations with large amounts of wind power

Lim, Jang-Kwon
Simulation and Electrical Evaluation of 4H-SiC Junction Field Effect Transistors and Junction Barrier Schottky Diodes with Buried Grids

Malik, Naveed-Ur-Rehman
Modelling, Analysis, and Control Aspects of a Rotating Power Electronic Brushless Doubly-Fed Induction Generator

Modeer, Tomas
Cascaded Converters with Gate-Commutated Thyristors – Experimental Verification and Auxiliary Power Supply

Mousavi, Seyedali
Electromagnetic Modelling of Power Transformers for Study and Mitigation of Effects of GICs

Scharff, Richard
Design of Electricity Markets for Efficient Balancing of Wind Power Generation

Tolstoy, Georg
High-Efficiency SiC Power Conversion – Base Drivers for Bipolar Junction Transistors and Performance Impacts on Series-Resonant Converters

Wang, Xiaolei
Partial Discharge Analysis of Stator Insulation at Arbitrary Voltage Waveform Stimulus

Electronic and Computer Systems

Feng, Yi
Printed RFID Humidity Sensor Tags for Flexible Smart Systems

Jafari, Fahimeh
Analysis and Management of Communication in On-Chip Networks

Ma, Ning
Ultra-low-power Design and Implementation of Application-specific Instruction-set Processors for Ubiquitous Sensing and Computing

Malik, Jamshaid
Gaussian Random Numbers and FGN Wireless Channel models: A Hardware Perspective

Microelectronics and Applied Physics

Amir Manouchehry Naini, Maziar
Horizontal Slot Waveguides for Silicon Photonics Back-End Integration

Xiang, Yu
GaAs based Vertical-Cavity Surface-Emitting Transistors—Lasers

Zhang, Zhenzhong
Materials and Processing Technologies for Advanced Electronic and Photonic Devices

Physical Electrotechnology

Bykov, Igor
Experimental studies of material migration in magnetic confinement fusion devices

Signal Processing

Negusse, Senay Amanuel
On Parameter Estimation Employing Sinewave Fit and Phase Noise Compensation in OFDM Systems

Telecommunication

Do, Tai
Fundamental Limits in Wireless Wideband Networking

Farhadi, Hamed
Coordinated Transmission for Wireless Interference Networks

Gabry, Frédéric Gilbert
Secrecy in Cognitive Radio Networks

Ghadim, Euhanna
Accelerating Convergence of Large-scale Optimization Algorithms

Glaropoulos, Ioannis
Coexistence and Energy Efficiency in Wireless Networks

Hussain, Iqbal
Analysis and Design of Rateless Codes

Stathakis, Efthymios
On Interference Management With Incomplete Side Information

Wang, Zhao
Interference Alignment with Imperfect Channel Knowledge and Secrecy Constraints

ENVIRONMENTAL ENGINEERING

Industrial Ecology

Risén, Emma
Sustainability Aspects of Bioenergy and Nutrient Recovery from Marine Biomass – Baltic Sea case studies

Stoll, Pia
Residential Demand Response – in the Context of European Union Energy Policy

Land and Water Resource Engineering

Azcarate Venegas, Juan
Beyond impacts: Contextualizing strategic environmental assessment to foster the inclusion of multiple values in strategic planning

Elmi Mohamed, Abdallah
Sharing Water in Africa: Comparative Analysis of the Limpopo and Orange-Senqu River Basins in SADC and the Juba and Shabelle River Basins in the Horn of Africa

Engström, Emma
Predicting the Transport of Escherichia coli to Groundwater
Franzén, Frida
From words to action – Lessons from active stakeholder participation in water management

Kale, Manoj
Bird Species in Urban and Agricultural Landscapes – Bird diversity patterns along an urbanisation gradient and crop damage caused by birds on the Deccan Plateau, India

Karlsön, Mårten
Road Ecology for Environmental Assessment

ORMACHEA MUÑOZ, MAURICIO RODOLFO
Hydrogeochemistry of Naturally Occurring Arsenic and Other Trace Elements in the Central Bolivian Altiplano – Sources, mobility and drinking water quality

HEALTH SCIENCES
Technology and Health
Fahlstedt, Madelem
Numerical Accidental Reconstructions – A Biomechanical Tool to Understand and Prevent Head Injuries

Frånberg, Oskar
Oxygen content in semi-closed rebreathing apparatuses for underwater use. Measurements and modeling

Glimskär, Bo I
The adoption of Ergonomic Innovations for Injury Prevention – Examples from the building construction and health care industries.

