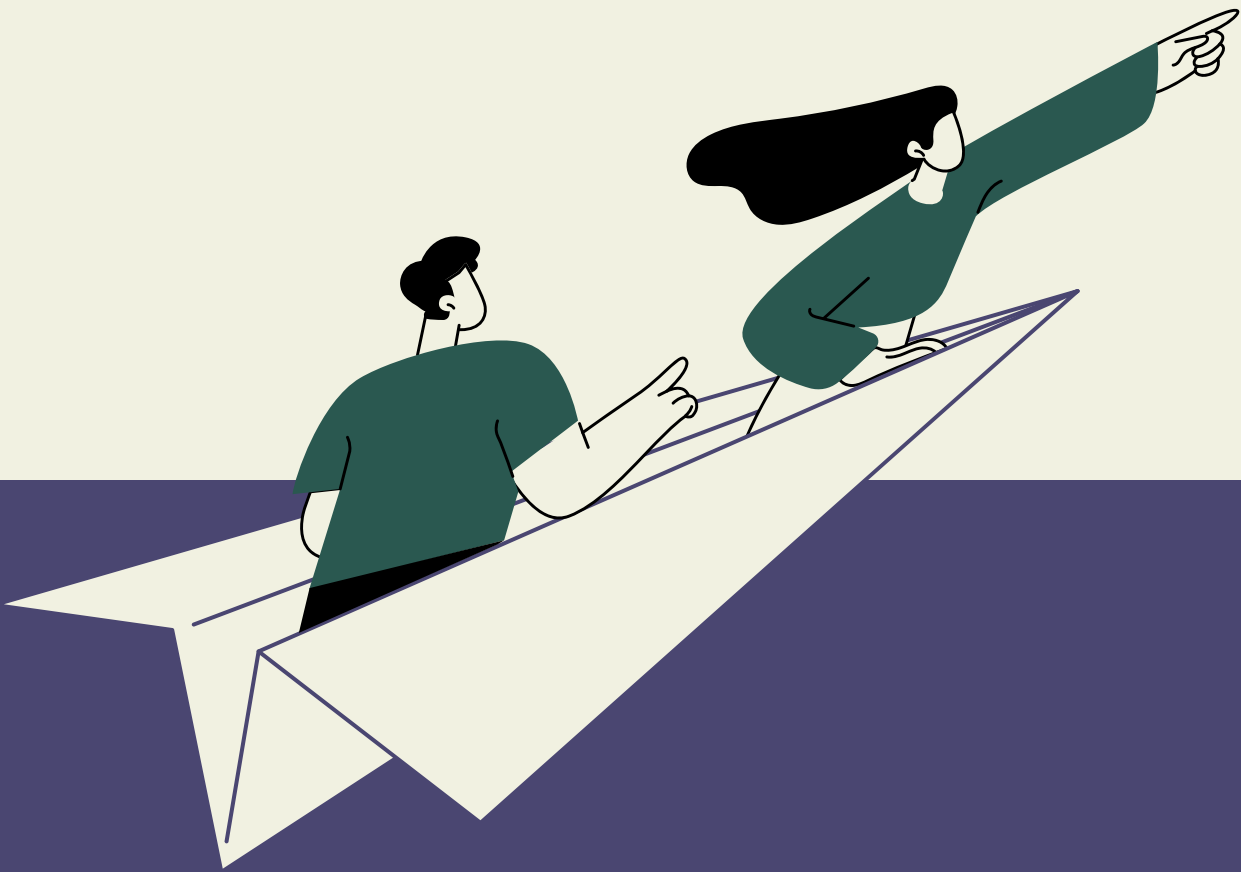


Research Impact

Pathways to Research Impact in Society



**DANMARKS FRIE
FORSKNINGSFOND**
INDEPENDENT RESEARCH
FUND DENMARK

Research Impact via Independent Research Fund Denmark

Research is a driving force behind the development of society. Research shapes our educational system, economy, business sector, legislation, culture and our daily lives. Independent Research Fund Denmark was established to boost the quality of Danish research and to create opportunities for breakthroughs in research.

Every cent awarded by Independent Research Fund Denmark helps to create new knowledge and lay the foundation for solutions to society’s most pressing challenges – both those we know and those we are yet to see. In this way, the foundation we build upon is reinforced – and this helps us both when society’s subtle shifts call for deeper insight, and when major transformations demand new and perhaps unexpected answers. However, the effects of research are often long-term and indirect, and so they can manifest themselves in many unpredictable ways. At the same time, research contributes lasting insights and new ways of thinking that shape the development of society – and sometimes this value only becomes visible many years later. This means that research is not always credited for the benefits it brings to society. In this report, Independent Research Fund Denmark places particular emphasis on how its funding supports and strengthens research environments, career pathways and new insights within academia.

The report covers some of the impact, but not all of it

The impact report is based on the fund's activities from 2016 to 2024. Part 1 of the report (pp. 3–10) covers the fund's direct investments into research, presenting data from all applications and grants from the period 2018–2024.

Part 2 of the report (pp. 11–21) focuses on the five pathways to research impact in society. The data on page 11 is based on all completed grants from 2016–2023, while the data on pages 13–21 is based on responses from 1,328 grant recipients. Since 2020, all grant recipients have been required to answer questions about the five pathways to impact in society when finalising their project with the fund.

This report thus covers both the more concrete effects, such as the number of funded researchers and publications, as well as the more diffuse pathways to research impact that benefit all of society in different and often unpredictable ways.

0

THE FUND'S DIRECT INVESTMENTS IN RESEARCH

1

RESEARCH-BASED EDUCATION

Five pathways to research impact in society

2

COMPETITIVE ADVANTAGES FOR BUSINESS

Five pathways to research impact in society

3

A STRONG PUBLIC SECTOR

Five pathways to research impact in society

4

KNOWLEDGE-BASED LEGISLATION AND REGULATION

Five pathways to research impact in society

5

CULTURAL DEVELOPMENT

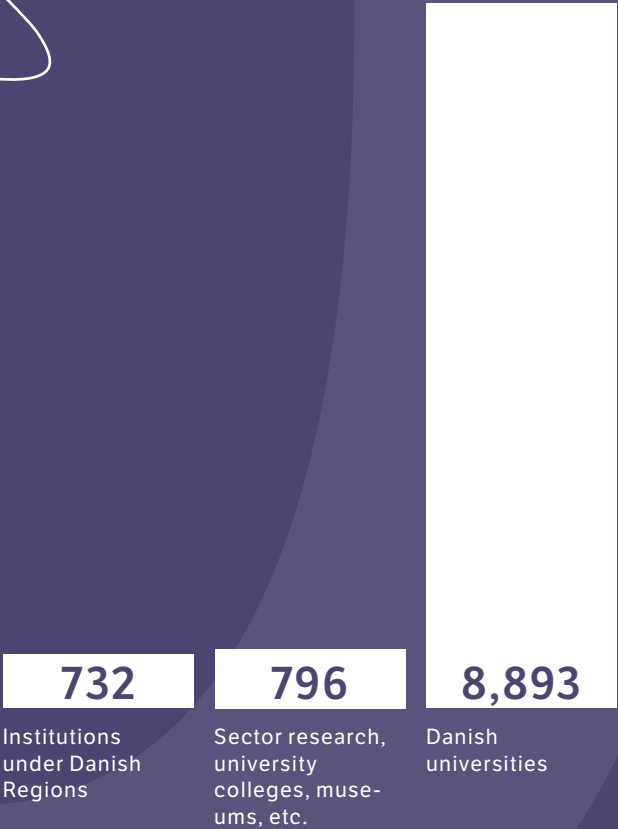
Five pathways to research impact in society

Independent Research Fund Denmark invests in groundbreaking research ...

