

Annual Report 2019



Royal Swedish Academy of
Engineering Sciences

»The Academy's mission is to
promote the engineering and
economic sciences and the
development of industry for
the benefit of society«

IVA's statutes, §1

1919



IVA IS FOUNDED

In June His Majesty the King establishes the Academy's statutes, in August 40 individuals are inducted as members, in September additional members are elected and on 24 October **Axel F. Enström** is appointed as President.

1920



FIRST ANNUAL MEETING

On 17 April the first Annual Meeting is held in the Banquet Hall in the building on Grev Turegatan. The following year the Annual Meeting is moved to 24 October, the date the Academy was founded. The King attends for the first time.

1922

The Academy gets involved in the **electric vehicle issue** and publishes a report on the topic. Based on experiences in the USA, experts claim that electric lorries could be a commercial success.

1923

The **electrical heating institute** – the first in a long list of industry institutes – is launched and moves into offices in the Academy's back building. During its first decade the institute carries out close to 500 studies.



1927

A study is carried out to **compare wood stoves, gas stoves and electric stoves** and the results are presented in three reports. An association called Fera is created to promote the use of electricity and Edy Velandar is its director.



A MUSEUM IN THE LOFT

Tekniska museet (National Museum of Science and Technology) is formed in 1923 and opens a temporary exhibition in the loft of the building. A prototype of Baltzar von Platen's and Carl Munter's refrigerator is one of the items on display.

1926

1924

The Academy receives a special government grant to start an **aeronautics committee**, but more investment is needed in the area. IVA starts working on establishing a "testing institute" which later becomes the Aeronautical Research Institute of Sweden (FFA).

1928



10,000 NATURAL SCIENCES VOLUMES

Anna Sjögren donates the library of her husband, Professor **Hjalmar Sjögren**, consisting of 10,000 volumes of natural sciences literature. The books are placed in the newly created library in a room in the IVA building.

1929

A **charcoal laboratory** is established with support from *Jernkontoret* (Swedish Steel Producers Association) among others. It produces numerous products, not only made from wood; **wood, peat and tar** are hydrogenated and liquid engine fuel is produced.



FIRST EDITION

The IVA magazine is launched to share the results from the growing number of institutes with a wider public. A first attempt is made to take stock of all industrial R&D in Sweden. Surveys and reply postcards are sent out with the magazine.

1930

The Annual Meeting venue is moved from the Banquet Hall in the building to the significantly larger **Vinterträdgården** (Winter Garden) at Grand Hotel in Stockholm. It returns to Grev Turegatan and the Banquet Hall in 1939, the first autumn of WWII.



1931

The steam heating institute is established in cooperation with the electric heating institute. Two thirds of the institute's activities are in the form of commissioned research for industry and the private sector – a pioneer initiative.



NOT A COMMERCIAL SUCCESS

The IVA stove that cuts wood consumption in half is launched in an advertising campaign aimed at Swedish housewives. Although the stove is licensed to around ten manufacturers, it is not a commercial success.

1932

The corrosion commission is formed to gather knowledge in the area and publishes a handbook on using anti-rust paint. Large-scale field trips are also arranged to study rust protection.

1935



HEAD OF ASEA IS THE NEW CHAIRMAN

During the years 1935–1936 the number of international members almost doubles – 21 members are inducted. The internationally oriented head of Asea, **Sigfrid Edström**, becomes Chairman of IVA.

1939

WOOD GAS

When the war breaks out the Government establishes a wood gas committee chaired by Axel F. Enström. A fast transition to wood gas to fuel the fleet of vehicles is planned and put in place.



1938

Axel F. Enström is elected Chairman of the Academy. Edy Velander takes over from him as President. In the beginning Velander only serves as deputy and Enström continues to hold the address at the Annual Meeting.

A new building to house the **Swedish National Museum of Science and Technology** is officially opened in the presence of Crown Prince Gustaf Adolf and Prime Minister Per Albin Hansson. A donation of SEK 2 million from the Knut and Alice Wallenberg Foundation provides funding for it.

After pressure from IVA, a **measurement technology institute** is established and arranges conferences, exhibitions and lectures on the technology. An X-ray control section subsequently becomes Tekniska Röntgencentralen.

1936



1940

IVA's statutes are amended. The Executive Committee gets two vice chairs, the number of working members is increased to 120 and two new departments are established: **Forest Technology** (VIII) and **Economics** (IX).

1941

The dynamic **Edy Velander** also formally takes over as President when Axel F. Enström resigns as Chairman. Velander becomes a member of a high-level government committee on how research is organised.

1942



The first government research council is created. *Tekniska forskningsrådet, TFR*, (engineering research council) takes over significant parts of IVA's role as the main actor in engineering research. President **Edy Velander** is a member of the council and stays on until 1960.

1943

A division for biotechnology (X) is established. The possibility of developing and synthetically producing vitamins, enzymes and hormones increases. Microbiology also impacts the food industry.

1944



RESEARCH STATION AT KTH

In connection with the Academy's 25th anniversary celebration **IVA's Research Station** is built adjacent to the Royal Institute of Technology (KTH). This is an initiative to provide smaller research teams with resources similar to those of universities and large corporations.

1944



Focusing on the Future

An intensive jubilee year has come to an end. We celebrated our first 100 years by anticipating the future while also remembering our history in an exciting and beautiful book.

In preparation of the jubilee year we challenged our twelve divisions and our regional sections in the north, west and south to organise a top-class jubilee seminar, this with full support from the Academy staff to celebrate our 100 years!

And what a success it was! Full house everywhere; enthusiastic reactions on interesting themes and excellent speakers – most of them IVA's international or Swedish members. This is an example of IVA at its best – our fellows generously sharing their expertise, identifying future challenges and discussing how science and new technology can help us find solutions.

IVA runs many specific projects with funding in the short term, but also needs support for larger initiatives over a long-term perspective. In 2019 we made excellent progress. We received generous donations from companies, foundations and individuals, resulting in close to SEK 300 million for future initiatives over a ten-year period. These resources will be spent on initiatives to develop Swedish school education and support and encourage entrepreneurship and entrepreneurs.

IVA celebrates its birthday on the last Friday in October. In 2019 we did so with finesse and elegance at our Annual Meeting in Aula Medica in Solna and at a banquet at Stockholm City Hall. More than 1,000 guests from near and far joined the King, IVA's Patron, to celebrate the Academy.

Throughout its history IVA has been a force to induce positive change in the society. The Academy was born at a time of transition from the old to the modern Sweden. The energy supply was one of the main issues of that day. How to raise the status of the engineer – the profession of the future – by establishing engineering sciences research programmes was also a key topic. These issues have remained on IVA's agenda throughout our history.

In 2019 the *Climate Crossroads* project presented a number of reports on the future energy supply. Research and the challenge of inspiring more and more people to adopt engineering careers are at the top of our agenda.

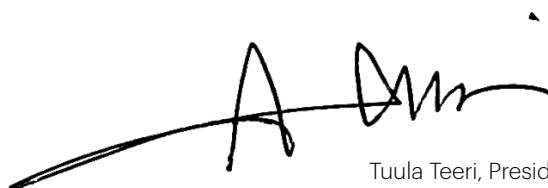
I am convinced that IVA will be a strong and trustworthy voice in the public debate for the next 100 years as well. In the 2019

Annual Report we provide examples of the hard work of members of our extensive network in a number of areas: the climate challenge, circular economy, energy, sustainable water supply, digitisation of society, entrepreneurship and collaboration between the research community and the private sector. We have a long-term plan to promote the development of Swedish schools and important research – both of which are essential for sustainable development and Sweden's strong competitiveness. We're also working to increase interest in sciences and engineering while also helping university graduates who have moved to Sweden to enter the job market and contribute their professional capacity here.

As part of the jubilee celebrations IVA, together with 30 international Academies of Engineering, arranged a large conference in Stockholm in June. The theme was *Engineering a Better World – the next 100 years*.

Many technological advances and promising plans for the future were presented, but the most important message was that sustainable technology development needs to benefit more people and impact all of the countries of the world. If we fail this mission it is possible that fear of and resistance to technology will take over and we will miss out on opportunities to find solutions to the great challenges we face. Through facts and insightful policies we must therefore show that new technology can help us – regardless of where in the world we live.

This is the third time that I've had the privilege of introducing the Annual Report as President. On the following pages you will find many examples of how our fellows, representatives of companies in the Business Executives Council, the Student Council and the Academy staff are helping to maintain IVA's relevance. I want to thank you all for your efforts in 2019 and I look forward to your strong future commitment now that IVA has entered its 101st year.



Tuula Teeri, President of IVA

Vera on tour from Luleå to Lund

Sweden's first female engineer, Vera Sandberg, graduated from Chalmers University of Technology in 1917.

Just over a century later she was celebrated at a festive event at IVA, marking the launch of the Vera Roadshow project – a tour visiting Sweden's universities that offer engineering programmes. 13 universities were visited – from Luleå in the north to Lund in the south.

"The idea of the event was to apply an approach that is fun, engaging and energetic and inspire more women to become engineers," says Katarina Mellström, Project Director for Vera Roadshow.

The universities were hosts and were free to arrange their own "inspiration day." Representatives from IVA's Teknisksprången project participated and new contacts were made.

The Vera Roadshow project had three main target groups: young people aged 12–20 who will start university within a few years, students who have begun engineering degree programmes and decision-makers from the private sector, universities and the political sphere.

In total almost 2,000 people participated at the events which were documented in articles and films published on the universities' websites. The regional media and Sveriges Radio and SVT (Swedish public radio and television) have all covered Vera Roadshow.

ABOUT VERA ROADSHOW

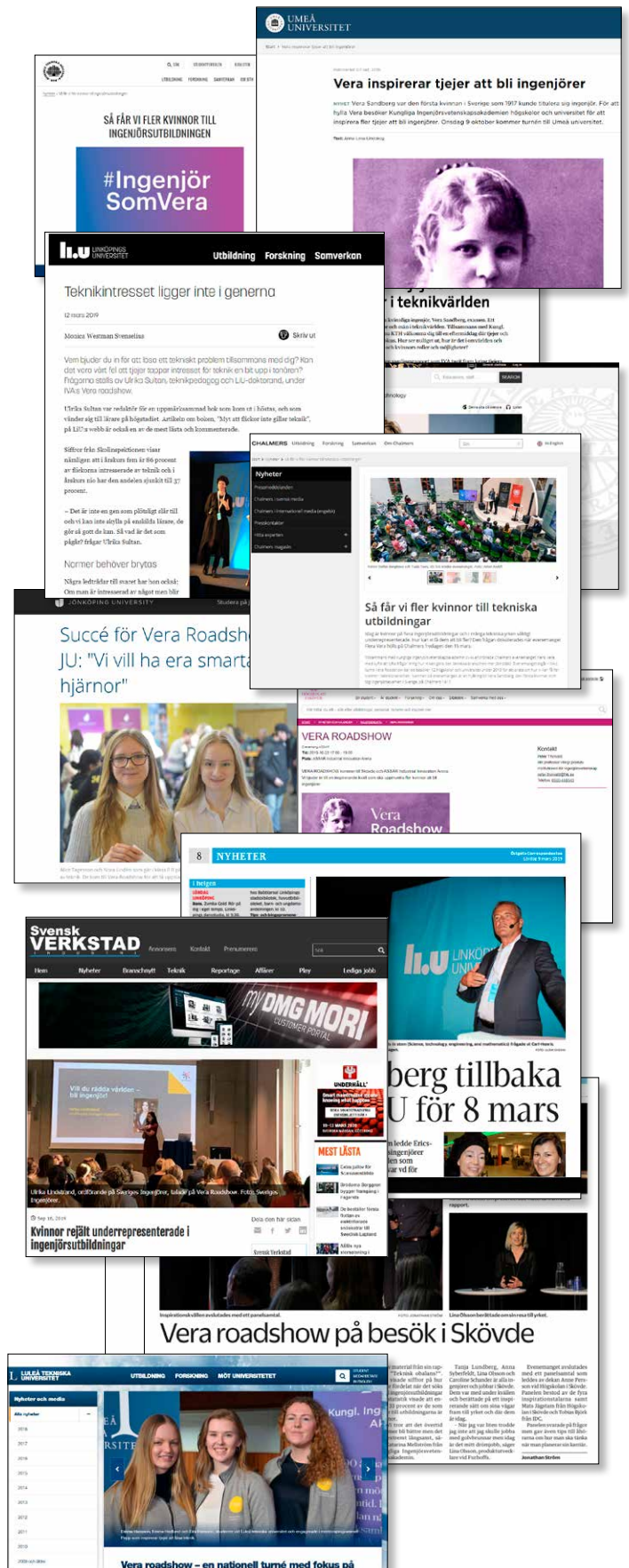
Arranged by: IVA, Swedish Association of Graduate Engineers, Association of Swedish Engineering Industries.

Date: February–November.

Location: Nationwide.

Participating universities: Luleå University of Technology, Linköping University, Chalmers University of Technology, Faculty of Engineering (LTH) at Lund University, the Royal Institute of Technology, Örebro University, Umeå University, University of Skövde, Jönköping University, Uppsala University, Blekinge Institute of Technology, Mälardalen University.

Project Manager: Katarina Mellström.



Festive beginning to the jubilee year



Tuula Teeri, Carl-Henric Svanberg

»Our future
is not
something
that just
happens, it's
something
we create.«

Watch the full seminar
at IVA's website:



Balloons, ribbon cutting, a buffet and everyone mingling with pleasant music in the background – this was the official start of IVA's centennial celebration on 21 February.

The evening also offered musings about the past, present and future. First up was the premier of a short film that started with the words "Our future is not something that just happens, it's something we create."

Professor Sverker Sörlin explored how we study the future.

"The future was hot in the 1950s. IVA has also made predictions about the future – in the beginning with mixed success. Eventually this practice changed into creating foresights for the future. IVA's technology-focused foresights, focus groups and a process that leads to consensus is a formula that works – the

process is just as important as the result," says professor Sverker Sörlin.

LOOKING INTO THE FUTURE AND LOOKING BACK ON PAST PREDICTIONS FOR THE FUTURE

The official start of IVA's 100 year jubilee celebration.

DATE: 21 February 2019.

LOCATION: Stockholm, IVA.

PARTICIPANTS: Carl-Henric Svanberg,
Sverker Sörlin, Tuula Teeri, Anna Wedell.

Green future for innovative forest companies

»Our main competitor is not fast-growing forests in Brazil but oil.«

Annica Bresky

Watch the full seminar
at IVA's website:



McKinsey consultant Peter Berg along with five Nordic forest company CEOs analysed and discussed the opportunities and challenges in the forest industry.

Increasing e-commerce is presenting new challenges for transport packaging. Half of the growth in demand for corrugated cardboard is due to e-commerce.

"It's increasing the need for innovation in areas such as package tracking. But the metal, plastic and glass industries are investing more in developing packaging than the forest industry," said Peter Berg.

New cellulose-based packaging is an opportunity for the forest industry. Textiles are another.

Peter Berg pointed out that the forest industry also faces challenges – competition from raw material from deciduous trees in the Southern Hemisphere is one of them.

Annica Bresky is the new President and CEO of Stora Enso. "Our main competitor is not fast-growing forests in Brazil but oil," she said.

Lack of knowledge in other countries – particularly the rest of the EU – about the sustainable Swedish forest industry is a challenge. The other forest company CEOs agreed with Annica Bresky.

"Interest in the forest has never been this big in Sweden. We should be able to capitalise more on our positive effect on the climate and how we are a sustainable industry," said Henrik Sjölund, CEO of Holmen.

A national bioeconomy strategy would, according to Södra's CEO Lars Idermark, be a step in the right direction.

SCA's CEO Ulf Larsson said that the industry is communicating well with universities.

"But we mustn't forget the existing products. I would like to see a bridge between basic research and industry," he said.



Hannele Arvonen



Henrik Sjölund



Susanne Björkqvist, Andreas Ewertz, Anna Palme, David Quist, Anna Stridsman

THE FOREST INDUSTRY OF THE FUTURE – CHALLENGES FOR COMPANIES, RESEARCH AND YOUNG TALENT

ARRANGED BY: Forest Technology division.

DATE: 11 November 2019.

LOCATION: Stockholm, IVA.

PARTICIPANTS: Hannele Arvonen, Peter Berg, Susanne Björkqvist, Annica Bresky, Lena Ek, Andreas Ewertz, Lars Idermark, Ulf Larsson, Anna Palme, David Quist, Fredrik Rosén, Henrik Sjölund, Anna Stridsman, Daniel Söderberg, Anna Wiberg.



Lena Ek

Generous donors fund long-term initiatives



Fundraising for IVA's Jubilee Fund ended at the end of the 2019 jubilee year. The goal was SEK 300 million.

"We have come very close thanks to generous donations from businesses, foundations and private individuals. If we include donations pledged in 2019 that will be fulfilled in 2020, I think we'll reach our goal," says Katarina Mellström, head of the fundraising campaign.

Funds raised will go to two decade-long initiatives: *World-Class Knowledge* and *Entrepreneurship for the Future*. Work in both of these areas is in full swing.

"In addition to funding for a specific project, it's important for IVA to be able to finance long-term initiatives like these. The money is needed in order to act fast on a specific issue, which can be difficult when funding is earmarked for projects."

The donations were the result of many conversations on how and in which areas IVA can make a difference in the future.

"These conversations have led to our decision to continue our fundraising work to provide long-term financing for IVA's other two themes as well: *People – Technology – Society* and *Climate – Resources – Energy*. I hope that IVA will be able to act

swiftly and independently on these important themes too," says Katarina Mellström.

DONORS TO IVA'S JUBILEE FUND 2019

Anders Scharp, ASSA ABLOY, AstraZeneca, Atlas Copco, Autoliv, Axel Johnson Gruppen, Bertil Edlunds Stiftelse, Billerud-Korsnäs, Björn Savén, Bo and Gunilla Pehrsson, Carl Bennet AB, Carl-Henric Svanberg, Chalmers University of Technology, Clas Ohlson, Ericsson, Erling-Persson Family Foundation, Hakon Swenson Foundation, Icomera, Industrivärden, Investment AB Latour, Knut and Alice Wallenberg Foundation, Lars Backsell, Laurent Leksell, Leif Johansson, Leif Östling, Ljung Toolbox, LKAB, Marianne and Marcus Wallenberg Foundation, Mycronic AB, Märta Christina & Magnus Vahlquist Stiftelse, Perstorp, Saab, SKF, Stefan Widegren, Stena Metall, Marcus and Amalia Wallenberg Memorial Foundation, Mellby Gård Foundation, Stora Enso, Sven Tyrén Foundation, Confederation of Swedish Enterprise, Tetra Laval, Thomas Eldered, Volvo Group, ÅF.

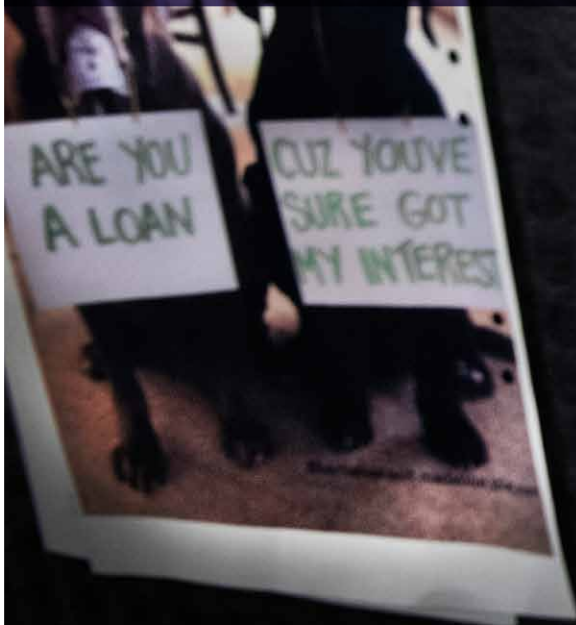
Jobbsprånget

Jobbsprånget is an internship programme that offers a four-month internship for university graduate engineers, architects, scientists and economists who have recently arrived in Sweden. The purpose of the programme is to embrace the participants' knowledge and expertise and to fast-track entry into the Swedish job market.

Jobbsprånget was launched in 2015 and interest in it is growing rapidly. Today Jobbsprånget can be found at around 50 locations in Sweden. Large and small employers in both the private and public sectors are participating and the results are very good:

- 7 out of 10 interns get a job after completing an internship
- 5 out of 10 interns are women
- 4 months is the average time from completed internship to employment

Head of Jobbsprånget: Alexandra Ridderstad.



Engineer for a day at the museum

»Above all we want to provide inspiration; to show that studying pays off because you can experience great things.«

Christer Fuglesang



During a packed day at *Tekniska museet* in Stockholm (Sweden's National Museum of Science and Technology), 600 students in year 7 from the whole of Sweden learned more about working as an engineer.

"It's been fun to look around at everything here. My favourite thing was the robots that answered our questions," said Colin Hellner from class 7C at Vättleskolan outside Gothenburg.

Numerous lecturers, researchers and engineers with exciting jobs fired up the students.

"Above all we want to provide inspiration; to show that studying pays off because you can experience great things," said Christer Fuglesang.

Many of the students already had a big interest in technology.

"I'd like to be a mechanic and fix motorbikes," said Oliver

Vrubel, a student at Vättleskolan outside Gothenburg, while learning to program a route for a remote controlled vehicle.

