IVA 2012

GOALS FOR IVA'S ACTIVITIES

A POSITIVE ATTITUDE TO ECONOMICS, ENGINEERING AND SCIENCE, AND IN PARTICULAR A GREATER INTEREST AMONG YOUNG PEOPLE IN HIGHER EDUCATION IN MATHS, NATURAL SCIENCES, IT AND ENGINEERING. IMPROVED CLIMATE FOR ENTREPRENEURS AND INNOVATION. INCREASED GROWTH AND INTERNATIONAL COMPETITIVENESS FOR KNOWLEDGE-INTENSIVE COMPANIES. GUARANTEED ACCESS TO ENERGY AT COMPETITIVE PRICES WHILE ATTAINING THE GOALS OF MORE EFFICIENT ENERGY CONSUMPTION AND REDUCED GREENHOUSE GAS EMISSIONS. MORE GOVERNMENT RESEARCH INVESTMENT FOR GROWTH AND COMPETITIVENESS. EFFECTIVE AND EFFICIENT INFRASTRUCTURE, TRANSPORT SYSTEMS AND BUILT ENVIRONMENT. INTERNATIONALLY COMPETITIVE EDUCATION PROGRAMMES. SWEDEN AS A WORLD LEADER IN ENERGY TECHNOLOGY, CLEANTECH, BIOTECH AND IT. ALLEVIATE THE PROBLEM OF AN INADEQUATE SUPPLY OF EDUCATION, WATER, ENERGY AND FOOD IN DEVELOPING COUNTRIES. HELP MEET THE "GRAND SOCIETAL CHALLENGES."

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

IVA is a meeting place where insightful people come together to discuss matters that are critical for the development of society. At meetings and seminars the Academy's members and members of the Business Executives Council delve into topical issues. The Academy's projects create solutions for the future.

IVA's network is not only filled with expertise, it is extensive and open. The voices of more than the members are heard.

In addition to a selection of IVA's activities in 2012, this report contains interviews with people who have something to say about education, research and entrepreneurship. In a nutshell: What does the future for today's young generation look like?

It would be presumptuous of us to assume that we can provide you with all of the answers between the covers of this report, but reading about the thoughts, experiences and knowledge of wise people is always time well spent.

We wish you pleasant reading!

WHAT IVA SAYS CARRIES WEIGHT

Björn O. Nilsson, President of IVA

»To me, research is an obvious and important basis for future innovation, but innovation policy requires a broader approach.«

The future is uncertain. The challenges, or rather, the problems wash over us in a steady stream. Globally, we see the consequences of climate change, armed conflict and human suffering on a daily basis in the media. The images can be frightening.

The focus in Europe is on the economic future. Financial imbalance in the PIGS countries and UK's uncertain future in the EU are creating more uncertainty. And in Sweden more than 70,000 people were given notice. Just as many are predicted to meet the same fate soon.

In this troubling and unpredictable time, IVA's role and mission are important. We can use our knowledge network to identify opportunities for new solutions. IVA is a neutral, independent and stable platform which, through broad and deep knowledge, can penetrate problems and construct science-based proposals for solutions. One specific ability we have is seeing challenges early on and turning them into opportunities. That is often entirely possible. This is how we have worked since 1919 when the Academy was founded.

It would, of course, be more than presumptuous to believe that IVA will solve the world's dilemmas. But we are helping to shape what happens in Sweden and our advice is solicited more and more internationally, particularly in Europe. We have had partnerships beyond Europe for decades. We have, for example, had a successful renewable energy exchange for a number of years with China. In a broader perspective, this enables Sweden to be a positive force internationally.

Moreover, we can look back at 2012 as a successful year for IVA in the work that was done turning challenges into opportunities for a brighter future.

With great humility I can state that what IVA says carries weight among the country's decision-makers. People across a broad front listen when we present the conclusions and recommendations from our projects and seminars.

We recognise many proposals from the conclusions of IVA's projects in the research and innovation bill. Annie Lööf chose to present the Government's innovation strategy here at IVA one year after her first appearance as Minister for Enterprise. This time, too, with IVA hosting and arranging the event. While here, she was handed our "Innovation Plan Sweden" report by Marcus Wallenberg, Chairman of the "Innovation for Growth" project. Yes, IVA is needed as Sweden's foremost independent arena for forward-looking and real innovation policy.

Our Innovation Powerhouse Sweden project is now connecting the regional level with the national one. Almost 15 regional gatherings will take place before the end of 2013. It's clear that there is faith in the future as well as the capacity for initiative and activity beyond the horizon from the capital city.

To me, research is an obvious and important basis for future innovation, but innovation policy requires a broader approach.

Our Agenda for Research project has been examining a number of different aspects. The project's concluding seminar filled the China Theatre in Stockholm. Swedish research should be broad and interdisciplinary, and the humanities are important. These were among the project's conclusions. But the seminar also concluded that research and innovation are not synonyms. While they have a lot in common, they shouldn't automatically be put together. I agree whole-heartedly with this.

Energy, an important focus for IVA for almost 100 years, is still a necessary resource to create growth and solve climate problems. But what is the best way to conserve energy? That question was debated in a project called "An Energy Efficient Society." The project participants have set the bar high. The project's aim is to find solutions that will result in all transportation, all industry, Sweden's forestry and agriculture, as well the service sector being 50-percent more energy efficient by 2050. It has already been established that this is fully implementable for all of Sweden's buildings.

Engineering expertise is critical if we are to achieve this goal. But we need engineers.

In 2012 Minister for Education Jan Björklund initiated a programme called Technology Leap (Teknikspränget) to encourage more young people to choose an engineering education. IVA has been tasked with the practical implementation of this multi-year initiative.

Technology Leap is based on Swedish technology-intense companies and organisations providing paid internships. The applicants are students who have graduated from science and technology programmes at the upper secondary level. IVA's task is to ensure that the programme is a success, not only among young people, but also among companies. The first internship period was concluded in 2012 with good results. Now intensive efforts are under way to scale up the programme.