Independent Research Fund Denmark has invested a total of DKK 10.4 billion into groundbreaking, curiosity-driven research since 2018.



Eighty-five percent of the fund's resources have gone to researchers employed at one of the country's eight universities.



Funding, DKK million

... and backs researchers

3,289

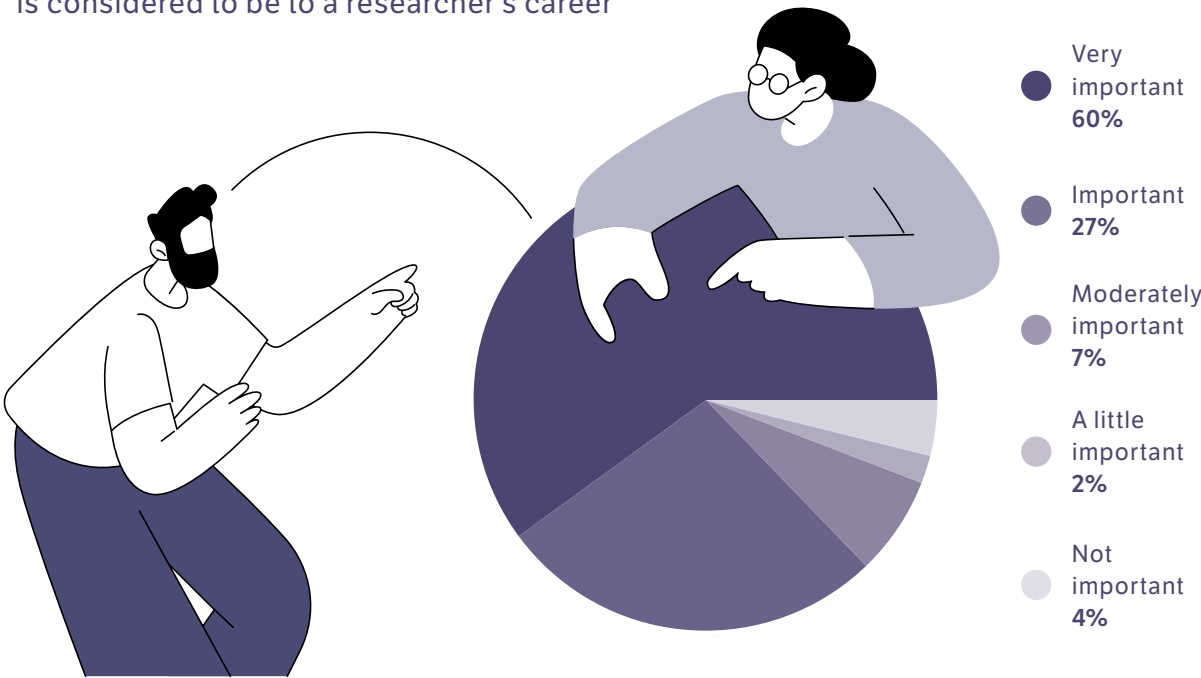
research ideas supported by the fund since 2018.

Eighty-seven percent of researchers state that a grant from Independent Research Fund Denmark has been important to their careers.

Right now, around 2,000 research projects are under way with research activities made possible by the fund's support.

Since 2018, the fund has received 22,214 applications. The fund's financial framework means that approximately 15 percent of these receive funding.

How important a grant from Independent Research Fund Denmark is considered to be to a researcher's career