One of the more unusual lectures was about how to cultivate meat to make hamburgers without any animals being harmed.

"There are different ways of cultivating meat, just like when we grow tissue and organs for humans. We take stem cells from animals and try to get them to multiply," said Julia Gold, an associate professor at Chalmers University of Technology.

David Sumpter, a professor in applied mathematics at Uppsala University and a data analyst at Hammarby IF football club uses mathematics to develop football.

"Football is a very geometric sport. Think about all of the angles that are involved, all of the moves, all of the patterns that a team creates. A lot of it is based on mathematical patterns and principles," he told the students, as an example of how research and technology can have broad application areas.



DISCOVER, EXPERIENCE, EXPLORE – AS AN ENGINEER

ARRANGED BY: Basic and Interdisciplinary Engineering Sciences division
in cooperation with the National Museum of Science and Technology.

DATE: 17 September 2019.

LOCATION: Stockholm, the National Museum of Science and Technology.

PARTICIPANTS: Christer Fuglesang, Julie Gold, Kristina Höök, Lena Klasén, David Sumpter.

The whole of humankind is a sensor

»The existing algorithms are already changing the world.«

Anders Sandberg

Watch the full seminar
at IVA's website:



Are we quickly approaching the point when machines will be smarter than humans? Will machines give us new capabilities or take over? These questions were explored from several perspectives at the seminar.

Anders Sandberg researches the future at the University of Oxford.

"Even if no one discovers anything new in AI and machine learning, the existing algorithms are already changing the world," said Sandberg.

Danica Kragic, robot researcher at the Royal Institute of Technology (KTH) pointed out that robot development is making them more interactive in their interactions with humans.

Staffan Truvé is CTO at Recorded Future.

"Sensors and AI are the basis for predictions on the future. And now the whole of humankind is a sensor," he said.

It is unclear how fast the world will be transformed by AI,

machine learning, augmented reality (AR) and other new technologies. There are some factors that are slowing things down and fundamental decisions are needed to prevent development from getting out of hand. This was the opinion of Virginia Dignum, a professor of computer science at Umeå University.

"We will probably still be in about the same place in fifty years' time. It's not just the technology that controls what happens; it's also about what we want the technology and enterprises to be able to do," she said.

She made the point that the important choices that will make it possible for new technology to provide real benefits must also include eliminating the risk of bias, discrimination and loss of human control, among many other things.

"Responsible AI needs to be ethical, law-abiding and reliable. It also needs to know that it is, in fact, artificial and that humans are the ones who decide," said Virginia Dignum.



Irem Boybat



Mouna Esmailzadeh



PEAK HUMAN

ARRANGED BY: Electrical Engineering and Information Technology divisions.

DATE: 3 December 2019.

LOCATION: Stockholm, IVA.

PARTICIPANTS: Irem Boybat, Virginia Dignum, Mouna Esmailzadeh, Fredrik Heintz, Darja Isaksson, Jonas Ivarsson, Danica Kragic, Anders Lansner, Anders Sandberg, Thomas Schön, Robin Teigland, Staffan Truvé, Anders Ynnerman.



John and Margaretha Aspegren Scholarship 2019

The John and Margaretha Aspegren Scholarship of SEK 100,000 was awarded to Lea Porsager for her artistry and in particular her work *Gravitational Ripples* which is inspired by scientific observations and cosmic phenomena. This very moving memorial to the tsunami disaster has elements of both engineering and the humanities.

Lea Porsager, who was born 1981 in Frederikssund, Denmark, is a Danish artist working with film, sculpture and photography.

The John and Margaretha Aspegren Scholarship is awarded every two years, alternatingly between an engineer/scientist and a humanities scholar. The foundation's board selects the scholarship recipients.

Leaders of the future are visionary team players



»Business management consists of 40 percent improvisation and short-term problem-solving.«

Ingalill Holmberg

Watch the full seminar at IVA's website:



How do Swedish management principles hold up today with the current challenges and new generations to lead?

“Business management consists of 40 percent improvisation and short-term problem-solving. 20 percent of it is visualising the future and 40 percent is creating goals, recruiting and budgeting,” said Ingalill Holmberg, a professor at Stockholm School of Economics.

Representatives from several knowledge-intensive, creative companies talked about their leadership models that are based, among other things, on cross-functional teams, short-term budgets, mutual understanding, discussion and openness.

SWEDISH MANAGEMENT – IS IT KEEPING UP WITH THE TIMES?

ARRANGED BY: Management division.

DATE: 23 October 2019.

LOCATION: Stockholm, IVA.

PARTICIPANTS: Marianne Dicander Alexandersson, Sofia Börjesson, Mats Engwall, Ingalill Holmberg, Johan Johansson, Fredrik Lagergren, Johan Lassing, Dennis Nobelius, Stefan Palskog, Carl-Henric Svanberg, Katarina Walter.

1945

1945

In the autumn a **technical contact person** is stationed in New York tasked with gathering information from journals, conferences and exhibitions.



AMERICAN INDUSTRIALISTS ON TOUR

The Academy arranges a tour of Scandinavia for 24 industrialists and research directors from the USA. The tour receives a lot of attention. They spend two weeks in Sweden travelling in a specially-equipped train from Skåne in the south to Örnköldsvik in the north.

1946

1947

Nordforsk is created to promote collaboration between engineering academies and technical research councils in the Nordic countries. Edy Velander is appointed Secretary General and remains in the position until 1959.

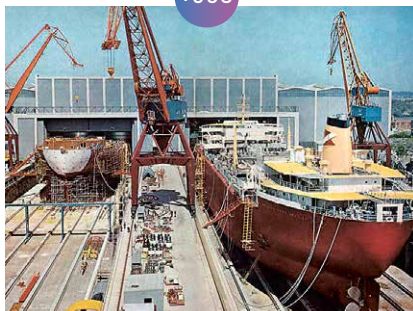
1948

INDEPENDENT MUSEUM

Tekniska museet is converted into an independent foundation and is no longer part of IVA. The Academy and other founders remain as governors for the foundation.



1953



SHIPBUILDING RESEARCH

Based on a donation from Sweden's General Consul Axel Ax:son Johnson, research into the blooming shipbuilding industry is launched. Sweden is one of the world's leading nations in the area.

1951

The Academy **arranges meetings at locations outside Stockholm** – first in Gothenburg where Academy member Gustaf Larson speaks about “The Modern Car” and then in Malmö and Helsingborg the following year.

1950



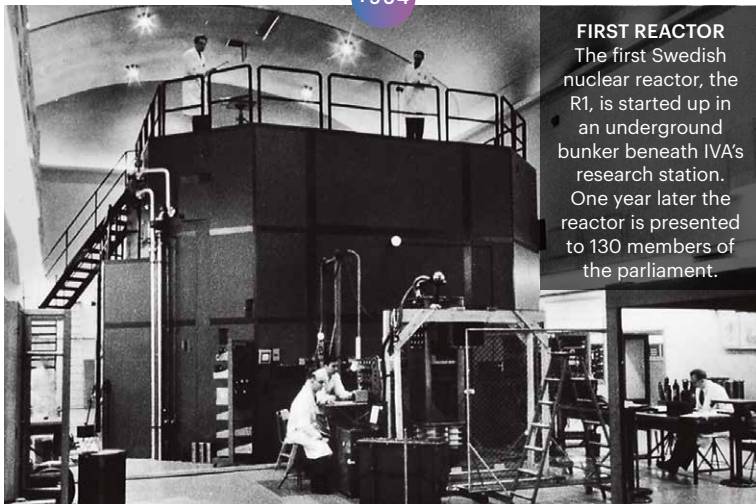
BOOK ABOUT WOOD GAS

The rapid transition to wood gas in Sweden during WWII is described in a thick book entitled *Wood Gas*. It describes Swedish experiences from 1939–1945.

1949

In conjunction with the Annual Meeting, the heads of 35 of the country's largest industrial companies form the **Academy's Industrial Council**. The Council's name is changed to its current one: Business Executives Council.

1954



FIRST REACTOR

The first Swedish nuclear reactor, the R1, is started up in an underground bunker beneath IVA's research station. One year later the reactor is presented to 130 members of the parliament.

1955

A water committee is established to address the increased need for laws in the area. A large conference with 900 delegates discusses the increasing concerns of municipal politicians about **water and sewage systems**.

1957

Statens tekniska forskningsråd (the state technical research council) is launched based on an English model and IVA arranges **field trips and presentations** for parliament members. In 1959 the **Society for Members of Parliament and Researchers (Rifo)** is formed.



1958

TECHNICAL ATTACHÉ IN WASHINGTON

The technical contact person in New York moves into the Swedish Embassy in Washington. At the beginning of the 1960s the contact person gets a new title at the Embassy: Science & Technology Attaché.



1959

CONTACT IN MOSCOW

Sputnik fever spreads around the world. Edy Velander manages to raise enough funds from research councils and industry to station a science attaché in Moscow.



1960

BROHULT TAKES OVER

Sven Brohult who has a PhD in chemistry takes over as President. This brings the Academy closer to the TFR engineering research council. After he spends time there the council's IVA grant is increased.



1966

OFFICE IN TOKYO

IVA stations a scholarship recipient in Tokyo. The next year an office is opened in Tokyo and in 1970 the Swedish Centre is opened in the Tokyo district of Roppongi. The Academy owns 20 percent of the property company.

1965

A special foreign secretariat is established at the Academy's offices in Stockholm.

Hans G. Forsberg, who later serves as President of the Academy, is the secretariat's first director. A technology attaché is stationed in Paris.



1963

SURFACE CHEMISTRY AT THE RESEARCH STATION

A surface chemistry lab is created within the research station at KTH. The lab is run by IVA until 1967. It then becomes the Surface Chemistry Institute.

1962

To answer the question of how innovations come about, a study on **business and innovation** is launched. The study report is published in 1969 and contains a diagram of "the innovation process."

1967

An eleventh division is established to focus on research policy. The name is considered too charged and is changed to **Technical research general planning and economics (XI)**.



1968

WICKMAN REARRANGES THE FURNITURE

The TFR engineering research council is discontinued. Minister for Industry Krister Wickman gives the newly formed National Swedish Board for Technical Development (STU) responsibility for allocating government funding. STU takes over IVA's research station; government funding for the attachés and IVA's government grant is cut in half.



1969

BIG 50-YEAR CELEBRATION

50 years are celebrated with four conferences, two commemorative lectures and two booklets.

Herman Kahn who researches the future, US economist **J. Kenneth Galbraith** and physicist **Werner Heisenberg** (the last two are Nobel Laureates) are among the pre-eminent speakers. A publication entitled *Utvecklingslinjer inom forskning och teknik 1919-2019* (Development lines in research and technology) is published in conjunction with the 50th anniversary.



1969

A focus on Gothenburg of tomorrow



Helena Bjarnegård, who holds the position as Sweden's first "national architect," started the seminar with good examples that can show the way forward for Gothenburg, but pointed out that political control mechanisms are needed to create the right conditions. Dialogue and conversation are also needed. The most important thing is to remember that, apart from its physical structures, the city is also made up of all the activities that take place within them.

In order to reach the sustainability goals, some drastic measures are needed. Holger Wallbaum, professor in sustainable building, talked about examples such as free public transport and more wood in construction.

Gothenburg is a sprawling city and transport-dependence has increased among its residents. Meanwhile the centre has moved southwards," said Jan Jörnmark.

But, according to Dennis Nobelius at Zenuity, mobility could

be adapted at the individual level with public transport that intuitively knows where and when we want to travel. Robin Teigland, a professor at Chalmers University of Technology, questioned the whole concept of mobility. With all the possibilities of working remotely, people will not need to move very far in the future.

Chrisna du Plessis, a sustainability professor at the University of Pretoria, regards Gothenburg as a leader in sustainability. According to her, sustainability goals have existed in some form or other for 70 years. It is highly unlikely that the goals we have today will be met because we have already missed several critical targets.

Important aspects of future urban planning will be avoiding segregation and increasing equality. This was highlighted by Mohamed Hama Ali of Gårdstensbostäder. He maintained that having a mix of condominiums (Sw: *bostadsrätt*) and rental homes is important to create equality.



Chrisna du Plessis



Jan Jörnmark

#GÖTEBORG100 – A SUSTAINABLE SOCIETY IN TRANSITION

ARRANGED BY: IVA West and the Education and Research Policy division.

DATE: 11 April 2019.

LOCATION: Gothenburg, Chalmers Conference Centre.

PARTICIPANTS: Mohamed Hama Ali, Helena Bjarnegård, Hans Bjur, Elisabeth Björk, Michael Browne, Erik Gatenholm, Jan Jörnmark, Dennis Nobelius, Felicia Olsson, Chrisna du Plessis, Robin Teigland, Holger Wallbaum.



Prince Daniel's Entrepreneurship Day

Prince Daniel's Fellowship arranged an Entrepreneurship Day for the fifth consecutive year in 2019. More than 100 young entrepreneurs from the whole of Sweden and many inspiring business leaders sat down in a packed Wallenberg Auditorium. One of the speakers was Jessica Schultz from Northzone who talked about the time when she founded the successful meal kit delivery company Hello Fresh. Another speaker was Ilkka Pananen, founder of Finnish game developer Supercell. His advice for the young entrepreneurs in the audience was to be persistent and think big right from the start. Contacts were made, business cards exchanged and the room was filled with the sound of entrepreneurs mingling and networking with expectations for and confidence in the future.

ABOUT PRINCE DANIEL'S FELLOWSHIP

The purpose of the project is to inspire young people to become entrepreneurs and to support young entrepreneurs. The project has gathered a group of experienced entrepreneurs and inspiring leaders. It includes a mentoring programme for young entrepreneurs as well as visits to upper secondary schools and higher education institutions where Prince Daniel and inspiring leaders discuss the many aspects of entrepreneurship with students. The project also arranges an annual networking event called Prince Daniel's Entrepreneurship Day.

Project Manager: Jenny Nordlöw.



Health checks not always a good thing



Mathias Uhlén, Emma Frans, Edzard Ernst, Eugen Steiner

More and more diseases are being discovered and predicted earlier and earlier. But that's not always a good thing, according to Eugen Steiner, a partner in venture capital company HealthCap. Demanding analysis methods can mean health risks for patients.

Professor Edzard Ernst from the University of Exeter in the UK specialises in examining alternative medicine.

"If it really works, the medicine is real and not an "alternative," he said. But one problem with alternative treatments is that patients may not seek evidence-based, conventional care. Refusal among proponents of alternative medicine to vaccinate their children has led to dangerous outbreaks of diseases like the measles.

Mathias Uhlén, a professor at KTH and KI, pointed out that most medicines these days target the proteins that are natu-

rally found in the body. We should therefore work on individualised treatments, for example for diseases such as Alzheimers.

HOW DO YOU FEEL? NAVIGATING MEDICAL ADVICE

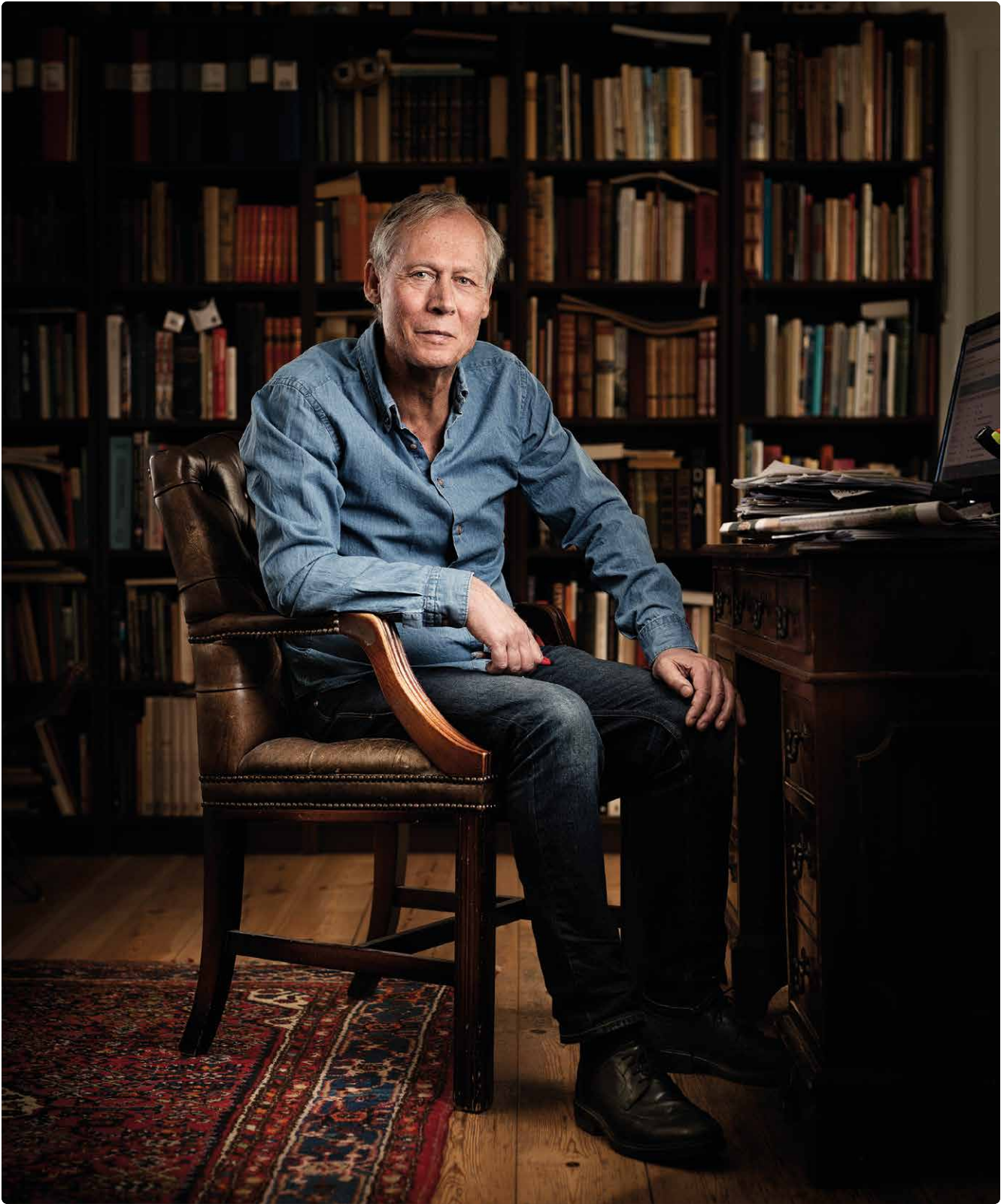
ARRANGED BY: Biotechnology division.

DATE: 19 September 2019.

LOCATION: Stockholm, IVA.

PARTICIPANTS: Edzard Ernst, Emma Frans, Eugen Steiner, Mathias Uhlén.





Well-read and easy to read with a local angle

MEDICAL JOURNALIST **ÅKE SPROSS** HAS RECEIVED THE HANS BERGSTROM AWARD, IVA'S AWARD FOR SCIENTIFIC JOURNALISM

For forty years he has covered an entire world of science and research with a local perspective for Upsala Nya Tidning (UNT). It became clear at the beginning of the 1980s that the newspaper would have its own medical section. At that time there were also two reporters covering the university and in the 1990s a student reporter was added.

Thanks to his curiosity, an introduction at the National Board of Health and Welfare's medicinal department, which would become the Medical Products Agency, Åke Spross soon started looking for his own news stories – always incorporating a local angle so that his articles could compete for space in the paper.

"A big part of my job has always involved very careful reading. At conferences and medical congresses a lot of the information comes from unpublished studies. But over the years I've also streamlined the type of reporting I do."

He has had embargo agreements for many years with numerous scientific journals.

"That allows me to read the reports three or four days before they're published in the journal, which is great because it gives me time to work longer on each article."

Explaining its decision, the jury wrote that "Spross is always well-read and easy to read. His work is just as appreciated in the research community as it is by his broad readership."

"I write for readers with a general interest but who are also prepared to think for themselves. I try to avoid terms that make my articles harder to read. When covering things like DNA research, this can be a problem. I try to give the reader an understanding of the subject without including difficult terminology," he says.

In a university town like Uppsala with all the professors and scholars who are critical readers, this can be a challenging task. But according to Åke Spross, any angry phone calls or emails do not come from the research community. In 2011 he was awarded an honorary doctorate by Uppsala University Faculty of Medicine. His integrity and ability to incorporate the interests of researchers and pharmaceutical companies when reporting on medicine were highlighted as reasons for this distinction.

"I think it raised my status in some way – not among my normal readers, but in the scientific community."

In August Åke Spross retired after forty years on the hunt for news stories. He ended his career with a series under the heading "*Born at the right time.*" In eight articles UNT readers could read about people who would not have been alive today if it hadn't been for medical advances in areas such as pacemakers, new cancer treatments, heart transplants, artificial insemination or advanced care for premature babies. He has met and reported on several of these individuals in the past.

"The idea during my time covering the field was to highlight advances in medicine – and to do it differently."

ABOUT THE HANS BERGSTROM AWARD

IVA's award for scientific journalism – the Hans Bergström Award – recognises a scientific approach in the media and excellent journalism in science, technology, innovation and entrepreneurship – in a tradition of informing, educating, detailed explanation, integrity and a belief in the future. The amount awarded is SEK 100,000.