IVA is a fantastic academy and I would above all like to thank our members, but also our Business Executives Council and others in our network, for their contributions to our endeavours.

Björn O. Nilsson, President of IVA

THE MOST IMPORTANT TASK IS TO PUT YOUNG PEOPLE TO WORK

Stefan Löfven, Leader of the Social Democratic Party

»What is good is that in Sweden a relatively large percentage of GDP goes to research and that we have a well-developed education system in many areas. But there is a lot we can do better.«

Having more businesses, and especially growing ones, is key to job creation. What is the best way for politicians to help more businesses to get started and to grow?

"I think we need to look at the whole innovation chain – from idea to products ready for the market. We should also make it easier to access enterprise-related research and venture capital early on in the development process, and make sure that there is a requirement for innovative solutions in public procurement. Later along the chain we want to strengthen patent protection and make it easier to employ people by, for example, the Government taking over responsibility for the second week of sick pay and by increasing support for exports.

Today many companies are reporting that it's difficult for them to find people with the right expertise to employ, so one important step is to make it possible for more people to educate themselves to seize the job opportunities that are emerging. That's why more people need to have the opportunity of a higher education as well as competence development in the workplace.

We also need to strengthen cooperation. Elected officials should work with companies, the research community and unions to get rid of obstacles for new innovation and increased exports. An innovation policy commission led by the Prime Minister is therefore an important step in raising these issues to the highest level.

What are your recommendations for young people who want to be as sure as they can be of a firm footing in the labour market when they're ready?

"If they have already left school, an internship or trainee position is a good way to get into the workforce. But if they're still in school the most important thing is to make sure they graduate from the upper secondary level. That's a basic requirement for almost all employers in Sweden today. We would of course like to see more young people applying and having the opportunity to go into higher education because the businesses and professions of the future will require broader expertise. I also think it's important to find something you're interested in. The best way to do a good job is, after all, to enjoy your work."

The knowledge society: What does that mean from a labour market perspective?

"The knowledge society is increasing demand in both the industrial and service sectors for highly skilled and well-educated employees. Regardless of whether your job is in a mining operation or at a gym, the knowledge requirements in your work processes are growing, as is the need to keep an eye on international competition. The fact that Sweden is building its prosperity on knowledge doesn't necessarily mean that some sectors will become obsolete, but without doubt it does mean that all sectors need to acquire new knowledge quickly. This puts pressure on society to be able to provide education, professional development, research and knowledge exchange so that companies can increase their market share. We have to live up to that."

What is good and what can be done better in terms of Swedish research and education to meet the labour market's needs?

"What is good is that in Sweden a relatively large percentage of GDP goes to research and that we have a well-developed education system in many areas. But there is a lot we can do better. We should make it easier for companies to invest in research and development, increase cooperation as I mentioned before and enable more smaller companies to work with local universities or to employ engineers. We also need to spread the risk more effectively, because research in Sweden today is dependent on a few large players. This is where I believe the public sphere needs to take more responsibility and increase funding over time.

In education we have to improve school results primarily by reducing class sizes, ensuring that all young people graduate from upper secondary school and stopping the cuts in higher education. We need to expand it instead to ensure that at least half of all people ages 30 – 34 will have completed at least two years of higher education."

What issue is close to your heart when it comes to making Sweden even better?

"I think a lot of people feel the same as me, that the most important thing we need to do is put young people to work. Youth unemployment is increasing and young people who are out of work too long can easily start to become passive, feel hopeless and sometimes even turn to crime. All young people need to be either working or studying – they should never join the ranks of the long-term unemployed."

Active commercial and innovation policies are important to ensure that we have more start-ups and growing companies. But we also want to invest substantially in stopping youth unemployment by guaranteeing that all young people can get internships, trainee positions or education if they are unemployed for more than six months. Lingering passivity must not be an alternative. Guaranteeing that for all unemployed young people today doesn't cost much, but the cost of losing a young generation is significantly higher."

FOCUS ON EDUCATION!

Hillevi Engström, Minister for Employment

»Leaving school with knowledge gaps often goes hand in hand with problems finding a job later on. That's why the Government's work on preventing youth unemployment starts at the school desk.«

Having more businesses, and especially growing ones, is key to job creation. What is the best way for politicians to help more businesses to get started and to grow?

"Politicians can create favourable conditions for enterprise. The Swedish labour market is in an exciting development phase with new jobs and new sectors emerging. We also need to develop and be active in removing obstacles and providing opportunities for people with dreams and ideas.

Labour policy has an important role to play in creating better conditions for enterprise and more opportunities for companies to grow. Through labour market policies that help equip people for the workplace, politicians can help improve the matching process and fill the competence gaps in industry. Political initiatives that make it easier to start and run a business are also important."

What are your recommendations for young people who want to be as sure as they can be of a firm footing in the labour market when they're ready?

"Focus on education! Leaving school with knowledge gaps often goes hand in hand with problems finding a job later on. That's why the Government's work on preventing youth unemployment starts at the school desk. Through vocational training and internships, young people can get important experience that will increase their chance of getting into the labour market. I would also like to encourage today's young people to be more active when choosing an education and to use the information that's available on the quality, attractiveness and future outlook of different types of education.

The upcoming generational shift can also give today's young people a unique opportunity in the labour market. With all the people who will be retiring in a short space of time, there will be lots of opportunities for young people to establish themselves and get a job. At the same time, it's important to remember that a person who has worked in a field for a long time can't be replaced just like that. Employers need to start getting young people into their companies now and give them on-the-job-training."

The knowledge society: What does that mean from a labour market perspective?

"Our increasingly knowledge-based labour market means that Sweden is competing with knowledge and not with low salaries. As countries like China and India continue to develop we will hopefully see an increase in demand for products and services from the West. Our future therefore lies in being a knowledge society and competing with our innovation and research in both industry and the service sector. This will have consequences in the labour market in the form of increasing demand for a well-educated workforce."

What is good and what can be done better in terms of Swedish research and education to meet the labour market's needs?

