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UPPSALA UNIVERSITY'S
input
TO THE GOVERNMENT'S
RESEARCH POLICY FROM
2021



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Uppsala University's input to the government's research policy from 2021

Adopted by the University Board, 29 October 2019

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1. Summary

Uppsala University hereby submits its views on the government's policy for research and education from 2021. As a full-scale, internationally oriented research university, Uppsala University wishes to emphasise the importance of the link between research and education for the quality of activities. Our input therefore also contains proposals concerning education.

In its input, Uppsala University makes proposals that are of general relevance for the higher education sector, arranged in four areas that are presented below. As follow-up to the present research bill, Appendix 1 presents areas of strength that Uppsala University particularly wishes to emphasise. Their common denominator is that they are established, often world-leading research environments with the potential to grow even stronger. They also have the potential to help solve the great challenges facing society. The appendix also describes the University's work on external collaboration, reports initiatives taken to improve long-term talent recruitment, development and retention, as well as gender equality, and presents Campus Gotland as a successful example of how a large, broad higher education institution can support and strengthen the quality of education and research throughout the country.

Independent universities are a corner-stone of a democratic society. Free research and education stimulate creativity and drive quality. Liberal education and critical thinking increase our understanding of the world around us. The mission of universities to convey knowledge cannot be overemphasised at a time when resistance to knowledge is challenging scientifically-based knowledge. Confidence in researchers and research results must therefore be nurtured and the integrity of research defended. Here, good research practice and ethics have a key role. Research is a force for change in society and without knowledge and preparedness for new research challenges, society is more vulnerable.

Research of the highest scientific standards is necessary to meet national societal challenges and to achieve the UN's global sustainability goals. Sweden has globally outstanding, highly ranked higher education institutions (HEIs) that contribute to the country's supply of skills and knowledge and constitute a resource for all of Sweden. If Sweden is to defend its position as a leading knowledge nation and meet the challenges facing society nationally and globally, we need increased investments in research and education, and Swedish HEIs must be given the best possible conditions for their activities.

The three most recent research bills have each brought additional state funding for research in the region of SEK 3–5 billion. Uppsala University has assumed that this government also intends to invest in the further development of Swedish research and submits prioritised proposals within an overall framework increase of SEK 3.5 billion.

Uppsala University's proposals:

Give HEIs favourable conditions

- The freedom of education should be protected by law just as research is now protected by the constitution.
- While remaining public authorities, HEIs should be given greater autonomy.
- Certain changes should be made in the secondary legislation concerning the position of associate senior lecturers (assistant professors) and senior lecturers (associate professors).
- In the longer term, the legal status of HEIs should be reviewed.

Strengthen research of the highest quality and relevance

- To increase the universities' autonomy, their direct government funding should be ring-fenced from demands for co-financing when state research funding bodies award research and collaboration grants.
- SEK 1 billion should be invested in world-leading research by increasing direct government funding for research and postgraduate education and distributing it to HEIs on the basis of quality and performance indicators.
- The scope of the Swedish Research Council to make unrestricted project grants should be ensured.
- Government funding for existing strategic research areas should be fully integrated in the direct government funding of the universities affected without earmarking.
- SEK 1.5 billion should be invested in research in the form of new strategic research areas to meet national and global societal challenges.
- New initiatives should be guided by the principles of long-term commitment and breadth, quality and excellence, minimal formal requirements, the link between research and education, interdisciplinary approaches and collaboration with other actors.

Develop national and international research infrastructure

- An overarching national strategy for research infrastructure should be drawn up, together with an associated funding strategy.
- Long-term conditions should be created for technical environments on the borders between basic research and industry.
- A further SEK 1 billion should be invested to meet Sweden's research infrastructure needs.
- The research infrastructure at SciLifeLab should be strengthened.
- A special initiative should be taken to coordinate the national actors in digital research infrastructure.

Prioritise higher education for the sake of a well-qualified labour force

- Government appropriations for higher education should be increased by raising the allowances per student (the 'price tags'), so as to restore and improve the quality of education. The target should be to restore at least 75 per cent of the estimated erosion over the four-year period.
- Higher education should be exempted from productivity deductions.
- The funding ceiling should be raised without targeting specific educational programmes, so as to enable the range of programmes offered to be renewed and to meet society's need for lifelong learning.
- The extended medical programme should be fully financed.

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Give HEIs increased autonomy and freedom to act

Public higher education institutions need increased autonomy and freedom to act. Increased autonomy enhances the capacity for strategic innovation and favours quality enhancement. It is important to affirm and clarify the independence of both research and education. The freedom of education should therefore be protected by law just as research is now protected by the constitution. This question should be studied further.

By European standards, Swedish HEIs have a low degree of autonomy and are closely tied to the state as administrative authorities. Universities are essentially governed by the same set of regulations as public authorities whose activities predominantly lie in the exercise of official authority. This limits the ability of Swedish HEIs to act and operate. In addition to the issues raised below, which would give greater autonomy while staying within public authority status, in the longer term the legal status of HEIs should be reviewed.