Kothapalli, Satya V. V. N.
Nano Engineered Contrast Agents – Towards Multimodal Imaging and Acoustophoresis

Kuang, Qie
Structural Studies of Membrane Proteins Using Transmission Electron Microscopy

Larsson, Malin
Toward Increased Applicability of Ultrasound Contrast Agents

Vogel, Kjerstin
Meat cutting work and sustainability

INDUSTRIAL BIOTECHNOLOGY
Biotechnology
Aradbili Asl, Sahar
Microfluidic based Sample Preparation for Bloodstream Infections

Ayoglu, Burcu
Affinity Arrays for Profiling Proteins and Autoantibody Repertoires

Brown, Christian
Characterization of Specific Domains of the Cellulose and Chitin Synthases from Pathogenic Oomycetes

Dezfouli, Mahya
Barcoded DNA Sequencing for Parallell Protein Detection

Fleetwood, Filipa
Bacterial display systems for engineering of affinity proteins

Forsström, Björn
Characterization of antibody specificity using peptide array technologies

Hassan, Noor
Characterization and engineering of carbohydrate-active enzymes for biotechnological applications

Häggmark, Anna
Neuroproteomic profiling of human body fluids

Jarmander, Johan
Strategies for improved Escherichia coli bioprocessing performance

Lindberg, Hanna
Engineering of Affibody molecules targeting the Alzheimer’s-related amyloid β peptide

Sandersjöö, Lisa
Bacteria-based methods for engineering and characterization of proteases and affinity protein

Sjöberg, Ronald
On Generation and Applications of High-Density Protein Microarrays

Sjöström, Staffan
Droplet microfluidics for directed evolution of biocatalysts

Wang, Yang
Discovery and investigation of glycoside hydrolase family 5 enzymes with potential use in biomass conversion

Werne Solnestam, Beata
Interpreting the human transcriptome

Yu, Feifan
Generating Affinity Proteins for Biotechnological, Diagnostic and Therapeutic Applications

MATERIALS ENGINEERING
Engineering Mechanics
Fjällman, Johan
Large Eddy Simulations of Complex Flows in IC-Engine’s Exhaust Manifold and Turbine

Hosseini, Seyed Mohammad
On stability, transition and turbulence in three-dimensional boundary-layer flows

Imayama, Shintaro
Studies of the rotating-disk boundary-layer flow

Lazermos, Werner
Turbulence modelling applied to the atmospheric boundary layer

Nilsson, Karl
Numerical computations of wind turbine wakes and wake interaction

Noorani, Azad
Particle-laden Turbulent Wall-bounded Flows in Moderately Complex Geometries

Pouransari, Zeinab
Numerical studies of turbulent flames in wall-jet flows

Semlitsch, Bernhard
Large Eddy Simulation of Turbulent Compressible Jets

Söder, Martin
Creation and destruction of in-cylinder flows; Large eddy simulations of the intake and the compression strokes

Weng, Chenyang
Theoretical and numerical studies of sound propagation in low-Mach-number duct flows

Zhou, Lin
Acoustic Characterization of Orifices and Perforated Liners with Flow and High-Level Acoustic Excitation

Materials Science
Brusewitz Lindahl, Bonnie
Thermodynamic investigation of systems related to TWIP steels

Sun, Weilie
Ab initio study of transition metal carbides and actinide compounds

Östlin, Andreas
Electronic Structure Studies and Method Development for Complex Materials

Materials Science and Engineering
Technological Science
Bu, Junfu
Advanced BaZr0.03BaCe0.03 Based Proton Conductors Used for Intermediate Temperature Solid Oxide Fuel Cells (ITSOFCs)

Chen, Chao
Some Aspects on Macroscopic Mixing in a Tundish

Cheng, Yajuan
Synthesis of well arrayed structures with assistance of statistical experimental design

Cuvilla, Carlos Alberto
Mild Wet Torrefaction and Characterization of Woody Biomass from Mozambique for Thermal Applications

Dou, Maofeng
First principles study of oxide semiconductors for solar energy applications

Ekström, Madeleine
Oxidation and Corrosion Fatigue Aspects of Cast Exhaust Manifolds

Gauffin, Alicia
Improved mapping of steel recycling from an industrial perspective