"Research and development are important for jobs. It's with greater cutting-edge expertise that we will be able to compete internationally and be a competitive knowledge nation where research and innovation lead to high growth, innovative capacity and new jobs.

The link between education and the labour market needs to be strengthened by increasing cooperation between schools and local industry. In many sectors the gap between these is altogether too wide. Education providers of all kinds need to inform themselves more about the needs of industry and the challenges involved in guaranteeing a supply of talent. This may involve developing trainee systems and a clearer career focus, like we find in other European countries. It's also important to continue to reform the education system to raise the quality and to make sure young people finish school. We need the types of schools that support pupils all the way through and that have a relationship with local business and industry."

What issue is close to your heart when it comes to making Sweden even better?

"The big challenge in the labour market is reaching the groups that are far removed from it in terms of getting a job. These are many young people with an inadequate education, people who weren't born in Sweden and people with disabilities that make it more difficult for them to work. This is where we have significant and important work to do in the future.

The Government's arbetslinjen policy is based on getting everyone who can and is willing to work a chance to do just that. All jobs are needed."

IVA IN ALMEDALEN

RELAXED CONVERSATION ON IMPORTANT ISSUES

IVA has participated for the past three years, presenting the projects and the issues that are at the heart of the Academy. As an independent and impartial academy, this is an important task. The following IVA projects: Innovation Powerhouse Sweden, Agenda for Research and An Energy Efficient Society, arranged four well-attended seminars.

Under the heading Innovative Public Sector – the next export success? Representatives from the public sector discussed why the export of public sector services is relatively small.

The innovation support system was discussed in depth at a mini hearing. Does the system have the right players? Is there sufficient coordination between them?

What are the actual results from the SEK 25 billion invested in regional growth from 2007 to 2013? This question was addressed by various political representatives, organisations and authorities in a discussion facilitated by IVA.

Can research be a broader force in society? This was the theme of the seminar arranged by the Agenda for Research project.

PROJECT ACTIVITIES

IVA AT THE FOREFRONT

The objective of IVA's project activities is to create a greater understanding of the significance of engineering and economics by being an arena for discussion on development in society. As an independent bridge-builder with a network of expertise, IVA mobilises and disseminates new knowledge.

The projects usually run for one to two years and involve numerous decision-makers and experts from industry, the research community, government authorities and agencies, and politicians.

Through meetings, seminars, study trips and information reports, the combined expertise and experience within the projects leads to policy conclusions that are reported to the relevant decision-makers, or to concrete results that benefit the participating companies and organisations.

The process whereby decision-makers and experts from different spheres come together is often just as important as the actual end results.

Most of the projects focus on long-range issues relating to research and education, energy and the environment, innovation and enterprise, and communication and infrastructure. Internationalisation and connections to the EU are important aspects in all projects.

INNOVATION POWERHOUSE SWEDEN

REGIONAL INITIATIVES TAKE OFF IN SWEDEN

Innovation creates future growth and prosperity. Expressions like these have become axioms in every decision maker's verbal arsenal nowadays. But words must be converted into action. All levels of society need to join forces. What is happening now or may happen regionally must be supported by politicians at the national level. And vice versa.

This is the premise of IVA's multi-year project, Innovation Powerhouse Sweden.

The goal for the project is to develop innovation strategies at the national and region levels. The project will monitor the content and implementation of Sweden's innovation policy. It will also develop new activities and prepare proposals in areas that are of importance for Sweden as an innovation powerhouse.

The target groups are companies and players in the innovation system, regional authorities and politicians, as well as the Government and the opposition.

"We are aiming to facilitate the realisation of the many ambitions that exist in Sweden," says Project Director Johan Carlstedt.

An important element of the project is regional meetings. These bring together the regional players in the innovation system, including representatives from everything from the upper secondary school programme Ung Företagsamhet, UF (Young Enterprise) to regional authorities such as county administrative boards and, perhaps most importantly, companies active in the region. At workshops and in discussions, the participants are working together to produce a plan of action in line with their own situations. Representatives from the national political sphere, government agencies and authorities will also participate in the regional "dialogue days."

"The private sector players, such UF and Connect are important. Politicians often fail to recognise the importance of their efforts and those of entrepreneurs in getting Sweden moving."

In addition to being an actual list of measures, the regionally produced action plans will also clearly define who is responsible for what.

"During the course of the project we will conduct annual follow-ups to ensure the action plans are being implemented. These follow-ups will serve as meetingplaces and will continue even after our project is concluded."

Considerable interest has been shown in the regional dialogues. At the four that took place in 2012, 180 – 250 people participated.

"It has exceeded our expectations. We have also seen the 'right' people getting involved. One much appreciated element has been the 'inspiration lectures' describing what is actually already being done regionally. The overall picture has surprised many listeners."

In 2012 regional dialogue sessions have been held in Gävle, Skellefteå, Växjö and Linköping. (Around ten similar events are planned for this year.)

"At the four locations we have visited we have analysed the regional situation and conditions. What has been highlighted and what we want to focus on is local strengths. We're not focusing on fixing shortcomings. That's a good approach and starting point."

One direct effect of the dialogues is the creation of councils of regional players tasked with identifying what type of support the various players can offer individually and collectively.

Johan Carlstedt points out that innovative capacity requires entrepreneurial abilities.

"Innovation is a good concept, but if it is to do any good we need entrepreneurs. Entrepreneurs are the engines we need if innovations are to create value and find markets."

The project also has its sights on proposed commissions of inquiry in three main areas. One consists of business acumen, entrepreneurship and internationalisation. Another involves knowledge environments around universities and upper secondary schools, and the third is public procurement.

One of the ways the international perspective is being emphasised is through the combined efforts within Euro-Case (an umbrella organisation of European academies of engineering sciences).

"It can serve as an innovation platform and a starting point for discussion with the EU. But regardless of whether we think internationally, nationally or regionally, decision-makers need to actually stand up and declare that this is important. I also hope that these efforts will lead to a shift in the support the authorities are offering from supply-oriented to demand-oriented," says Johan Carlstedt.