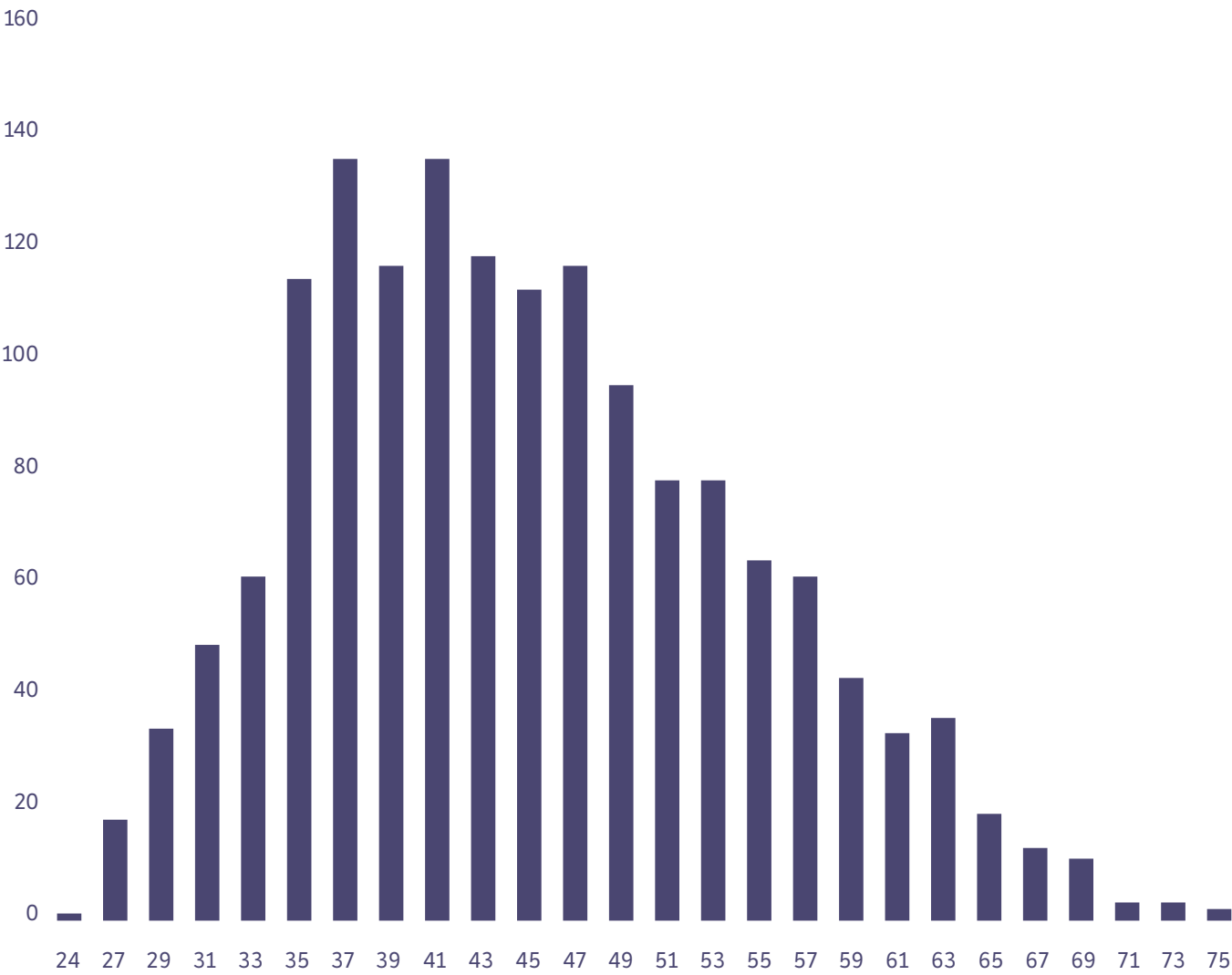


Support at all career stages ...

The fund supports both experienced researchers at the peak of their careers and researchers who are in the process of establishing themselves – plus everyone else in between.

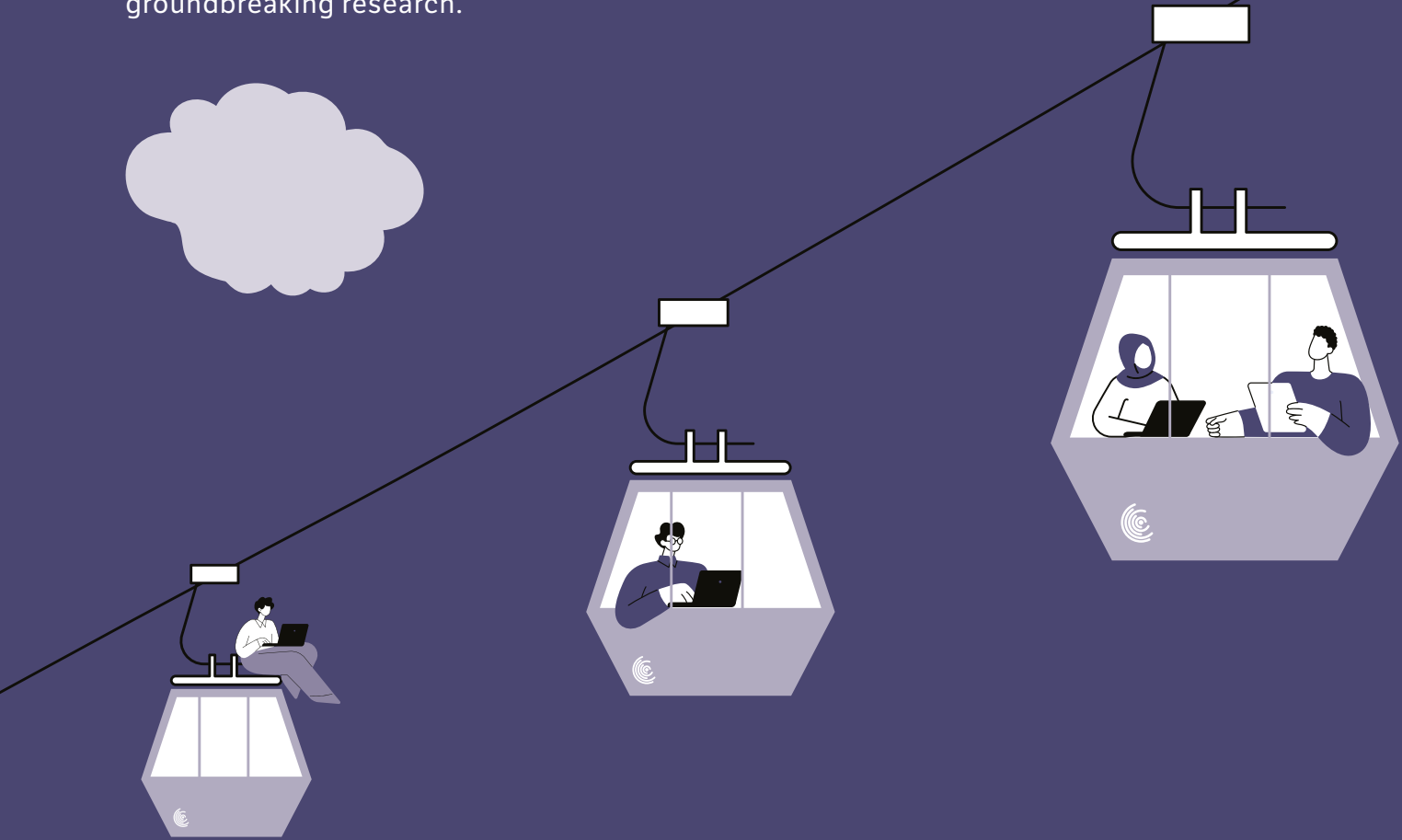
It is an important criterion for Independent Research Fund Denmark that researchers at all stages in their career, and at all levels of experience, have the opportunity to apply for funding for their research ideas in order to best support the next wave of innovation in Danish research.

Number of research leaders from 2018–2024 by age



...and the entire research sector

Independent Research Fund Denmark's portfolio of funding instruments is designed to support the careers of researchers and to promote the development of groundbreaking research.



DFF INTERNATIONAL POSTDOC

For researchers at the beginning of their career. The aim of this grant is to strengthen international mobility and develop research competencies by funding a two-year research project at a foreign institution to consolidate the researcher's independent and professional profile through international experience.

DFF-RESEARCH PROJECT1

A grant for researchers with some postdoctoral experience. This grant provides researchers with the opportunity to lead smaller, independent research projects and thus gain further experience in project management and research.

SAPERE AUDE: DFF-RESEARCH LEADER

For highly talented young researchers who have demonstrated original research at a high international level. This grant provides researchers with the opportunity to develop research ideas and strengthen competencies as independent research leaders. It aims to promote mobility and strengthen networks, equipping researchers to apply for international programmes.

DFF-RESEARCH PROJECT2

For researchers with significant independent research experience at a high international level, at least eight years after obtaining their PhD. Support can be granted to larger projects, often in the form of coordinated and binding collaborations between several researchers. This grant promotes the development of research management and collaboration skills across disciplines and institutions.

Men and women have equal opportunities to receive support ...

Male and female researchers have equal opportunities to attain funding for their research ideas from Independent Research Fund Denmark.