AI challenges ethics and integrity

»Humans have always learnt from their mistakes, but that's not enough anymore.«

Max Tegmark

Watch the full seminar at IVA's website:



Fredrik Heintz, Max Tegmark, Prince Daniel

"It's hard to tell if a text or image of a person is computer-generated or not," said Fredrik Heintz at IVA's Science & Society Forum, which this year was on the theme of artificial intelligence and its consequences for society. Heintz is a researcher and member of the European Commission High-Level Expert Group on AI.

He pointed out that artificial intelligence is different from human intelligence. AI lacks intuition, but it can process much more information; it's faster, but it cannot break rules and has no needs of its own.

"AI is a tool for us to achieve what we want. We complement each other," he said.

The term artificial intelligence encompasses more than machine learning and algorithms. It includes application, ethics, laws and values as well.

"But which values? Not just one person can determine that,"

says Virginia Dignum, professor of social and ethical AI at Umeå University.

It needs to be based on the common values in a society. However, these vary depending on shifting norms in different societies.

"This is making it hard to achieve ethical AI globally,"

Up to now an AI system can only do one thing, like diagnose a disease. But Max Tegmark, a cosmologist and professor at MIT, predicts that in a few decades there will be general artificial intelligence.

"By then machines will be able to do everything that we can do. Humans have always learnt from their mistakes, but that's not enough anymore," he said.

Security therefore needs to be a common theme in all AI development.

"We have to stop believing that we will always be better at some things than a machine. We're not going to be the smartest ones on the planet in the future," he said.



Paulina Modlitba



Yongqi Lou



Student choir from Nacka Music classes



Max Tegmark, Virginia Dignum, Fredrik Heintz, Joel Hellermark

SCIENCE & SOCIETY FORUM: ARTIFICIAL INTELLIGENCE AT WHAT PRICE?

ARRANGED BY: IVA.

DATE: 24 October 2019.

LOCATION: Stockholm, IVA.

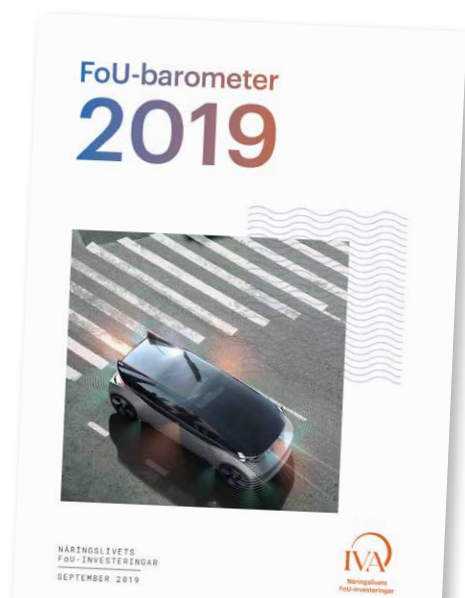
PARTICIPANTS: Evelina Anttila, Virginia Dignum, Fredrik Heintz, Joel Hellermark, Max Tegmark.

Barometer measures pressure of private sector R&D

We need to gain a greater insight into how private sector R&D investments are developing and being impacted and managed. More knowledge is also needed about which policy measures can effectively make Sweden more attractive for R&D investment.

IVA has therefore launched an annual R&D barometer as a means of showing progress. The first one, published in September, shows that finding the right talent for R&D in Sweden is very difficult.

The conclusions are based on responses from the heads of R&D at 48 of the country's most R&D-intensive companies. The companies that responded to the survey have a total of around 42,000 employees working in R&D, equivalent to just over half of all R&D employees in the private sector. Seven companies were also interviewed at length in addition to completing the survey.



ABOUT PRIVATE SECTOR R&D INVESTMENT

The project produces an annual R&D barometer. It highlights how companies view the R&D investment climate in Sweden and shows the investment trend over time.

Chair of the Steering Committee: Pontus de Laval, Saab.

Project Manager: Martin Wikström.



New Chair for Business Executives Council

Magdalena Gerger, CEO of Systembolaget, became the Business Executives Council's new Chair on 1 January 2020. She has a MSc in Business & Economics from Stockholm School of Economics and has previously worked for Nestlé, ICI Paints and Procter & Gamble. Magdalena Gerger took over from Eva Hamilton who had served as Chair of the Council since 2016. Eva Hamilton continues to work with IVA's regional hubs and started IVA East (in Östergötland County). She launched the CTO Round Table and Future Digital Leaders networks. Maria Rankka and Håkan Dahlström are new Vice Chairs and Johan Hjertonsson joined the Council's Executive Body in 2020.

Changed climate increases need for sustainable water supply



A warmer climate and a growing population are presenting new challenges for our water supply. Finding ways to tackle these is the objective of the project *Sustainable Water Supply – access to clean water in a changing climate*.

“The summer 2018 drought in Sweden brought home the issue of our water supply, but the fundamental problem is how to manage our water resources by closing the cycle and, not least, safeguarding the water supply in growing cities,” says Staffan Eriksson, Project Manager.

The project has gathered actors from industry, academia and the public sector. One key task is to create a platform that will live on long after the end of the project’s two-year period where the research community and public administration can come together to address the supply of fresh water.

The project began in autumn 2019 and will end in 2021.

ABOUT SUSTAINABLE WATER SUPPLY – ACCESS TO CLEAN WATER IN A CHANGING CLIMATE

The project is focusing on issues surrounding fresh water. There are three main themes: Water as a limited resource – cycle and management; Climate change – consequences and large precipitation variations; and Urban environments – How can we safeguard the water supply in our growing cities and communities?

The project wants to create a platform for all important actors in the water supply sector for meetings between R&D and public administration to facilitate development of common methods, processes and tools.

Chair of the Steering Committee: Tord Svedberg.

Project Manager: Staffan Eriksson.

Harvard professor shows the way to good jobs

»When I speak in other countries and get asked about what they should do, I usually answer: Do what Sweden is doing.«

Dani Rodrik

Watch the full seminar at IVA's website:



"We need a new, modern industrial policy," said Harvard professor Dani Rodrik, who spoke at a packed jubilee seminar.

According to Professor Rodrik, the new industrial policy needs to lead to good jobs. He stressed that the trend in Western Europe and the USA towards fewer good middle class jobs must be turned around.

He also pointed out that while globalisation and free trade benefit nations, they can also take opportunities away from individual groups. Policy-makers must therefore be active in addressing the increasing income inequality that automation and globalisation create.

"The main change that has taken place over the past 20 years

is the shift in the labour market. This has made people worried, which populists are now exploiting," he said.

The main question now is how to manage the anxiety that technological development is fuelling in large parts of the labour market.

He praised Sweden's social safety net, cooperation and openness to change, and confessed that coming to Sweden to speak was a little challenging.

"Sweden is a special country. When I speak in other countries and get asked about what they should do, I usually answer: Do what Sweden is doing."

He was of course asked what Sweden should do, and answered: "Try to be an even better version of Sweden."



Elisabeth Svantesson, Martin Flodén



Carl-Henric Svanberg, Sara Öhrvall



Harry Flam, Anna Ekström, Elisabeth Svantesson, Martin Flodén

ECONOMIC POLICY IN A TIME OF INTENSE TECHNOLOGICAL DEVELOPMENT

ARRANGED BY: Economics division.

DATE: 27 September 2019.

LOCATION: Stockholm, IVA.

PARTICIPANTS: Pontus Braunerhjelm, Lars Calmfors, Karolina Ekholm, Harry Flam, Martin Flodén, Mats Kinnwall, Katarina Lundahl, Dani Rodrik, Carl-Henric Svanberg, Elisabeth Svantesson, Sara Öhrvall.



Pontus Braunerhjelm, Lars Calmfors, Karolina Ekholm

Zero emissions with new climate action plan



Sweden must reach zero net emissions of greenhouse gases by 2045. A big majority of the parties in the Sweden's parliament agree on this.

Working at the strategic level and taking a comprehensive approach, the *Climate Crossroads* project will deliver an action plan with the measures needed for Sweden to reach its climate goals. This will make it easier for policy-makers and business leaders to weigh different options. Actions taken to reach the climate goals must also make Sweden more competitive.

Through its five sub-projects, *Climate Crossroads* has focused on key areas: industry, energy, agriculture, transport and society as a whole. The sub-projects' analysis and observations are summarised in a synthesis report which presents a number of recommendations.

Project Director Karin Byman is an energy expert.

"It's obvious that a comprehensive approach is needed if we're to reach our climate goals. Riding political hobby-horses is meaningless. Policy-makers need to focus on the right things," she said, pointing out that the electricity market is key and that the transport system is the biggest challenge.

"But Sweden cannot make the transformation on its own; cooperation with the EU is really important if we're to reach our goals."

A single sector of society cannot take overall responsibility for the necessary transformation in Sweden.

"The risks need to be shared between the public sector, with the Government taking the lead, and the private sector. Here, public procurement can play an important role," says Karin Byman, adding that the sub-project reports have received a lot of media attention and that the politicians in the project's reference group agree on the goals but differ on the best way to reach them.

ABOUT CLIMATE CROSSROADS

The project will produce a plan of action for how Sweden can achieve zero emissions and be more competitive by 2045. It will also support the Government's Climate Policy Council, analyse progress in other countries and perform a broad consequence analysis of all climate measures that are under way.

Chair of the Steering Committee: Elisabeth Nilsson.

Chairs of the sub-projects: Mikael Dahlgren, Hans Folkesson, Stefan Nyström, Eva Pettersson and Andreas Regnell.

Project Manager: Karin Byman.

Female engineers want to improve the world



»We need to look at the whole picture to get more people to study engineering.«

Matilda Ernkrans

Watch the full seminar at IVA's website:



"Diversity at all levels is important. It creates innovative environments," says Aldert Kamp, education director at one of the faculties at Delft University of Technology in the Netherlands.

The university has been varying and adapting its programmes according to specific needs. As a result, the number of applications to engineering programmes has increased by 5 percent annually.

According to Birgitta Bergvall-Kåreborn, Vice-Chancellor of Luleå University of Technology, Swedish universities need to follow suit.

"Women are interested in getting an education that will enable them to help address the challenges facing society. We therefore need to adapt what we can offer them," she said.

Matilda Ernkrans is Sweden's Minister for Higher Education and Research.

"We need to look at the whole picture to get more people to study engineering. Role models and cooperation are important," she said.

WHAT DO FUTURE ENGINEERS NEED TO KNOW?

ARRANGED BY: Education and Research Policy division.

DATE: 28 August 2019.

LOCATION: Stockholm, IVA.

PARTICIPANTS: Kristina Axén Olin, Birgitta Bergvall-Kåreborn, Jonathan Edin, Johan Eklund, Matilda Ernkrans, Aldert Kamp, Peter Larsson, Annika Pontén, Anna Yman, Martin Wikström.

Mines and space are Norrbotten's future

»We're moving towards AI, but also towards an exciting area for future development.«

Jan Moström



Leif Östling, Björn O. Nilsson, Birgitta Bergvall-Kåreborn

The seminar highlighted how artificial intelligence can be used in one of Sweden's vital basic industries, mining, and in a growing sector, space technology.

At LKAB, digital control processes were introduced back in the 1980s. The systems have been developed over time into advanced and integrated solutions.

"Today, for example, we have ball bearings with built-in sensors and we're now using data from all of these sensors to further develop products and performance. We're gathering a lot of data, but we still don't know what to use some of it for today. We're moving towards AI, but also towards an exciting area for future development," said Jan Moström, CEO of LKAB.

Olle Nordberg, Vice Rector for Space at Luleå University of Technology (LTU), pointed out that Sweden has large companies in the space industry as well as smaller niche actors. There

is also excellent research being done in the field in Sweden, especially at LTU, Chalmers University of Technology and the Royal Institute of Technology (KTH).

Tor Björn Minde of Rise said that demand for "green" data centres has increased. Customers recognise the added value in being able to market more sustainable services to their own end-customers.

Based on education and research, industrial collaboration and strong institutions, Luleå has a good ecosystem for data centres.

Marcus Liwicki, a professor at LTU and specialist in machine learning and image analysis, talked about technologies that can be used in applied AI. Systems for voice recognition, image analysis and translation are already well developed, for example as apps for phones. With increasing amounts of data available there are huge opportunities if it is used in the right way.



Jennie Hägg

SPACE, MINES, DATA STORAGE AND AI – HOW ARE THEY ALL CONNECTED?

ARRANGED BY: IVA North.

DATE: 11 June 2019.

LOCATION: Luleå, Vetenskapens hus (Science House).

PARTICIPANTS: Birgitta Bergvall-Kåreborn, Emma Fryer, Christian Landgren, Marcus Liwicki, Jan Moström, Tor Björn Minde, Björn O. Nilsson, Olle Norberg, Mikael Nyström, Michael Rast, Tuula Teeri.



Marcus Liwicki

1970

The Industrial Research Committee (IRC) is created to increase interactions with a selection of R&D leaders in industry.

Committee members, who are recommended by Academy members, serve a three-year term and then become IRC alumni.



FIRST WOMAN

Physiologist **Irma Åstrand** is the first woman to be inducted into the Academy. She is a well-qualified and sharp-witted researcher who, later in her career, becomes a professor and head of the Work Environment Institute.

1971



TV PERSONALITY

Engineer **Gunnar Hambræus** is appointed as President. He is a strong communicator, was IVA's contact person in the USA, Editor-In-Chief of the journal *Teknisk Tidskrift*, started *Ny Teknik* and became a TV personality in a popular program about space.

1972

Gunnar Hambræus visits China at the beginning of the year after an invitation from the Chinese Academy of Sciences. A delegation of 30 people from China visit IVA and KVA (Royal Swedish Academy of Sciences) for a week the same autumn.

1973



YEARBOOK GROWS

The yearbook entitled **Progress in Research and Technology**, issued for the first time in 1967, grows from a booklet of 150 pages to a 250-page bound volume and is distributed to members of *Civilingenjörsförbundet* (now the Swedish Association of Graduate Engineers).

1981



STATT FOUNDATION

Birgit Erngren is recruited from STU and is named head of the attaché programme. The programme is restructured into the STATT Foundation overseen by the Government and IVA. STATT moves out of IVA and into its own offices

1980

SPECIAL INITIATIVE

A special initiative is created to explore **People-Technology-Society**. A committee of the same name is formed. The emphasis is on electronics, computers and communication technology.



1979



THE BIG PROJECT

In a report on knowledge och competitiveness, often called "The Big Project," IVA is tasked by the Government with providing an overview of Sweden's technical and industrial future and competitiveness.

1975

The annual Attaché Day attracts record participation.

More than 400 people gather to listen to lectures on the theme of international environmental conservation. The lectures are published in a report under the heading "Environmental conservation policy and industry."

1976

Information for industry and organisations is gathered under one umbrella: IVA's Information Service.

1981

The Academy gains a footing regionally, first through **IVA West** in Gothenburg and then **IVA South** in Skåne.



SHIPPING BOSS

Engineer **Hans G Forsberg** takes over as President. In the years 1965–1971 he serves as head of IVA's international section but works throughout the 1970s in shipping and shipbuilding at the shipyards in Salén and Öresund.

1983

1984



INSPIRED BY THE BRITISH PARLIAMENT

The Wallenberg Auditorium is officially opened. It is built based on donations from the business community in connection with Marcus Wallenberg's 80th birthday in 1979. The design is inspired by the British parliament.

1984



FIRST ROYAL TRIP

The west coast of the USA is the destination of the first Royal Technology Mission. The delegates visit the Palo Alto Research Center, HP and Boeing. The following year 25 delegates travel to Japan and in 1986 to West Germany.

1985

The shortage of engineers is a hot topic and between the years 1984–1993 IVA forms **four committees** to address the need, quality, recruitment and education of Swedish engineers in the future.

1986

The **Management of Technology** project aims to increase understanding of the factors that make Swedish industry and Swedish engineers successful. A video-based education package is produced.

1990



WERTHÉN FOUNDATION

Ericsson honours Hans Werthén by donating money to a foundation. Scholarships are to be awarded for international study and research in science, engineering, management, economics and law.

1989

ECONOMIC SCIENCES

The mission statement is changed to include the economic sciences when IVA hears of plans for an academy of economics. The idea to merge the divisions is scrapped.

»The Academy's mission is to promote the engineering and economic sciences and the development of industry for the benefit of society.«

1988

YES ON NUCLEAR ENERGY

In a referendum 89.5 percent of the members (80 percent participating) support the Academy's position on nuclear energy; the reactors are to be operated as long as they are profitable and meet safety criteria.



1987

A twelfth division, **Information Technology** (XII), is established. At the end of the 1980s a study is also conducted of a proposal to combine division VI and division IX as they are considered to have overlapping activities.

1991

The **financial crisis** forces restructuring of all of IVA and a savings programme is created. Academy activities are limited to fewer areas (called programmes) and the secretariat is streamlined.

1992

A productivity study under the heading **Best in the World** receives a lot of attention and is followed up by **Best in Services** which compares service companies and organisations in Sweden and other countries.

1993



A BEST SELLER

The Environmental Committee, formed in 1983, conducts its final study of **environmentally driven business** development. **Leif Johansson** chairs the committee. The committee's report becomes a "best seller." There are both risks and opportunities associated with environmental awareness.

1994



IVA CELEBRATES 75 YEARS

IVA turns 75 and celebrates with 20 or so jubilee symposiums. Prime Minister **Carl Bildt** gives a speech on "Investing in the future" in Kista, Stockholm, and announces the creation of the Governments IT Commission.

1994

Royal interest in sustainability and the climate

»We're not designing for circularity today. We need to think about it right from the drawing board stage.«

Elin Larsson



A seminar on sustainability attended by the King and Queen, Crown Princess Victoria and Prince Daniel, was opened by the King.

"Just look at the history of Swedish engineering sciences – it's a history of exceptional individuals and ideas; of constant innovation and development," said the King.

The focus of the seminar was Sweden's ability to promote climate benefits and resource efficiency. Examples include the success of the landfill ban and CHP plants as a significant export opportunity for system and technical expertise.

Klas Gustafsson is Vice President of Tekniska verken in Linköping.

"If we look at waste as refuse, the question we ask is how to get rid of it. This is how the question is framed in many other countries," he said.

But the Swedish example shows that it is possible to turn sig-

nificant challenges into opportunities. Brand new environmental technology initiatives can become a Swedish export success. Northvolt's new battery plant in Skellefteå can become a Sweden export success.

The need for engineers is great in many industries. The textile industry is one example.

"We're not designing for circularity today. We need to think about it right from the drawing board stage," said Elin Larsson, former Sustainability Director at Filippa K.

Another sector facing major challenges is the plastics industry. This is also the case in several other sectors of industry, as well as households around the world.

"We need a competitive transformation of industry and transport systems; we need a circular system for plastics and textiles, and we need to reduce food waste," said IVA's Chairman Carl-Henric Svanberg, commenting on the challenges.



Magnus Huss, Elin Larsson, Johan Kuylenstierna



Birgitta Resvik



FROM LANDFILL BAN TO CIRCULAR ECONOMY – WHAT SOLUTIONS CAN SWEDEN PROVIDE TO THE WORLD?

ARRANGED BY: The projects Resource Effectiveness and the Circular Economy and Climate Crossroads.

DATE: 12 November 2019.

LOCATION: Stockholm, Royal Palace, Bernadotte Library.

PARTICIPANTS: Peter Carlsson, Klas Eklund, Klas Gustafsson, Magnus Huss, Johan Kuylenstierna, Elin Larsson, Björn Ola Linnér, Birgitta Resvik, Carl-Henric Svanberg, Tuula Teeri.

Sweden at the forefront in sustainable transport



Håkan Samuelsson, Henrik Henriksson, Monica Bellgran

According to Director General of the Swedish Transport Administration, Lena Erixon, Sweden is at the forefront in a number of areas – one of them is sustainable transport.

“But the regulatory frameworks are not keeping up with developments in technology,” she said.

“In 2025 cars are to either be hybrids or fully electric powered,” said Håkan Samuelsson, CEO of Volvo Cars.

Henrik Henriksson, CEO of Scania, wants to see a long-term, party-neutral agreement for the transport sector. He believes biofuel is a good thing because it will take a long time before heavy vehicles can run on electricity.

Lars Stenqvist is Chief Technology Officer at AB Volvo.

“City buses are already perfect for electricity. Plant machinery could also be powered by electricity,” he said.

PEOPLE, TECHNOLOGY AND ENTERPRISE IN THE FUTURE TRANSPORT SYSTEM

ARRANGED BY: Mechanical Engineering division.

DATE: 21 January 2019.

LOCATION: Stockholm, IVA.

PARTICIPANTS: Anders Blom,
Anna Dubois, Lena Erixon,
Henrik Henriksson, Johan Rockström,
Håkan Samuelsson, Lars Stenqvist,
Tuula Teeri, Annika Stensson Trigell,
Björn Westerberg.



Student Council provides perspective

Climate leadership and more female engineers are areas the Student Council is focusing on. In its own project on combining efforts and resources for the climate, the Student Council has delved into the great challenge of our times. One of the conclusions is that climate leadership is essential if the climate goals are to be reached. Speakers at a seminar to answer the question: "What type of climate leadership is needed to meet the Paris Agreement goals?" included Johan Kuylenstierna, Vice Chair of the Climate Policy Council and Katarina Kolar, SCA's Sustainability Director.