The 2012 – 2013 Innovation Powerhouse Sweden project is being run in cooperation with the Swedish Agency for Economic and Regional Growth (Tillväxtverket), the Swedish Governmental Agency for Innovation Systems (Vinnova), Teknikföretagen employers' organisation and Sweden's municipal authorities and county councils.

Mellby Gård's Chairman and IVA member Rune Andersson is Chairman of the project's Steering Committee.


»Innovation is a good concept, but if it is to do any good we need entrepreneurs. Entrepreneurs are the engines we need if innovations are to create value and find markets.«

LUCK COMES TO HE WHO IS PREPARED

Ashkan Pouya & Saeid Esmaeilzadeh, Serendipity

»Sweden needs to be more like Silicon Valley. Apple and Google started there and they're still there. If we have a lot of start-ups, many will stay. Ikea and H&M are examples.«

On the fourth floor at Stureplan 15 in Stockholm the walls of Serendipity Innovations' reception area are covered with newspaper articles about the company. There is no empty space. Actually, the articles are mainly about the company's two founders Saeid Esmaeilzadeh (SE) and Ashkan Pouya (AP).

They have a vision. They want to create a new giant Swedish corporation at the level of Ericsson or Ikea.

The time perspective would hardly suit someone who likes to monitor quarterly results. 35 years is what they have in mind.

"It's not a magic number. But 35 years is the length of the professional careers we have ahead of us," said Ashkan Pouya, Chairman of the Board.

On the company's website he is described as a serial entrepreneur with experience in research-based company construction. He has a degree in Business Administration. Saeid Esmaeilzadeh, CEO, is a scientist (Adjunct Professor of Materials Chemistry at Stockholm University). He is also a member of the board of IVA's Business Executives Council.

The company has grown since it was formed in 2004 and now has several companies in its portfolio. Diamorph, the biggest one, was started based on Saeid Esmaeilzadeh's research. Serendipity's core business is creating new innovative companies based on leading academic research.

Serendipity is an ambiguous word. It has to do with fate or coincidences. A 2001 American film had the title "Serendipity." Genre: Romantic Comedy.

Do you have a romantic view of business with the entrepreneur as the hero?

AP: "Absolutely, with an element of Science Fiction as well. The entrepreneur is a hero. These are talented and capable people we are working with. We like and actually admire them. They're young people who have already achieved a lot. From us they receive guidance and access to an infrastructure that makes them even stronger."

SE: "They get to use our tools and methods. Our network, capital and specialist expertise are part of the package."

To distinguish it from traditional linear company development, Serendipity prefers to be called an incubator. Saeid gets up and draws on the whiteboard hanging on the wall of the sparsely decorated conference room. Idea – technology development – prototype – pilot production – upscaling – marketing.

"That's not a successful way to do it. It's all wrong. We go directly from the idea to the paying customer. Having a customer who's involved and providing input right from the start significantly reduces the risk."

The type of company that Serendipity wants to work with and develop is usually very dynamic.

"Scientists and researchers want to generate knowledge. The business developer sees knowledge as a means to an end. That's a recipe for conflict and requires special leadership abilities."

Is it just chance and coincidence that controls the path to success? Don't business plans have a big role to play?

SE: "Luck comes to he who is prepared. You need to pay attention to opportunities that arise. Not just focus on the path from A to B. The goals and the content can change along the way."

AP: "A rigid business plan can be a dangerous thing."

Although Serendipity works with young entrepreneurs, they have several experienced individuals on their own Board of Directors. Innovation professor and IVA member Bengt-Arne Vedin is one of them. Legendary entrepreneur Anders Wall, also an IVA member, is another.

"You shouldn't underestimate the importance of experience. But it needs to be used in the right places."

SE: "Inexperience also has value when you're building new ventures in unknown or non-existent markets. That's when it's good to have young, creative people without any mental barriers."

Do you see knowledge as a raw material, similar to ore?

AP: "We usually equate knowledge with oil. As long as it's still in the ground its future value will never be realised."

SE: "Sweden produces knowledge on an assembly line. But it needs to be refined and packaged. That's where we come in."

Research isn't the only thing that increases knowledge. Education does that too. Which is actually the most important?

SE: "In Sweden they are both at a high level. Best in the world in terms of a highly educated population. We need to take advantage of that. Swedes are technology driven and work well in teams. There's a kind of collective mentality here that works well."

But Sweden has a few deficiencies as well. What's lacking the most, scientists or entrepreneurs?

The response is immediate. And with emphasis from both of Serendipity's founders.

"Definitely entrepreneurs."

SE: "Sweden doesn't have environments like those around places like Stanford University in the US. There, the flow between academia and industry goes in both direc-

tions. In Sweden it's more segregated. But intrapreneurship is strong within big Swedish corporations."

So why should young people start businesses when they can have an exciting career in a big corporation?

SE: "Lots of them want to and could, but they're afraid to. That's a pity, both for the individual and for society. Starting a business is a personal outlet."

What do you think should be done to give more people the courage they need to be entrepreneurs?

SE: "Funding for research only provides one thing: new research results. That's why we need to use more resources in different ways to stimulate entrepreneurship. A good idea would be for private individuals to get a tax deduction if they invest in a development company. The new job opportunities that entrepreneurs can create benefit society no end."

AP: "Politicians should be encouraging a culture of entrepreneurship. Fiscal tools and regulations could be changed. Venture capital is an important component. The Government doesn't necessarily need to be a venture capitalist, but subsidies are needed."

More entrepreneurs means more business start-ups. But the ones with real potential are often bought up by foreign stakeholders and end up leaving the country. What should we do about that?

That problem didn't seem to worry Serendipity's owners very much.

SE: "Producing more companies doesn't necessarily mean that the percentage that get bought up will increase. If a successful company leaves the country, some Swedish entrepreneur will get rich and reinvest in new Swedish companies. But we do need to have incentives for companies to stay and grow here."

AP: "Sweden needs to be more like Silicon Valley. Apple and Google started there and they're still there. If we have a lot of start-ups, many will stay. Ikea and H&M are examples."