Remove administrative obstacles

In its input to the current research bill, Uppsala University pointed out the need for increased freedom of action for the benefit of internationalisation, practical application and increased competitiveness for Swedish HEIs, and proposed that the government should implement the changes proposed in the report *Ökad handlingsfrihet för statliga lärosäten* (Increased freedom of action for public higher education institutions)¹. Most of the issues raised in the report remain relevant and it would be highly desirable to implement the proposals in the report.

The greatest challenge regarding skills provision in the health and medical care sector is the shortage of placement opportunities. To strengthen the connection between research and education and to ensure the skills supply throughout the health and medical care sector, the Health and Medical Services Act should be amended to include education.

Provide conditions for attractive careers

The position of associate senior lecturer (assistant professor) has given HEIs a form of employment that, if used properly, can serve as the way in to an attractive academic career system on the tenure track model. This possibility is destroyed if recruitments subject to highly competitive public advertisement are replaced by re-assignment under the rules in Section 7 of the Employment Protection Act. The possibility of allowing exceptions from these rules specifically in the case of recruitment to the position of associate senior lecturer (assistant professor) should therefore be looked into.

The acquisition of research qualifications and experience by clinical researchers is complicated by the absence in the Higher Education Ordinance of any possibility of combining a career-development position with employment at a healthcare unit at which medical education and research are permitted.

In addition, the possibility should be opened up of calling individuals to senior lecturer (associate professor) positions in certain circumstances, just as is now possible for professorships. This would apply to individuals who have received certain long-term research grants that are awarded following particularly stringent quality assessment, such as ERC Starting Grants and KAW Fellows.

The University's initiatives to improve conditions for researchers and gender equality are described in Appendix 1.

¹ *Ökad handlingsfrihet för statliga lärosäten* (Increased freedom of action for public higher education institutions). A report to the Stockholm–Uppsala university network, April 2015.

3. Strengthen research of the highest quality and

Uppsala University's proposals:

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relevance

Increase direct government funding and ring-fence it from co-financing

Free research is the basis for developing new knowledge. Sweden's ambition is to be one of the world's leading research nations. Research policy must therefore seek to generate the highest academic quality and internationally leading expertise.

To establish world-leading research environments, Swedish HEIs need autonomy, long-term commitments and scope for strategic renewal. The most recent research bills have increased direct government funding for HEIs. At the same time, the requirements in terms of what this funding has to cover have increased. These days, the universities finance an increasing part of the national research infrastructure and research-intensive universities bear most of this responsibility. External research funding bodies demand co-financing from the universities' direct government funding. The universities are also increasingly expected to take long-term responsibility for the employment of researchers who receive external funding, to create attractive career paths and to promote increased gender equality.

The balance between direct government funding and external grants has shifted over the past ten years. External grants should complement direct government funding, not vice versa. Consequently, to achieve the government's goal that Sweden should be a leading research nation, new direct government funding needs to be distributed among the HEIs on the basis of quality and performance indicators. This investment should amount to SEK 1 billion.

HEIs have a responsibility for the quality of education and research. Given that the Swedish Higher Education Authority has received instructions to audit both the quality of higher education and the institutions' own systems for quality assurance of higher education and research, it would be reasonable to review other public authorities' mandates concerning the evaluation of research.

Safeguard the Swedish Research Council's unrestricted project grants

An increase in direct government funding must not be achieved by reallocations from the Swedish Research Council's scope for unrestricted project grants. Funds distributed via the government research funding bodies are subject to competition and based on quality assessments by experts, which gives a high level of legitimacy and guarantees high quality research. They are an important complement to the direct government funding.

Uppsala University also wishes to safeguard the EU instruments that are most valuable for Sweden and Swedish researchers, such as the Excellent Science pillar in Horizon Europe. Sweden should therefore strive for an increase in the EU's research budget.

Integrate strategic research areas fully in direct government funding and invest in new strategic research areas

The strategic research areas initiative has made it possible to establish a number of internationally prominent research environments. Uppsala University intends to continue to develop the existing strategic research areas at the University. The original intention – that the grants for the strategic research areas should be fully integrated in the direct government funding of the universities concerned, without earmarking in appropriation directions – should now be implemented. This will promote a greater assumption of responsibility by HEIs and enhance their strategic autonomy.

To meet national societal challenges and to help achieve the UN's global sustainability goals, investments must be long term and the research of the highest scientific quality. The strategic research areas model, which is based on HEIs receiving direct government funding for new initiatives in prioritised areas according to a quality-assured process, is a good form of funding. Uppsala University therefore proposes a new investment of the same order of magnitude as the previous investment in strategic research areas. Researchers themselves are in the best position to formulate the questions that research is to answer. Our assessment is therefore that long-term, open or thematically broad investments, without strict formal requirements, provide the best conditions for developing strong interdisciplinary research environments that can contribute to the sustainable development of society. HEIs should be invited to apply for funding in collaboration with other actors. Research applications should be assessed primarily on the basis of quality and relevance, and in addition on the basis of the strength and commitment of other participating partners.

