

THE FUTURE OF EUROPE DEPENDS ON KNOWLEDGE

*— together we must nurture
talent and innovative capacities
to transform knowledge into
competitive and innovative
products, industries and services*



DANISH SCIENCE, INNOVATION AND HIGHER EDUCATION

— *a Global Perspective*

Published by

The Danish Ministry of Science,
Innovation and Higher Education
2012

Printed by

Scanprint

Design by

e-Types / India

Photos

Study Denmark
Norden.org

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1. Foreword by Morten Østergaard

Danish Minister for Science, Innovation and Higher Education

On behalf of the Danish Government, it is my great privilege to present the science, innovation and higher education system in Denmark.

Let me take this opportunity to welcome all European and associated countries to Denmark. I feel confident that Denmark will honour your expectations of a rewarding and inspiring EU Presidency. We are committed to fulfilling our tasks as host and will take great pleasure in providing the best conditions for a lively and constructive dialogue.

Significant progress has been made in the 11 years since the introduction of the European Research Area. And the launch of the European Higher Education Area at the 10th anniversary of the Bologna Declaration in 2010 has helped ensure a more compatible and coherent system of higher education in Europe. The Danish Presidency is a welcoming opportunity to further

develop the framework conditions for science, education and innovation in Europe. It is widely recognised that Europe's future is dependent on knowledge and the ability to transform knowledge into competitive and innovative products, industries and services. For this ambition to succeed, it is vital to nurture talent and innovative capacities that can compete globally. The EU Framework Programme is one of the largest research and innovation investment platforms in the world, and it is important that the programme is re-examined and planned in order to tackle the grand challenges of society. The goal of the Danish Government is to foster and maintain an ambitious pan-European consensus on science, innovation and education.

Being a small open economy, Denmark takes a particular interest in the successful internationalisation of its research, innovation and education activities. Today, Denmark is among the top six countries in the world with regard to R&D expenditure. In 2009, we reached the ambitious goal set by the Barcelona Council of Ministers in 2002 stating that Member States should spend 3 per cent of GDP on research and development. The Barcelona objective is an important guiding principle in the transformation of Europe from a resource-driven economy to a knowledge-based economy. The Danish Government considers the Barcelona objective a baseline – not a boundary – looking into the future for new avenues to further raise the level of public and private funding for science and innovation.

Among its key efforts, the Danish Government intends to realise an ambitious national education and research agenda, recognising that knowledge and qualifications are particularly important in a rapidly changing global economy. Universities and research institutions in Denmark hold a strong international position, with a growing public awareness that science and education are imperative for providing future growth and welfare. Investing in research, innovation and education is rewarding.

I believe that the outlook presented in this publication clearly demonstrates Denmark's ability to transform into a vibrant and internationally-oriented knowledge society.



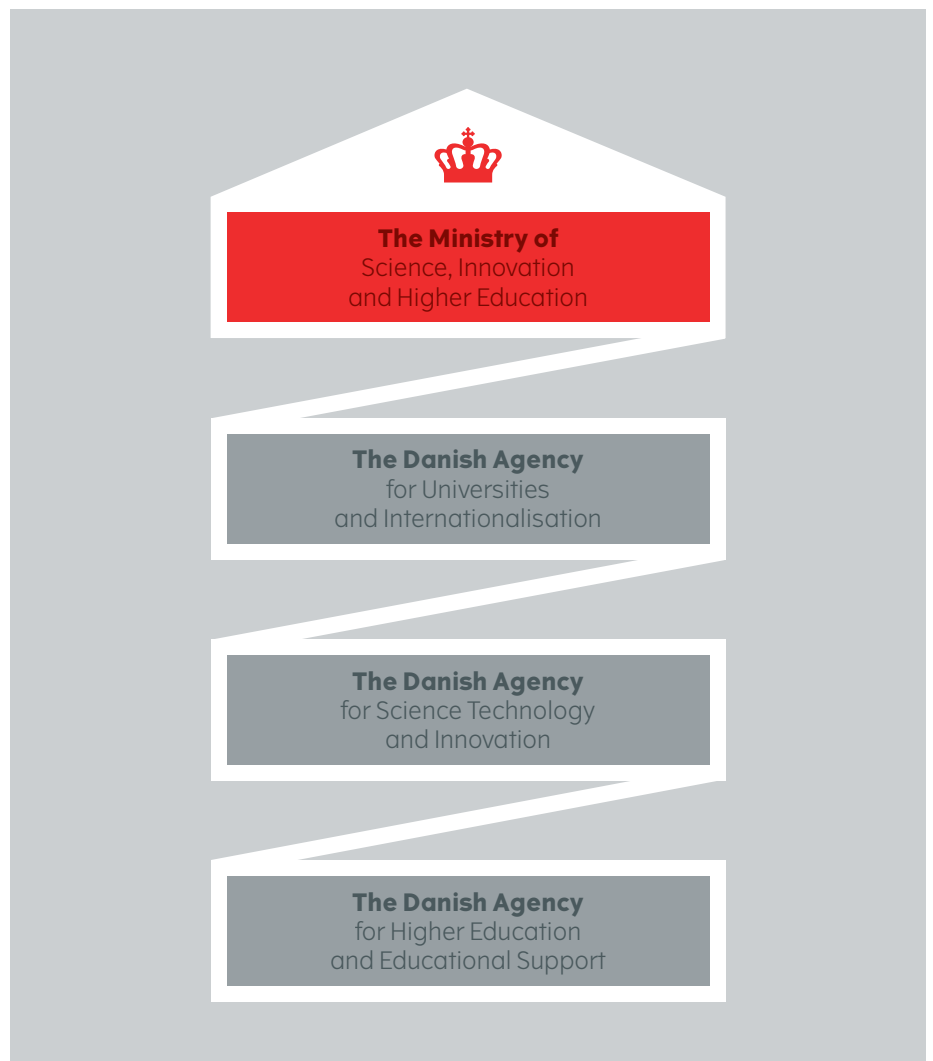
2. An organisation designed to meet globalisation

The Ministry of Science, Innovation and Higher Education is the ministerial institution responsible for research, innovation and higher education in Denmark. The Ministry is composed of the a Department and three agencies: the Danish Agency for Science, Technology and Innovation, the Danish Agency for Universities and Internationalisation, and the Danish Agency for Higher Education and Educational Support.

The Knowledge Triangle in one ministry

With higher education recently gathered under the remit of the Ministry, the institutional structure has been re-examined and focused.

The objective is to ensure a cross-education cohesion and solid administration of central areas of priority to the Danish Government such as research, innovation, education and educational grants. This requires close cooperation and strong institutional capacities across agencies and between the agencies and the Department.