In 2019 the Student Council presented women who are engineers and role models under the heading *Vera of the Month* (Månadens Vera) on IVA's website.

Representatives from the Student Council also took part in a jubilee seminar in Gothenburg arranged by IVA West and the Education and Research Policy division.

ABOUT THE STUDENT COUNCIL

The Academy's Student Council exists to provide IVA with a student perspective. The Council consists of students from universities that offer engineering programmes, the Swedish University of Agricultural Sciences, Stockholm School of Economics and the School of Business, Economics and Law at the University of Gothenburg.

Chair: Anna Adolfsson, Linköping University.



Anna Adolfsson

Scholarships for young academics

The 2019 scholarships from the Hans Werthén Foundation went to 18 young university graduates – eleven women and seven men. They shared a total of SEK 1,840,000.

The Foundation was established in 1990 in honour of Hans Werthén for his lifework as an engineer and business leader. Since the Foundation was established, 472 scholarships totalling SEK 55.2 million have been awarded. The purpose

is to give young graduates an opportunity for development in another country and to gain new knowledge and experience that they can use in industry, business or the academic sphere in Sweden. Green light-weight batteries, algorithms to ensure self-driving cars make good decisions, bumblebees and risk capital management are a few of the subjects that this year's scholarship recipients are planning to study.

International science conference

»Climate change is fairly easy to solve – from a purely technical point of view – but there is no easy technical solution to the issue of biological diversity.«

Olle Olsson



What role will engineering play over the next 100 years? This question was discussed for three days in July at the annual conference of the International Council of Academies of Engineering and Technological Sciences (CAETS), arranged by IVA. The participants included researchers from Sweden and around the world.

The themes were broad ones. Topics discussed among prominent experts and speakers included gravitational waves, medicines of the future and the origins of the internet.

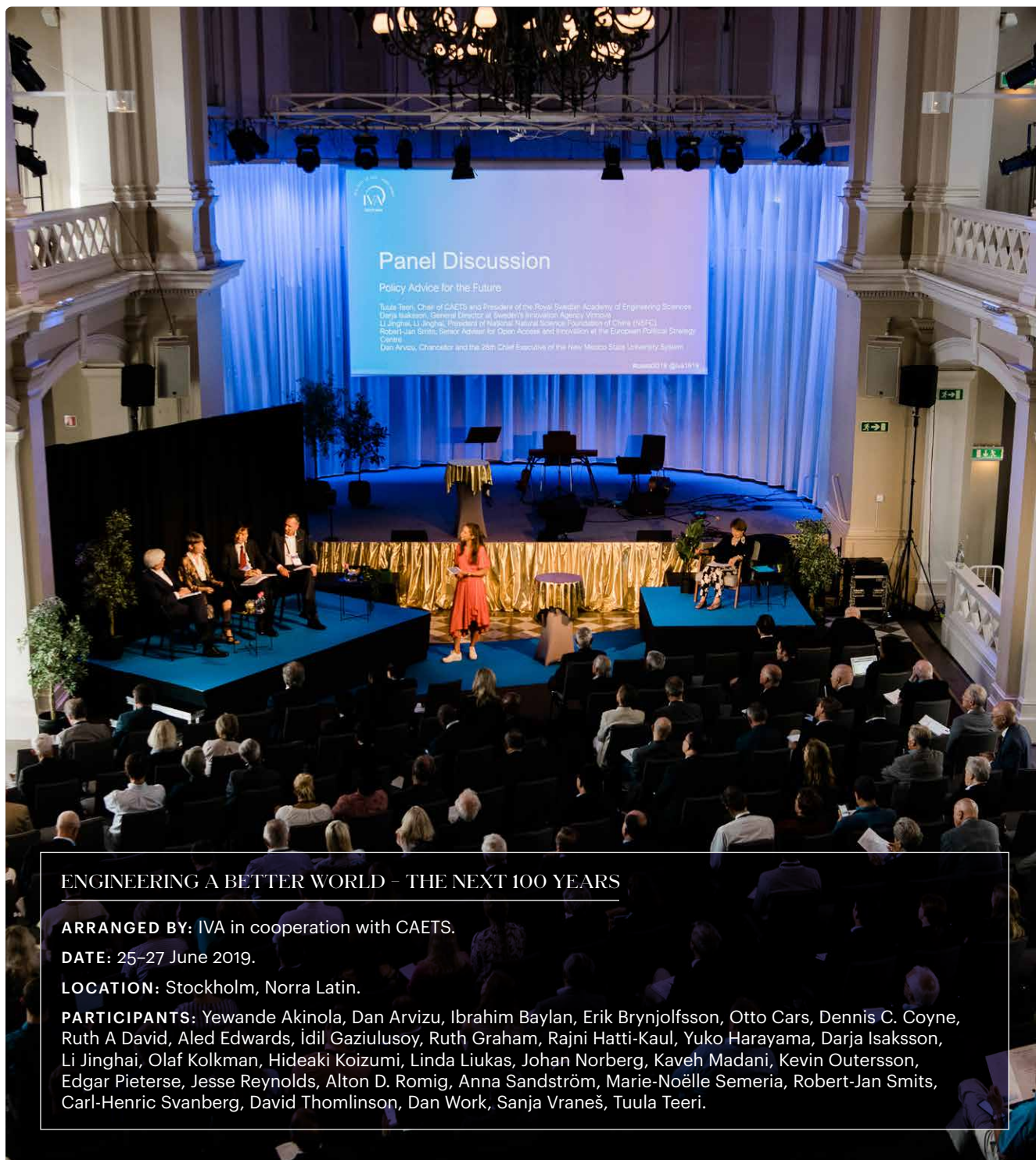
One of the experts was MIT professor Erik Brynjolfsson. He considers it a paradox that the rapid development of AI has not led to a corresponding increase in productivity, but he is sure the effects will come eventually.

Researchers from an observatory at the California Institute

of Technology were awarded a Nobel Prize in 2017 for capturing the universe's gravitational waves in images. Behind this achievement was technology developed under the leadership of Dennis C. Coyne, Chief Engineer at the observatory. He spoke about the technology and the event that led to the prize.

The need to quickly develop new antibiotics was underscored by Otto Cars, a senior professor at Uppsala University. More cooperation between academies of sciences and engineering sciences and decision-makers is something that Robert-Jan Smits from Eindhoven University of Technology said he would like to see so that political decisions can be based on science.

In addition to listening to numerous speakers, the participants at the Wallenberg Wood Science Center were able to learn about the latest advances in Swedish forest research.



ENGINEERING A BETTER WORLD – THE NEXT 100 YEARS

ARRANGED BY: IVA in cooperation with CAETS.

DATE: 25–27 June 2019.

LOCATION: Stockholm, Norra Latin.

PARTICIPANTS: Yewande Akinola, Dan Arvizu, Ibrahim Baylan, Erik Brynjolfsson, Otto Cars, Dennis C. Coyne, Ruth A David, Aled Edwards, İdil Gaziulusoy, Ruth Graham, Rajni Hatti-Kaul, Yuko Harayama, Darja Isaksson, Li Jinghai, Olaf Kolkman, Hideaki Koizumi, Linda Liukas, Johan Norberg, Kaveh Madani, Kevin Outersson, Edgar Pieterse, Jesse Reynolds, Alton D. Romig, Anna Sandström, Marie-Noëlle Semeria, Robert-Jan Smits, Carl-Henric Svanberg, David Thomlinson, Dan Work, Sanja Vraneš, Tuula Teeri.

New honorary members with strong commitment

At the Assembly of the Academy on 3 June, Peter Wallenberg Jr, Mary Walshok and Jan-Eric Sundgren were named as honorary members.

"We want to highlight in particular these three inspiring leaders for driving change and helping to make Sweden more competitive – both inside and outside academia," says Tuula Teeri, President of IVA.

The Executive Committee's explanations for its choices are summarised as follows:

Peter Wallenberg Jr, a member of the Education and Research Policy division, has demonstrated a strong personal commitment to IVA's activities, including as an active member of the Business Executives Council and in division activities. He was also an initiator/catalyst for the creation of IVA's Jobbsprånget project.

Mary Walshok, an international member, has made important contributions to IVA's work on the themes of innovation and entrepreneurship. She founded Connect in San Diego, which

connects entrepreneurs with capital and talent, and was instrumental in establishing the model in Sweden.

Jan-Eric Sundgren, a member of the Basic and Interdisciplinary Engineering Sciences division, has been deeply committed to IVA's activities for many years. His contributions as Steering Committee Chair for Teknicsprånget and Jobbsprånget have been invaluable.

ABOUT THE ACADEMY'S HIGHEST DISTINCTION

As honorary members, IVA may appoint individuals who "through their work or by other means have contributed greatly to the promotion of the Academy's objectives."

The first honorary members were appointed back in 1919.

They were HRH Crown Prince Gustaf Adolf and Director General Karl Axel Fryxell.

Current honorary members, in addition to the new ones: Arne Wittlöv, Lena Treschow Torell and Prince Daniel.



Peter Wallenberg Jr



Mary Walshok



Jan-Eric Sundgren

Luleå company Mobilaris wins Smart Industry



Luleå-based software company Mobilaris was the winner in the fourth round of the Smart Industry Enterprise Competition. Moelven Valåsen AB and Moving Floor AB received an honourable mention.

The jury explained its decision as follows: Mobilaris was named the winner of the 2019 Smart Industry Enterprise Competition for its contributions to the digitalisation of traditional industries. With a strong understanding of customer needs, Mobilaris has used the possibilities of digital technology to increase productivity, improve personal safety and reduce energy consumption. Through its digital service offering aimed at mines and other basic industries, in five years the company has quadrupled its sales, increased its headcount from 17 to 70 employees and now has 25 customers from all parts of the world.

The jury also awarded two honourable mentions.

One went to one of Sweden's biggest sawmills, Moelven Valåsen AB, which "in a business that up to now had a relatively low level of digitalisation, implemented an internal 'digitalisation jour-

ney' for the entire production process – from timber to finished products. The Company has systematically sought access to knowledge and combined best practice with its own solutions."

The second honorary mention went to Moving Floor AB, an environmental technology company with technology for automatic self-cleaning boxes, which "in an industry with very little digitalisation, demonstrated the possibilities and great potential of digitalisation."

ABOUT IVA'S SMART INDUSTRY

Since 2016 Smart Industry has been recognising and rewarding companies that are embracing the possibilities of digitalisation. The project arranges business forums throughout the country for knowledge transfer between companies, organisations and public agencies.

Project Manager: Johan Carlstedt.

Brilliant companies for an innovative future

»We need to invest much more in education, research and innovation. One of the world's ten best universities needs to be in Sweden.«

Jan-Olof Jacke

Watch the full seminar
at IVA's website:



Christian Landgren, Jan-Olof Jacke

More than a century ago, brilliant inventions brought success and fast growth to companies like Ericsson, SKF and Asea.

"Now Sweden is trying to find a new model for innovation," said Arne Kaijser at a jubilee seminar on innovation and the future.

Jan-Olof Jacke, Director General of the Confederation of Swedish Enterprise, predicted that the reduced birth rates around the world will lead to tougher competition for talent.

"We need to invest much more in education, research and innovation. One of the world's ten best universities needs to be in Sweden," he said.

Irena Pozar, Editor-in-Chief of Veckorevyn magazine, pointed out that what is relevant today will not be relevant to those living a 100 years from now.

"The values and desires of today's youth will shape the future of technology," she said.



Arne Kaijser, Samuel Engblom



Irena Pozar



Darja Isaksson



Peter Holmstedt

200 YEARS OF INNOVATION

ARRANGED BY: Industrial Research Committee (IRC).

DATE: 2 December 2019.

LOCATION: Stockholm, IVA.

PARTICIPANTS: Samuel Engblom, Darja Isaksson, Jan-Olof Jacke, Arne Kaijser, Christian Landgren, Irena Pozar.

Materials that will dominate the century



Robert Langer

Discoveries in physics dominated the first half of the 1900s and advances in molecular biology dominated the second half. New materials will dominate the next 100 years.

A clear future perspective was the theme at a packed jubilee seminar arranged by the Chemical Engineering division.

Energy research, how to design drugs to be active for a precise period, and the challenges and opportunities of polymers were explored by a long list of international and Swedish top researchers and business representatives – many of them IVA members.

THE SIGNIFICANCE OF MATERIALS IN SOCIETY

ARRANGED BY: Chemical Engineering division.

DATE: 14 May 2019.

LOCATION: Stockholm, IVA.

PARTICIPANTS: Ann-Christine Albertsson, Lennart Bergström, Brad Chmelka, Ulrica Edlund, Kristina Edström, Anders Hagfeldt, Thomas Hjertberg, Werner Kunz, Martin Malmsten, Karin Markides, Robert Langer, Virgil Percec, Fredrik Tiberg.



Successful start for Junior Academy

Junior Academy is a collaboration between IVA and the New York Academy of Sciences. Young people from different countries work together in teams online to solve great societal challenges. The winners attend a ceremony in New York to receive their prize.

In 2019 an initiative was launched to encourage Swedish youth to apply. It was a success – 68 of the applicants accepted came from Sweden. This represents the most accepted applicants per capita of all the participating countries. Maja Neiman, Project Manager, has received many responses from participants and their parents.

“I’ve received reports on the work being done by the teams from the young people themselves and their parents. One father wrote that he was happy to see his daughter and her teammates really having fun.”

The challenges the teams were asked to work on in 2019 were Space, where they were tasked with creating a framework for and designing a self-sufficient colony for humans on the moon, and Intelligent Homes & Health. In this category, two Swedish girls were part of the winning team that included teenagers from Australia, the Philippines and the USA.

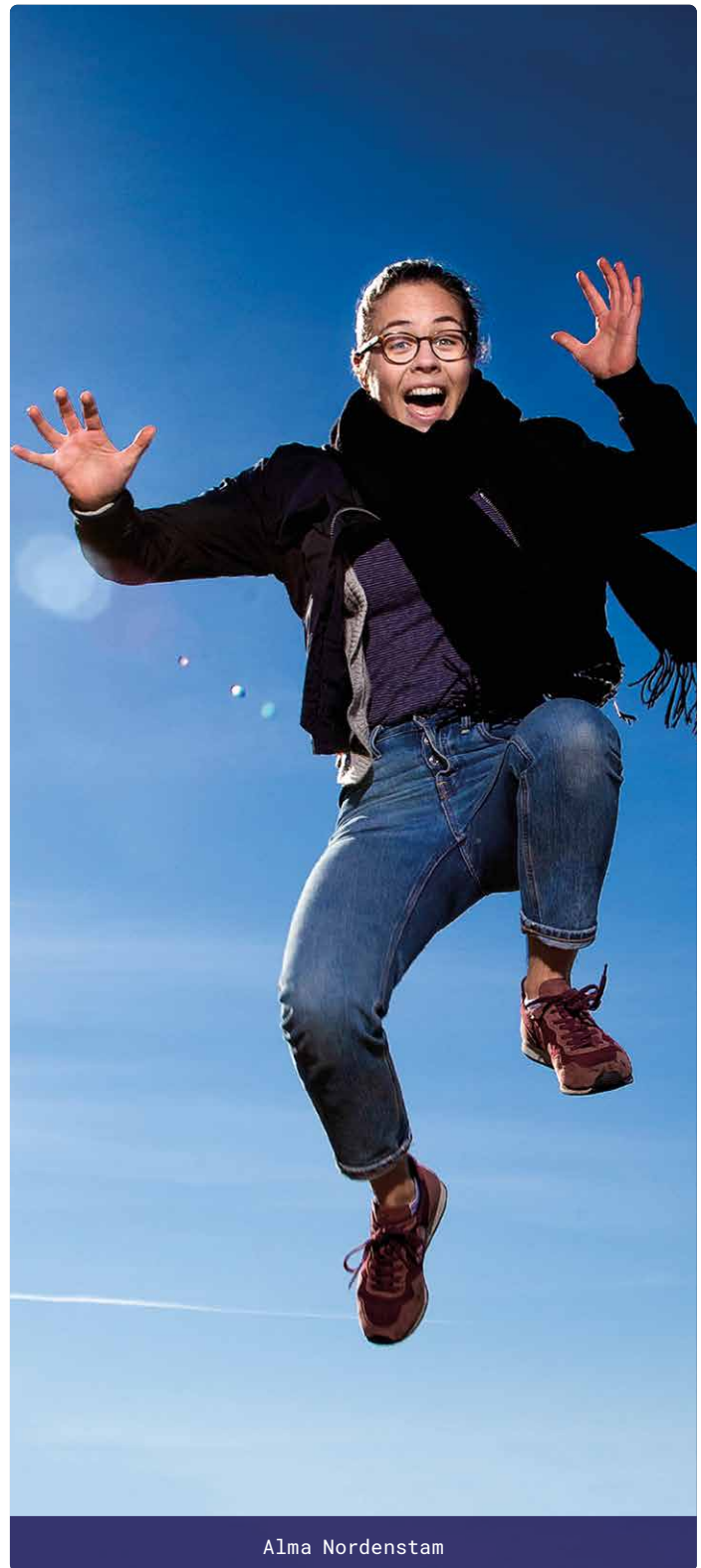
In explaining its selection, the jury pointed out that the team’s solution, called HealthSync, shows an understanding of the complexity of the significant challenges that health systems are facing, with a focus on prevention as a critical success factor. The jury also noted that the members of the winning team are already thinking about the complex systems that engineers of the future will be working on.

Up to now the members of the winning team have only interacted over the web. But in July 2020 they will meet each other in person in New York to receive their prize.

ABOUT JUNIOR ACADEMY

The competition, which is entirely web-based, is for young people all around the world between the ages of 13 and 18. The teams are supported in their work by mentors and experts.

Project Manager: Maja Neiman.



Alma Nordenstam

Focus on learning in Washington



Amelie von Zweigbergk, France A. Córdova, Anna Nilsson-Ehle

On 14–15 October IVA, in cooperation with the National Academy of Engineering and the Embassy of Sweden in Washington D.C., organised a jubilee seminar and a reception at House of Sweden.

Members of both academies alongside many participants from universities, public agencies, the diplomatic corps and various organisations gathered for the activities on 14 October. The reception, which included speeches and discussions, was opened by H.E. Karin Olofsdotter, Swedish Ambassador to the United States, Dr. John L. Anderson, President, National Academy of Engineering and Professor Tuula Teeri, IVA's President.

The themes for the full-day seminar on 15 October were life-long learning, how the education system has changed and how to attract underrepresented groups to higher education, especially in sciences, engineering and mathematics.

The speakers included Dr. France A. Córdova, Director, National Science Foundation; Dr. Anna Nilsson-Ehle, Chair, Vinnova (Sweden's innovation agency); Dr. Norman Fortenberry, Executive Director, American Society for Engineering Education; Dr. Henni Buckley, Associate Professor of Mechanical Engineering, University of Delaware; and Björn Åstrand, Umeå University, Inquiry Chair of the Swedish Government's national action for the teaching profession.



Jenni Buckley



Amelie von Zweigbergk, Christine Cunningham



Kyle Gibson



Camilla Modéer, Martin A. Wikström

INCLUSIVE LEARNING, EDUCATION AND WORK-FORCE DEVELOPMENT IN FUTURE SOCIETIES

ARRANGED BY: IVA, National Academy of Engineering and the Embassy of Sweden in Washington D.C.

DATE: 14–15 October 2019.

LOCATION: House of Sweden, Washington D.C.

PARTICIPANTS: John L. Anderson, Jenni Buckley, France Córdova, Christine Cunningham, Norman Fortenberry, Kyle Gipson, Okhee Lee, Eva Lundgren, Camilla Modéer, Anna Nilsson-Ehle, Karin Olofsdotter, Bill Rouse, Tuula Teeri, Martin A. Wikström, Amelie von Zweigbergk, Björn Åstrand.

1995



Doctor **Kurt Östlund**, a veterinarian, becomes IVA's President. The economy is weak. Programmes are cut back and reorganised. A new strategy is produced with a clear focus on societal development.

1996

The Environmental Council is formed to promote debate about the environment. The target group consists of decision-makers in the private sector, politics and education.

1997



LIGHTYEAR IGNITED
The idea is to promote renewal of business and industry for 18 months through nationwide "challenges." The Ministry of Enterprise and around 30 organisations support the project.

1998

Connect is launched and involves voluntary initiatives to support entrepreneurs. The idea comes from a field trip to California. The project becomes independent after seven years.



FOCUS ON THE FUTURE

The **Technology Foresight** project with eight themed panels is launched. The focus is on the coming decades.



Teknisk Framsyn

2003



DEREGULATION ANALYSIS
The project **Collaboration for Growth** analyses what happens to R&D in deregulated markets. The focus areas are telecommunications, energy, the railway and defence.

2002

The Engineer of Tomorrow project is launched aimed at producing proposals to make Sweden the leading European nation in engineering education.

2001



Professor **Lena Treschow Torell** leaves her position as Research Director at the European Commission to become IVA's President.

2000



Sigrun Hjelmquist takes over as Chair of the Business Executives Council. She launches breakfast meetings to be attended by successful business leaders.

1999



Enrico Deiacco, who was formerly Secretary to the Academy, is appointed as acting President.