Future research challenges

In Appendix 1, Uppsala University highlights some prioritised research areas that can contribute to addressing national and global societal challenges, have the potential for further development and where the University is well equipped to take great responsibility. These research areas are listed below. The University regards external collaboration as an integral part of education and research and submits proposals in the same appendix on the further development of collaboration.

The prioritised research areas are:

- Renewable energy and electrification
- Climate change and biodiversity
- Materials for future challenges in society
- The challenge of antibiotic resistance
- Major common diseases, global health and mental health
- SciLifeLab and pharmaceutical development
- Future health and medical care
- The digitalisation of society: AI and digital humanities
- Liberal democracy, human rights and the rule of law
- Migration and racism
- Social sustainability

- The pilot project ULF (Development, Learning, Research)

4. Develop national and international research infrastructure

Uppsala University's proposals:

- An overarching national strategy for research infrastructure should be drawn up, together with an associated funding strategy.
- Long-term conditions should be created for technical environments on the borders between basic research and industry.
- A further SEK 1 billion should be invested to meet Sweden's research infrastructure needs. See Table 1.
- The research infrastructure at SciLifeLab should be strengthened.
- A special initiative should be taken to coordinate the national actors in digital research infrastructure.

Draw up a national strategy for research infrastructure

Research infrastructure is a vital prerequisite for top quality research and future innovations. If Sweden, as a knowledge nation, is to derive the greatest possible benefit from the technological advances created by research infrastructures, this will require good coordination and long-term financing with a clear division of responsibilities between different actors.

It is important to improve the overall national coordination. As managers, developers and users of research infrastructure, HEIs should be allowed influence and should take responsibility. A national strategy should be drawn up clarifying the division of responsibilities, priorities and long-term financing of research infrastructure. The organisation of the MAX IV synchrotron radiation facility needs to be reviewed. The strategy should include research infrastructures that lie on the border between basic research and collaboration with industry (technical environments), such as the FREIA Facility for Research Instrumentation and Accelerator Development and research related to the ITER fusion experimental reactor. Such facilities enable technological progress and skills transfer and it is important that these technical environments are given long-term conditions for their activities.

Increase allocations to research infrastructure

Research infrastructure involves substantial costs and state funding is largely channelled through the Swedish Research Council. However, the co-financing required by the Swedish Research Council means that the large HEIs pay for approximately half of all national research infrastructure. It is important to secure long-term financing for MAX IV and the Swedish National Infrastructure for Computing (SNIC) and to meet commitments for the European Spallation Source (ESS) without impoverishing other research infrastructure.

There is also a need for investments in research infrastructures in the humanities and social sciences. One example that can be mentioned is context databases for social sciences. The potential of this type of research infrastructure lies in the continuous addition of data and the building up of long time series, which means that running costs account for a large part of the costs.

International commitments have become more expensive due to annual mark-ups and the weak krona. The assessment is that unless further funds are forthcoming, the Swedish Research Council will no longer be able to finance other national research infrastructure. In that case, the responsibility for financing research infrastructures will fall even more heavily on the research-intensive universities. The HEIs should co-finance research infrastructures, but it is not reasonable that they should assume greater responsibility than at present. Instead, the co-financing of research infrastructure by HEIs should decrease, as the burden on the direct government funding of the research-intensive universities is too heavy. There is a risk that funding will be allocated to research infrastructure at the expense of the Swedish Research Council's scope for unrestricted project grants. This scope for unrestricted project grants must be safeguarded. The assessment is that an additional SEK 1 billion will have to be invested in research infrastructure (Table 1). A boost in resources would secure access to relevant research infrastructure for large and small HEIs, industry and health care, thereby enhancing Sweden's competitiveness and skills provision.

Strengthen SciLifeLab

The national centre for life sciences research, SciLifeLab, is a large-scale national research facility focusing on molecular life sciences that offers advanced technology and expertise. The close connection with excellent research environments benefits technological development, interdisciplinary exchanges, innovation and collaboration with industry and the healthcare sector. SciLifeLab must be seen as a national research infrastructure and included in strategic discussions on, for example, the development of digital research infrastructures and planning of future strategic research programmes in life sciences, medicine and the environment. Its activities need to be enhanced to meet the increased national need for research infrastructure in life sciences, make it more attractive to locate life sciences activities in Sweden and promote the development of the pharmaceutical development platform at SciLifeLab.

Develop the digital research infrastructure

Digital technology has changed the playing field for higher education and research. Digitalisation is a global phenomenon and if Sweden is to keep up with the rapid process of change, the digital infrastructure has to be boosted. The digital research infrastructure is currently split up among many local, national and international actors. An initiative aimed at coordinating and improving digital research infrastructure, rooted in a national strategy, is essential to ensure that all research data is stored, managed, analysed, shared and made available in the best possible way.

Legislation on sensitive personal data imposes special requirements on management and storage by HEIs. There is currently no national research infrastructure for certain sensitive data, such as health data. The task and funding of HEI cooperation in the Swedish National Infrastructure for Computing (SNIC) should be enlarged to include the storage and management of research data.