THE KEY PRINCIPLES OF THE ORGANISATION

- **Strengthen the quality and cohesion** of higher education in Denmark.
- **Promote the** excellence and societal relevance of science.
- **Stimulate internationalisation** of science, innovation and higher education.
- **Promote innovation** in business, public institutions and higher education.
- **Maintain and develop** a dynamic structure of administration, educational support and funding.

*“The governance of higher education has been gathered in the Ministry of Science Innovation and Higher Education **in order to meet the ambitious educational goals set by the Danish Government.** The government wants to enhance a diverse educational system where students experience the possibility of building bridges between disciplines.”*

Morten Østergaard

Danish Minister for Science,
Innovation and Higher Education



3. Creating an internationally competitive education system



Denmark is in many ways a dynamic and sustainable knowledge society with a competitive knowledge infrastructure characterised by flexibility and the ability for fast readjustment of the labour force. In the emerging knowledge economy, the nature of knowledge and education has changed significantly. Knowledge is produced and applied by many different institutions, organisations and players and often in a network-based knowledge exchange. There is strong international competition for students and researchers, and the competition is ever growing.

As the number of students increases, universities and vocational higher education institutions are responsible for a far wider range of occupational preparation than before. People at all levels of the public

and private sector now receive their principal qualifications from higher education institutions.

Various political measures have been employed to further the globalisation of higher education in Denmark e.g. the institutional reform of universities, university mergers and the development of a new grant scheme for international students studying in Denmark and Danish students studying abroad.

Of particular importance is the ambition to combine research-based knowledge with practice-based skills in university colleges. Exchanging ideas and sharing networks with public and private knowledge institutions will enable a new era of knowledge-based education.

The Danish higher education system on the move

Previously there were 25 universities and research institutions in Denmark. In 2007, that number was reduced to the current eight universities and three research institutions. The merger plan was realised in order reap benefits from the synergies of fewer, but state-of-the-art universities. The universities are located in all regions of Denmark and vary in size and in student numbers. The universities offer research-based education in a three cycle degree structure – bachelor, master and PhD levels.

Danish universities are funded through two main sources: basic block funding and external income. The basic funding is state-sponsored and allocated for each university through the Government Budget. Other income is derived from research councils, the European Framework Programme, private foundations and commissioned research activities. In 2012, the turn over of Danish universities is EUR 3,3 billion.

Universities in Denmark are regulated by the national university act. Each university has a governing board with a majority of external members which appoints the rector.

Seven university colleges and nine academies of professional higher education are the main providers of vocational higher education in Denmark. The main political objective of the vocational higher education institutions is to ensure broad educational environments with a range of options for young people in all geographical regions of Denmark. The knowledge base of the academy programmes is business and profession-based. Work placement has been mandatory in all programmes since August 2009.

Furthermore, three educational institutions provide vocational higher education: two colleges of engineering and the Danish School of Media and Journalism.

The artistic higher education institutions offer bachelor and master educations for designers, architects and conservators and are based on artistic knowledge, practice and research. The artistic education field also includes the Royal School of Library and Information Science, offering university level education to approx. 700 students.

University colleges are self-governing institutions, while academies of professional higher education are independent institutions. Like Danish universities, each university college and academy of professional higher education enters a development contract with the Ministry of Science, Innovation and Higher Education.

The self-governing educational institutions have two sources of revenue: state grants and income-generating activities such as participant fees and fees paid for unemployed people in activation programmes, etc. State grants amount to approx. 80 per cent of the total funding and are the primary source of revenue for the institutions. Of this amount, activity-level determined grants (teaching, building and maintenance) constitute approx. 92 per cent.

There are no tuition fees for full degree programmes in the Danish educational institutions. Students are supported by a monthly state grant – the SU (State Education Grants). Student support is available from the age of 18. Grants and state-secured loans are given to educations recognised by the Ministry of Science, Innovation and Higher Education. Also, state education grants can be awarded for a study period abroad. Today, about 21 per cent of young people in Denmark take a university degree and 49.4 per cent complete a programme of higher education.

EIGHT DANISH UNIVERSITIES



1. Aalborg University
2. Aarhus University
3. University of Southern Denmark
4. Technical University of Denmark
5. University of Copenhagen
6. IT University of Copenhagen
7. Copenhagen Business School
8. Roskilde University

IN THE AUTUMN 2011

THE DANISH GOVERNMENT SET A NUMBER
OF AMBITIOUS EDUCATIONAL GOALS:

95%

of all young people must complete an upper secondary education.

60%

of all young people must complete a programme of higher education

25%

of all young people must complete a long-cycle programme of higher education.

The internationalisation of education and training is high on the political agenda in Denmark. And the government, labour market bodies and educational institutions are active in the field of international cooperation. The goal is to enforce incoming and out-going mobility and strengthen the participation of Danish universities in international cooperation within education and research.

Further mobility and international cooperation

Denmark has achieved the majority of the objectives set out in the Bologna Declaration at an early stage. The continued development of cooperation in European higher education has been a governmental priority, not only to facilitate mobility, but to enhance quality and strengthen the Danish higher education system's attractiveness and competitiveness.

The Danish higher education system has become more comparable and transparent for national and international students and other stakeholders. This has in part been realised through the introduction of the three cycle degree structure – bachelor, master and PhD – and the full implementation of the ECTS credit system, flexible learning paths, student-centred learning and Diploma Supplement free of charge for all students in higher education. The Danish National Qualifications Framework for Higher Education was verified in 2009 to be compatible with the Bologna Declaration.

To promote mobility and cross-border collaboration, joint education programmes within the scope of the Erasmus Mundus programme are, for Denmark's part, only required to be quality assured by one

The Danish higher education system has become more comparable and transparent for national and international students and other stakeholders.

quality assurance agency. The participating universities can freely choose whether a Danish or foreign accreditation agency, complying with the European Standards and Guidelines for Quality Assurance and registered in the European Quality Assurance Register for Higher Education (EQAR), should accredit the education programme. A focused internationalisation of the academy profession and professional bachelor programmes was established in 2008. Internationalisation of vocational higher educa-

tion programmes is an important element in strengthening the quality and attraction of the short-cycle and vocational first-cycle higher education programmes. And it is important in the pursuit of the mobility objectives set out in the Bologna Process.

In 2020, at least 20 per cent of the graduates within the European higher education area are expected to have spent a study period or an internship abroad as a part of their education.