2004



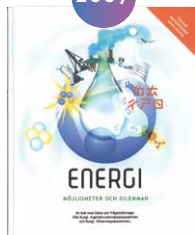
NOTHING VENTURED, NOTHING GAINED
Healthy Successful Companies – 3F, a five-year initiative is launched. Professor **Gunn Johansson** is Project Director.

2005

Elkrafttringen is launched and its name is later changed to **Power Circle**. The programme receives government support and is gradually expanded.

Which sectors will bring growth? How do we increase competitiveness in business and industry? The project **Industry and Enterprise of the Future** finds out.

2007



WELL-RECEIVED TEXTBOOK
The textbook **Energy – Possibilities & Predicaments** is produced by IVA and KVA. The book is very well-received by schools and several new editions are published.

2008



Associate Professor **Björn O. Nilsson**, previously at Biovitrum, is the new President.

The **Research and Innovation Foresight** project prepares input for the Government's upcoming research bill.

Internet Foresight and **Scorecard.se** measure how Sweden is doing in IT.

2008

Energy Crossroads is launched. The goal is to produce a forward-looking and fact-based body of information with and for politicians in the Government and the parliament.

2009



ALMEDALEN PREMIERE

Three seminars are arranged and the participants include Minister for Enterprise and Energy, Maud Olofsson.

2010



The Business Executives Council focuses on service companies. A special initiative for this is launched. **Marie Ehrling** chairs the initiative.

Innovation for Growth is launched. The results are to be presented on an ongoing basis rather than only in a final report. Motto: From words to actions.

2012



TEKNIKSPRÅNGET TAKES ITS FIRST STEPS

19 April Minister for Education Jan Björklund launches the **Tekniksprånget** internship programme at a press conference in the Government's Rosenbad building.



Prince Daniel's Fellowship is launched and begins an inspiration tour of schools and universities.

IVA North is added as another regional hub.

Efforts to improve Sweden's competitiveness through innovation continue through the project **Innovation Powerhouse Sweden**.

Energy efficiency is in focus in a multi-year project called **An Energy Efficient Society**.

2011

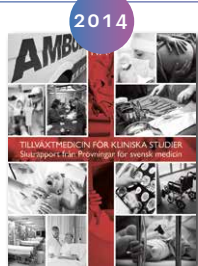
INNOVATION PLAN SWEDEN

The **Innovation for Growth** project presents Innovation Plan Sweden to Annie Lööf as she makes her first appearance as Minister for Enterprise.



2013

The **Wallenberg Auditorium** is reopened after a year-long total renovation.



The project **Trials for Swedish Medicine** presents its final report.

The **Attractiveness for Sustainable Growth** and **Resource Efficient Business Models** projects are launched.

2016

Jobbsprånget, an internship programme that gives graduates who have recently arrived in Sweden a chance to enter the labour market, is supported by both the Government and the Wallenberg Foundation.



2017



Professor **Tuula Teeri** is IVA's new President. She had previously served as President of Aalto University in Finland.

2019



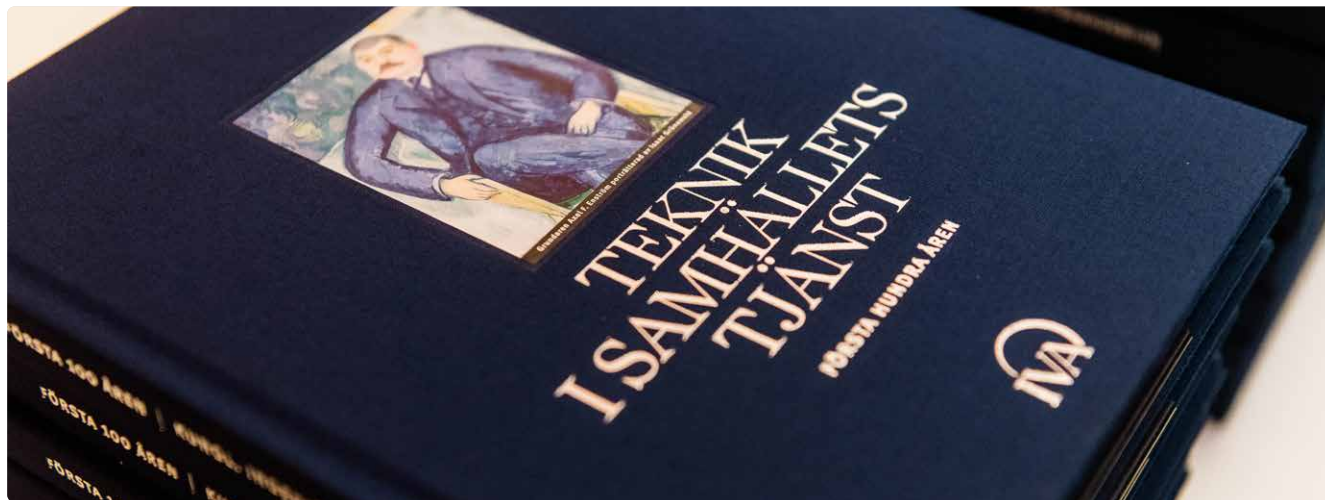
Kungl. Ingenjörsvetenskaps Akademien

A new strategy is adopted for the period up to 2025. The themes are: World-Class Knowledge, Industry and Enterprise of the Future, Climate-Resources-Energy and People-Technology-Society.

Multiple jubilee activities are arranged and new projects are launched during the anniversary year.

2019

Book on IVA – the first 100 years



The jubilee book entitled *Teknik i samhällets tjänst* (Engineering in the Service of Society) presents key individuals, events and buildings from IVA's 100-year history.

However, according to one of the book's authors, Arne Kaijser, speaking when it was launched in August, even fourteen essays, short articles, paragraphs and a treasure trove of images from the past and present do not tell the whole story.

The authors of the book – all scholars of the history of engineering – focused on events and developments and, in particular, described individuals who have played an important role in society and for IVA.

Axel F. Enström, the Academy's first President, is one of those portrayed.

"I became fascinated with the link between IVA's founding and the electrification of Sweden. At that time – the beginning of the 20th century – it wasn't clear that our country would become an industrial nation. We didn't have coal, but we did have plenty of water power," said Gunnar Wetterberg, who took an in-depth look Axel F. Enström's achievements and significance.

Energy, like research and research policy, has been an important theme for the Academy ever since 1919. At the end of the

1960s the Government took over full responsibility for funding engineering research. That was a bit disconcerting for the Academy, according to Sverker Sörlin, who describes IVA's process of exploring future scenarios in his essay.

"Previously we considered ourselves stewards of the future. Now the relationship is more relaxed," he said, adding that things have not always gone the way IVA wanted them to.

"Several of our big initiatives never took off, but when IVA works in collaboration with others, it's a success," says Sverker Sörlin.

ABOUT THE JUBILEE BOOK

Teknik i samhällets tjänst – första hundra åren (Engineering in the Service of Society – the first 100 years) was published as part of the Academy's 100th anniversary celebration.

Contributing authors: Mats Benner, Ylva Hasselberg, Anders Houlitz, Thomas Kaiserfeld, Arne Kaijser, Ingemar Pettersson, Ulrika Sax, Daniel Svensson, Sverker Sörlin, Gunnar Wetterberg, Nina Wormbs.

Editors: Arne Kaijser, Lars Nilsson.

MPs get a dose of technology

A quarter of the 349 members of the Swedish parliament got together to chat and listen to a speech about technology at the annual gathering of IVA and the Society for Members of Parliament and Researchers (Rifo) one evening in November. The parliamentarians with Speaker Andreas Norlén and Rifo's Chair Betty Malmberg (M) listened to Tuula Teeri talk about progress in research and technology and applauded to express their gratitude.

Betty Malmberg pointed out that the Academy's origins can be traced back to bills passed within the parliament before IVA was formed. The parliament had, however, envisioned a different solution than an academy, but added: "Who can complain when the results have been so good?"

ABOUT THE SWEDISH SOCIETY FOR MEMBERS OF PARLIAMENT AND RESEARCHERS (RIFO)

Rifo is a forum for contact and dialogue between members of the parliament and researchers. Members of parliament and researchers involved in public or private research can become members. Rifo has around 600 members, 100 of whom are members of parliament.

Chair: Betty Malmberg (M).



Tuula Teeri, Andreas Norlén



Digitalisation for Increased Competitiveness

In March the *Digitalisation for Increased Competitiveness* project released its final report. The report presents analysis and proposals for digital infrastructure, security, talent, integrity and industrial platforms for increased Swedish competitiveness. One of the proposals is for a new coordination role at the Government Offices. The project involved numerous politicians and representatives from public agencies, the public and private sectors and the research community. They all contributed to nuanced and insightful discussions on the changes that digitalisation is bringing about. The challenge was to highlight the many positive effects of digitalisation while not forgetting the more problematic aspects. IVA will continue its focus on digitalisation in 2020. The Project Manager was Per Hjérten and the Chair of the Steering Committee was Jan Nygren.

Sweden's image important in fight for talent

»The problem of finding housing makes people think twice about moving here.«

Magdalena Gerger

Watch the full seminar
at IVA's website:



Knowledge about Sweden is low internationally – but on the plus side, Sweden has a lot going for it in the hunt for international talent. James Savage is CEO and publisher of The Local, an English-language website that reports news about Sweden. He has taken a closer look at how we're perceived in other countries.

"In general the image of Sweden is a bit vague," he said at a Business Executive Council jubilee seminar.

The Local's readers think the country is innovative and people have a good work-life balance. The fact that all Swedes speak English is a bonus. The public sector is efficient, particularly the Tax Agency. Our flat organisational structures are considered to have both advantages and disadvantages. Examples of the latter are that it's hard to make a career and there are bureaucratic issues. The Swedish Migration Agency's long waiting times are evidence of this. According to The Local, since 2000 the influx

of labour from EU countries has tripled, doubled from the OECD area and increased five-fold from the BRIC countries.

"Sweden's employers should be better at identifying and embracing talent," said James Savage.

Magdalena Gerger, CEO of Systembolaget, is the Business Executives Council's new Chair. She also believes we should make better use of talent from other countries.

"The problem of finding housing makes people think twice about moving here," she said.

Despite this, she thinks the Swedish private sector is attractive. Investment in employees and flexibility are examples of the reasons for this.

"We are also good at working across organisational boundaries. Interplay between politics, academia and industry is another benefit."



Maria Rankka



James Savage



SWEDEN AND TALENT – DESTINATION OR DEPARTURE GATE?

ARRANGED BY: Business Executives Council.

DATE: 29 November 2019.

LOCATION: Stockholm, IVA.

PARTICIPANTS: Johan Carlstedt,
Magdalena Gerger, Peter Larsson, Maria Rankka,
James Savage, Martin Wikström.

Five areas in focus for circular business models and resource effectiveness

The participants in the project *Resource Effectiveness and the Circular Economy* have worked to find ways to make material flows more efficient and to promote a circular economy. The project has focused on: mobility, facilities, food, textiles and plastics. Hundreds of individuals have been involved. The reference groups included politicians and representatives from the financial sector.

Åke Svensson was Chair of the Steering Committee.

"Swedish industry has been taking a resource-efficient approach for a long time. Now it's time to develop business models that are non-linear. This will create opportunities to improve competitiveness internationally" he says.

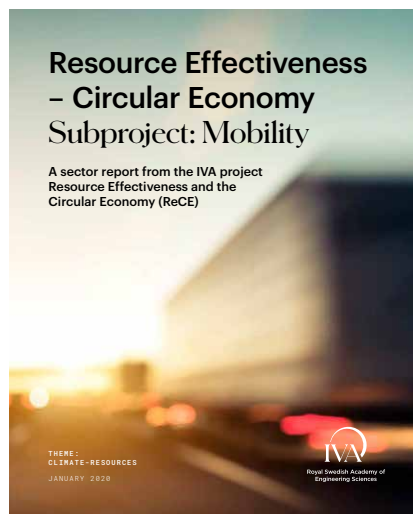
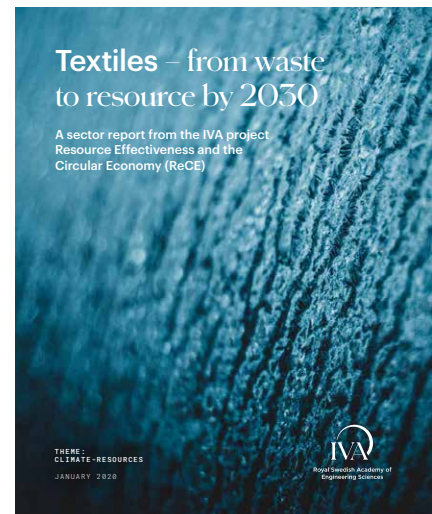
ABOUT RESOURCE EFFECTIVENESS AND THE CIRCULAR ECONOMY

The project's goal is to create a platform for resource effectiveness and the circular economy.

The work was carried out by five groups focusing on the themes: mobility, facilities, food, textiles and plastics.

Chair of the Steering Committee: Åke Svensson.

Project Managers: Caroline Ankarcróna and Jan Nordling.



New materials challenge today's product design



Jari Kinaret

The development of materials has had a profound impact, dramatically changing the way people live their lives – from the Bronze Age and the Iron Age to today when 3D printers are printing materials with built-in sensors.

The new materials and processes are challenging today's product design. There are more and more ways to reduce the weight of products and more of them are being electrified. Demand for metals for batteries is also growing and it is increasingly important to find the most efficient ways to recycle them.

These themes were addressed at a jubilee seminar arranged by IVA's Mining and Materials division. In a packed Wallenberg Auditorium the seminar participants met both Swedish and international researchers and industry representatives.

MATERIALS ARE DEVELOPMENT – INDUSTRY, SUSTAINABILITY AND SOCIETY

ARRANGED BY: Mining and Materials division.

DATE: 15 May 2019.

LOCATION: Stockholm, IVA.

PARTICIPANTS: Annika Borgenstam, Jari Kinaret, Kerstin Konradsson, Charlie Kuehmann, Gert Nilson, Vincenzo Palermo, Martin Pei, Tresa Pollock, Roger Reed, Olle Wijk.

Meetingplace for researchers and businesses



Ibrahim Baylan, Sweden's Minister for Business, Industry and Innovation

The Research2Business project started publishing its annual 100 List in 2019 to highlight research with commercial potential taking place at Sweden's universities. The theme in 2019 was digitalisation.

The List focuses attention on current research and makes it easier for researchers and businesses to find each other and together create innovation and new commercial opportunities.

The research projects on the first 100 List presented in March all have commercial potential and relate to digitalisation. By building bridges between the research and business communities, research results with the capacity to change the world have a better chance of being turned into actual benefits and of making Sweden more competitive.

In 2019 more than 300 research projects were registered. The

nominated proposals were examined by an expert team and then reviewed by a selection committee. The final decisions on which projects would make the list were made by the project's Steering Committee. 67 projects were selected to be part of the R2B Summit on 20 March.

At the event, researchers presented their projects, shared their knowledge and experiences and formed new contacts with business representatives. Hot topics around digitalisation, competitiveness and cooperation were at the top of the agenda.

The speakers included Anita Schjöll Brede who runs AI company Iris.ai, Professor Amy Loutfi from Örebro University and Darja Isaksson, Director General of Vinnova.

Sweden's Minister for Business, Industry and Innovation, Ibrahim Baylan, was a guest at the R2B Summit and presented the Government's view of how Sweden is equipped for digitalisation.



ABOUT RESEARCH2BUSINESS

Research2Business (R2B) is a 10-year initiative to promote cooperation between researchers, the private sector and society. The goal is to improve Sweden's international competitiveness and sustainable development.

Chair of the Steering Committee: Marianne Dicander Alexandersson.

Project Manager: Malin Mohr.

Hudiksvall trio win prize for smart hay packaging



Line Skoglund, Soline Andersson and Liv Krantz from class 8 at MTH Utbildning, a school in Hudiksvall, took home the prize in IVA's E-battle competition for students ages 13–16 with their "Smart Hay" business idea, a practical solution for packaging hay in the stable. According to the jury, in their solution the girls combine their favourite hobby with enterprise. The students won SEK 30,000 for their class and at the end of November travelled to Stockholm for a visit and to receive their prize. The Hudiksvall girls' road to success was via one of the five regional competitions in which 200 classes from schools throughout Sweden participated. All of the regional winners shared a strong focus on sustainability.

ABOUT E-BATTLE

The purpose of E-battle (*E-kampen*) is to give students ages 13–16 the chance to spend two days learning about entrepreneurship. E-battle is also a competition where the winners are rewarded with SEK 30,000 in prize money for their class.

This was the competition's second year.

E-battle is organised by IVA and STARTcentrum.

Project Manager: Johan Carlstedt.

Telecom cluster and cutting edge research in the south



Mikael Eriksson

Cutting edge research in a range of areas is taking place in Sweden's southern county of Skåne. At a jubilee seminar two areas were in focus: the strong telecom cluster and world-leading research infrastructure in the form of MAX IV and ESS.

For two days 115 seminar participants heard from experts from academia and industry who explored several aspects of communication technology of the future. Researchers also talked about how MAX IV and ESS are helping to advance the front lines of research in areas such as energy, forestry, life science and food. The participants toured MAX IV with an expert guide, Mikael Eriksson, the legendary creator of the first MAX facility in Lund.

A jubilee seminar without a festive dinner? Not an option in Skåne. The many guests at the dinner were welcomed by IVA President Tuula Teeri and Chair of IVA South, Per Eriksson.

TECHNOLOGY FOR THE GREAT SOCIETAL CHALLENGES

ARRANGED BY: IVA South.

DATE: 8–9 October 2019.

LOCATION: Lund, Medicon Village.

PARTICIPANTS: Ove Edfors, Per Eriksson, Björn Ekelund, Mikael Eriksson, Jesper Harholt, Hanna Isaksson, Peter Karlsson, Thomas Laurell, Sven Lidin, Cecilia Nebel, Linda Persson, Mats Qvarford, Lars Samuelson, Ola Svedin, Daniel Söderberg, Tuula Teeri, Björn Walse, Viktor Öwall.

Climate and talent in focus in Almedal

During Almedal Week IVA attracted large audiences at seminars covering topics such as the talent supply, the climate and resource use, as well as the business community's links to research.

Tekniksprånget, which arranges engineering internships for young people, was another focus area. The programme has had good results.

The Government's commission on governance of universities was discussed. One problem highlighted was the fact that the commission had not made more progress on the issues of innovation and collaboration.

One of the seminars addressed industrial platforms and digital collaboration. Darja Isaksson, Director General of Vinnova, talked about the need for common IT architecture. The IVA Student Council launched its campaign under the heading "My promise to the climate and the planet." The next 100 leaders of today and tomorrow made their promises and were photographed with them.

ABOUT ALMEDAL WEEK

IVA has participated in Almedal Week since 2009. The Academy is able to strengthen its network through the seminars and meetings it organises. Topical issues are addressed and discussed, particularly those relating to IVA's projects. Many IVA members participate in activities arranged by other organisations as well.

Project Manager: Anna Lindberg.



Ibrahim Baylan, Johan Svenningsson, Tuula Teeri



Eva Lundgren, Inger Ashing



Carina Håkansson, Andreas Regnell



Janine Alm Ericson, Cecilie Tenfjord-Toftby, Hampus Hagman, Johan Hultberg, Patrik Engström, Birger Lahti



Karin Byman

Elevated with technology in the cloud



Each year 40,000 people participate in a total of 2,600 meetings at the IVA Conference Centre. Many seminars and meetings are organised by IVA itself, but the majority are arranged by other organisations, companies and individuals.

The IVA building was constructed at the end of the 1800s, which is plain to see in the well-preserved Banquet Hall. But something quite different distinguishes the Wallenberg Auditorium and the other conference rooms today.

“We have a very high standard of technology in all of our conference rooms. The new huge LED screen in the Wallenberg Auditorium provides us with a lot of possibilities,” says Fredrik Adamsson, a technician at the Conference Centre.

The technology making the biggest difference is the video conferencing system in all of the rooms. Good screens and microphones in the ceiling make it easier to be seen and heard wherever you are.

“Video conferencing has been around for a long time, but there has been fast development on the software side. We use an entirely cloud-based system and it provides great flexibility.”

Participants who can't be at Grev Turegatan in person can easily connect via phone, tablet or computer. No special soft-

ware is needed because it is in the cloud and launches through a link to the meeting.


“IVA uses videoconferencing a lot because we have members throughout Sweden and in many other countries. The new technology is easy and reliable. With this quality and reliability I'm convinced that it will be used increasingly by speakers who can't physically be here. The challenge is to create an environment that is more interesting to watch than a speaker looking down at a computer screen. We're happy to help with that as well,” concludes Fredrik Adamsson.

ABOUT THE IVA CONFERENCE CENTRE

At Grev Turegatan there are 10 conference rooms of various sizes and a large Banquet Hall in a style dating back to the turn of the last century.

At IVA Conference Centre around 2,600 meetings are held every year with some 40,000 guests – ranging from breakfast meetings, seminars and AGMs to training and courses. Food and beverages are served in cooperation with the Grodan restaurant which is in the same building.

Conference Director: Charlotta Svedberg.

A photograph of three young people in a meeting. A man with dark hair in a black shirt stands on the left, looking towards the center. A woman with blonde hair in a white button-down shirt stands in the middle, looking towards the right. A man with curly dark hair in a dark blue hoodie stands on the right, looking towards the woman. The hoodie has 'TEKNIKSPRÅNGET' and a logo on the sleeve. They are in a room with a wooden door and a whiteboard in the background.