SE: "The general political climate plays a role. The Government or authorities shouldn't be assessing and prioritizing industries. We need catalysts for a dynamic economy."

The businesses you want to see grow are knowledge-intensive. They exist in a knowledge society. But what exactly is a knowledge society?

AP: "It's where production is based on the power of ideas instead of muscle power. The value of something created with muscle is limited compared to something created with ideas. The latter is unlimited. In a knowledge society people are materially better off. The quality of life is higher because creative abilities are used to a greater extent. But entrepreneurship is exactly the same in both types of society. In other words, it involves activities that bring about change. Entrepreneurship is a component in the creation of a knowledge society."

Ericsson sold telephones in China in the 1800s. But it took a while before it became a giant corporation. What role does the time perspective play if you want to create a big corporation?

AP: "You behave differently depending on your time horizon as an owner. A quarter, a two-year plan, perhaps five. Then exit. You build for sustainability during that time. But if you think in terms of decades, you build something more sound."

SE: "Being clear as an owner is important. Building companies is like bringing up children. You can't have a nanny 24/7 while you the parent takes a holiday."

AP: "The management of that sort of company isn't taking long-term responsibility either. If we look at the stock exchange we see that people used to hold onto their shares for decades. Now it's just a few months. It's all about short-term profit maximisation and that damages long-term growth."

In the US many successful companies were started by people with different ethnic backgrounds. What are the differences between the US and Sweden?

SE: "In Sweden people are seen as first, second or third generation immigrants. When someone moves to the USA, they become first generation Americans."

AP: "According to one study, what distinguishes successful companies in the US is the fact that the people who started them are young. Dual citizenship is common."

SE: "At Serendipity many of the employees have a non-Swedish background. Not because we have looked for that, but because we have supported many exceptionally talented people. Their talent wasn't being used in other places. We want our company to be like a mini Silicon Valley."

What will the company be like in five years' time?

SE: "We don't really know. But we have long-term goals. We really want to build something big. In the short-term we're looking at development pragmatically. Up to now the company has grown according to plan. But five years ago I would not have been able to imagine that it would be exactly like this."

AP: "In five years we'll be at lot bigger."

Serendipity Innovations is a member of the Business Executives Council and Saeid Esmaeilzadeh is a member of the Council's board.

NEWLY STARTED

TRIALS ARE THE GOAL

In the past, the clinical pharmaceutical trials segment was strong in Sweden. But the number of clinical studies being conducted on Swedish soil has fallen considerably. IVA has therefore started a project called Trials for Swedish Medicine.

The objective is to create a neutral meetingplace for collaboration between the healthcare sector, academia and industry. During the course of the two-year project, a list of common objectives for the three sectors will be produced. Creating concrete proposals for measures that can be implemented is also a project goal.

One of the most important tasks for the project participants will be to identify incentives that will give new impetus to clinical studies in Sweden.

Another task of the project is to create a vision that academia, the healthcare sector and industry can get behind. Carola Lemne, CEO of Praktikertjänst, Sweden's the largest private healthcare provider, is chairman of the Trials for Swedish Medicine project.

IN PROGRESS

HIGH-LEVEL ENTREPRENEURSHIP

In cooperation with HRH Prince Daniel, IVA is launching a project entitled Prince Daniel's Fellowship and Entrepreneurship Programme. The Prince has been held up as a role model for entrepreneurship.

A number of entrepreneurs have been assembled in the form of a council of experts for the project. They will share their own experiences and knowledge and act as mentors to inspire and assist the selected Prince Daniel Fellows on their journey to become successful.

The main purpose of the project is to promote entrepreneurship and generate more business start-ups. The first phase of the project will run for two years and it will gradually be expanded after that.

PROJECT SEMINARS

ENERGY, RESEARCH AND INNOVATION IN FOCUS

IVA arranges numerous seminars and symposiums every year. In 2012 regional presence for projects such as Innovation Powerhouse Sweden was in focus. Issues relating to energy and research have been important to IVA ever since 1919 and still are today. Two exciting seminars are described below.

INNOVATIVE SWEDEN

Is our national self-confidence based in fact?

IVA and GE invited guests to attend a breakfast seminar on 22 March.

Innovative capacity determines a country's international competitiveness. Sweden is in first place in the EU's innovation statistics. Meanwhile the need to analyse the significance of national differences in leadership, culture and attitudes is increasing.

GE's Innovation Barometer, which was presented at the seminar, surveyed what senior executives at large international and Swedish corporations think about the frameworks for successful innovation.

Just over nine out of ten senior executives at Swedish companies believe that Sweden has a very good or at least a fairly good reputation abroad when it comes to innovation. Six out of ten said that Sweden's innovation reputation is among the three best in the world.

But globally only five out of one hundred executives thought that Sweden's innovation reputation is among the top three.

If we narrow it down from globally to EU nations, the opinions are different. Then Sweden comes third after Germany and Finland.

In general the Swedish business executives are optimistic about the significance and opportunities of innovation. They fall into the category of enthusiasts.

They are also among the people who are the most satisfied with the current innovation environment.

Compared to others, the Swedish executives have a clearer idea of what innovation actually is. For 66 percent of executives in Sweden innovation means the introduction of new processes, products, structural changes or new forms of marketing. Globally 47 percent thought that was the best definition.

AN ENERGY EFFICIENT SOCIETY

More energy savings possible in buildings

The project entitled An Energy Efficient Society arranged its first seminar in March.

Professor Lars Bergman, formerly President of Stockholm School of Economics is Chairman of the Steering Committee.

"There are lots of good reasons to get energy efficient now," he says.

The necessary technology is already available or is being developed. Consumers who mainly use fossil fuel-based energy are feeling the rapidly rising prices.

Sweden's Minister of Public Administration and Housing Stefan Attefall was one of the speakers at the seminar.

"As of 1 January 2021 all new buildings are to be zero-energy buildings. That has been established by the EU," he said.