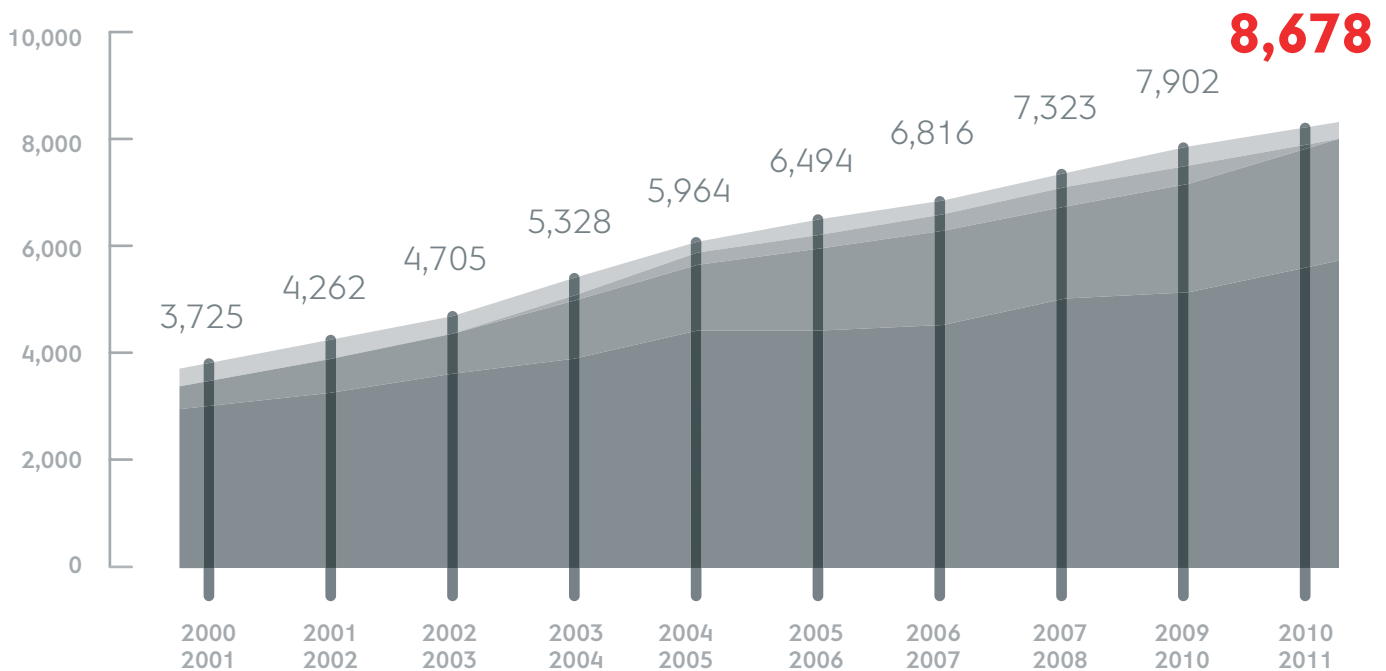
Studying in Denmark

Danish higher education is characterised by its innovative teaching methods. The goal is to foster a creative learning environment that encourages students to express their views, cooperate and apply a critical mind. Such interaction is seen as key to meeting the student's potential and the needs of today's labour market.

Every year, 12,000 students study in Denmark for a short or longer period. Students from the European Union, the wider European Economic Area and Switzerland do not pay tuition fees for higher education in Denmark. Highly qualified full-degree students from countries inside and outside the EU are also offered scholarships and grants. Annual tuition fees for full-time degree students range from EUR 6,000 to EUR 16,000.

In 2010, more than 8,500 international students studied in Danish universities in full degree programmes. The majority came from the European Union and the wider European Economic Area. The top-5 countries to provide incoming full-degree students were Norway, Sweden, Germany, Iceland and Lithuania.

INTERNATIONAL STUDENTS IN DANISH STUDY PROGRAMMES NUMBER OF STUDENTS 2000 -2011



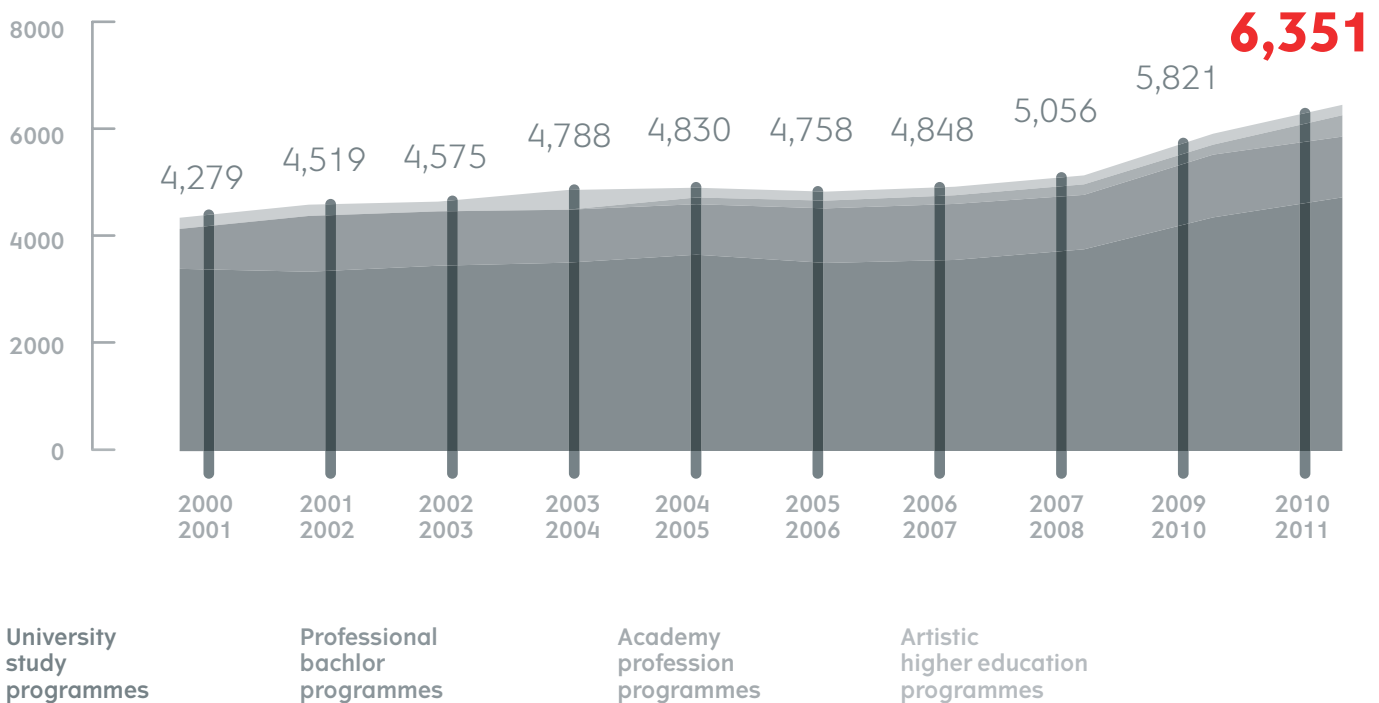
University
study
programmes

Professional
bachelor
programmes

Academy
profession
programmes

Artistic
higher education
programmes

Source: Danish Ministry of Science, Innovation and Higher Education

DANISH STUDENTS IN INTERNATIONAL PROGRAMMES 2000 –2011

Source: Danish Ministry of Science, Innovation and Higher Education

Studying abroad

In 2009/2010, more than 4,500 Danish students went abroad to study for a short or longer period. A total of 29 per cent of outgoing Danish students went to the top-5 countries of United Kingdom, Germany, France, Spain and Italy.