Table 1. Need for additional national investments in research infrastructure.

Area	SEK m
Guarantee operating costs of MAX IV	100
Restore level of national research infrastructure ²	200
Digital research infrastructure	
Sensitive personal data	80
Storage and management of research data via SNIC ³	120
Strengthening SciLifeLab's research infrastructure	80
New investments ⁴ and scope to reduce co-financing by HEIs	420
Total	1000

5. Prioritise higher education for the sake of a well-qualified labour force

Uppsala University's proposals:

- Government appropriations for higher education should be increased by raising the allowances per student (the 'price tags'), so as to restore and improve the quality of education. The target should be to restore at least 75 per cent of the estimated erosion over the four-year period.
- Higher education should be exempted from productivity deductions.
- The funding ceiling should be raised without targeting specific educational programmes, so as to enable the range of programmes offered to be renewed and to meet society's need for lifelong learning.
- The extended medical programme should be fully financed.

Restore the level of allowances per student in higher education

A well-qualified labour force is a key issue for society and there are major challenges in different parts of the education system. If Sweden is to continue to be one of the foremost knowledge nations, investments are needed to enhance the quality of higher education. Calculations show that the allowances per student ('price tags') paid to HEIs have declined by SEK 6.8 billion in real terms since the mid-1990s.⁵ After many years of erosion of the allowances for education, it is a challenge for HEIs to offer high quality education.

This erosion has resulted in fewer laboratory sessions, reductions in field studies and skills training, and fewer teacher-directed sessions in general. The number of contact hours in Sweden is low

² Restore Swedish Research Council's scope to fund national research infrastructure to 2013 level.

³ Germany has recently decided to invest new funding of SEK 900 m per year in research infrastructure for good data management.

Assuming that Germany's economy is eight times as large as Sweden's, the equivalent investment in Sweden would be almost SEK 120 m per year.

⁴ Including research infrastructure in the humanities and social sciences.

⁵ SULF (2018). *Systemfel i kunskapsfabriken - om urholkning av ersättningsbeloppen till högre utbildning* (Systemic error in the knowledge factory – on the erosion of allowances per student in higher education).

compared with other European countries.⁶ This gives Swedish higher education institutions poorer opportunities compared with HEIs in many other countries to supply the labour market with the skills that are needed. It is therefore important to restore the quality of higher education by raising allowances per student.

Exempt higher education from productivity deductions

The financial erosion has been caused by the 'productivity deduction', which means that direct government funding is not adjusted fully in line with increases in costs. The purpose of the deduction is to encourage public authorities to continuously improve their efficiency. In this respect, higher education differs from public administration. Fewer contact hours for students generally means lower quality in education. Direct government funding for higher vocational education is adjusted according to a special index, not applying the productivity deduction. It would be reasonable for universities and other HEIs to have a similar exemption to that now made for higher vocational education institutions.

Expand higher education with unrestricted places

The labour market is changing and the need for continuing professional development and career changes is increasing. To meet these needs without reducing higher education opportunities for young people, higher education needs to expand. Moreover, provided relevant financing arrangements can be achieved, HEIs could contribute considerably more to skills provision throughout the country than they do at present, through further education and continuing professional development.

Broad research universities have a unique ability to offer research-related education in innovative fields with a footing in multiple disciplines and disciplinary domains. It is important that targeted educational expansion is accompanied by increased funding for research to ensure the link between research and education, in accordance with the proposal of the government inquiry on governance and resources (SOU 2019:6).

Fully fund the new programme in medicine

Starting in autumn 2021, medical students will be admitted to the new six-year medical programme. The longer programme requires changes in teaching and learning procedures, new resource-heavy forms of assessment and increased supervision. To maintain high educational quality, the programme must be fully funded under both the funding cap system and the ALF system (the agreement on funding for medical training and research).

⁶ UKÄ/Swedish Higher Education Authority (2018). Teacher contact hours in Swedish higher education. A timetable study. Report 2018:15.

Appendix 1. Research initiatives, collaboration and skills provision at Uppsala University

Research initiatives, collaboration and skills provision at Uppsala University

1 Introduction

Universities and other higher education institutions have been invited by the Minister for Higher Education and Research to submit material aimed at communicating the priorities made at each institution and the focus of future activities. The institutions are also asked to comment on the relationship between their activities and the political focus of the research policy bill *Kunskap i samverkan* (Collaborating for knowledge, Govt Bill 2016/17:50), with respect for example to societal challenges identified, collaboration, gender equality and conditions for researchers. In the sections below, Uppsala University describes its priorities and the relationship between the University's activities and the focus in the present research bill.

2 Future research challenges

The research policy bill *Kunskap i samverkan* (Collaborating for knowledge, Govt Bill 2016/17:50) identifies five priorities. Three of these priorities have global and national relevance: climate and the environment, health, and increased digitalisation. In addition, two national challenges are identified: creating a secure, inclusive and sustainable society, and improving learning outcomes in the Swedish school system. These areas broadly coincide with those that are mentioned in the invitation to submit input to the government's research policy and the areas of strength that Uppsala University highlights below.