It is crucial to have the entire talent pool on board as a foundation in order to ensure a high international level in Danish research and to be able to support the best researchers, with the most original research ideas. It is for this reason that diversity is a key focus area for the fund.

The success rate among men is

14 percent.

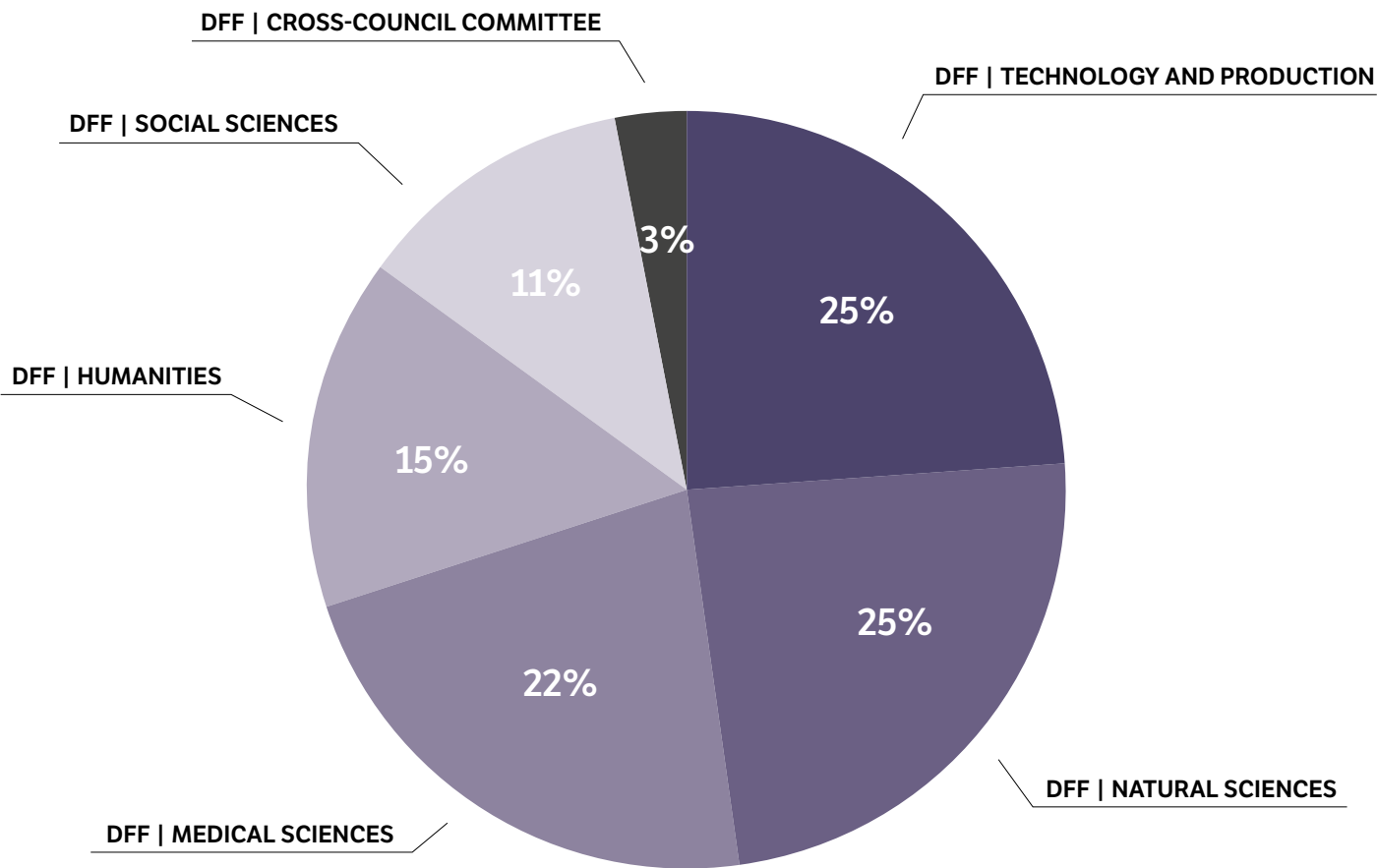
The success rate among women is

15 percent.



... in one fund for all the main scientific fields

As the only research fund in Denmark, Independent Research Fund Denmark supports research in all five of the main scientific fields and at all career stages across its five scientific research councils. The board allocates the independent funds from the Danish Finance Act to the five academic research councils and to the cross-council committee. The fund also allocates funding to politically determined themes via thematic committees established on an annual basis, such as green research, research into vulnerable children and young people, psychiatry research and clinical research.