Since mid-2008, Danish students who wish to study abroad may apply for a scholarship for up to two years. The scholarship is intended for study periods or whole study programmes at master level and is intended

to cover the tuition fees. To obtain a scholarship for studying abroad, the study programme has to be listed on THE – QS World University Ranking that contains 100 top universities.

Strategic educational collaboration

Danish universities already cooperate with the best international universities with regard to education and research. In the last

5 to 10 years, universities have focused on strategic educational collaborations with foreign universities. If Danish universities are to be attractive partners and are to attract the most qualified scholars and students, they must have the best possible international framework. Hence the Danish framework has gradually been adapted to meet the demands of the international co-operation agenda.

THE SDC – A FOCAL POINT FOR SINO-DANISH COOPERATION



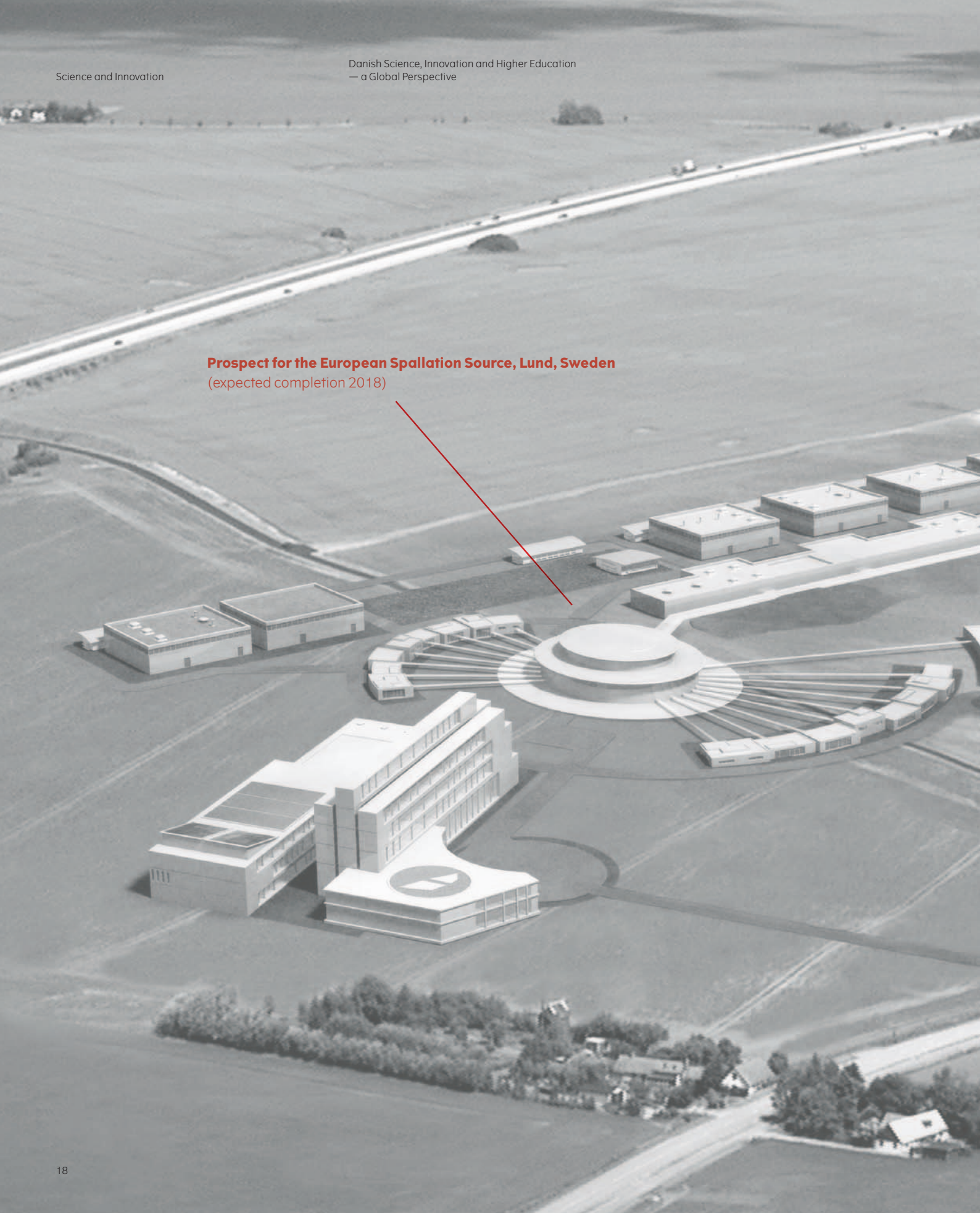
The Sino-Danish Centre for Education and Research is a joint venture between Danish universities, the Danish Ministry of Science, Innovation and Higher Education, the Graduate University of Chinese Academy of Sciences (GUCAS) and the Chinese Academy of Sciences (CAS).

As a joint Chinese-Danish university centre, the overall purpose of the SDC is to promote and strengthen collaboration between Denmark and China on research and education for the benefit of both

countries. Moreover, the SDC aims to be an attractive resource for Danish businesses operating in China, contributing with research, innovation and by fostering skilled graduates with cultural understanding of both Denmark and China.

The SDC is being built up gradually from 2010 to 2013. When the university centre is fully established, it is expected to have 100 researchers, 75 PhD students and 300 graduate students, half from Denmark and half from China.

Prospect for the European Spallation Source, Lund, Sweden
(expected completion 2018)



*“We must ensure that Denmark is a strong player in the global knowledge economy by **contributing to international knowledge accumulation** and we must provide Danish research institutions and businesses with access to leading global research and innovation environments.”*

Morten Østergaard
Danish Minister for Science,
Innovation and Higher Education

4. Danish science and innovation in a global world



Denmark takes an active stance in facing the reality of globalisation and utilises the numerous opportunities for trade and collaboration that it offers. The Ministry of Science, Innovation and Higher Education actively works to stimulate and expand collaboration among knowledge institutions, private enterprises and public authorities in Denmark and abroad.