Tekniksprånget

Through *Tekniksprånget* young people throughout Sweden get the opportunity to test a career in engineering through a paid four-month internship. The idea is to inspire young people to study for an engineering degree by giving them a better idea of what to expect after graduation. About 200 employers are participating in the programme, offering internships in 100 locations all around Sweden. The results are good:

- 50 percent the interns are women. 50 percent go on to study for an engineering degree.
- 60 percent of the young people applying to *Tekniksprånget* say they have reservations about studying for an engineering degree.
- 80 percent of those who completed a *Tekniksprånget* internship in one of the first four terms state that they are now studying or intend to study for an engineering degree or another technical degree.
- 75 percent of the interns who go on to study engineering consider the internship to have influenced their decision.

Head of *Tekniksprånget*: Alexandra Ridderstad.

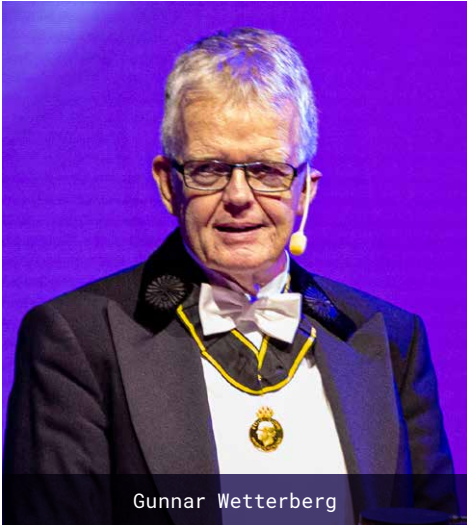
Annual Meeting







Peter Wallenberg Jr



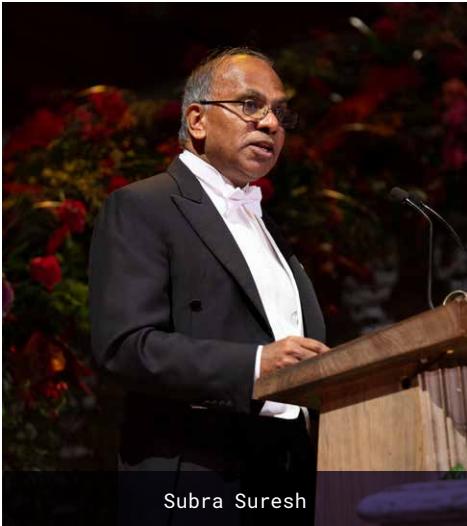
Gunnar Wetterberg



Helena Norlén, Andreas Norlén



Elin Malmsköld, Max Tegmark



Subra Suresh



Martin Lorentzon,
Tara Derakshan

Medals, a banquet and mingling

The world's first engineering sciences academy celebrated its 100 years in existence with an Annual Meeting in Aula Medica in Solna and a banquet at Stockholm City Hall.

As per tradition there were speeches, Gold Medals were awarded, a commemorative booklet was presented and the guests enjoyed dinner and a chance to mingle.

In his speech, IVA Chair Carl-Henric Svanberg made connections to the Academy's long history:

"Today Sweden is in an era of entrepreneurship – and it was the same 100 years ago. We got the separator, the three-phase electric power system and ball bearings – and many of the so-called "genius enterprises" are still with us today.

Since 1921 it has been the Academy's tradition to award Gold Medals. The 2019 Gold Medallists were Hans Dalborg, Lena Olving, Max Tegmark and Spotify duo Martin Lorentzon and Daniel Ek. The annual address on *Progress in Research and Technology* was given by Tuula Teeri, the Academy's 10th President. The audience got a surprise when her speech was unexpectedly started by Axel F. Enström, IVA's first President, who stepped onto the stage as a hologram to say a few words.

"The image of engineers as creators of prosperity – which he described in his speech in late autumn 1939 – is just as relevant today," said Tuula Teeri.



Carl XVI Gustaf, Hans Dalborg



Anna Ekström

ABOUT THE ANNUAL MEETING

The Annual Meeting of the Academy is always held on the last Friday in October. The Chair opens the meeting and gives an account of the Academy's activities. As per tradition, deceased members are remembered. One individual is memorialised for meritorious achievements further back in time. New members are welcomed and the Academy's medals are presented. The President holds a speech under the heading *Progress in Research and Technology*. The Chair closes the meeting and the evening is rounded off with a banquet, entertainment and dancing.

Project Manager: Anna Lindberg.

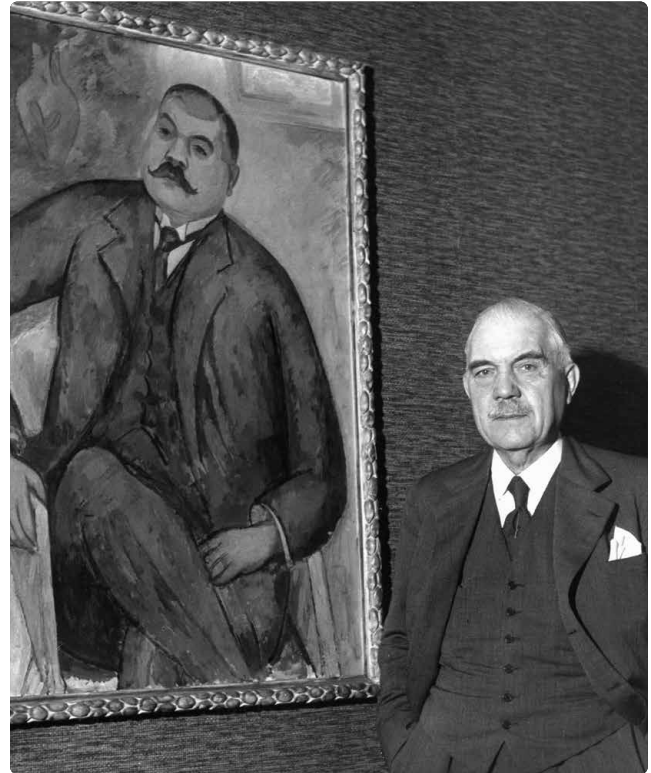
Axel F. Enström, IVA's founder

Axel F. Enström was IVA's first president. With his charisma and position at the centre of the engineering network he dominated the first 25 years of IVA's history. He was the face of IVA while others took care of day-do-day activities.

Enström was one of the first batch of students to graduate in 1894 from the Royal Institute of Technology's new school of electrical engineering. His choice of career put him at the centre of the great electrification revolution in Sweden. Electrical engineers were at the cutting edge of the new future. Enström and a team of colleagues would play a dominant role in Sweden's industrial and economic development in the decades to come. As a consulting engineer he would work on a number of new technological developments, but the work that would have the greatest significance over time was done when Enström served on government commissions and committees. Back in 1901 he was asked by the Board of Trade to provide expert advice and the following year he was appointed to assist on a special committee for a proposed bill on electrical installations. Over the years Enström built up a network of contacts which included several influential members of the parliament.

Meanwhile, a lot of hope was pinned on hydropower and electricity for the fast industrialisation of Sweden. The most important source of energy was coal, which dominated the entire Swedish import system at the beginning of the 20th century. WWI broke out in 1914 bringing the energy issue to a head. The blockades meant that other energy sources had to be found and the electrification of Sweden was accelerated. The energy supply became one of the main economic issues of the day. 64 members of the parliament got behind a fuel policy bill in 1916. The idea was to create a "permanent, practical scientific institution" to promote a national energy policy.

Axel F. Enström was assigned to write a response to the bill proposal. In 1917 he gathered around 20 industrialists, researchers and engineers at a meeting to address a broader notion "creating a Swedish engineering sciences academy." The proposal fell on fertile soil and an "academy inquiry commission" was formed. The commission also started to raise funds for a foundation for the academy. In 1918 the Board of Trade wrote to the King to propose that the Government establish the academy. A bill was presented in June 1919, the Government established the



statutes in June, appointed the first academy members in August and on 24 October 1919, approved the election of the Chairman and Vice Chairman as well as the appointment of the President. Even before all of the decisions had been made, Enström had secured premises for the Academy using funds raised to take over the shares in a property company with a building on Grev Turegatan. IVA was able to move into the second floor immediately after the Academy was established.

The rest is history – a 100-year history in the service of society.

ABOUT THE COMMEMORATIVE BOOKLET

Every year IVA publishes a Commemorative Booklet to honour a person who has made a significant contribution to society in the areas of engineering sciences, technology, economics or industry. The honourees were born at least 100 years ago. The Commemorative Booklet is published in conjunction with the Annual Meeting at which the individual is honoured in a commemorative address. The 2019 Commemorative Booklet was written by historian and author Gunnar Wetterberg.

The Gold Medallists of 2019



Hans Dalborg, PhD Econ., received IVA's Great Gold Medal for his achievements in developing the Swedish financial sector and the Swedish model for corporate governance, in combination with his commitment to social issues involving significant contributions to research and culture.

Four deserving individuals were awarded IVA's Gold Medal:

Daniel Ek, Chairman and Martin Lorentzon, D.Eng h.c., for creating the company Spotify which has fundamentally changed the music industry and put an end to music piracy. As innovators and entrepreneurs, they have built what may be the only European tech company to succeed in competing with Chinese and American giants.

Lena Olving, MSc Eng., for her achievements as an innovator and leader of successful businesses at the front lines of technology. Her progressive and ground-breaking leadership makes her a role model for leaders of technically advanced companies in a global market.

Professor Max Tegmark for his contributions to our understanding of humanity's place in the cosmos and the opportunities and risks associated with artificial intelligence. He has courageously tackled these existential questions in his research and, in a commendable way, succeeded in communicating the issues to a wider public.

NOBEL LAUREATE PAYS A VISIT

Akira Yoshina, 2019 Nobel Laureate in Chemistry, visited IVA in connection with the Nobel festivities in December. He was the keynote speaker at a seminar on the future of battery technology and ecosystems. Akira Yoshina is usually described as the father of lithium-ion batteries. Although he shared the Nobel Prize with the two American researchers, Stanley Whittingham and John Goodenough, who laid the foundation for the technology, it was Akira Yoshina who in 1985 created the first commercially viable lithium-ion battery. The first batteries came out on the market in 1991 and got their breakthrough in consumer electronics. Today the batteries can be found in, for example, electric cars. This is the second time Akira Yoshina has visited the Academy. He was a guest back in 2013.



IVA Documentation 2019

A from 31 December unless otherwise stated. Division affiliation is noted in parentheses.

THE EXECUTIVE COMMITTEE

Carl-Henric Svanberg (VI),
Chair of the Academy 2018–2020
Cecilia Hermansson (IX),
Vice Chair 2019–2021
Pia Sandvik (XI), Vice Chair 2018–2020
Johan Sterte, (IV), Vice Chair 2018–2020
Hand Stråberg (I), Vice Chair 2017–2019
Eva Hamilton (VI), Business Executives
Council Chair 2016–2019
Tuula Teeri (IV), President of the
Academy 2017–2023
Adjunct member: Anna Adolfsson,
Chair of IVA's Student Council

Elected member of the Executive Committee from 1 January 2020

Magdalena Gerger (VI), Chair of the
Business Executives Council 2020–2022
Magnus Hall (VIII), Vice Chair 2020–2022

THE ADVISORY COUNCIL

The Advisory Council includes the Chair of the Academy, the chairs or vice chairs of the Academy's divisions, chairs of the regional networks and IVA's President. The Secretary to the Academy as well as the chairs of the Business Executives Council and the Industrial Research Committee are also called upon to attend meetings.

Carl-Henric Svanberg (VI), Chair
Tuula Teeri (IV), President
Johan Weigelt, Secretary to the Academy

Division chairs

Monica Bellgran (I)
Birgitta Resvik (II)
Jonas Eliasson (III)
Martin Malmsten (IV)
Gert Nilson (V)
Sofia Börjesson (VI)
Sophia Hober (VII)
Lena Ek (VIII)
Anders Lindberg (IX)
Stefan Ståhl (X)
Peter Larsson (XI)
Staffan Truvé (XII)

Chairs of IVA's regional sections

Per Eriksson (XI), IVA South
Erik Höglund (I), IVA Nord
Marianne Dicander Alexandersson (VI),
IVA West

Chairs of IVA's Business Executives Council (BEC) and Industrial Research Committee (IRC)

Eva Hamilton (VI), BEC
Peter Holmstedt (I), IRC

Chairs of IVA's Theme Councils

Maria Anvret (X), World-Class
Knowledge
Karl Bergman (II),
Climate–Resources–Energy
Carola Lemne (VI), Industry
and Enterprise of the Future
Åsa Söderström Winberg (III),
People–Technology–Society

MEMBERS

The Academy has 963 Swedish
members and 264 international
members.

Elected members in 2019

Mats Rahmström (I), President & CEO
Atlas Copco Group
Catharina Tunberg (I), General Manager
Shared Technologies, Assa Abloy AB
Klas Wåhlberg (I), Director General,
Association of Swedish Engineering
Industries
Elna Holmberg (II), Vice President
Volvo Group Electromobility
Andreas Regnell (II), Senior Vice
President, Strategic Development,
Vattenfall AB.
Lena Erixon (III), Director General,
Swedish Transport Administration
Svante Hagman (III), MSc Bus. Econ.
Jan Jörmark (III), Associate Professor,
University of Gothenburg School of
Business, Economics and Law
Staffan Asplund (IV), Global RD&I
Director, Nouryon, Surface Chemistry
Mats Larhed (IV), Professor,
Uppsala University
Magnus Nydén (IV), Chief
Scientist, Nouryon
Eva Pétursson (V), Executive
Vice President, Research and
Innovation, SSAB
Pontus Sjöberg (V), Managing
Director, Swerim
Signhild Arnegård Hansen (VI),
Chair, Svenska Lantchips AB
and Utah Chips Corporation
Jan-Olof Jacke (VI), Director General,
Confederation of Swedish Enterprise
Anne Lidgard (VII), Director, Vinnova
Erik Lindahl (VII), Professor,
Stockholm University/KTH,
Science for Life Laboratory
Johan Åkerman (VII), Professor,
University of Gothenburg

Peter Berg (VIII), Director,
McKinsey & Company
Marie Johansson (VIII), Professor,
Linnaeus University and Senior
Researcher, RISE
Johan Eklund (IX), Managing
Director, Entrepreneurship Forum
Lena Hagman (IX), Senior Economist,
Association of Swedish Engineering
Industries
Per Josefsson (IX), entrepreneur,
owner, Brummer & Partners
Eva Mörk (IX), Professor,
Uppsala University
Mai-Lis Hellenius (X), Professor,
Karolinska University Hospital
Roger Johanson (X), Founding
Partner, Carneo Alternative Solutions
Martin Gren (XI), Founder
and board member, Axis AB
Sylvia Schwaag Serger (XI), Professor
and Pro Vice-Chancellor, Lund University
Erik Elmroth (XII), Professor, Department
of Computing Science Umeå University
Fredrik Heintz (XII), Lecturer, Associate
Professor Linköping University
Robin Teigland (XII), Professor,
Chalmers University of Technology

Elected international members 2019

Björn Birgisson, Professor
Texas A&M University, USA
Magnus Egerstedt, Professor
Georgia Institute of Technology, USA
Kari Jordan, Chair Outokumpu Oyj,
Finland
Casper von Koskull, President
and CEO Nordea, Finland
Junbai Li, Professor, Chinese
Academy of Sciences, Beijing,
China
Anders Petersson, Partner,
IK Investment Partners GmbH,
Germany
Caterina Petrillo, Professor, Dept.
of Physics and Geology, Perugia
University, Italy
Yongqi Lou, Professor,
Tongji University, China

Deceased members 2019

(Year elected in parentheses)
Sven Axsäter (VI, 1994), Professor,
Associate Professor
Holger Bohlin (VI, 1969), MSc Bus. Econ.,
Professor Arne Elmroth (III, 1990),
Professor, D.Eng, MSc Eng
Stig Ericsson (I, 1983), MSc Eng, Director
Bengt Eskilson (VI, 1994), MSc Eng
Bengt Hallström (X, 1984), Professor,
Lic. Eng.
Gunnar Hambræus (XI, 1970), Professor
Bjarne Holmqvist (VI, 2008), MSc Eng,
Director
Bengt Hultqvist (VII, 1972), Professor
Lars Högberg (VII, 1991), Former
Director General
Inge Johansen (Int, 1986) Professor
Hans Jørgen Larsen (Int, 1987), MSc Eng
Jan-Olov Liljenzin (IV, 1991), Professor
Per-Arne Lindqvist (V, 2000), D.Eng.,
Professor
Leif Nilsson (I, 1990), D.Eng., Ass. Professor
Nils J. Nilsson (Int, 1993), Professor
Bin Ning (Int, 2017), Vice-Chancellor,
Professor
Anders Nyrén (IX, 2011), Director
Ragnar Ohlson (X, 1976), Professor
Hans Rausing (IX, 1984), MSc Eng
Evelyn Sokolowski (VII, 1991), D.Eng.,
Associate Professor
Dirk Thoenes (Int, 1985), Professor, dr, ir
Director Gunnar Wessman (XI, 1984),
MSc Eng
Nils Åslund (VII, 1987), Professor
Gustaf Östberg, Lic. Eng., Professor
Emeritus (V, 1978 / XI, 1988)

IVA DIVISIONS

Division I: Mechanical Engineering

Monica Bellgran, Professor,
Chair 2016–2019
Per Grunewald, board member,
Vice Chair 2019–2021
Rikard Söderberg, Professor,
Vice Chair 2017–2019
Secretary: Ingrid Jansson, IVA
Number of members: 91

Division II: Electrical Engineering

Birgitta Resvik, Vice President,
Chair 2017–2020
Alf Isaksson, Programme Manager,
Vice Chair 2017–2019
Karl Bergman, Research Director,
Vice Chair 2017–2019
Secretary: Karin Byman, IVA
Number of members: 51

Division III: Building and Construction

Jonas Eliasson, Professor,
Chair 2019–2021
Kristina L Nilsson, Professor,
Vice Chair 2019–2021
Johan Woxenius, Professor,
Vice Chair 2017–2019
Secretary: Staffan Eriksson, IVA
Number of members: 80

Division IV: Chemical Engineering

Martin Malmsten, Professor,
Chair 2018–2020
Henrik Thunman, Professor,
Vice Chair 2018–2020
Ulrika Edlund, Professor,
Vice Chair 2019–2021
Secretary: Jan Westberg, IVA
Number of members: 81

Division V: Mining and Materials

Gert Nilson, D.Eng.,
Chair 2018–2020
Lars Hultman, Professor,
Vice Chair 2018–2020
Ingegerd Annergren, D.Eng.,
Vice Chair 2017–2019
Secretary: Elin Elliot, IVA
Number of members: 67

Division VI: Management

Fredrik Wirdenius, CEO,
Chair 2019–2021
Sofia Börjesson, Professor,
Vice Chair 2016–2019
Marcus Lindahl, Professor,
Vice Chair 2019–2021
Secretary: Malin Mohr, IVA
Number of members: 127

Division VII: Basic and Inter-disciplinary Engineering Sciences

Sophia Hober, Professor, Chair 2017–2019
Ann Louise Johansson, CEO,
Vice Chair 2017–2019
Fredrik Höök, Professor,
Vice Chair 2019–2021
Secretary: Per Hjertén, IVA
Number of members: 99

Division VIII: Forest Technology

Lena Ek, Board Chair,
Chair 2018–2020
Birgitta Sundblad, CEO,
Vice Chair 2017–2019
Jon Haag, Director,
Vice Chair 2018–2020
Secretary: Johan Weigelt, IVA
Number of members: 58

Division IX: Economics

Anders Lindberg, Board Chair,
Chair 2019–2021
John Hassler, Professor,
Vice Chair 2019–2021
Cecilia Hermansson, PhD Econ.,
Vice Chair 2018–2020
Secretary: Hampus Lindh, IVA
Number of members: 115

Division X: Biotechnology

Stefan Ståhl, Professor,
Chair 2017–2019
Lena Gustafsson, Professor,
Vice Chair 2017–2019
Magnus Lundberg, Board Chair,
Vice Chair 2018–2020
Secretary: Maja Neiman
Number of members: 64

Division XI: Education and Research Policy

Peter Larsson, Director of Social Policy,
Chair 2018–2020
Susanne Ås Sivborg, Director General,
Vice Chair 2018–2020
Hans Hentzell, CEO,
Vice Chair 2019–2021
Secretary: Martin Wikström, IVA
Number of members: 75

Division XII: Information Technology

Staffan Truvé, Research Director,
Chair 2017–2019
Ulf Wahlberg, MSc Eng,
Vice Chair 2019–2021
Jane Walerud, Entrepreneur,
Vice Chair 2017–2019
Secretary: Linda Olsson, IVA
Number of members: 69

REGIONAL SECTIONS

IVA North

Erik Höglund (I), Pro Vice-Chancellor,
Chair 2018–2020
Lars-Eric Aaaro (V), Director of Sales,
Vice Chair 2015–2019
Stina Blombäck (VIII), CEO,
Vice Chair 2018–2020
Secretary: Eva Lagerblad

IVA South

Per Eriksson (XI), Professor,
Chair 2018–2020
Sven Mattisson (II), Associate Professor,
Vice Chair 2019–2021
Judith Melin (VII), Doctor,
Vice Chair 2018–2020
Secretary: Jan Westberg, IVA

IVA West

Marianne Dicander Alexandersson (VI),
Board Chair, Chair 2019–2020
Sofia Börjesson (VI), Professor,
Vice Chair 2017–2019
Torbjörn Holmström (I), Director,
Vice Chair 2018–2020
Secretary: Gustaf Wahlström, IVA

Participants in IRC – IVA's Leadership Programme

Peter Holmstedt, Chair, 2014–2019
Niclas Andersson, BTG Process
Solution, 2018–2020
Anders Berglund, Scania CV AB,
2017–2019
Henrik Blomberg, Telia, 2018–2020
Catherine Boissier, AstraZeneca AB,
2019–2021

Lena Bruce, Sveaskog, 2017–2019
Dilip Chandrasekaran, Kanthal AB,
2019–2021
Jeanette Edblad, Ministry of Enterprise,
Energy and Communications, 2017–2019
Fredrik Edström, Drupps, 2018–2020
Elena Fersman, Ericsson, 2018–2020
Richard Furberg, Electrolux AB,
2019–2022
Olof Johansson, Swedish Transport
Administration, 2017–2019
Karin Johnson, RISE Processum AB,
2019–2022
Gustaf Kylberg, Vironova AB, 2019–2022
Sofia Lundberg, VTI-KTH Campus,
2019–2021
Jonas Mann, Atlas Copco AB, 2019–2021
Sandra Olivera Sánchez, Government
Offices of Sweden, 2019–2022
Per Sahlholm, Scania CV AB,
2019–2022
Ylva Strander, VINNOVA, 2019–2021
Anna-Maria Wiberg,
Vattenfall, 2018–2020
Maria Åstrand, Swerea
KIMAB AB, 2017–2019
Coordinator: Elin Elliot, IVA
Chair from 1 January 2020
Torbjörn Holmström (I), AB Volvo,
2020–2022

BUSINESS EXECUTIVES COUNCIL

237 companies, government agencies
and organisations were members of the
Business Executives Council in 2019.