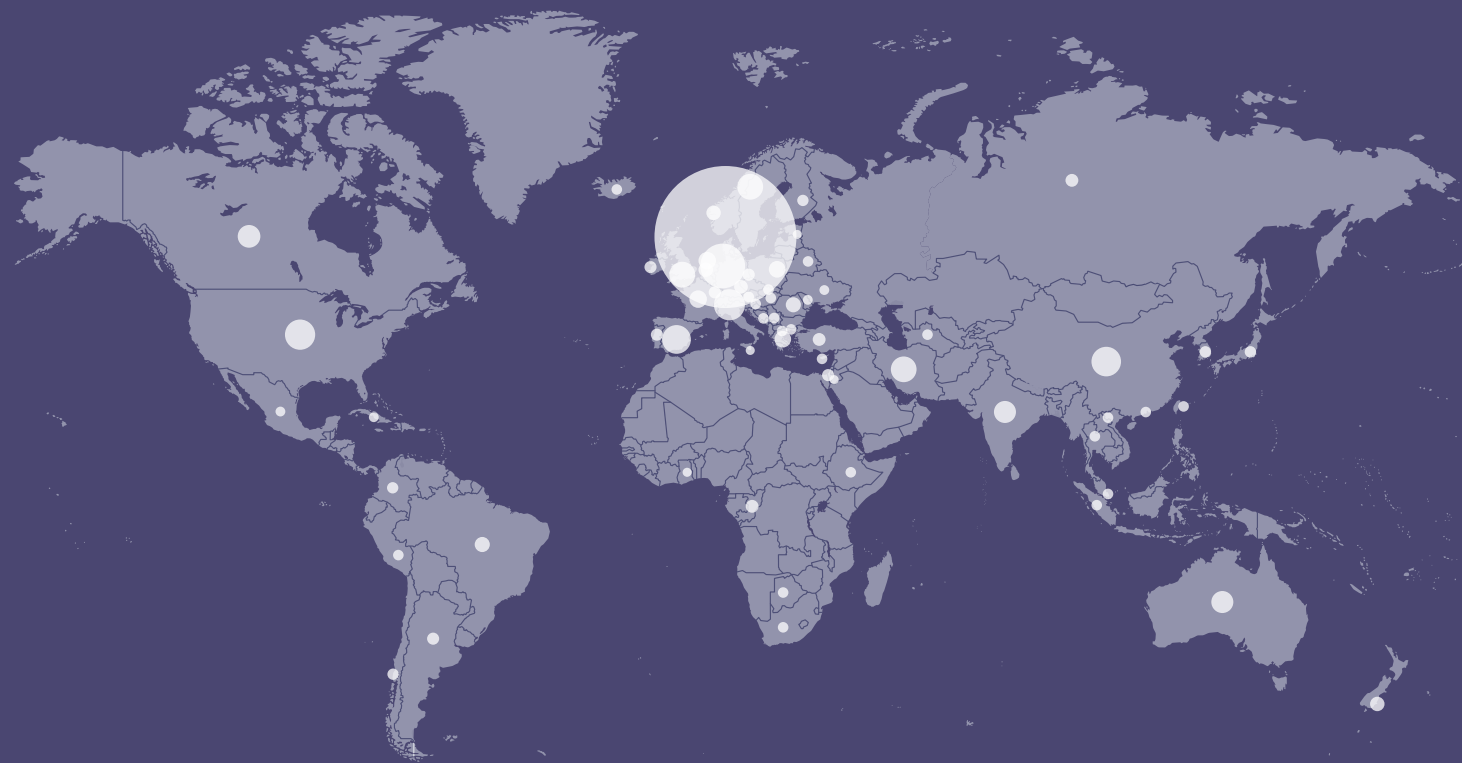


Source: IRFD's allocation of discretionary funds in the period 2018–2024, including the major cross-cutting instruments DFF-Research Project1, DFF-Research Project2, Sapere Aude: DFF-Research Leader, and the council-specific instruments, Clinician Scientist Positions | Medical Sciences, Pre-graduate Scholarships | Medical Sciences, Journals | Humanities, International Research Stay | Social Sciences and Explorative Network | Humanities.

Researchers from all over the world ...

Independent Research Fund Denmark regards the internationalisation of research as both positive and necessary. We believe that, in most cases, Danish researchers deliver their best results when working in collaboration with colleagues both from Denmark and from abroad – for the benefit of research and society.

Since 2018, the fund has supported 1,011 international researchers from 70 different countries who have chosen to conduct research in Danish research environments.



... and more researchers in each project

Independent Research Fund Denmark has provided support to 3,289 research leaders to carry out specific research projects. But a research project is rarely carried out by just one person. Research requires collaboration and is often conducted by groups of researchers.

Between 2018 and 2024, Independent Research Fund Denmark's research projects have had over 9,500 participants from home and abroad. These include PhD students, postdocs and academic staff.

Thus, a research grant, given to one research leader can help to build capacity and broker collaborations within the wider research environment.



9,510
project participants,
i.e. researchers beyond the PI,
that have been supported:

1,772 PhD students

1,898 postdocs

5,840 academic staff

Five Pathways to Research Impact in Society

On the following pages, you can dive into the long-term effects of Independent Research Fund Denmark's investments into groundbreaking research, illuminated through five different prisms – namely, the five pathways to research impact in society: Education, business, the public sector, legislation and regulation, and, finally, cultural development.

But before we dive into the five pathways, let's briefly consider what we might call the academic impact of research projects. Publications, presentations at international conferences, the development of new courses, meetings and workshops are an integral part of all Independent Research Fund Denmark research projects, resulting in the dissemination of research results and new knowledge within the academic environments that both precede and span the five pathways to impact.

On average, 8.5 publications are published from each grant. Much of the research is disseminated through peer-reviewed articles, and approximately one in ten of these are published in some of the world's most recognised journals such as Nature, the Lancet and the Harvard Business Review. But researchers also share their knowledge via books, book chapters, conference papers and other publications, each helping to make new knowledge accessible.

12,897

publications since 2016 from completed grants

1

project

}

=

8.5

publications



1

RESEARCH-BASED EDUCATION

Research-based education ensures that the latest knowledge is put to use in society via our educational institutions. Research-based education enhances theoretical, practical and vocational education and provides the best foundation for the society of the future.

2

COMPETITIVE ADVANTAGES FOR BUSINESS

Research drives business results and is central to research-intensive companies and global corporations in Denmark because research delivers the fundamental breakthroughs that pave the way for new competitive advantages..

3

A STRONG PUBLIC SECTOR

Research supports decision-making processes in the public sector and is a source of efficiency gains. For example, research into public healthcare can contribute to better diagnostics, new methods and technology that can facilitate processes and the treatment of diseases.

4

KNOWLEDGE-BASED LEGISLATION AND REGULATION

Research lays the foundation for legislation and regulation in society and provides support and advice to policy makers. This applies to areas such as migration, social and labour market policy, tax estimation, etc.

5

CULTURAL DEVELOPMENT

Research helps us gain a deeper understanding of our society and shapes cultural development through art, cultural heritage, architectural and cultural preservation, and via museums and exhibitions. In a globalised world, research contributes to the public debate with clarity and relevance.

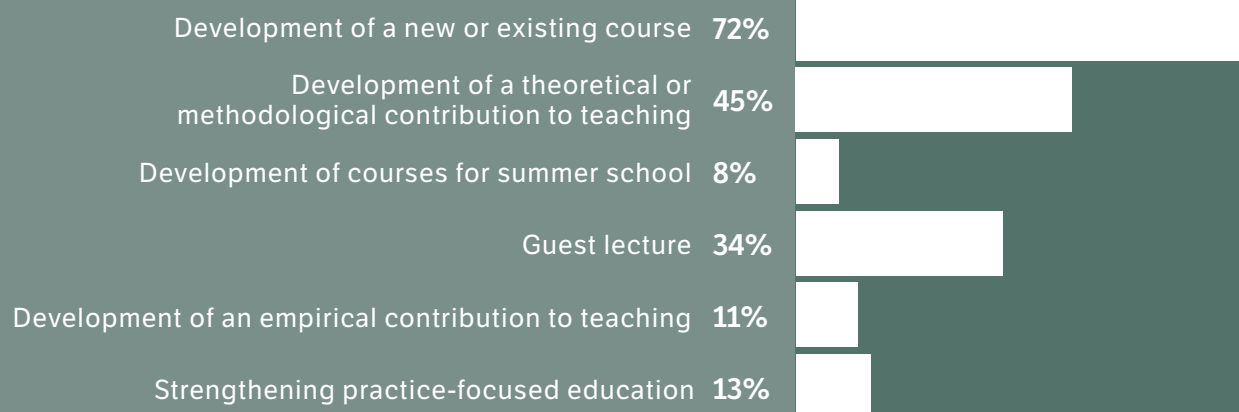
1 RESEARCH-BASED EDUCATION

Presentations at international conferences, the development of new courses, meetings and workshops are a regular part of all Independent Research Fund Denmark research projects, and these various different research activities lead to the dissemination of research results and knowledge within academia. Eighty-five percent of the projects have carried out educational activities in the form of course development, summer schools and similar. Research-based education ensures that students have access to the latest knowledge and methods that can enhance their skills within problem-solving and innovation. This boosts the competitiveness of society and our ability to tackle global challenges.