Uppsala University is a full-scale, internationally oriented research university that conducts both research and education. The University is organised in some 60 departments in nine faculties, divided into three disciplinary domains: humanities and social sciences, medicine and pharmacy, and science and technology. The University is located in a research-intensive region. Approximately 60 per cent of Sweden's materials research and 70 per cent of Sweden's life sciences research is conducted in the Stockholm–Uppsala region⁷. Targeted investments have created world-leading knowledge and innovation environments that are valuable for the entire country.

In view of the breadth of subjects it covers, Uppsala University is in a good position to contribute to meeting challenges facing society at national level and towards achieving the UN's global sustainability goals. Achieving these goals requires a combination of technological development, community planning and changes in human behaviour, along with decisions that build on scientifically based knowledge. In recent years, many interdisciplinary and cross-cutting initiatives have been carried out at Uppsala University, often linked to sustainable development and enhanced competitiveness. Besides the strategic research areas and the initiatives listed below, we could mention the interdisciplinary initiatives Medtech Science and Innovation, the Centre for Integrated Research on Culture and Society (CIRCUS) and Uppsala University Sustainability Initiatives (UUSI).

⁷Numbers based on research grants from the Swedish Research Council in 2017. Linköping University is included in the group of universities.

The sections below describe some areas of strength to which the University particularly wishes to draw attention. Their common denominator is that they are established, often world-leading research environments with the potential to grow even stronger. The University is well placed to take substantial responsibility for them, but fully realised, they would require increased direct government funding and higher funding ceilings.

2.1 Renewable energy and electrification

Uppsala University conducts research in renewable energy and energy storage and has strong groupings in fields including artificial photosynthesis, batteries, solar cells, water power, wave power and wind power. Uppsala University's leading position in this area of research is reflected in its lead role in the European Commission's BATTERY 2030+ project, its leading participation in strategic research areas such as STandUP for Energy and eSENCE, and its role as host of a new competence centre funded by Vinnova. Uppsala University sees a need to offer a Master's programme in renewable energy and electrification to create a clearer link between education and research.

The University also conducts research in electrification at a systems level. Electrification is one of the global technological transformations of society. It offers great opportunities to Swedish industry, which in turn will require extensive renewal of engineering programmes and other higher education. Future energy provision requires a transformation of both energy generation and skills development and will affect everyone, from researchers to users. Uppsala University has established itself in many new research areas at the interfaces between communications, industry, the environment, energy, transport, housing and artificial intelligence. Long-term financing arrangements are needed here to maintain stability, innovation and quality.

2.2 Climate change and biodiversity

Climate change and decreased biodiversity pose serious threats to present-day society. The University has broad academic competence in areas that are central to investigating the causes and consequences of climate change. The research concerns functional links between the Earth's geo- and biospheres and aims to provide increased understanding and the ability to predict changes in the climate system. A multidisciplinary research initiative has started, focusing on climate leadership in society and academia. Uppsala University is home to world-leading research in evolutionary genetics, which provides unique opportunities to study the ability of organisms to adapt to a changed climate and other stress factors, such as habitat loss. Much of the research is at genetic level and SciLifeLab, National Bioinformatics Infrastructure Sweden (NBIS) and the Swedish National Infrastructure for Computing (SNIC) are key infrastructures for research in the area.

2.3 Materials for future challenges in society

Materials science research contributes to solutions to societal challenges in both climate and health. This area enhances Swedish competitiveness and is important for basic Swedish industries. Research at Uppsala University has a broad range, including energy material, nanotechnology, materials for medical technology and functional materials. The University is also investing in research on more effective, efficient and sustainable production technologies with a focus on materials, such as additive manufacturing (3D printing). The University hosts a new Vinnova-funded competence centre in additive manufacturing for life sciences. In autumn 2020, Uppsala University will launch the first Swedish Master's programme in additive manufacturing, which will provide Swedish industry and academia with necessary skills to meet demands. The University also participates in materials-related research at ESS and MAX IV.

To safeguard Sweden's internationally leading position as a materials manufacturing nation and to stimulate the capacity for innovation, more materials-related basic research is needed. The

investment in SciLifeLab has successfully created technology platforms to increase the interaction between academia and industry. Uppsala University proposes the development of similar technology platforms in the materials area. These could also function as a bridge to the Swedish materials industry.

2.4 The challenge of antibiotic resistance

Antibiotic resistance is an urgent and growing global problem. The pharmaceuticals industry has more or less stopped developing new types of antibiotics, which means that progress in this field largely depends on research at universities and small biotech companies. The situation demands new solutions and partnerships.

Uppsala University's breadth equips it to help find solutions in the area. The establishment of Uppsala Antibiotic Center (UAC) in 2015, for example, created a multidisciplinary research environment for studying antibiotic resistance. The centre conducts interdisciplinary research and education in antibiotic resistance, in areas ranging from microbiology and pharmaceutical development to economic models, law, socioeconomic factors, economic and historical prerequisites for developing new antibiotics, and the implementation of new diagnostics in the clinical meeting between doctor and patient.