Executive Body

Chair: Eva Hamilton (VI),
LKAB 2016–2019
Vice Chair: Håkan Dahlström,
board member, 2019–2021
Vice Chair: Maria Rankka (XI),
board member, 2019–2021
Lars Stugemo (VI), HiQ 2015–2019
Lena Olving (I), Mycronic 2018–2020
Mohammed Homman,
Vironova 2018–2020
Mikael Pawlo, CEO Red Flag,
2019–2021

Adjunct members

Fredrik Gustafsson, IVA's Business Executives Council Östergötland
Marc Hoffmann (IVA South)
Torbjörn Holmström (I), Volvo (IVA West)
Beatrice Kämpe Nikolausson, Linnéakademien
Lars Lindblom, Samarkand
Thomas Nilsson, NJT Konsult (IVA North)

Chair from 1 January 2020

Magdalena Gerger (VI), Systembolaget 2020–2022

SEMINARS AND MEETINGS

17 January in Karlstad

Smart Industry
– What are the opportunities?
Seminar – IVA's Smart Industry project

21 January in Stockholm

Jubilee Seminar: People, technology and business in the future transport system
Seminar – IVA's Mechanical Engineering division

23 January in Ludvika

Progress in Research and Technology 2018
Seminar – IVA's Business Executives Council and Samarkand

24 January in Lund

The model behind Ingvar Backhamre's and Tarkett's commercial success in the USA
Seminar – IVA South

25 January in Växjö

Progress in Research and Technology 2018
Seminar – IVA's Business Executives Council and Linnéakademien

29 January in Stockholm

How to capture carbon dioxide and store it in the ground
Seminar – IVA's Climate Crossroads project

31 January in Stockholm

Smart Industry – how SMEs are becoming more competitive
Seminar and award ceremony with IVA's Smart Industry project

5 February in Stockholm

STRUT report submitted to the Government – time for the next step
Seminar – IVA
Education and Research Policy division

8 February in Stockholm

Breakfast meeting with Lotta Lyrå
– Clas Ohlson 100 years – from mail order to meeting customers
IVA's Business Executives Council

12 February in Stockholm

AI – How are Sweden and Europe doing in a global perspective?
Roundtable – IVA's Electrical Engineering and Information Technology divisions

12 February in Lund

How has life on our planet been affected by the history of the solar system?
Seminar – IVA South

13 February in Stockholm

Innovation Procurement
– How far have we come?
Seminar – IVA's Building and Construction and Economics divisions.

14 February in Luleå

The lasagne model
– Is it robust enough for Norrbotten's digital infrastructure?
Seminar – IVA's Digitalisation for Increased Competitiveness project, Luleå Science Park and IVA North

21 February in Stockholm

Jubilee Seminar: Looking into the future and looking back on past predictions for the future
Seminar – Assembly of the Academy

3 March in Gothenburg

Field trip to Cellink, Chalmers University of Technology
Ventures, Zenuity and Na-kd with the mentoring programme
IVA's Prince Daniel's Fellowship project

4 March in Stockholm

Jubilee Seminar: Increased Digital Competitiveness – What does Sweden need to do?
Seminar – IVA's Digitalisation for Increased Competitiveness project

4 March in Stockholm

Field trip – SSE Business Lab
– Stockholm School of Economics and IVA's Prince Daniel's Fellowship project

6 March in Stockholm

Innovative environments
Workshop – IVA's Resource Effectiveness and the Circular Economy project

8 March in Linköping

Vera on Tour
IVA and Linköping University

15 March in Stockholm

Breakfast meeting with Kjell A Nordström Deglobalisation
– the next trend?
IVA's Business Executives Council

15 March in Gothenburg

Vera on Tour
IVA and Chalmers University of Technology

20 March in Stockholm

R2B Summit 2019
IVA's Research2Business project

20 March in Gothenburg

Mechanical engineers make the world better and our existence smarter
Seminar – Chalmers University of Technology in cooperation with IVA Mechanical Engineering division

20 March in Västerås
Field trip to ABB Industrigymnasium
and Mälardalen University
IVA's Prince Daniel's Fellowship project

26 March in Gothenburg
Digital Twins and Intelligent Processes
Chalmers University of Technology
in cooperation with IVA's Mechanical
Engineering division

29 March in Stockholm
What type of climate leadership is needed
to comply with the Paris Agreement?
Breakfast seminar and workshop
– IVA's Student Council

4 April in Stockholm
The Patient in Focus
– Breakfast seminar with Gunilla Osswald
Seminar – IVA's Biotechnology division

9 April in Stockholm
Prince Daniel's Entrepreneurship Day
IVA's Prince Daniel's Fellowship project

9 April in Luleå
Innovation-critical metals
– Can Norrbotten show the way for
sustainable industry of the future?
Seminar – IVA North, Norrlandsfonden
and Invest in Norrbotten

9 April in Stockholm
Wood Mechanical Industry in a
globalised world
Seminar – Royal Swedish Academy of
Agriculture and Forestry (KSLA) and IVA
Forest Technology division

9 April in Kalmar
Meeting with Linnéakademien and
company visit to Electra
IVA's Business Executives Council and
Linnéakademien

10 April in Lund
Brain Computer Interfaces (BCI)
– this is how big the opportunities are
Seminar – IVA South

11 April in Gothenburg
Jubilee Seminar: #Göteborg100
– A sustainable society in transition
Seminar – IVA's Building and
Construction division, IVA West and
Chalmers University of Technology

23 April in Stockholm
How to make industry climate-neutral
Seminar – IVA's Climate Crossroads project

26 April in Stockholm
Future of the automotive industry,
Martin Lundstedt, President and CEO
AB Volvo
Breakfast meeting – IVA's Business
Executives Council

26 April in Stockholm
Digital leadership of the future
Leadership Programme IRC
in cooperation with Atlas Copco

7 May in Stockholm
Workshop: The financial sector
IVA's Resource Effectiveness
and the Circular Economy project

14 May in Stockholm
Electric Power and Grid Capacity
– How did we get here?
Roundtable – IVA's
Electrical Engineering division.

14 May in Stockholm
Jubilee Seminar: The Significance
of Materials in Society
Seminar – IVA's
Chemical Engineering division

15 May in Stockholm
Jubilee Seminar: Materials are
Development – industry, sustainability
and society
Seminar – IVA's Mining and Materials
division

15 May in Luleå
Creating a Global Watch Centre
Seminar – IVA North

16 May in Jönköping
School visit – UF school
– Finnvedens gymnasium
IVA's Prince Daniel's Fellowship project

17 May in Stockholm
Field trip
– AI company Peltarion
IVA's Prince Daniel's Fellowship project

20–22 May in Singapore
Entrepreneur trip
IVA's Prince Daniel's Fellowship project

22 May in Linköping
How engineers make the world
better and our existence smarter
Seminar – IVA's Mechanical Engineering
division and the Institute of Technology
at Linköping University

23 May
Webinar for young people who
want to apply to Junior Academy
Junior Academy – IVA and the NYAS

27 May in Stockholm
Roundtable – Ethics guidelines
for trustworthy AI
IVA's Information Technology
division

3 June in Stockholm
Future of Regional Newspapers
– What do they need?
Seminar and award ceremony
The Hans Bergström Award
Assembly of the Academy

3 June in Simrishamn
Simris – Sweden's first
local electrical grid
Field trip to Eon's plant in Simris,
Österlen – IVA South

11 June in Luleå
Jubilee Seminar: Space, mines,
data storage and AI – How are
they all connected?
Seminar – IVA North

<p><i>12 June in Stockholm</i> How the transport sector will meet the climate goals Seminar – IVA's Climate Crossroads project</p>	<p><i>20 August in Stockholm</i> Launch: Book on IVA – the first 100 years</p>	<p><i>19 September in Stockholm</i> Jubilee Seminar: How do you feel? Navigating medical advice Seminar – IVA's Biotechnology division</p>
<p><i>13 June in Gothenburg</i> IVA West – Summer Party</p>	<p><i>28 August in Stockholm</i> Jubilee Seminar – What do future engineers need to know? Seminar – IVA's Education and Research Policy division</p>	<p><i>19 September in Gävle</i> The resource-efficient, sustainable and profitable company – Anna Denell, Sustainability Director at Vasakronan Seminar – Norrlandsfonden and IVA's Business Executives Council</p>
<p><i>24 June in Stockholm</i> This is how to get young people fired up about engineering and sciences Seminar – Education and Research</p>	<p><i>30 August in Karlstad</i> Värmland – a future hub in the Swedish forest industry Workshop in cooperation with Business Värmland, IVA, Paper Province and Region Värmland</p>	<p><i>20 September in Gothenburg</i> Positive effects of space activity on business, research and education Seminar – IVA West and IVA Building and Construction division</p>
<p><i>25–28 June in Stockholm</i> Engineering a Better World – the next 100 years International conference arranged by IVA and CAETS</p>	<p><i>2 September in Stockholm</i> Breakfast meeting with Birgitte Bonnesen who is analysing new challenges and commercial opportunities for the financial industry – IVA's Business Executives Council</p>	<p><i>24 September in Stockholm</i> IVA barometer checks the temperature of private sector R&D Seminar – IVA Education and Research Policy division</p>
<p><i>1 July in Visby</i> Internships get women to choose an engineering degree, provide a vision for students and motivation Seminar – IVA in Almedalen</p>	<p><i>10 September in Stockholm</i> Field trip – Start-up generator Antler IVA's Prince Daniel's Fellowship project</p>	<p><i>24 September</i> Field trip – Swerin IVA's Mining and Materials division</p>
<p><i>1 July in Visby</i> Governance of research and higher education – What will happen following the STRUT report? Seminar – IVA in Almedalen</p>	<p><i>11 September in Södertälje</i> Field trip – Scania IVA's Management division</p>	<p><i>24 September in Uppsala</i> Field trip Testa Center and SciLifeLab IVA's Chemical Engineering division</p>
<p><i>1 July in Visby</i> School segregation – a threat to Swedish competitiveness Seminar – IVA in Almedalen</p>	<p><i>12 September in Stockholm</i> Vera Roadshow Stockholm: Technical balance – the roles of women and girls in the world of technology IVA and KTH</p>	<p><i>25 September in Luleå</i> Are engineers equipped for the challenges of today and tomorrow? Seminar – IVA's Mechanical Engineering division and Luleå University of Technology</p>
<p><i>1 July in Visby</i> Efficient Industrial Platforms – the key to Swedish competitiveness? Seminar – IVA in Almedalen</p>	<p><i>17 September in Stockholm</i> Jubilee Seminar– Discover, experience, explore – as an engineer Seminar – IVA's Basic and Interdisciplinary Engineering Sciences division</p>	<p><i>26 September in Stockholm</i> Roundtable on entrepreneurship IVA's Entrepreneurship Academy</p>
<p><i>1 July in Visby</i> Research – a good deal for business Seminar – IVA in Almedalen</p>	<p><i>19 September in Stockholm</i> New report from Climate Crossroads: How Swedish society will meet the climate goals Seminar – IVA's Climate Crossroads project</p>	<p><i>26 September in Stockholm</i> How the Swedish energy system will meet the climate goals Seminar – IVA's Climate Crossroads project</p>
<p><i>2 July in Visby</i> Crossroads for Sweden Seminar – IVA in Almedalen</p>		

26 September in Södertälje
School visit – Täljegymnasium
IVA's Prince Daniel's Fellowship project

27 September in Stockholm
Jubilee Seminar: Economic policy in a time
of intense technological development
Seminar – IVA's Economics division

1 October in Stockholm
Roundtable on entrepreneurship
IVA's Entrepreneurship Academy

2 October in Östersund
Mid Sweden University as a growth
engine in the region
Seminar – IVA North, IVA's Business
Executives Council
and Norrlandsfonden

4 October in Stockholm
Focus on teachers
Workshop on IVA's new school initiative

8–9 October in Lund
Jubilee Seminar – Technology for the
great societal challenges
Seminar and field trip – IVA South

9 October in Stockholm
Resource-effective food transport
Seminar – IVA's Resource Effectiveness
and the Circular Economy project

10 October in Stockholm
Sustainability is the foundation for
profitable growth
Breakfast meeting with Petra Einarsson,
CEO of BillerudKorsnäs
IVA's Business Executives Council

11 October in Östersund
School visit – IVA's Prince
Daniel's Fellowship project

16 October in Stockholm
How Swedish agriculture
will meet the climate goals
Seminar – IVA's Climate Crossroads
project

21 October in Gothenburg
Who owns information about
me and on what terms?
Seminar – IVA West, Rifo and
IVA's Digitalisation for Increased
Competitiveness project

21 October in Stockholm
Roundtable on entrepreneurship
IVA's Entrepreneurship Academy

22 October in Lund
Boeing 737 Max 8 – the challenges
of autonomous systems
Seminar – IVA South

23 October in Stockholm
Jubilee Seminar: Swedish management
– Is it keeping up with the times?
Seminar – IVA's Management division

23 October in Stockholm
Being Human in the Age of Artificial
Intelligence – Max Tegmark
Seminar – IVA

24 October in Stockholm
Science & Society Forum:
Artificial intelligence at what price?
Seminar – IVA's Science & Society
Forum

30 October in Kiruna
Seminar with Stefan Gärdefjord
SSC Swedish Space Corporation
– Space is the key to global change
Seminar – LKAB, Norrlandsfonden,
IVA North and IVA's Business Executives
Council

5 November in Linköping
A whodunnit evening
on the theme of how to
investigate AI and IT crime
IVA's Business Executives Council

7 November in Stockholm
Breakfast meeting
with Jacob Wallenberg
IVA's Business Executives Council

11 November in Stockholm
Lunch with IVA's Business Executives
Council and theme leaders

11 November in Stockholm
Jubilee Seminar: The forest industry of
the future – challenges for companies,
research and young talent
Seminar – IVA's Forest Technology
division.

12 November in Linköping
Digitalisation opportunities –
Östergötland
Forum – IVA's Smart Industry and
Kickstart Digitalisation in cooperation
with Mjärdevi Science Park

12 November in Stockholm
After the National Negotiation on
Housing and Infrastructure – Is there a
national plan to meet future needs?
Seminar – IVA's Building and
Construction division

12 November in Stockholm
From landfill ban to circular economy
– What solutions can Sweden provide
to the world?
Seminar IVA

14 November in Stockholm
New report: How we can increase
the quality of Swedish research
Seminar – Swedish Research Council
Formas and IVA

17 November in Stockholm
Knowledge Day for teachers
IVA's school initiative

18 November in Växjö
Business forum: IVA's Smart Industry
and Kickstart Digitalisation
Forum – IVA's Smart Industry project

20 November in Ljungby
Business forum: IVA's Smart Industry
and Kickstart Digitalisation
Forum – IVA's Smart Industry project

22 November in Luleå

Breakfast seminar with Henry Ohlsson,
Deputy Governor of the Riksbank
(central bank)
Seminar – Norrbotten Chamber of
Commerce, Norrlandsfonden and IVA's
Business Executives Council

22 November in Skellefteå

Digitalisation with big
opportunities – But how do we
handle security and privacy?
A joint arrangement of Skellefteå
Municipality, Skellefteå Digital Alliance,
Region Västerbotten and IVA. Part of the
Digital@ldags national initiative

25 November in Stockholm

Field trip – Stockholm
Innovation and growth (STING)
IVA's Prince Daniel's Fellowship project

25 November in Stockholm

Roundtable on entrepreneurship
IVA's Entrepreneurship Academy

28 November in Stockholm

School visit – Royal College of Music
IVA's Prince Daniel's Fellowship project

28 November in Mölndal

Field trip – GoCo Health Innovation City
IVA West

29 November in Stockholm

Jubilee Seminar: Sweden and talent –
destination or departure gate?
IVA's Business Executives Council

2 December in Stockholm

Jubilee Seminar:
200 years of innovation
Seminar – IVA's leadership
programme IRC

3 December in Stockholm

Jubilee Seminar: Peak Human?
Seminar – IVA's Electrical
Engineering and Information
Technology divisions

4 December in Luleå

Progress in Research
and Technology 2019
Seminar – IVA North and
Norrlandsfonden

5 December in Stockholm

How world-leading universities
are created for the challenges
of the future?
Seminar – IVA's Education and
Research division and Vinnova

9 December in Karlskrona

Entrepreneurship Day
IVA's Prince Daniel's Fellowship project

10 December in Lund

Progress in Research and
Technology 2019
Seminar – IVA South

11 December in Stockholm

Future engineers for a better world
Seminar – IVA's Mechanical Engineering
division and KTH

13 December in Stockholm

Future battery technology
and ecosystems
Seminar with Akira Yoshino,
Nobel laureate in Chemistry 2019
IVA, Embassy of Japan, Sweden-Japan
Foundation and Japan Society for the
Promotion of Science (JSPS)

16 December in Gothenburg

Progress in Research and
Technology 2019
Seminar – IVA West

IVA PROJECT BY THEME

World-Class Knowledge

Private sector R&D investment
IVA School development
Junior Academy
Tekniksprånget
NTA Digital

Industry and Enterprise of the Future

Entrepreneurship Academy
Jobbsprånget
Research2Business
Smart Industry
Prince Daniel's Fellowship project

Climate-Resources-Energy

Resource Effectiveness and
the Circular Economy
Climate Crossroads

People-Technology-Society

Digitalisation for Increased
Competitiveness
Sustainable Water Supply

MEMBERS OF IVA THEME COUNCILS

World-Class Knowledge

Maria Anvret (X), Chair
Peter Gudmunson (I)
Ulla Sandborgh (II)
Anna Kadefors (III)
Lennart Bergström (IV)
Susanne Norgren (V)
Erik Bohlin (VI)
Anna Sandström (VII)
Charlotte Bengtsson (VIII)
Magnus Henrekson (IX)
Peter Larsson (XI)
Jan Gulliksen (XII)
Henrik Friman (BEC)
Anna Adolfsson (Student Council)

Industry and Enterprise of the Future

Carola Lemne (VI), Chair
Per Grunewald (I)
Birgitta Resvik (II)
Svante Hagman (III)
Michael E. Persson (IV)
Göran Carlsson (V)
Laszlo Fuchs (VII)
Jon Haag (VIII)
Claes de Neergard (IX)
Roger Johansson (X)



Saeid Esmaeilzadeh (XI)
 Staffan Truvé (XII)
 Ulf Troedsson (BEC)
 Henrik Larson (Student Council)

Climate–Resources–Energy

Karl Bergman (II), Chair
 Margareta Norell Bergendahl (I)
 Ingela Lindh (III)
 Charlotte Turner (IV)
 Per Storm (V)
 Lars G Josefsson (VI)
 Jonas Nycander (VII)
 Birgitta Sundblad (VIII)
 Per Kågeson (IX)
 Elisabeth Lindner (X)
 Hans Hentzell (XI)
 Robin Teigland (XII)
 Charlotta Sund (BEC)
 Jonathan Edin (Student Council)

People–Technology–Society

Åsa Söderström Winberg (III), Chair
 Ylva Fältholm (I)
 Ingrid Skogsmo (II)
 Gunnar Svedberg (IV)
 Jan Olof Carlsson (V)
 Peter Gärdenfors (VI)
 Sven Ove Hansson (VII)