The housing minister pointed out that energy standards for new buildings have been raised.

"The standards in Sweden are tough compared to other countries. But we also need to pay attention to economic considerations. According to the Swedish National Board of Housing, Building and Planning, a requirement to implement all technically possible measures would only marginally help us achieve our environmental goals."

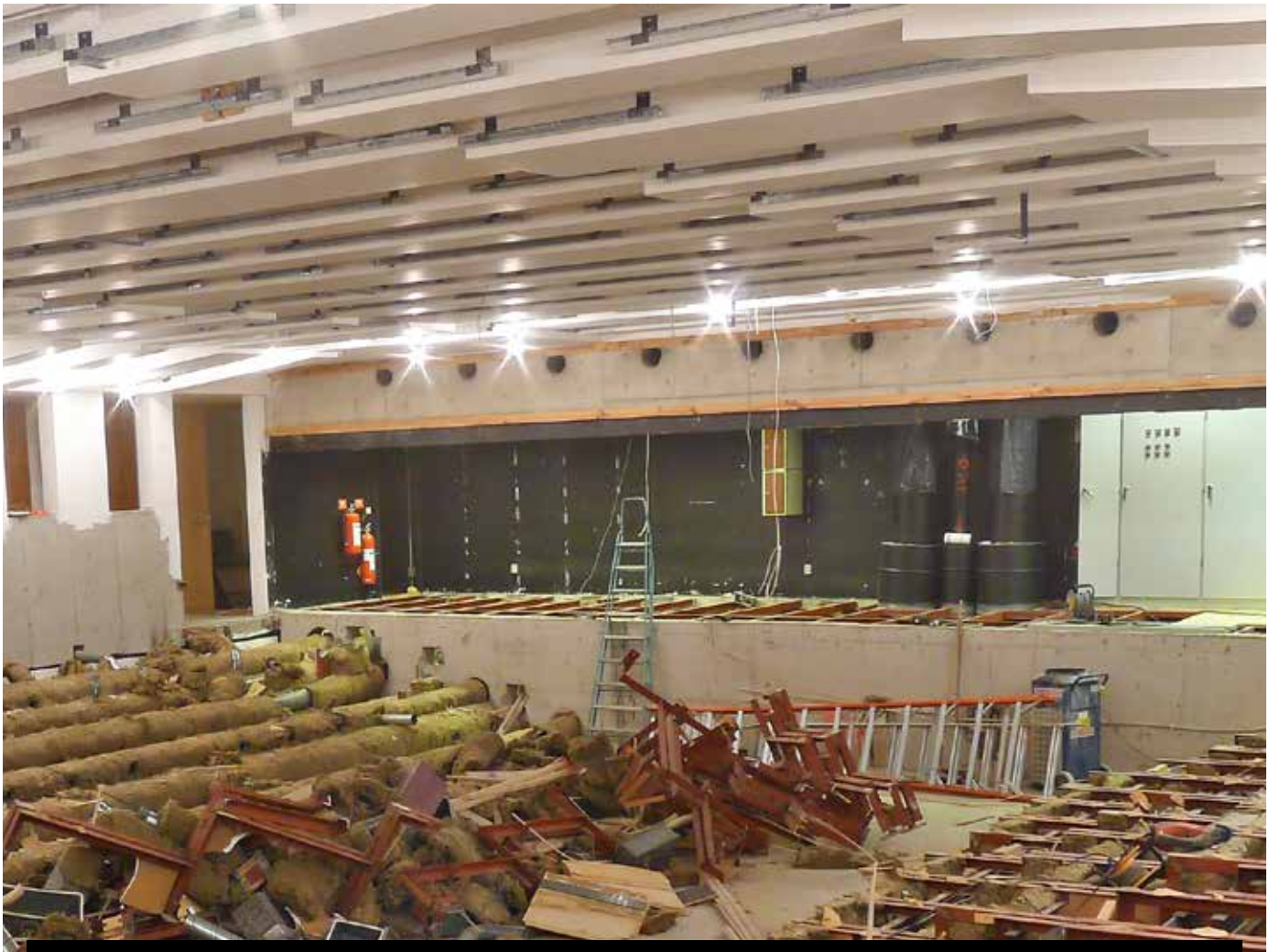
According to Stefan, even more stringent regulations would result in unacceptably high rent increases and would also cause problems for the production of small single family homes. Professor Emeritus Arne Elmroth is an IVA member and a member of a committee that has been looking into the possibility of cutting energy use in half in multi-dwelling buildings in Sweden. And yes, it is possible. But the process of upgrading older buildings needs to start right away.

Arne Elmroth did not agree with the Minister about the building requirements being sufficient. They only force those who are building the worst to built better.

"The extra costs involved in constructing new buildings that are really energy efficient are marginal. Over time it will be well worth it."

Arne Elmroth believes that energy efficiency requirements should be stricter for renovation and remodelling.

"Having stricter regulations stimulates the development of technology in multiple areas. All buildings built before 1975 need to be upgraded before 2050. That's an excellent opportunity to implement measures to greatly improve energy efficiency. The extra costs are often only a fraction of what it would cost to implement the energy improvements on a separate occasion."



IVA'S CONFERENCE CENTRE

WALLENBERG AUDITORIUM RECONSTRUCTED

In 2012 the reconstruction of the Wallenberg Auditorium was a dominant event at IVA's Conference Centre. The auditorium was closed in June for renovation which lasted the rest of the year. The re-opening was planned for the end of February 2013 on the 30th anniversary of the original official opening.

Despite the closure of the Wallenberg Auditorium and the recession, 2012 was still a good year for the Conference Centre which had a high occupancy rate and maintained its strong position in Stockholm's conference market.

During the year a new conference room was created, the Enström Room, with space for 12 – 15 people. The room's furniture arrangement is flexible and it is equipped with a wall-mounted interactive projector.

In 2012, the Banquet Hall was equipped with a top-class stationary sound system.

The technology in the Crafoord, Wingquist and Nobel Rooms has been upgraded with new, ceiling-mounted and interactive projectors, and the Ericsson Room has a new 55-inch TV screen.