A European antibiotic development platform (ENABLE) has been established in Uppsala. It would be valuable to complement UAC's activities by developing the ENABLE concept and building an antibiotic development platform for Swedish researchers.

2.5 Major common diseases, global health and mental health

Infectious diseases and antibiotic resistance, mental ill health and major common diseases such as cancer and cardiovascular diseases, are some of the greatest challenges of our time. On the model of Uppsala Antibiotic Center (UAC), Uppsala University is working on further interdisciplinary centres and initiatives focusing on women's mental health (WoMHeR), and diabetes and childhood obesity (ECHO zones). Progress in the field of immunotherapy promises new, innovative treatment methods.

Uppsala University wants to initiate new, interdisciplinary doctoral schools in the field of major common diseases. The great future breakthroughs in medical research will come where different branches of science meet new, innovative possibilities for development in diagnostics and treatment. Interdisciplinary doctoral schools with clinical doctoral students will also facilitate knowledge transfer to healthcare.

Mental health issues need to be tackled from both a medical perspective and a broader societal perspective. There is a need to strengthen research studying the entire chain of mental health problems from origin to clinical treatment, as well as preventive measures. Uppsala University has strong research environments in healthcare for women (for example, on postpartum depression) and the biology behind mental illness, as well as in psychology, theology and gender studies, all of which can contribute to a sustainable society from a public health perspective. The University sees a need to start a new healthcare counselling programme to further strengthen this area.

2.6 SciLifeLab and pharmaceutical development

The national centre for life sciences research, SciLifeLab, is a large-scale national research facility in molecular life sciences. SciLifeLab focuses on technological development and data-driven research in cell biology, precision and translational medicine, and the environment and biodiversity. The close connection between the research infrastructure and the excellent research environment benefits technological development, interdisciplinary exchanges, innovation and collaboration with industry and the healthcare sector. Uppsala University has unique expertise in areas such as pharmaceutical development, medical imaging, genetics and bioinformatics.

Examples of this include the cooperation of the Faculty of Medicine and the country's only Faculty of Pharmacy with SciLifeLab Drug Discovery and Development Platform (DDD), Swedish Drug Delivery Center (SweDeliver) and the new initiatives Genomic Medicine Sweden (GMS) and Testa Center.

It is important to enhance national access to SciLifeLab's research infrastructure. Furthermore, a national framework is needed for the large quantities of data that are generated in life sciences. Internationally, SciLifeLab will have a key role in coordinating the large quantities of data generated in the life sciences, notably through Swedish involvement in the European 1+ Million Genomes Project.

Strengthening the pharmaceutical development platform would create possibilities, for example for developing new antibiotics and expanding collaboration with companies. The part of SciLifeLab that is funded as a strategic research area should be fully integrated in the direct government funding of the universities involved without earmarking.

Through SciLifeLab, Uppsala University can take increased national responsibility for bioinformatics and the University perceives a need for a Master's programme in bioinformatics with a focus on medicine and biology. Further, doctoral education in the pharmaceutical area needs to be strengthened to ensure that Swedish industry and Sweden maintain competitiveness in the life sciences area.

2.7 Future health and medical care

The healthcare landscape is changing, not least through reforms focusing on local care and home healthcare. This will make greater demands on skills and interdisciplinary cooperation in care services. Uppsala University has good potential to contribute to the future skills supply by preparing healthcare staff for the challenges that lie ahead. Among other things, teaching and learning methods are being developed with a focus on primary care in the form of academic health centres. In addition, the University has a special initiative in medical humanities and social sciences, launched in 2017, which aims to develop interdisciplinary teaching and research in this area and to give future care providers a broad set of tools to equip them better to meet patients in care situations. Uppsala University also hosts research and education aiming to interconnect healthcare practice with research on leadership and organisations.

The implementation of precision medicine in healthcare, for example through Genomic Medicine Sweden (GMS), will bring far-reaching structural changes in current healthcare over the next ten years. Major investments are required in data management infrastructure, continuing professional development and the incorporation of new staff categories in healthcare in order to implement these changes.

Uppsala University has the skills capacity to increase its educational offerings in the area, for example by establishing a new occupational therapy programme.

2.8 The digitalisation of society: AI and digital humanities

Artificial intelligence (AI) and the increasing digitalisation of society are affecting people's work and life, and society more generally. The consequences need to be studied from various perspectives, taking up issues of technology, ethics, law, philosophy, gender, human computer interaction, linguistics, education, politics and other fields.

AI initiatives with close industry links are increasing in Sweden and globally, but will lose their innovative edge in the absence of broader scientific initiatives. Uppsala University's ambition is to establish a position of strength in research and education in the digitalisation of society and the associated challenges and opportunities. The University is therefore making strategic efforts in the area aimed at strengthening interdisciplinary research and education in AI and machine learning

(ML). In addition, there is a growing research and education environment in digital humanities that links up many of the areas offered by the University.