Dissemination of research results in academia



Research-based education



Source: Researcher reporting at the end of the project to Independent Research Fund Denmark, n=1,328

Research-based education

Upper Secondary Students Follow in the Footsteps of a Glacier Scientist

Assistant Professor Anders Anker Bjørk's research has followed the evolution of Greenland's glaciers via historical aerial and satellite imagery from the 1930s onwards. Today, upper secondary students are using the scientist's data to calculate how fast glaciers are melting.

Upper secondary students can measure glaciers and see how fast they are melting via the use of an interactive tool created by Anders Anker Bjørk and his thesis students in a research project. The tool is part of the Ice Frontiers educational package. *'Students can make the same measurements of the ice that I have made in real life and compare the evolution of the glaciers with the climate over a longer period of time,'* says Anders Anker Bjørk, who is an Assistant Professor at the Department of Geosciences at the University of Copenhagen.

The material is aimed at students of upper secondary level geography/physical geography, and it has been visited approximately 31,000 times online. Today, the material has been translated into both Greenlandic and English.

Students study images from spy satellites

Anders Anker Bjørk has compiled a unique collection of images of Greenland's glaciers from the 1930s onward. The collection contains images from American and Russian spy satellites from the Cold War that were classified until recently. There are also old film reels from polar expeditions. In addition to the visual component, another strength of the material is that a computer programme generates graphs that quickly show the results of the students' measurements.

The students gain experience with measurement methods, but they also gain several important perspectives on climate challenges, and Anders Anker Bjørk hopes that the teaching material will help motivate the students, because there are important research projects ahead. *'We need more people interested in our field. I hope that this educational material will leave students feeling that this is something they can do.'*

ABOUT THE RESEARCH GLACIERS AT UPPER SECONDARY

- The project **G2C – Greenland Ice Sheet Response to Two Centuries of Oceanic and Atmospheric Change** was granted DKK 2.2 million in 2016.
- Assistant Professor Anders Anker Bjørk's research shows that glaciers are melting about twice as fast today as they were in the 1920s, when they were also melting fast.
- Anders Anker Bjørk wants to create a 'glacier weather forecast 100 years into the future' by reproducing what has happened in the past to better predict the future – such as future sea level rise.

2.2
million
DKK

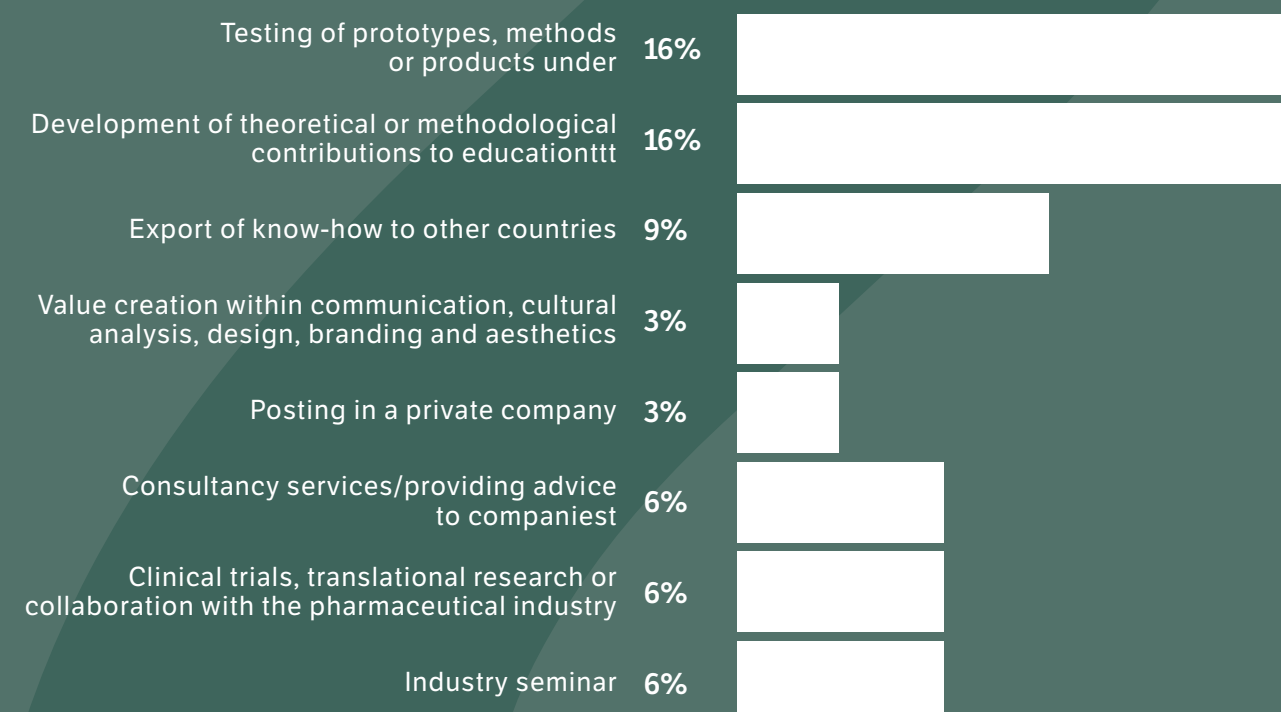
2 | COMPETITIVE ADVANTAGES FOR BUSINESS

Eleven percent of the research ideas supported by the fund have subsequently been protected by copyright. This includes patents, copyrights and intellectual property protections, etc.

These copyrights have in turn led to the commencement of several operations, such as the development of products and technologies within vaccines and immunotherapy, as well as research and experimental development activities.

Research can drive innovation and create new solutions to complex problems. It can boost the competitiveness and efficiency of organisations through evidence-based methods, leading in turn to both growth and sustainability.

Pathways to innovation and competitive advantage for business



Source: Researcher reporting at the end of the project to Independent Research Fund Denmark, n=1,328

Competitive advantages for business

Danish Research Produces Offshoots: Patents, Start-Ups and New Medical Hope

They were the first in the world to map a connection in the immune system – and it became the genesis of a biotech start-up that develops medicine for overactive immune systems.

After several experiments in the laboratory, Professor Søren Riis Paludan from the Department of Biomedicine at Aarhus University and his team found a mechanism that can stop a specific part of the immune system from overreacting. The discovery was patented in 2016, and the start-up company iSD Immunotech has been licensed to use it.

‘Our discovery has the potential to become a new medication for a number of autoimmune diseases. In the long term, the drug may also be relevant for patients with common diseases such as Parkinson’s and blood clots, where some of the same immunological mechanisms have recently been shown to be at work,’ says Søren Riis Paludan.