The central concepts are excellence of research, highly-skilled manpower and mutual exchange of knowledge between public universities, professional education and the private sector. Denmark is aiming to create a genuine two-way interaction: to cooperate and exchange knowledge with global partners, and to attract researchers, investments and talent from abroad.

The Danish advisory and funding system for research and innovation

The Danish research advisory and funding system plays a significant role in stimulating and strengthening the interaction between research institutions and industry at an international level. Among its responsibilities, the Ministry is home to a number of different funding bodies each of which contribute to an overall coherence.

Two-fold tasks

The task of the science and innovation funding bodies are two-fold. Firstly, they fund excellent and high-impact research and innovation in an open competition based on rigorous peer. Secondly, they advise and deliver input to the Danish Parliament, Government and sector ministries.

Contribution to internationalisation of Danish research and innovation

An important task for the advisory and funding bodies is to contribute to the internationalisation of Danish research and innovation through funding of international programmes. In the evaluation procedure adopted for reviewing grant proposals, evaluators are instructed to emphasise the involvement of international partners with the aim of stimulating potential collaboration, publications and dissemination of results.

It is recognised that participation in international research and innovation demands national co-funding. Therefore, the Council for Independent Research and the Council for Strategic Research have the legal capability to allocate up to 20 per cent of their annual funding to international research projects that go beyond Danish borders and institutions.

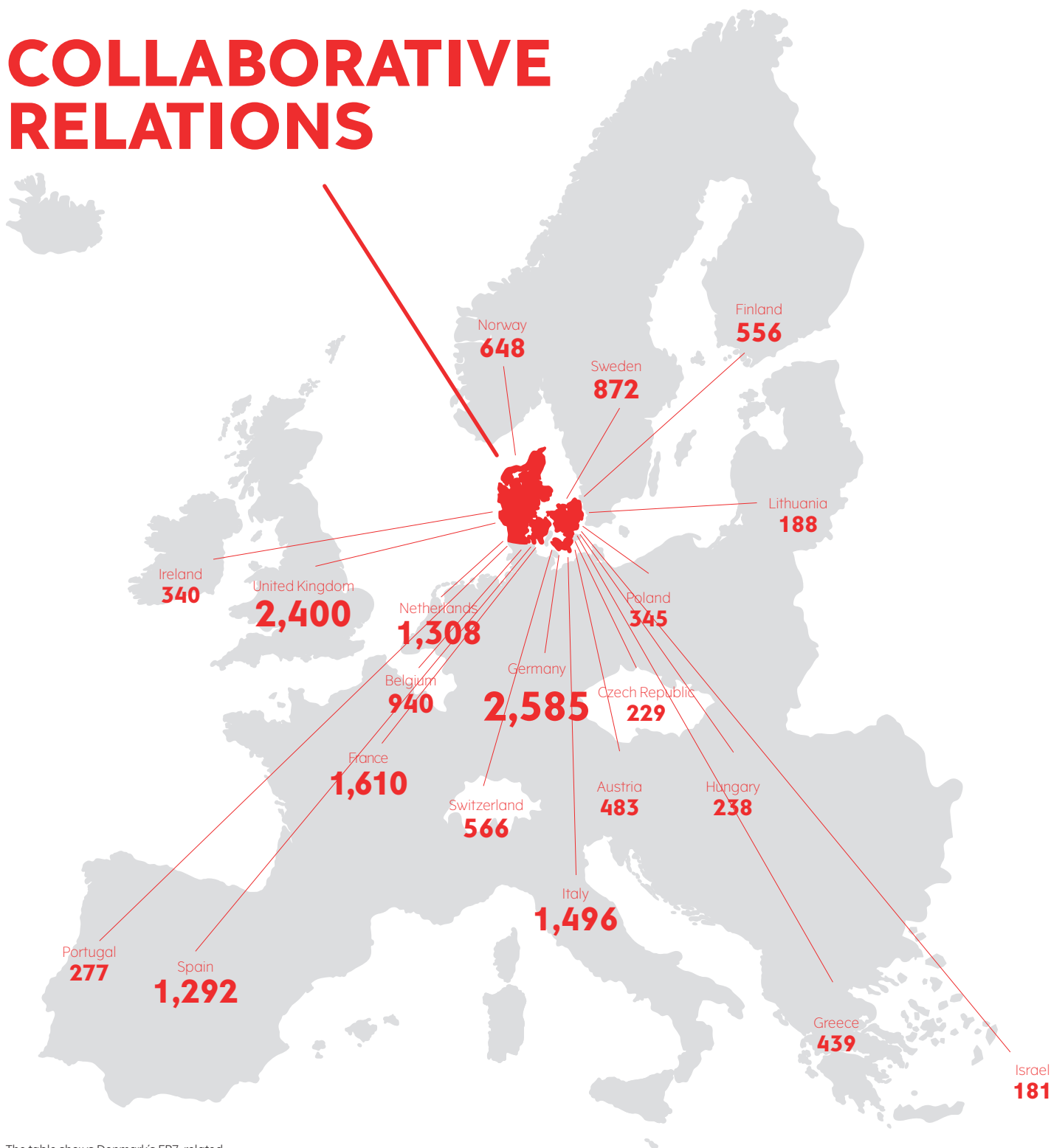
THE DANISH ADVISORY AND FUNDING SYSTEM

The Danish Council for Research Policy

The council advises the Danish Government and the minister for science, innovation and higher education as well as the parliament in overall research matters, comprising future perspectives and priorities.



COLLABORATIVE RELATIONS



The table shows Denmark's FP7-related collaborations with international partners.

Towards more pan-European coordination and collaboration

Research and innovation are at the heart of the Europe 2020 agenda which aims to get Europe out of its current economic difficulties, and transform Europe into a region that combines international competitiveness with sustainability and social inclusion. Denmark is committed to this agenda and appreciates the efforts to complete the European Research Area in order to achieve a genuine single market for knowledge, research and innovation. Supporting measures to stimulate mobility and cross-border cooperation are key issues.

European cooperation in research and innovation is a key driver for sustainable and knowledge-based growth. Having society and enterprises more involved in defining research agendas and projects is an important condition for the dynamic cooperation between research institutions and the business community.