2.9 Liberal democracy, human rights and the rule of law

Global developments pose considerable challenges to the democratic system and the rule of law, both nationally and internationally. Uppsala University has leading expertise in this area and the capacity to conduct interdisciplinary research and education, with strong research environments, for example, in the Uppsala Forum on Democracy, Peace and Justice, the Uppsala Conflict Data Programme (UCDP) and the Institute for Russian and Eurasian Studies (IRES). UCDP is the world leader in the production of data on conflicts and is used not only by researchers, but also by UN bodies, the World Bank and the WHO. More coordinated research initiatives and Master's level education are planned. The IRES excellent research environment is also a node for national and international cooperation between universities, and for government agencies and ministries.

There is potential to start international Master's programmes and freestanding courses. There is also a need to further develop collaboration with both public administration and civil society in Sweden, in order to promote an inclusive, democratic and socially sustainable development of society.

2.10 Migration and racism

Uppsala University conducts successful research on integration and the labour market, for example through the Uppsala Immigration Lab. The University is also strongly placed to engage in research on migration and racism, following the establishment of the Centre for Multidisciplinary Studies on Racism (Cemfor), and in view of the unique linguistic research conducted at the University. This particularly applies to minority and immigrant languages. The links between increasing migration and political conflicts, violence and military conflicts pose new societal challenges, as do issues relating to the education system. In addition, there are issues concerning migration, the labour market and regional disparities. Uppsala University sees a need to further strengthen this field of research, particularly in practice and policy-related research on political, social, economic, cultural and legal aspects of migration.

2.11 Social sustainability

In a sustainable society, economic development, social welfare and cohesion go hand in hand with a sustainable environment. Research and education in the Disciplinary Domain of Humanities and Social Sciences are important for the democratic and sustainable development of society. Uppsala University currently has many unique research and educational environments associated with sustainability issues, for example, environmental law and the Future Urbanisms project at Campus Gotland. In addition, expertise from a range of disciplines is being brought to bear on research issues relating to the causes, consequences and solutions of segregation. A sustainable society also depends on enough people being educated in social welfare occupations to ensure a continued supply of skilled people and good services for citizens. Uppsala University stands prepared to take responsibility and contribute in this respect.

2.12 The pilot project ULF (Development, Learning, Research)

Uppsala University is participating in the pilot project ULF (Development, Learning, Research), which runs from 2017 to 2021. The purpose of the project is to develop models for long-term collaboration on practice-based research between local authorities and HEIs, and to create structures that enable teachers, students of education and researchers to collaborate on practice-based research and operational development. The pilot project has established and strengthened collaboration by building on and renewing existing collaboration structures. The results will be presented in the form of various models which will be used as a basis for deciding on regular activities. A final report and external evaluation of the pilot project will be presented in 2022.

Uppsala University considers that ULF activities should be made permanent if an evaluation of the project shows that this is a successful way to strengthen research on schools. Pending a decision on continued activities, it is important that the pilot project continues to receive funding so as not to lose skills and continuity.

3 Collaboration

Uppsala University regards collaboration as an integral part of education and research, not as a separate task. Much of the University's research is conducted in collaboration with other actors. All of the strategic initiatives at Uppsala University listed above occur in collaboration with companies, healthcare or other actors. Uppsala University participates in EIT consortia and hosts Vinnova-funded competence centres. Collaboration with employers is natural and central to most educational programmes, particularly programmes that include placements.

Uppsala University's strategic partnerships with ABB, Uppsala Municipality, Region Gotland and RISE Research Institutes of Sweden, as well as a similar agreement on collaboration with NCC, are all intended to strengthen the University's research and education, while contributing to societal benefit and innovation.

In recent years, the University has developed its collaboration at local and regional levels. The close collaboration with the County Council on university healthcare and clinical research has been supplemented by deepened partnerships with Uppsala Municipality and Region Gotland based on the underlying theme of sustainability. These partnerships offer good contexts to find practical applications for the research and education conducted at Uppsala University.

The task of collaboration should not receive any particular compensation in the government's distribution of resources. The model used at present – redistribution of direct government funding based on a pilot evaluation carried out by Vinnova in 2016 with voluntary participation by HEIs – is inappropriate for the purpose and reduces the legitimacy of the government's distribution of resources.

If the government is to include a collaboration component in its allocation of funding to HEIs, the assessment of performance and quality must be based on collaboration in its entirety, and the impact must be evaluated, not just HEI strategies and supporting functions. The evaluation of outcomes and impacts should include benefit to the HEI, benefit to partners and benefit to society. In addition, it is crucial that comparisons are based on some form of equivalent to the standardisation of fields used in bibliometrics. The evaluation of collaboration must not reward certain HEIs more than others on the basis of differences in their range of subjects and profile.

As is the case with research in general, in collaboration too, a high degree of external funding has a negative impact on the HEI's strategic autonomy and long-term outlook. Increased direct government funding would improve the conditions for long-term activities in the area of collaboration as well.