Researchers are now focusing specifically on developing treatments for the autoimmune disease lupus, where the same immunological mechanism is overactive. In Denmark, approximately 3,000 people suffer from lupus and are regularly hospitalised.

Freedom to run after an offshoot discovery

For Søren Riis Paludan, the company has been a way to get his research ‘off the ground’ and to ‘push fundamental research closer to society.’ According to the professor, this story is an expression of how important independent research is.

‘Our discovery came via an offshoot from our interest in how viruses evade the immune system. We followed the path of greatest research potential rather than what we applied for. If I had been given a grant to do something about lupus, it would never have reached this level,’ he says and continues: *‘New ideas come about when you don’t have a goal. That is where the potential to innovate, and develop the medicines of the future, lies,’* he concludes.

ABOUT THE COMPANY **BIOTECH-STARTUP iSD IMOMUNOTECH**

- The project **In Vivo Characterisation of Mice Lacking a Novel Immune Sensor for Foreign DNA** received DKK 2.5 million in 2016
- The biotech start-up iSD Immunotech is developing a drug against the autoimmune disease lupus which is based on the discovery made by Professor Søren Riis Paludan and his team.
- They plan to test the drug (called iSD017) in both healthy volunteers and lupus patients.
- The company has attracted interest from life science investors such as Novo Ventures and Eir Ventures, and most recently, from the US pharmaceutical company Biogen.

**2.5
million
DKK**

3 | A STRONG PUBLIC SECTOR

Twenty-two percent of the research supported by the fund contributes to the development of the public sector. This can be through new knowledge, new bases for decision-making and recommendations for the political and administrative level. Three percent of researchers state that they are aware that their research has been used in decision-making processes.

Research can improve public sector decision-making by providing evidence-based solutions to societal challenges. This optimises resource use and efficiency in public services. In addition, it also supports the development of policies that promote sustainability and social welfare.

The contribution of research to the public



Source: Researcher reporting at the end of the project to Independent Research Fund Denmark, n=1,328

A strong public sector

New Recommendations for Doctors on Both Diabetes and Cholesterol

Danish researchers have made discoveries and recommendations that can help patients at risk of both diabetes and high cholesterol.

Researchers from Rigshospitalet set out to explore how cholesterol and glucose affect the risk of various cardiovascular diseases and chronic kidney disease in the general population. The results led the researchers to make a new recommendation to doctors.

'Today, patients are not routinely screened for the associations we could observe between cholesterol, peripheral artery disease and kidney dysfunction. But we were able to show that they are actually at just as high a risk for these diseases as for heart attacks. It would therefore make sense to screen for these diseases as well,' says Frida Emanuelsson, a Doctor at Rigshospitalet who wrote her PhD thesis on the subject.

Glucose also matters for non-diabetics

The project also investigated how glucose affects the risk of vascular disease. Here, Frida Emanuelsson found that glucose also played a role in the risk of disease in both small and large blood vessels – even in the general population.

'So it's not just in diabetics that high blood sugar contributes to the risk of cardiovascular disease, but also in people who have not yet developed diabetes but who are at risk,' says Frida Emanuelsson. *'This suggests that screening should be done a bit earlier, rather than waiting until the patient has already been diagnosed with diabetes. The earlier you start treatment for low blood sugar and cholesterol levels, the better you can prevent cardiovascular problems,'* adds Marianne Benn, who was also part of the research group.

ABOUT THE RESEARCH CHOLESTEROL AND GLUCOSE

- The project entitled **Sodium/Glucose Co-Transporter 2, Genetic Variation and Risk of Disease** received DKK 1.7 million in 2019
- One in four Danes has elevated cholesterol, and this increases the risk of early heart disease.
- Cholesterol and glucose play a central role in widespread public health diseases such as high cholesterol and diabetes Researchers from Rigshospitalet have investigated how these factors affect the risk of cardiovascular disease and chronic kidney disease. The goal is to isolate their individual effects and understand how much each contributes to the risk of blood clots in the heart and small vessel diseases such as eye and kidney disease.

1.7
million
DKK

4 KNOWLEDGE-BASED LEGISLATION AND REGULATION

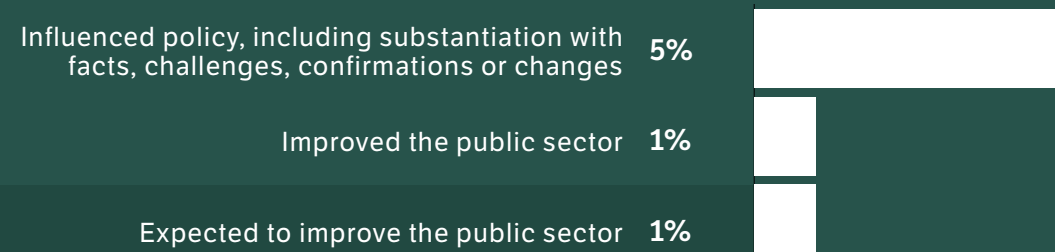
Sixteen percent of the research supported by the fund has contributed to or supported decision-makers in regulatory processes. Researchers report that they communicate their research verbally to decision-makers and through written presentations and analyses.

Research makes it possible to create legislation and regulation that is based on proven facts and real-world challenges. It ensures that laws and regulations are effective, relevant and sustainable. Furthermore, research supports the continuous adaptation of legislation in line with societal developments and new knowledge.

The research has been used by decision makers



The research has influenced decision makers



Source: Researcher reporting at the end of the project to Independent Research Fund Denmark, n=1,328

Research Gives police a New Perspective on Minority Youth

Anthropology professor Geoffrey Hunt has studied the relationship that minority youth have with the police: We need to listen to those who experience the problem, so we can create a nuanced picture of how it arises in society – and find a solution, says the professor.

Geoffrey Hunt and his fellow researchers have mapped out how young people from minority backgrounds actually perceive the police and justice in policing through a series of qualitative interviews. *'If the police do not inspire a sense of justice among those they enforce the law upon, this not only undermines the trust of those individuals in the police, but also in society as a whole,'* says Geoffrey Hunt, who, together with his research team, has given the police two very specific recommendations:

Firstly, it's important for police officers to talk about how to maintain professionalism in their daily encounters with young people who they may perceive as troublemakers. Many of the young people have described how their personal integrity has been violated through what researchers call 'minor harassments'. *'These kinds of minor incidents can have serious consequences for the trust and faith of young people in the system because they build on previous experiences of discrimination,'* Geoffrey Hunt points out. Secondly, police officers should consider how they can ensure that this group of young people feel that policing is fair.