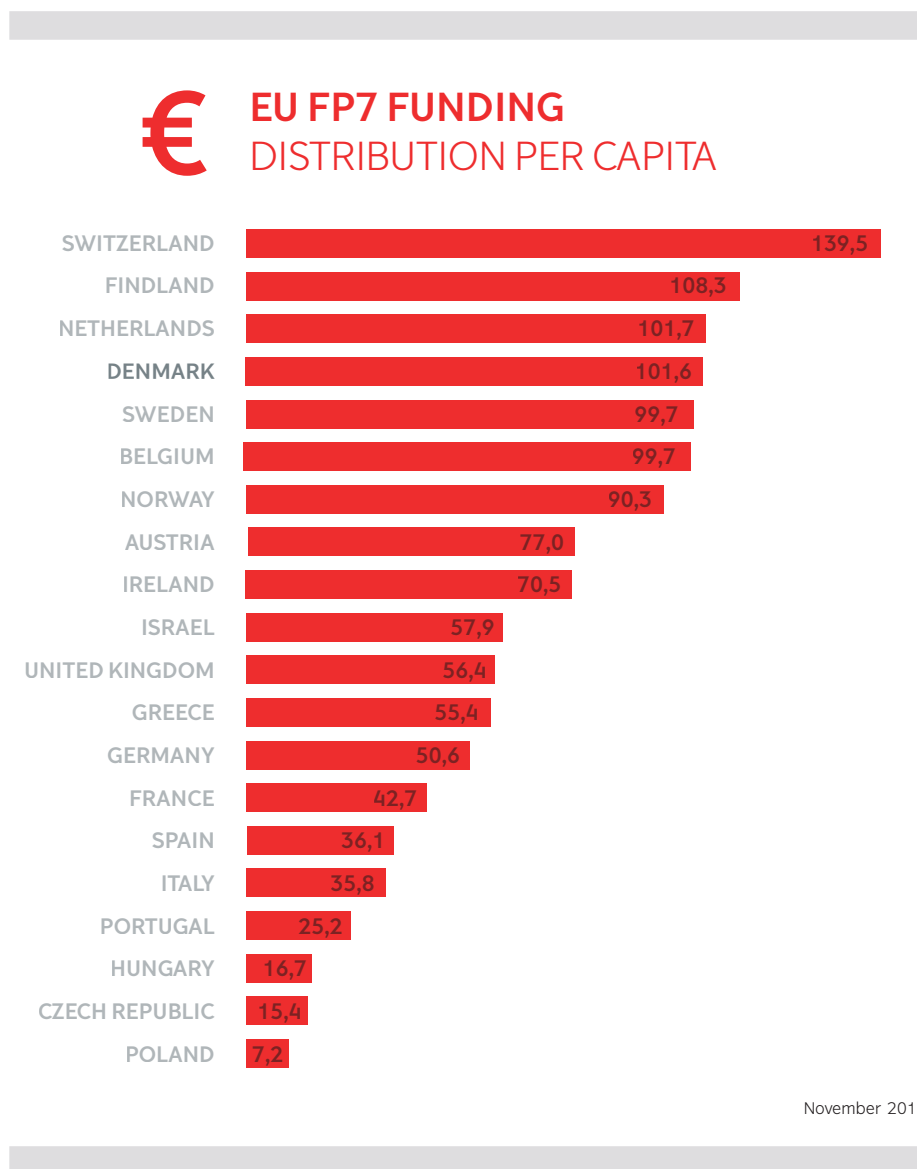
From priority-setting to the funding of scientific projects, the Danish Ministry of Science, Innovation and Higher Education actively promotes strategic partnerships between science and society. Increased business participation in R&D is key to the realisation of the Danish and European knowledge economy. Success requires transnational cooperation between universities, businesses and public authorities in addressing the innovative capacity of today's grand challenges.

Denmark's foremost collaborators are partners from Germany, Great Britain and France. Denmark and Germany alone have established more than 2,100 collaborative relations in the Seventh European Frame-

work Programme (FP7). From the launch of FP7 in 2007 until today, Danish researchers and businesses have received more than EUR 110 million a year in support of research and development projects.

The Ministry of Science, Innovation and Higher Education continually surveys Danish participation in the European Frame-

work Programme in areas where Denmark holds strong positions. In 2011, Danish advisory and funding bodies established the subsidy scheme *EUopStart*. The aim of the scheme is to give financial support to Danish knowledge institutions and businesses that prepare applications and negotiates grant agreements with the European Commission within FP7.



THE NORDIC RESEARCH AND INNOVATION AREA (NORIA)



CASE

The Nordic science and innovation system is a front-runner in adopting the Fifth European Freedom: the free movement of knowledge. By adopting an open border approach and a proactive agenda in order to secure greater mobility of knowledge and competences, the path is open to future science and innovation collaborations in Scandinavia.

Among its key successes, the Nordic countries has initiated the “The Nordic Top-Level Research Initiative”, which aims to create larger professional communities that extend across borders and pave the way for greater mobility of competencies.

NURTURING THE TALENTS OF THE FUTURE



The Danish Council for Independent Research has launched the research career programme Sapere Aude – ‘dare to know’. The aim of the programme is to retain the most talented young researchers and create new carrier paths. The programme creates incentives for applying to large international funding

schemes like the European Research Council. Partly by creating the best possible conditions for developing exceptional research projects, and partly by preparing applicants for international application processes by conducting interviews as a part of the selection procedure.

*“Denmark is a firm supporter of the proposal to design the future European Framework Programme for Research and Innovation – Horizon 2020 – in accordance with the grand challenges facing the European society. **Challenges are generic and cross-cutting**, triggering insights from a rich and variegated cluster of disciplines and areas of innovation. Indeed, the strength of organising the framework programme around challenges instead of scientific disciplines or technologies is that it **will enable scientific institutions all over Europe to reflect upon what science can contribute to society**, and what society can do for the promotion of science, innovation and higher education.”*

Morten Østergaard

Danish Minister for Science,
Innovation and Higher Education

Denmark is taking a lead in the global competition for knowledge and innovation

In the increasingly competitive environment of today's global society, ensuring access to the best and most advanced knowledge and innovation capacities has become an ever more urgent matter for research institutions and industries. Since only a fraction of the world's total knowledge is produced within Danish boundaries, there is a strong urgency for Denmark to orient the country and its knowledge institutions towards internationally leading research communities and innovation hubs.

In recent years, it has become a central priority to further Denmark's role as an active contributor to international cooperation and networks, ensuring the systemic internationalisation of Danish research by engaging in cooperation with global partners. The Ministry of Science, Innovation and Higher Education has devised a number of initiatives to promote internationalisation with the aim to increase the rate of knowledge exchange between Danish and global knowledge communities.

Stimulating global engagement of the Danish science system

Bilateral agreements. The Ministry has initiated a number of promising bilateral agreements – Memorandums of Understanding – with its global partners in the US, Brazil, China, India, Japan and Israel. Agreements such as these will facilitate and spur contacts between researchers and high technology companies on a cross-border level.