Certain circumstances hinder collaboration by HEIs. The fact that HEIs cannot act as independent legal persons limits their ability to enter into certain types of agreements and to claim secrecy in cooperative projects with external actors, because of the principle of public access to official documents. Moreover, certain forms of collaboration risk falling into the ambit of the Public Procurement Act. Still other cases raise the issue of conflict with state aid rules. Increased

institutional autonomy would also enable HEIs that lack holding companies to manage certain issues more effectively.⁸

It is important that the forms of collaboration supported by government research funding bodies are easy to operate within. Many programmes for collaboration, both nationally and in the EU, have acquired too complex a structure, involving extensive administration, because of the number of actors involved, requirements for numerous parties from academia, companies and organisations, and a lack of clarity in funding arrangements.

4 Skills provision at Uppsala University

4.1 Conditions for researchers and attractive career paths

The long-term provision of skills at the University can be improved by a number of measures. In Chapter 2 *Give higher education institutions favourable conditions* the University points out the need for legislative changes to improve opportunities for strategic recruitments and in Chapter 3 *Strengthen research of the highest quality and relevance* the University indicates the need for autonomy and long-term action in order to take strategic responsibility as an employer.

Uppsala University has taken significant initiatives to improve the long-term availability of skilled staff. For many academics, the period between successful completion of their doctorate and a permanent position is challenging and involves short-term financing conditions. The University is developing career guidance and mentoring programmes for young researchers, along with continuing professional development tailored to different groups. In addition, measures are being taken to provide associate senior lecturer (assistant professor) positions during the period 2016–2021.

As part of its work on improving conditions for researchers, the University has joined the European Charter for Researchers & Code of Conduct for the Recruitment of Researchers (Charter and Code). The European Commission approved the University's application in early 2019, which confirms that Uppsala University maintains high standards in its recruitment procedures and working conditions for researchers and teachers. At the same time, the University has committed itself to continued efforts in areas where improvements are necessary. These are in line with the recommendations in the research evaluation Quality and Renewal 2017. They include parallel language use and enhanced career support, and to some extent involve development activities that the University has already started.

4.2 Gender equality

Gender equality and equal opportunities are important issues from the perspective of both rights and quality. To maintain high quality in both research and education, the higher education sector must make use of the skills and potential of all teachers, researchers and students, regardless of gender. This work requires persistence and long-term commitment. The goal should be for the gender distribution to fall within the established gender equality range (40–60 per cent) in all employment categories and all activities. The government's micromanagement of gender equality efforts in terms of the goal for the proportion of women among new professors is not an effective means of support for achieving gender equality throughout universities. Gender mainstreaming, on the other hand, is considered an appropriate tool to use.

The University conducts long-term, strategic efforts to promote increased gender equality and five key areas have been identified in the gender mainstreaming plan: professional development at

⁸ *Lärosätenas samverkan med det omgivande samhället – utgångspunkter och principer* (HEI collaboration with society: starting points and principles). Association of Swedish Higher Education Institutions: Expert Group on Collaboration. December 2018.

management level, the content and design of educational programmes, University-wide governance documents, recruitment and supply of skills, and internal allocation of resources. Gender mainstreaming is being implemented alongside the University's regular work on equal opportunities.

The focus in recent years has been on professional development for managers and on building up a function that can provide knowledge support. In addition, the University has reviewed procedures and processes associated with nominations, recruitment and skills provision, for example, interview guides and checklists to facilitate objective and impartial assessment. As support in analysing gender equality and in taking gender equality aspects into account, for example in the allocation of research funding, a gender equality indicator has been developed that shows the allocation of research resources relative to gender.

The University took a strategic initiative for increased gender equality in connection with the establishment of a visiting professor programme in 2017. The programme is co-financed out of central funds with a special focus on the recruitment of the underrepresented gender.

5 Campus Gotland – a successful example

Since 2013, Uppsala University has had operations in Visby. Uppsala University – Campus Gotland is a successful example of how a large, broad higher education institution can support and develop activities in a limited region. As such, it could provide a model for a potential future review of the higher education landscape. Since Gotland University College became part of Uppsala University, the operations there have developed into a full academic environment for research and education.

Uppsala University has put significant resources into developing attractive on-campus courses and programmes at Campus Gotland. When fully implemented, the initiatives carried out so far will result in 1,500 full-time equivalent students on campus, which is twice as many as at the time of the merger. The number of international students has almost quintupled. Strategic initiatives have established and expanded courses and programmes for which there is great demand from the community on Gotland, such as programmes in social work, education and nursing. Apart from the increase in the number of students, the educational initiatives also strengthen the academic environment by increasing the numbers of teachers and researchers in place in Visby.

Sustainable development issues lie behind many of the research environments at Campus Gotland. For example, there is interdisciplinary research on the actions needed to achieve a one hundred per cent renewable energy supply. This research is directly linked to the government's decision to make Gotland a pilot for the transition to a renewable energy system in Sweden.

Much of the research conducted at Campus Gotland involves collaboration with the regional business sector and public authorities located on the island. This has both increased the interest of researchers in establishing activities at Campus Gotland and opened up new opportunities for Gotland to be an attractive place for innovation, business development and entrepreneurship. For the continued development of activities at Campus Gotland, it is important that the temporary reinforcement of resources for research at Campus Gotland is made permanent.