'We can see that experiences with random and unfair actions by the police, as well as surveillance, increase these young people's feeling of being excluded from society' he says. However, he is generally cautious about making recommendations. *'Society is not simple. That's why it's difficult to make simple recommendations, and solutions to social problems must always be developed together with the people whose lives the research is about.'*

ABOUT THE RESEARCH YOUNG PEOPLE'S RELATIONSHIP WITH THE POLICE

5.9 million DKK

- The project entitled **Perceptions of Procedural Justice among Ethnic Minority Youth** received DKK 5.9 million in 2016
- Researchers have previously warned that the use of stop-and-search zones, for example, can have a negative effect on perception of and trust in the police among young people. This study showed that the reasons behind negative perceptions of the police among young people were far less clear and often on a more subconscious level.
- Factors such as tone of voice, body language or form of greeting could all have a big impact. And due to the subtle nature of the problem, it can be hard to spot. Not least for decision-makers and the general public.

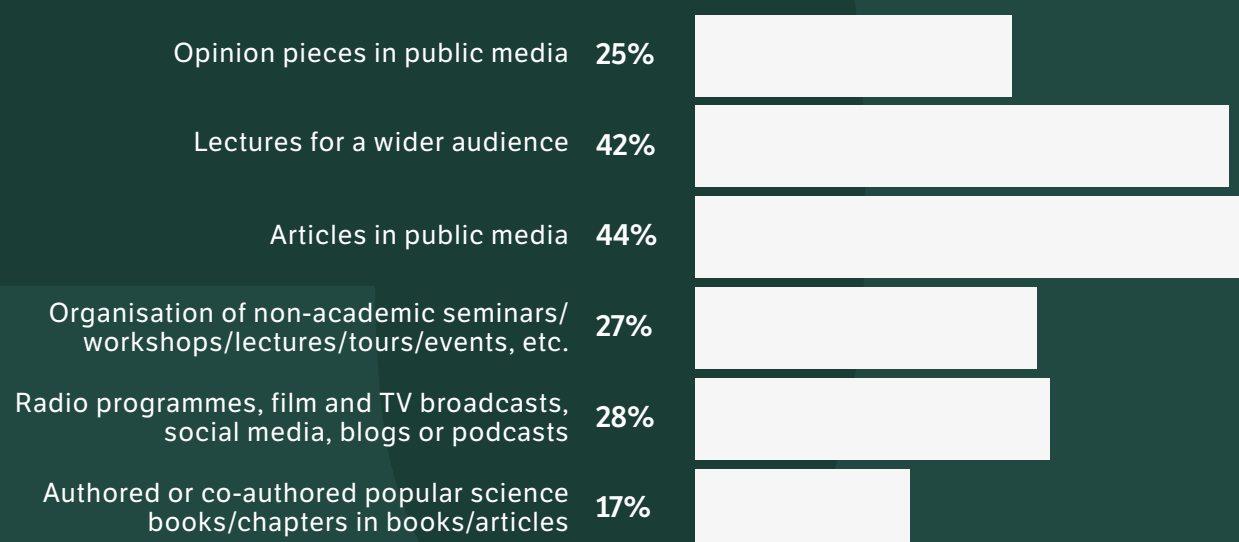
5 | CULTURE AND SOCIETY

Ten percent of the research has contributed to, or supported, the development of performance, art, cultural heritage, architectural and cultural preservation, and museums and exhibitions.

These are research contributions that shed light on society's culture and values, promoting greater understanding and dialogue across differences. At the same time, research also yields insight into interdisciplinary trends and challenges to support informed decision-making. Research helps to preserve and develop cultural traditions, promote social cohesion and influence cultural development. In a global world, research analyses processes of change and contributes clarity and relevance to the public debate.

Sixty-eight percent of research leaders have engaged in the popular science communication of their research project and thus contributed to the dissemination of the research and its results.

How research contributes to cultural development



Source: Researcher reporting at the end of the project to Independent Research Fund Denmark, n=1,328

Cultural development

Cultural Development Becomes Award-Winning Documentary

Anthropologist Sine Plambech's anthropological study of migration, trafficking and sex work led to an award-winning documentary film that attained both commercial and academic success.

Senior Researcher at the Danish Institute for International Studies, Sine Plambech's documentary *Hjertelandet* (Heartbound), besides being shown in Danish cinemas and on national television, was also sold to the BBC and a number of other European broadcasters. The film, which is about the migration stories of Thai women, premiered at one of the world's biggest film festivals – the Toronto International Film Festival – and is based on Sine Plambech's study of migration, trafficking and sex work.

In addition to its cinematic success, the film has also garnered academic praise. *'Both the film and the project are being used in the education sector, in the US and in Denmark. In many places, it is part of the curricula at universities on courses that discuss gender, globalisation, migration, family relations, sex work and trafficking,'* says Sine Plambech.

The film has managed to bridge the gap between the research world and the film world. This is largely due to the long-term anthropological project that lies behind it, explains Sine Plambech. Sine Plambech has also experienced great interest in her research from politicians. She has advised the European Asylum Support Office (EASO), and in Denmark, she has shared her research with the Minister for Social Affairs, the Ministry of Foreign Affairs and in various political consultations and panel debates.

One of the findings she shares is that we often overlook the role of debt in the migration and trafficking of women. She has conducted field studies in Thailand and Nigeria. These are the two countries with the highest number of female immigrants in Europe who sell sex and are involved in trafficking. *'When we send women who are in debt back to their home country, they will very often migrate again. This shows us that we need to take the issue of debt seriously,'* says Sine Plambech

THE FILM THAI WOMEN'S MIGRATION STORIES

- The project entitled **Women, Sex & Migration – Seeing Sex Work Migration and Human Trafficking from the Global South** received DKK 2.3 million in 2015.
- In the film *Hjertelandet*, we follow a number of Thai women who have immigrated to Denmark, and their families, over the course of ten years. Through arranged marriages, escapes from sex work, joy, laughter, deprivation, pain and warmth.
- The film stands on the shoulders of its predecessors, *Fra Thailand til Thy* (From Thailand to Thy) and *Fra Thy til Thailand* (From Thy to Thailand), about the same women, and which Sine Plambech also made with director Janus Metz, and which were seen by over a million Danes ten years earlier.

2.3
million
DKK



**DANMARKS FRIE
FORSKNINGSFOND**
INDEPENDENT RESEARCH
FUND DENMARK

INDEPENDENT RESEARCH FUND DENMARK

Independent Research Fund Denmark supported 587 research projects with DKK 1,928 million in 2024. Independent Research Fund Denmark funds research of the highest international quality and strengthens groundbreaking, curiosity-driven research in Denmark. The fund invests at risk in research based on the best original ideas of researchers within and across their scientific fields. The fund promotes the internationalisation of research and strengthens both emerging research talent as well as experienced researchers. Each year, the fund also awards funding for strategic initiatives in politically determined themes such as green research, research into children and young people and clinical research.

Independent Research Fund Denmark also provides research-related advice to ministers, the Danish Parliament and the wider Danish and international research landscape.

**INDEPENDENT RESEARCH FUND DENMARK, DANISH
AGENCY FOR HIGHER EDUCATION & SCIENCE**

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