Innovation Centres. In addition, and in joint effort with the Danish Ministry of Foreign Affairs and trade departments in foreign countries, the Ministry has established a number of well-functioning innovation centres in Silicon Valley, Shanghai and Munich, and has recently established a new centre in Hong Kong and a hub in Sao Paulo. With the availability of Danish staff and consultancy on location, industries and research institutions from Denmark are offered highly qualified advice and assistance in gaining access to global networks of knowledge, technology, venture capital, and the possibility of exploring new and emerging markets.

Partnership agreements. Moreover, the Ministry of Science, Innovation and Higher Education has initiated a range of initiatives with the aim of providing increased cooperation with the world's largest research nations such as the US and Japan. Among its key activities, the Ministry has engaged in a partnership agreement with the H-STAR Centre at Stanford University, California, and a similar partnership agreement with the world-renowned research network, CITRIS, which includes UC Berkeley, UC Merced, UC Santa Cruz and UC Davis. And finally, a cooperation agreement within life sciences research has been signed with the Japanese Science and Technology Agency (JST).

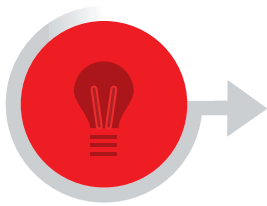
*“Denmark has an excellent research base, but **the challenge is to transform the research into new high added value products and services.** Hence, Danish innovation policy has a strong focus on forging stronger links between research and industry.”*

Morten Østergaard

Danish Minister for Science,
Innovation and Higher Education



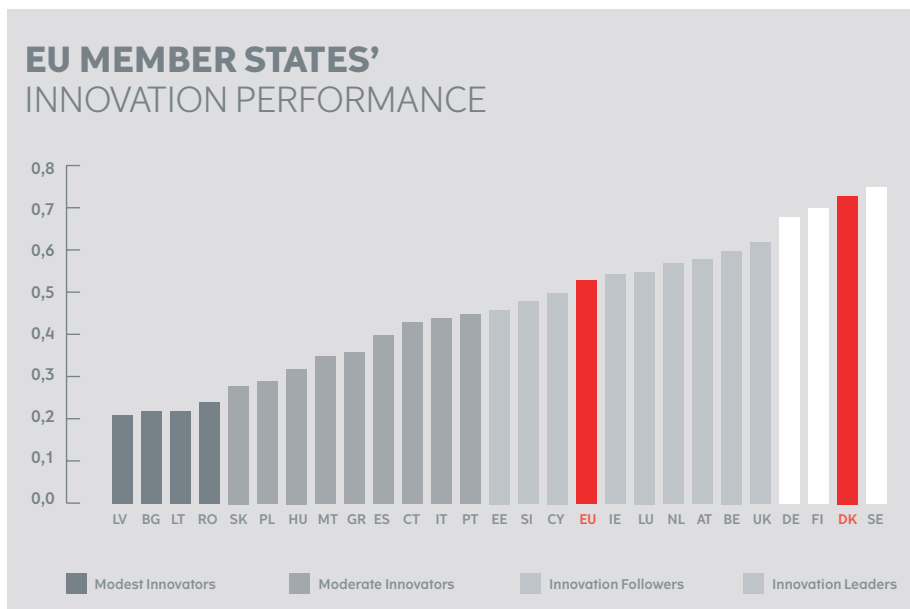
5. Towards a new innovation strategy for Denmark



In the coming years, the Danish Government plans to develop a comprehensive and ambitious Innovation Strategy aimed at integrating innovation policy with areas such as energy and environmental solutions, public-private partnerships, etc. The goal of the strategy will be to better address and accommodate solutions to societal challenges. Defining new targets for a national innovation strategy will result in the capacity to build a better, stronger and more cohesive innovation system in Denmark. Success requires continuity from priority-setting to market introduction, from knowledge production to global match-making. According to the Innovation Union Scoreboard 2010, Denmark is one of the innovation leaders in Europe with an above average performance.

Denmark performs well on indicators such as international scientific co-publications, public-private scientific co-publications and patent applications. However, Denmark performs below average when it comes to medium and high-tech manufacturing exports and sales from new-to-market and new-to-firm innovations.

In other words, Denmark has an excellent research base, but the challenge is to transform the research into new high-added value products and services. Hence, Danish innovation policy has a strong focus on forging stronger links between research and industry. The scope of the innovation policy is to strengthen these links between research and wider segments of the business community.



Note: Average performance is measured using a composite indicator building on data from 24 indicators going from a lowest possible performance of 0 to a maximum possible performance of 1.

INNOVATION INSTRUMENTS

– BUILDING LINKS BETWEEN RESEARCH AND INDUSTRY

The instruments of Danish innovation policy are divided into **four main focus areas:**



The core objectives of the different instruments are:

- **To support clusters and networks** for knowledge sharing and matchmaking between business and research in strategic fields of technologies and cross-sectoral themes.
- **Support different types of R&D and innovation** collaboration projects.
- **Support to bring more highly-educated people into** the business community and stimulate interaction between private and public researchers.
- **A well-developed infrastructure for technological service and consultancy** for companies and in particular SMEs.
- **To give new innovative businesses easier access to risk capital** and to commercialise ideas originated from research.

USER-DRIVEN HEALTHCARE INNOVATION



Embodied gaming, such as Nintendo Wii, has lately been adopted and used in the field of physical rehabilitation. In Wii-in-Trige (Trige is a small village outside Aarhus in Denmark where the nursing and elderly residential home used in the study is located) the BDSI (Danish acronym for user-driven healthcare innovation) consortium performed a six-month-long study of senior citizens and their use of Nintendo Wii Fit in a supervised physical training context.

The study participants generally found the training socially engaging and fun, although barriers can exist when seniors interact with the system. BDSI is financed by the Ministry of Science, Innovation and Higher Education.

OFFSHORE CENTER DENMARK

CASE

Offshore Center Denmark is a Danish innovation cluster located in the centre of the offshore industry in South-western Denmark. The cluster brings together universities, advanced technological institutes, companies and business associations within the offshore sector to collaborate on R&D and developing new products, services, materials and market opportunities.

Today, more than 200 private enterprises are members of Offshore Center Denmark, and the cluster is widely recognised for its success in helping transform the offshore sector. From traditionally focusing on oil and gas, the industry now explores new market opportunities within wind power and sustainable energy sources.

Offshore Center Denmark is one of the Danish innovation networks and has been supported by the Ministry of Science, Innovation and Higher Education since 2003.



Clusters and innovation networks

The “Europe 2020” strategy for smart, sustainable and inclusive growth singled out the grand societal challenges as the top priority for Europe. Denmark has pooled world class research and business expertise in clusters and innovation networks dealing with grand challenges such as sustainable energy and transport systems, clean water, an ageing society and food quality.

Danish clusters and innovation networks are important instruments in creating stronger links and cooperation between research and industry. Today, Danish universities and research institutions collaborate with more than 3,000 enterprises through 20 Danish clusters and innovation networks.