Gorbakov, Oleg
Theoretical investigation of copper precipitation in steel

Kaplan, Bartek

Equilibrium aspects of Cr-alloyed cemented carbides
Li, Xiaoging
Mechanical Properties of Transition Metal Alloys from First-Principles Theory
Li, Yunguo
Ab initio based modeling of defects and disorder in industrial materials
Mellin, Pelle
Pyrolysis of biomass in fluidized-beds: in-situ formation of products and their applications for ironmaking
Mu, Wangzhong
Microstructure and Inclusion Characteristics in Steels with Ti-oxide and TiN Additions
Ni, Peiyuan
A study on Particle Motion and Deposition Rate Application in Steel Flows
Wang, Guisheng
Ab initio Prediction of the Mechanical Properties of Alloys
Wang, Jinf
Development of Graphitic Carbon Nitride based Semiconductor Photocatalysts for Organic Pollutant Degradation
Yang, Ying
Inclusion Motion under a Swirl Flow in the Continuous Casting Process and Wire Feeding in the Induction Furnace
Zhou, Xiaobin
Mathematical and Physical Simulations of BOF Converters
Metallurgical Process Science
Alevanau, Aliaksandr
Study of pyrolysis and gasification of biomass from the self-organization perspective
Brandberg Hurtig, Jenny
Solubility of hydrogen in slags and its impact on ladle refining
Janis, Diana
A Study of Different Methods for Inclusion Characterization towards On-line use during Steelmaking
Pulp and Paper Chemistry and Technology
Oninonen, Petri
A biomimicking approach for hemicellulose processing
Svedberg, Anna
Improvement of the retention-formation relationship using three-component retention aid systems
Solid Mechanics
Abdulamir Sadek, Salar
Probabilistic high cycle fatigue models – volumetric approaches
Andersson, Daniel
Material Characterization of Powder Materials using Inverse Modeling
Dersjö, Tomas
Methods for reliability based design optimization of structural components
Linnares Arregui, Irene
Mechanical behaviour of a roller bearing steel: Strength differential effect, low temperature creep and propagation of short cracks
Olsson, Erik
Micromechanics of Powder Compaction
Saadati, Mahdi
On the mechanical behavior of granite: Constitutive modeling and application to percussive drilling
MATHEMATICS
Applied and Computational Mathematics
Arjmand, Doghonay
Analysis and Applications of Heterogeneous Multiscale Methods for Multiscale Partial Differential Equations
Gudmundsson, Thorbjörn
Rare-event simulation with Markov chain Monte Carlo
Löfahl Grelsson, Björn
Topics in life and disability insurance
Nykvist, Johan
Topics in importance sampling and derivatives pricing
Oddsdottir, Hildur Æsa
Macroscopic Modeling of Metabolic Reaction Networks and Dynamic Identification of Elementary Flux Modes by Column Generation
Odland, Tove
On Methods for Solving Symmetric Systems of Linear Equations Arising in Optimization
Swärd, Henrik
Topology Optimization of Fatigue-Constrained Structures
Mathematics
Aas, Erik
A Markov Process on Cyclic Words
Duse, Erik
On Uniformly Random Discrete Interlacing Systems – Asymptotics and Universal Edge Fluctuations with Applications to Lozenge Tiling Models
Greco, Ornella
Bounds on Hilbert Functions and Betti Numbers of Veronese Modules
Lundman, Anders
Topics in Combinatorial Algebraic Geometry
Scolamiero, Martina
Invariants for Multidimensional Persistence
MECHANICAL ENGINEERING
Aerospace Engineering
Otero Sola, Evelyn
Acceleration of Compressible Flow Simulations with Edge Using Implicit Time Stepping
Zhang, Mengmeng
Contributions to Variable Fidelity MDO Framework for Collaborative and Integrated Aircraft Design
Energy Technology
Anwar, Zahid
Flow boiling heat transfer, pressure drop and dryout characteristics of low GWP refrigerants in a vertical mini-channel
Araoz Ramos, Joseph Adhemar
Thermodynamic analysis of Stirling engine systems – Applications for combined heat and power
Baina Veizaga, Fabiola
Externally fired gas turbine cycle based on biomass gasification gas as fuel
Biltaraf Haghighi, Ehsan
Single Phase Convective Heat Transfer With Nanofluids: An Experimental Approach
Chen, Jianyong
Investigation of Vapor Ejectors in Heat Driven Ejector Refrigeration Systems
Mader, Gunda
Economic analysis of air-water heat pump technologies with a screening method
Martin Callizo, Claudi
Development of an Impinging Receiver for Solar Dish–Brayton Systems
Industrial Economics and Management
Birkie, Seyoum Eshetu
Be lean to be resilient: Setting capabilities for turbulent times
Boon, Edward Cornelis Jacobus
Deal of the day – An Assessment of a New Form of Sales Promotion
Freilich, Jonatan
When Innovation Is Not Enough – The Managerial Challenges of Technology Change In Pharmaceutical R&D
Karakaya, Emrah
Diffusion of dynamic innovations: A case study of residential solar PV systems
Levhn, Fabian
Investments, system dynamics, energy management, and policy: a solution to the metric problem of bottom-up supply curves
Lilford, Neil Frank
An exploration of factors determining salesperson effectiveness

Long, Vicky Xiaoyan
A technological capabilities perspective on catching up: the case of the Chinese information and communications technology industry

Sriwannawit, Pranpreya
Power to the people: Diffusion of renewable electricity in rural areas of developing countries