Elisabet Salander Björklund (VIII)
 Agneta Dreber (IX)
 Annika Åhnberg (X)
 Susanne Ås Sivborg (XI)
 Anette Novak (XII)
 Martin Tivéus (BEC)
 Patrik Gustafsson (Student Council)

Student Council

Chair: Anna Adolfsson,
 Institute of Technology
 at Linköping University
 David Ameov, Mid Sweden University
 Johan Bäckman Berg, Stockholm
 School of Economics
 Jonathan Edin, Royal Institute of
 Technology, KTH
 Patrik Gustafsson, Faculty of
 Engineering, Lund University
 Maria Gunnarsson, Faculty of
 Engineering, Lund University
 Henrik Larson, Chalmers
 University of Technology
 Linnea Michel, Institute of
 Technology at Linköping University
 Felicia Olsson, Swedish University of
 Agricultural Sciences
 Tamara Patrainika, Royal
 Institute of Technology, KTH

Amanda Vikström, Umeå University
 Linda Wäppling, Chalmers
 University of Technology
 Karin Östman, Luleå University of
 Technology

STEERING COMMITTEES FOR IVA PROJECTS

Digitalisation for Increased Competitiveness

Chair: Jan Nygren (XI), PrimeKey AB
 Karl Bergman (II), Vattenfall
 Ann-Marie Eklund Löwinder (XII), IIS
 Erik Ekudden, Ericsson
 Patrik Fältström (XII), Netnod
 Tobias Krantz, Confederation of Swedish
 Enterprise
 Cecilia Molinder (Student Council), KTH
 Pia Sandvik (XI), RISE
 Nils Svartz, MSB
 Cecilia Sjöberg, Vinnova
 Dag Ströman, FMV/CSEC
 Karl-Petter Thorwaldsson, LO
 Urban Wass, AB Volvo
 Peter Wahlgren, Stockholm University
 Johan Weigelt, IVA
 Project Manager: Per Hjertén, IVA

Smart Industry – Jury

Chair: Johan Weigelt, IVA
Torbjörn Holmström (I), AB Volvo
Björn Langbeck, Swedish Agency for
Economic and Regional Growth
Sara Mazur (XI), Knut and Alice
Wallenberg Foundation
Hans Olofsson, Scania
Mikael Rudin, ABB
Robin Teigland (XII), Chalmers University
of Technology
Ulf Troedsson, Siemens
Klas Wåhlberg (I), Association of Swedish
Engineering Industries
Project Manager: Johan Carlstedt, IVA

Climate Crossroads

Chair: Elisabeth Nilsson
Anja Alemdar, Swedish Energy Agency
Mikael Dahlgren, ABB AB
Hans Folkesson, Hans Folkesson AB
Torbjörn Holmström (I), AB Volvo
Åke Iverfeldt, Mistra
Kenneth Johansson, InnoEnergy
Bo Krogvig, LKAB
Johan L. Kuylenstierna, Stockholm
Environment Institute
Maria Malmkvist, Swedish Gas Association
Marie Nilsson, IF Metall
Stefan Nyström, Swedish Environmental
Protection Agency
Aas Ellika Olsson, IF Metall
Bo-Erik Pers, Jernkontoret
Eva Pettersson, Royal Swedish
Academy of Agriculture and Forestry
Andreas Regnell, Vattenfall
Birgitta Resvik, Fortum Corporation
Gunilla Saltin, Södra Cell
Maria Sunér Fleming, Confederation of
Swedish Enterprise
Ulf Troedsson, Siemens
Project Manager: Karin Byman, IVA

Research2Business

Chair: Marianne Dicander Alexandersson
(VI)
Anna Nilsson Ehle (VI), Vinnova
Malin Persson (XI), Accuracy
Saeid Esmaeilzadeh (XI),
Serendipity Group

Anna Holmberg, Chalmers
School of Entrepreneurship and
Sahlgrenska School of Innovation and
Entrepreneurship
Mikolaj Norek, Forum for Innovation
Management
Tuula Teeri (IV), IVA

Mentor4Innovation

Tuula Teeri (IV), IVA
Johan Weigelt, IVA
Project Manager: Anders Gezelius,
Strategize

Prince Daniel's Fellowship project

Honorary Chair: H.R.H. Prince Daniel
Chair: Marcus Wallenberg (VI), SEB
Carl Bennet (XI), Carl Bennet AB
Karolin A. Johansson, The Royal Court
(until end of August)
Johan Skarborg, Academic Work
Johan Weigelt, IVA
Project Manager: Jenny Nordlöw, IVA

NTA Digital

Chair: Staffan Truvé (XII),
Recorded Future
Caroline Ankarcrona, Wallenberg
Foundations
Bengt Nilsson, NTA School
Development
Ylva Engström, Stockholm University
Agneta Gulz, Lund University
Anders Ynnerman (XII),
Linköping University
Project Manager: Hampus Lindh, IVA

Resource Effectiveness and the Circular Economy

Chair: Åke Svensson (I),
Association of Swedish Engineering
Industries
Caroline af Ugglas, Confederation
of Swedish Enterprise
Ola Alterå, Formas
Tim Brooks, Swedish Agency for
Economic and Regional Growth
Thomas Nilsson, Mistra
Annica Sohlström, Swedish National
Food Agency

Björn Stigson, Stigson & Partners
Henrik Sundström, Electrolux
Cecilia Tisell, Swedish Consumer Agency
Anders Wijkman, ÅI

Adjunct members:

Jonas Brännström, Vinnova
Uwe Fortkamp, Swedish Environmental
Protection Agency
Louise Staffas, Formas
Teeri Tuula (IV), IVA
Project Manager: Caroline Ankarcrona,
IVA and Jan Nordling, IVA

Tekniksprånget and Jobbsprånget

Chair: Jan-Eric Sundgren (VII)
Helen Dannetun (XI), Linköping University
Johan Forssell, Investor
Vesna Jovic, SKL
Tobias Krantz, Confederation of Swedish
Enterprise
Peter Larsson (XI), Swedish Association
of Graduate Engineers
Anders Lindberg (IX), JKL
Camilla Modéer (XI), IVA
Tuula Teeri (IV), IVA
Helena Stjernholm (IX), Industrivärden
Head of Jobbsprånget: Alexandra
Ridderstad, IVA
Project Manager Jobbsprånget:
Eva Glaumann, IVA

Private Sector R&D Investment

Chair: Pontus de Laval
Lars Hultman (V)
Anna Hultin Stigenberg
Peter Johansson
Per Klingbjer
Peter Larsson (XI)
Anders Lindberg (IX)
Göran Marklund
Torgny Persson
Anna Sandström (VII)
Johan Weigelt, IVA

IVA School development

Steering Committee (forming)

Entrepreneurship Academy

Steering Committee (forming)

PROGRAMME COUNCIL

Water (ended in June)

Eva Färnstrand (VIII)
Britt-Inger Andersson (VIII)
Georgia Destouni (III)
Tord Svedberg (IV)
Secretary: Staffan Eriksson, IVA

In preparation for the research bill

Tuula Teeri (IV), Chair
Margareta Norell Bergendahl (I)
Birgitta Resvik (II)
Ulrika Francke (III)
Karin Markides (IV)
Lars Hultman (V)
Lars Engwall (VI)
Hjalmar Brismar (VII)
Per-Olof Wedin (VIII)
Henrik Jordahl (IX)
Maria Anvret (X)
Peter Larsson (XI)
Ulf Wahlberg (XII)
Mohammed Homman (BEC)
Patrik Gustafsson (Student Council)
Project Manager: Martin Wikström, IVA

DISTINCTIONS, SCHOLARSHIPS AND AWARDS

Medal Committee

Chair: Camilla Modéer (XI)
Peggy Bruzelius (IX)
Pontus Johnson (II)
Jens Nielsen (X)
Aina Nilsson Ström (I)
Margareta Norell Bergendahl (I)
Susanne Norgren (V)
Rolf Skoglund (XII)
Örjan Wikforss (III)
Gabriel Urwitz (IX)

Medals

The Academy's Great Gold Medal is awarded to Hans Dalborg, PhD Econ, for his achievements in developing the Swedish finance sector and the Swedish model for corporate governance, in

combination with his commitment to social issues involving significant contributions to research and culture.

The Academy's Gold Medal is awarded to Lena Olving, MSc Eng, for her achievements as an innovator and leader of businesses at the front lines of technology. Her progressive and ground-breaking leadership makes her a role model for leaders of technically advanced companies in a global market.

The Academy's Gold Medal is awarded to Daniel Ek, Chair and Martin Lorentzon, D.Eng h.c., for creating the company Spotify which has fundamentally changed the music industry and put an end to music piracy. As innovators and entrepreneurs, they have built one of the few (possibly the only) European tech companies that has succeeded in competing with Chinese and American giants.

The Academy's Gold Medal is awarded to Professor Max Tegmark for his contributions to our understanding of humanity's place in the cosmos, and the opportunities and risks associated with artificial intelligence. He has courageously tackled these existential questions in his research and, in a commendable way, succeeded in communicating the issues to a wider public.

New honorary members

As honorary members, IVA may appoint individuals who through their work or by other means have contributed greatly to the promotion of the Academy's objectives.

In 2019 three new honorary members were inducted. The explanations for the selections are summarised below:

Peter Wallenberg Jr, who is a member of the Education and Research Policy division, has demonstrated a strong

personal commitment to IVA's activities, including as an active member of the Business Executives Council and in division activities. He was also an initiator/catalyst for the creation of IVA's Jobbsprånget project.

Mary Walshok, an international member, has made important contributions to IVA's work focusing on innovation and entrepreneurship. She founded Connect in San Diego, which connects entrepreneurs with capital and talent, and was instrumental in establishing the model in Sweden.

Jan-Eric Sundgren, member of the Basic and Interdisciplinary Engineering Sciences division, has been deeply committed to IVA's activities for many years. His contributions as Steering Committee Chair for Tekniksprånget and Jobbsprånget have been invaluable.

The first honorary members were appointed back in 1919. They were HRH Crown Prince Gustaf Adolf and Director General Karl Axel Fryxell.

Current honorary members, in addition to the new ones: Arne Wittlöv, Lena Treschow Torell and Prince Daniel.

IVA's award for scientific journalism – Hans Bergström Award

IVA's award for scientific journalism – Hans Bergström Award – was awarded in 2019 to science reporter for Upsala Nya Tidning, Åke Spross, for his extraordinary work. From a local newspaper perspective he has succeeded in covering a whole world of science and research.

Hans Werthén Foundation

In 2019 SEK 1,840,000 was shared between 18 scholarship recipients. The purpose is to give young graduates an opportunity for development in another country and to gain new knowledge and experiences that they can use in

industry, business or the academic sphere in Sweden. The Foundation was established in 1990 in honour of Hans Werthén for his lifework as an engineer and business leader.

King Carl XVI Gustaf 50th Anniversary Fund

The purpose of the Fund is to promote research, technical development and enterprise that contribute to the sustainable use of natural resources and the preservation of biodiversity. In 2019 the Fund distributed five scholarships of SEK 100,000 and nine of SEK 85,000. The candidates are nominated by members of IVA or individuals who are active in research and enterprise. The scholarship recipients are announced on H.M. The King's birthday and presented at a reception at the Royal Palace.

John and Margaretha Aspegren Scholarship

The mission of the John and Margaretha Aspegren Memorial Foundation is to promote a better mutual understanding between engineering sciences and the humanities. The scholarship of SEK 100,000 is awarded one year to an engineer and the next to a humanities scholar.

In 2019 the Aspegren Scholarship went to: Danish artist Lea Porsager for her artistry and in particular her work Gravitational Ripples, which is inspired by scientific observations and cosmic phenomena.

The Thulin Medal

The Thulin Medal is the highest distinction within the aerospace industry in Sweden. The Swedish Society of Aeronautics and Astronautics and IVA have selected winners of the medal every year since 1944. It is awarded to commemorate aircraft pioneer Enoch Thulin. The Thulin Medals in gold, silver and bronze are awarded to individuals who have made important contributions

to the development of aerospace engineering in Sweden.

In 2019 the Thulin Medal in gold was awarded to Torbjörn Johansson for his extraordinary and meritorious achievements in developing CTT from a small enterprise into a market and technology leader and supplier of products to actively control humidity in passenger planes. The Thulin Medal in silver was awarded to Dag Folkesson for his critical work developing software that works in realtime with multiple computers in fighter plane systems.

Smart Industry

Service company Mobilaris was named the winner of the 2019 Smart Industry Enterprise Competition for contributions to digitalisation of traditional industries. With a strong understanding of customer needs, Mobilaris uses the possibilities of digital technology to increase productivity, improve personal safety and reduce energy consumption among its customers. Through its digital service offering aimed at mines and other basic industries, the company has in five years quadrupled its sales, gone from 17 to 70 employees and now has 25 customers from all parts of the world.

Honourable mention

Moelven Valåsen AB received an honourable mention for, in a traditional business that up to now had a relatively low level of digitalisation, implementing an internal 'digitalisation journey' of the entire production process – from timber to finished products. The Company has systematically sought access to knowledge and combined best practice with its own solutions. Moving Floor AB received an honourable mention for, in an industry with a very low level of digitalisation, demonstrating the possibilities and great potential of digitalisation. Moving floor is a greentech companies with technology for automatic, self-cleaning boxes.

REPONSES TO REPORTS REFERRED FOR CONSIDERATION

In 2019 IVA commented or expressed an opinion on the following proposals and reports for consideration:

Response to the commission report "Ökad attraktionskraft för kunskapsnationen Sverige" (Increased attractiveness for knowledge nation Sweden) (SOU 2018:78).

Response to "Frekvenser i samhällets tjänst" (Frequencies in the service of society) (SOU 2018:92).

Response to the report "En långsiktig, samordnad och dialogbaserad styrning av högskolan" (Long-term, coordinated and dialogue-based governance of universities) (SOU 2019:6).

Response to SOU 2019:15
"Komplementär och alternativ medicin och vård – säkerhet, kunskap och dialog" (Complementary and alternative medicine and care – safety, knowledge and dialogue) and SOU 2019:28
"Komplementär alternativ medicin och vård – ny lagstiftning" (Complementary alternative medicine and care – new legislation).

Input to the upcoming research bill

Response to the Swedish Agency for Marine and Water Management: "Synpunkter på förslag till nationell plan för omprövning av vattenkraft samt miljökonsekvensbeskrivningen" (Views on a proposed national plan to review hydropower and the environmental consequence description).

PUBLICATIONS

IVA-M series

IVA-M 498: Smart Industry – Warehouses, 2019, 36 p.

IVA-M 499: Final report of IVA's Digitalisation for Increased Competitiveness project, 2019 60 p.

IVA-M 500: Technical imbalance? Women and men in engineering, 2019, 44 p.

IVA-M 501: How Swedish industry will meet the climate goals. A report from the IVA Climate Crossroads project, 2019, 68 p.

IVA-M 502: How Swedish transport will meet the climate goals. A report from the IVA Climate Crossroads project, 2019, 64 p.

IVA-M 503: How Swedish society will meet the climate goals. A report from the IVA Climate Crossroads project, 2019, 56 p.

IVA-M 504: How the Swedish energy system will meet the climate goals. A report from the IVA Climate Crossroads project, 2019, 72 p.

IVA-M 505: Commemorative Booklet – A Tribute to the Memory of Axel F. Enström, 2019, 56 p.

IVA-M 506: Commemorative Booklet – In Memory of Axel F. Enström, 2019, 56 p.

IVA-M 507: Resource-effectiveness in food transport. A report from the IVA Resource Effectiveness and the Circular Economy (ReCE) project, 2019, 40 p.

IVA-M 508: How Swedish agriculture will meet the climate goals. A report from the IVA Climate Crossroads project, 2019, 56 p.

IVA-R-series

IVA-R 509: R&D Barometer 2019 – Private Sector R&D Investment. 2019, 24 p.

OMBUDSMAN

Erik Nymansson, Justice of the Supreme Administrative Court

AUDITORS

Anki Bystedt, appointed by the Government
Karl-Olof Hammarkvist (IX)
Peter Ekberg, Authorised Public Accountant

INVESTMENT COMMITTEE

Lars Heikensten (IX), Chair
Hans Dalborg (IX)
Irma Rosenberg (IX)
Tula Teeri, President of IVA (IV)
Katarina Arneving, CFO IVA

SELECTION OF DONORS TO IVA'S JUBILEE FUND

Knut and Alice Wallenberg Foundation
Marcus and Amalia Wallenberg Memorial Foundation
Volvo Group
Ericsson
Carl-Henric Svanberg
ASSA ABLOY
Investment AB Latour
Clas Ohlson
Hakon Swenson Foundation
LKAB
Ljung Toolbox
Laurent Leksell
Mellby Gård Foundation
Axel Johnson Group
Marianne and Marcus Wallenberg Foundation
Stora Enso
ÅF
Perstorp
Carl Bennet AB
Confederation of Swedish Enterprise
Chalmers University of Technology
Tetra Laval
Leif Johansson
Lars Backsell
Stefan Widegren
Autoliv
Bertil Edlund Foundation
BillerudKorsnäs
Erling Persson Family Foundation
Industrivärden

Saab
Atlas Copco
Sven Tyrén Foundation
SKF
Stena Metall
Mycronic AB
Björn Savén
Thomas Eldered
Anders Scharp
Icomera
Bo and Gunilla Pehrsson
AstraZeneca
Märta Christina & Magnus Vahlquist Foundation
Leif Östling

EMPLOYEES

Management team

Tuula Teeri, President
Johan Weigelt, Secretary to the Academy, Executive Vice President
Katarina Arneving, CFO
Lars Fog, Property Manager
Camilla Koebe, Vice President Business and Communications
Monica Krutmeijer, Assistant to the President

Development Office

Katarina Mellström

Academy and Projects

Johan Weigelt, Secretary to the Academy, Executive Vice President
Ingrid Jansson
Karin Byman, theme leader
Johan Carlstedt, theme leader
Staffan Eriksson, theme leader
Martin Wikström, theme leader

International Office

Elin Elliot

Thematic area:

World-Class Knowledge

Martin Wikström, theme leader
Hampus Lindh
Eva Lundgren

Alicia Parvin
Maja Neiman
Lars Nilsson

**Thematic area: Industry
and Enterprise of the Future**

Johan Carlstedt, theme leader
Jenny Nordlöw
Peter Mandahl
Malin Mohr
Sara Lodén
Jakob Rudberg
Maria Saker
Monica Sannerblom
Gustaf Wahlström
Sofia Yngwe

**Thematic area: Climate–
Resources–Energy**

Karin Byman, theme leader
Caroline Ankarcrona
Caroline Linden
Jan Nordling
Joakim Rådström

**Thematic area: People–
Technology–Society**

Staffan Eriksson, theme leader
Per Hjertén
Eva Lagerblad
Linda Olsson
Jan Westberg

Tekniksprånet and Jobbsprånet

Alexandra Ridderstad, Head of
Tekniksprånet and Jobbsprånet
Johan Persson
Sarah Bixo
Linus Brandin
Ellen Frostell
Louise Forsberg
Eva Glaumann
Helena Gyrulf
Annika Johansson
Helena Lind
Mattias Lindberg
Sabinor Lönnroth
Saba Mosazghi
Kristian Nilsson
Laras Pinjii
Sara Rhodes
Nina Rudbeck
Binette Seck
Karin Wachtmeister
Olle Wallin
Linnea Werlid

Business and Communications

Camilla Koebe, Vice President Business
and Communications
Pelle Isaksson
Henrik Lagerträd
Anna Lindberg
Helena Mehra
Lars Nilsson

Pär Rönnerberg
Johanna Theander
Jan Westberg
Sofia Yngwe

Finance, ICT and Administration

Katarina Arneving, CFO
Lena Anderson
Sherry Benzon
Jakob Bjarnason
Sacharias Hade
Linnea Strömstedt
Martina Tallstrand
Marika Thunberg Petersson

Property

Lars Fog, Property Manager
Lennart Ohlsson

IVA Conference Centre

Charlotta Svedberg, Conference Director
Fredrik Adamsson
Britta Aulio
Ann Clauson
Anna-Karin Friskopps
Linda Hillborg
Robert Komakech
Therese Pettersson
Lisa Wiklund

© Royal Swedish Academy of Engineering Sciences, 2020
P.O. Box 5073, SE-102 42 Stockholm
Tel: +46 (0)8 791 29 00
Fax: +46 (0)8 611 56 23
E-mail: info@iva.se
Web: www.iva.se

ISSN: 1100-5645
ISBN: 978-91-89181-03-8

Project Management: Jan Westberg, Anna-Karin Friskopps
Texts: Lars Nilsson, Pär Rönnerberg, Jan Westberg
Layout: Pelle Isaksson
Printed by: Göteborgstryckeriet AB

Photos: Elin Elliot, Adrian Pehrson, Erik Cronberg,
Daniel Söderberg, Jack Mikrut, Jonas Bilberg, Daniel Roos,
Pär Rönnerberg, Petra Älvstrand, Jenny Hammar, Sören Håkanlind,
Alexandra Örn, Katriina Mäkinen, Karina Ljungdahl

For 100 years the Royal Swedish Academy of Engineering Sciences (IVA) has been a meetingplace for Sweden's future. IVA builds bridges between the business community, the public sector, academia and the political sphere. We bring together the expertise and experience of more than 1,200 Academy members and 250 companies.



Royal Swedish Academy of
Engineering Sciences