The Danish innovation clusters also collaborate internationally and are continuously looking for new partners around the world to exchange knowledge and explore new business opportunities with. The Danish clusters and innovation networks have just been benchmarked according to the EU quality assessment criteria and are expected to be among the first clusters in Europe to receive the European Cluster Management Quality Label, when it is officially introduced.

Cooperation between industry and knowledge institutions pays off

An increased transfer of knowledge from research and vocational higher education institutions helps to increase productivity in businesses, since new knowledge incorporated in products and processes contributes to value-adding features and a more effective production. A new Danish study

shows that companies who enter into R&D collaboration have significantly higher growth rates in productivity compared to other companies performing R&D, but not collaborating. Entering R&D collaboration increases productivity by an average of 9 per cent every year over a 9-year period.

Participating in R&D collaboration projects with universities and research and technology institutions such as the Danish Innovation Consortia scheme also generates increase in companies’ gross profits (see graph). Thus, it is beneficial for companies to engage in R&D collaboration with universities and other research institutions.

Another study conducted by Denmark together with other European countries and Israel shows that businesses participating in cross-border collaboration not only achieve increased productivity but also benefit from a significant growth increase in exports. Thus, transnational collaboration instruments such as EUREKA and EUROSTARS contribute positively to increased growth and productivity. In recent years, Denmark has increased its participation in EuroStars.

The Industrial PhD Programme and the Knowledge Pilot Programme

The Danish Industrial PhD Programme is an example of a well-established Danish innovation instrument, which has proven very effective over the years.

An Industrial PhD is a three-year business-focused PhD project where the student is employed by an enterprise and enrolled at a university at the same time. The Ministry

supports between 100 and 120 new industrial PhD projects in Denmark each year.

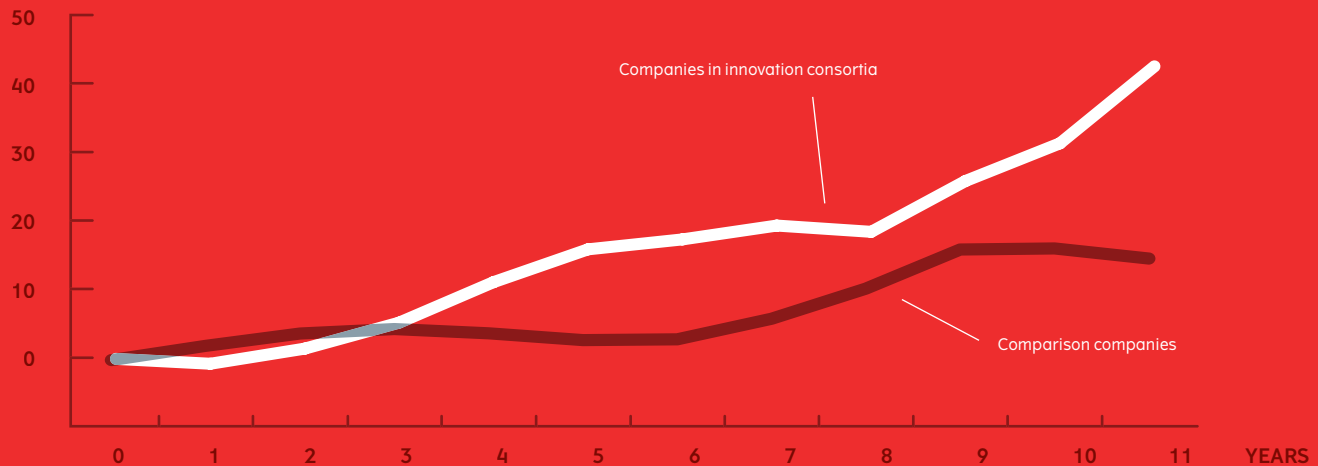
An impact study of the Industrial PhD Programme shows that companies are benefiting in numerous ways from participation in the programme. Apart from becoming more innovative they also experience a higher increase in economic growth, productivity and employment compared to other similar companies. That is why the European Commission decided in 2011 to establish a European Industrial PhD Programme based on the good practice from Denmark.

The Knowledge Pilot Programme is a Danish subsidy scheme aimed at increasing knowledge dispersion throughout the economy by subsidising the employment of university graduates in SMEs which do not typically make use of the resources of these individuals. An initial impact study indicates that enterprises that participated in the programme increased their annual gross profits by an additional EUR 150,000 on average compared to similar non-participants.

COLLABORATION GENERATES INCREASE IN GROSS PROFITS

Development in gross profits in companies that participate in an innovation consumption compared with the development in gross profits in companies that do not. Groth is significantly higher for consortium participants.

DKK MIO

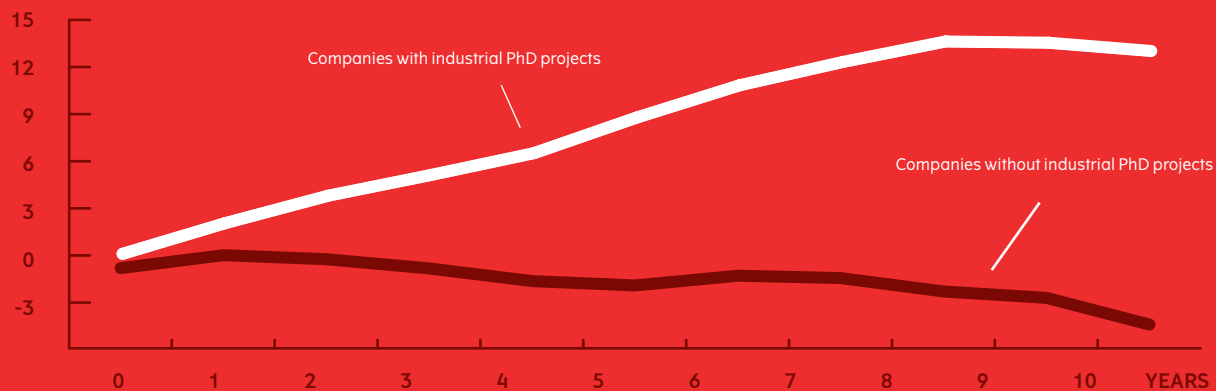


Source: Analysis of the Danish innovation consortia by Centra for Economic and Buisness Research (CEBR) 2010

INDUSTRIAL PHD'S GENERATE EMPLOYEES DEVELOPMENTS

Development in number og employees at companies with and without Industrial PhD Projects, relative to the year before starting the first project.

AVERAGE VALUES RELATIVE TO YEAR 0



Source: Analysis of the Danish innovation consortia by Centra for Economic and Buisness Research (CEBR) 2011