Facts about IVA's Conference Centre
Ten conference rooms for up to 175 guests. Four event spaces. Food and beverages provided by Restaurant Grodan. Around 1,700 conferences and gatherings a year attended by some 35,000 guests. Awarded five crowns by Svenska Möten.

TECHNOLOGY STUDENTS SHOULD STUDY MORE HUMANITIES SUBJECTS

Nina Wormbs, Associate Professor in the History of Technology

»Historians like me don't like to simplify things. Societies change over time. The same things don't repeat themselves precisely. Also, the questions we ask of the past are being asked now at a time when conditions are different to those in the past.«

The importance of science and technology cannot be overestimated when it comes to developing society. New technologies have always been a driver of social change. They generate opportunities and meet human challenges.

"It is certainly possible to overate the significance of a new science or new technology. That happens all the time," says Nina Wormbs, Associate Professor in the History of Technology at the Royal Institute of Technology (KTH).

According to Nina, it's not the fact that too little is invested in science and technology that is preventing global challenges from getting relevant solutions. Rather, it's the inefficient social institutions that are throwing a spanner in the works.

"Technology is important of course. But it's important to choose the right technology. Technology that can generate the really positive system changes."

It's not just new technology that creates the future. We create it ourselves by talking about it.

Technology is something people create and it needs the help of people in order to develop. Take the petrol engine; it has been fine tuned by engineers for well over a century.

But imagine if we had invested in electric cars at the beginning of the last century. They were the fastest after all.

The price of petrol-driven engines fell slowly at the same time as people's incomes were increasing. Almost every household was able to own a car. The dream was greatly encouraged in various ways.

"But no one predicted the effects of mass motoring on the infrastructure and appearance of cities. Not to mention the emissions problems. If we had invested in electric-driven cars back then, things would perhaps have looked different today."

System changes require strength and will. Many are incentivised to develop existing technologies when new challenges present themselves.

Ethanol is one example.

"The existing system of fuelling stations and functioning distribution channels allowed ethanol to be a success without challenging the existing system."

It has certainly solved some problems, but other problems have taken their place.

Nina maintains that when we produce solutions for the future we need to pay more attention to the total systemic effects. It's important to recognise that there are several conceivable futures.

The shortage of water and sanitation in many places around the world is one of the biggest problems today. We don't need new technology to remedy that. We already have good technology; we just have to put it to use.

"At the global level it's the simple technologies that can do the most good. Not nano, bio or IT."

"Historians like me don't like to simplify things. Societies change over time. The same things don't repeat themselves precisely. Also, the questions we ask of the past are being asked now at a time when conditions are different to those in the past."

Nina believes that a lot of the future is being produced now. She herself is involved in a Mistra project on the future of the Arctic.

According to Nina, the general discussion about the Arctic is based on climate determinism. The ice is melting now. That's alarming.

"The ice-free water leads to exploitation and more shipping. That's obvious. It adds weight to the story of the Arctic's future. If it's allowed to be the only story."

But over the years many futures have been constructed for the Arctic region. For a long time the ice was regarded as an asset. If it's melting now there may, for example, be drift ice and that could cause a problem for those trying to reach the Arctic's natural resources.

Researchers should be more active in sharing their results on a broad front.

"Unfortunately the academic system doesn't encourage that. One of the researcher's roles should be to question what is happening and show complexity. In politics there is a trend towards simplification. Meanwhile society is becoming increasingly vulnerable and complex."

Technology that drills wells or makes ploughs doesn't increase vulnerability. But systems engineering does, e.g. in district heating or the internet.

In an increasingly complicated world, we need engineers with broad-based expertise beyond the purely technical side.

"Technology students should study more humanities subjects. That and social sciences could improve engineers' critical thinking."

It's difficult to practice that in maths courses. In order to solve the big problems it's necessary to have an understanding of many subjects.

"Similarly, humanities students should learn more about technology. If for no other reason than to be able to question the technical systems."

Nina Wormbs was one of the speakers at an IVA symposium called "Technologies for the Future – Visions and Opportunities."

AGENDA FOR RESEARCH

GREAT INTEREST IN PROJECT CONCLUSIONS

Agenda for Research has come to an end. The final results were presented at the China Theatre in Stockholm. The venue was well-filled to say the least.

Arne Wittlöv was Chairman of the Steering Committee. One of the project's main objectives was to highlight and energise the research policy discourse. Did it succeed?

"Absolutely. The process was important. The Steering Committee consisting of heads of research funding organisations and research consumers arranged 20 or so hearings involving individuals with considerable experience and deep insight into the area. Through these hearings and lively discussions we have built a solid foundation of shared experience which I believe is of great value for everyone involved with both the operative and strategic side."

"Our ten reports have been presented and discussed at open seminars attended by close to 800 participants. 300 people attended our concluding seminar."

"We of course also delivered a report to the Ministry of Education and Research for the bill. There have been several op-eds in the press, but best of all, some trade journals have cited and commented on our work. We have also seen considerable interest in our opinions and conclusions."

What sort of reactions have you had?

"A lot of people have commented on our final report. Some universities have contacted us to hear about our thought processes and for us to participate in discussions at local events. Another example

is ongoing discussion on our conclusions on research education with the Swedish Higher Education Authority which will conduct an evaluation during the year. We will also be meeting with the Parliamentary Committee on Education."

How closely does the content of the autumn research bill match your recommendations?

"In general I think the bill presents a much more balanced picture than expected based on the impression given by the Ministry's rhetoric in the period leading up to the bill. We recognise a lot of the ideas we put forward, especially in the initial description of the bill's intentions. On the other hand, there's a lot has not been translated into concrete terms. We have to accept the fact that it's not all that simple to do this within the context of preparing a bill, but it's important that the work continues."

What do you remember in particular from the project?

"The Steering Committee's genuine commitment to working though all of the issues and discussions was invaluable in reaching our goal. Consensus through the lowest common denominator is not a good driver of change. In many situations we reached consensus by thinking along new lines, which I think is reflected in the final report."