Machine Design
Bergendahl, Magnus
Collaboration and competition in firm–internal ideation management: Two alternatives – and a third way out

Cha, Matthew
Dynamic Performance and Design Aspects of Compliant Fluid Film Bearings

Malmquist, Daniel
A Tool for Holistic Optimization of Mechatronic Design Concepts

Pinazaur, Abdurasul
Forestry machine and soil interaction for sustainable forestry

Stetler, Katarina
Innovation under pressure – Reclaiming the micro-level exploration space

Production Engineering
Akillioglu, Hakan
Demand Responsive Planning – A dynamic and responsive planning framework based on workload control theory for cyber-physical production systems

Fu, Qilin
High dynamic stiffness nano-structured composites for vibration control – A Study of applications in joint interfaces and machining systems

Mikler, Jerry
On Improvement Of Maintenance Function – A Reference Model And Improvement Methodology

Pervaz, Salman
Numerical and Experimental Investigations of the Machinability of Ti6Al4V Energy Efficiency and Sustainable Cooling/Lubrication Strategies

Werke, Mats
Principles for modelling of manufacturing sequences

Technical Acoustics
Hynminen, Antti
Acoustic In-duct Characterization of Fluid Machines with Applications to Medium Speed IC-engines

Vehicle and Maritime Engineering
Dirks, Babette
Simulation and Measurement of Wheel on Rail Fatigue and Wear

Schneider, Christof
Recyclable self-reinforced ductile fiber composite materials for structural applications

Vehicles Engineering
Edren, Johannes
Motion modelling and control strategies of over-actuated vehicles

Wanner, Daniel
Controlling over-actuated road vehicles during failure conditions

MEDICAL ENGINEERING
Applied Medical Technology
Atefi, Seyyedreza
Electrical Bioimpedance Cerebral Monitoring: From Hypothesis and Simulation to First Experimental Evidence in Stroke Patients

Johnson, Jonas
The Cardiac State Diagram – A new method for assessing cardiac mechanics

PHILOSOPHY, ETHICS AND RELIGION
Philosophy
Dubois, Mikael
The Justification and Legitimacy of the Active Welfare State – Some Philosophical Aspects

Jebari, Karim
Human Enhancement and Technological Uncertainty Essays on the Promise and Peril of Emerging Technology

PHYSICAL SCIENCES
Physics
Chang, Zhongwen
Multiscale modelling of radiation-enhanced diffusion phenomena in metals

Forchheimer, Daniel
Imaging materials with intermodulation – Studies in multifrequency atomic force microscopy

Holmberg, Patrik
Laser processing of Silica based glass

Iranmanesh, Ida Sadat
On-chip Ultrasonic Sample Preparation

Jovicvic, Jelena
Evidence for the Standard Model Higgs boson in the WW* decay mode using the data collected by the ATLAS detector at the LHC

Kole, Merlin
Background Studies for the Balloon-Borne Hard X-ray Polarimeter PoGOLite

Kuwertz, Emma
A Search for Squarks and Gluinos in Final States with At Least Two Leptons with the ATLAS Detector

Larsson, Daniel
Small-Animal Imaging with Liquid-Metal-Jet X-Ray Sources

Li, Hongjie
Collective Excitations in Transitional Nuclei Studied by Means of gamma-ray Spectroscopy and Lifetime Measurements

Li, Li
Time-Resolved Optical Properties of Colloidal CdSe-CdS/ZnS Core-Multishell Quantum Dots in Bioimaging

Manzo, Michele
Engineering ferroelectric domains and charge transport by proton exchange in lithium niobate

Meier, Hannes
Phase transitions in novel superfluids and systems with correlated disorder

Ohlin, Mathias
Ultrasonic Fluid and Cell Manipulation

Sanatnia, Reza
Ensemble and Individual III-V Semiconductor Nanopillars: Optical Properties and Applications

Sanggaleh, Fatemeh
Carrier Dynamics in Single Luminescent Silicon Quantum Dots

Soltanmoradi, Reihaneh
Structured Metallic Films for Enhanced Light Transmission and Absorption

Thakre, Sachin
On Fuel Coolant Interactions and Debris Coolability in Light Water Reactors

Theile, Roman
Mechanistic Modeling of Wall-Fluid Thermal Interactions for Innovative Nuclear Systems

Thilmann, Nicky
Highly efficient optical parametric oscillators in the mid-IR

Tjornhammar, Staffan
Properties of Volume Bragg Gratings and Nonlinear Crystals for Laser Engineering

Uhlen, Fredrik
Nanofabrication of Zone Plates for Hard X-Ray Free-Electron Lasers

Yveborg, Moa
Quantification and Maximization of Performance Measures for Photon Counting Spectral Computed Tomography

Zeil, Peter
Tailored fiber lasers and their use in nonlinear optics