"I remember a lot of episodes, such as when Per Unckel, who sadly passed away too soon, came rushing into one of our meetings, cup of coffee in hand and declared: 'I haven't really got time for this – but it's such good fun!'"

Are more projects like this one needed?

"Research policy is a big area – it's necessary to have a long-term perspective, even when working on a project with a limited timeframe. As I mentioned before, I believe it's important to further explore both the overall approach and several of the concrete proposals we presented. The model of presenting studies to create a basis for robust debate and taking a stance has worked well in my opinion. There's a shortage of knowledge and continued project work would make a big difference."

MORE PEOPLE SHOULD SEE THE POTENTIAL IN A RESEARCH CAREER

Helene Andersson Svahn, Professor of Nanobiotechnology

»There are clear connections between research and education. A large part of undergraduate education naturally consists of basic knowledge, but towards the end there are courses providing top-level knowledge.«

Helene Andersson Svahn is a professor of nanobiotechnology at the Royal Institute of Technology (KTH) where she is head of a research team of about 20 researchers.

For Helene, the significance of research in Sweden's development is crystal clear.

"That's what drives the country forward as a science nation. Research, education and technology are absolutely fundamental if we are to keep up with the international competition," she says.

Her own field, nanobiotechnology, provides one example of research where Swedish researchers are among the world's elite.

"We are testing the boundaries of what's possible."

Among other things, Helene Andersson Svahn's research is aimed at developing new, faster and more detailed analysis methods for things like blood tests, cells, proteins and DNA.

"You could say that we're developing new tools to use in clinical settings."

Of course, not all of the research conducted in Sweden, or in other countries for that matter, is of an equal standard. In Sweden the research funding is shared by many.

"These days politicians are more focused on what's successful. That's good in a way, but at the same time it's difficult to predict when an unexpected breakthrough may happen."

In a small country for obvious reasons it is not possible to try to be best in the world at everything.

"If we are aiming for research that can create breakthroughs, interaction across disciplines is a good way to work. Combinations are important. I think the lines should be blurred as much as possible."

However, the researchers trying to do that may find it harder to get their funding applications granted.

"When you apply for funding you have to put yourself in a certain category. Research funders often say that interdisciplinary research should be encouraged. But it's not possible to apply for funding with combinations of disciplines."

This is unfortunate because what sets a certain type of research apart is sometimes precisely the combinations. The position of Chairman of the interdisciplinary Young Academy of Sweden, founded in 2011 by the Royal Swedish Academy of Sciences (KVA), should therefore be a good fit for Helene Andersson Svahn.

The Young Academy functions as a interdisciplinary forum and provides a research policy platform for young researchers.

Without research the quality of education would suffer, at least in the long term.

"There are clear connections between research and education. A large part of undergraduate education naturally consists of basic knowledge, but towards the end there are courses providing top-level knowledge."

It is quite clear that advanced research helps to make Sweden attractive. The fact that Swedish research in fields such as nano, IT and biotech is at the forefront attracts foreign researchers.

"The Nobel connection is important as well. For one week every year the whole world is looking at us. That's a trump card." Many innovations come from Sweden. Spotify, for example, has changed the way music is consumed.

"And Spotify has a strong connection to research."

It may seem a little frustrating that despite all this, companies aren't queuing at the border to locate their research departments in Sweden.

If anyone thinks that Helene Andersson Svahn enjoys her job as a scientist, they would be right. But she would like more people to open their eyes to the opportunities a research career can bring.

"Researchers can travel and see other environments. They visit labs in other countries and integrate across geographical boundaries. They get to solve problems and create new knowledge. It's a dream profession."

Anyone who decides to advocate cutting the research budged cannot count on the support of Helene Andersson Svahn.

"If we cut research we will fall behind. Then we wouldn't even be able to benefit from research carried out by researchers in other countries, because we wouldn't even be able to understand it."

Helene Andersson Svahn was named by MIT in 2003 as one of the world's most promising young scientists.

Helene Andersson Svahn was one of the speakers at IVA's seminar entitled "Technologies for the Future – Visions and Opportunities" held on 22 October in the Bernadotte Library at the Royal Palace in Stockholm.

AN ENERGY EFFICIENT SOCIETY

50 PERCENT MORE EFFICIENT ENERGY CONSUMPTION BY 2050

The buildings in Sweden are to use half as much energy per unit area by 2050 compared to 1995. This has been established by Parliament. But IVA's project, An Energy Efficient Society, has set its sights higher than that.

The project intends to find ways to make all transport, all industry, Sweden's forest and agriculture sector as well as the service sector 50 percent more energy efficient.

The technology needed to do this is largely available already, but cost-effective measures are not being implemented. The process is not being held up by any technological shortcomings.

The project's goal is therefore to find models that create real incentives to speed up energy efficiency work.

"Basically, the project is about finding out what is needed to cut Sweden's energy consumption in half by 2050," says Jan Nordling, Project Director.

The project is aiming for a relative reduction in energy consumption. If we can, for example, cut energy use in half in all existing homes, the original energy would be enough for twice as many.

The concrete work is being done within seven sub-projects. In addition to project groups focusing on the five sectors of society, there is a working group looking at smart energy systems and one aimed at finding and developing commercial opportunities and business models.

"We already know how to cut energy use in homes by half. We are going to present solutions for the other sectors in 2013."

Several well-attended seminars have been held, one of them in Almedalen, focusing on energy in homes. The proposals produced have received significant media attention.

"The extensive interest in the project is evidenced by the fact that several major companies, the Swedish Energy Agency and Swedenergy are all behind it."

Two reports were published in 2012 and parliamentary politicians have also paid attention to the project's ideas.

"Energy efficiency doesn't sound that exciting. It doesn't have the same appeal as building large energy plants. That's why I'm pleasantly surprised by the positive response," says Jan Nordling who has worked with energy issues and energy efficiency for 35 years.

The project plan includes making use of international experience.

"We've been in China where the focus is on making energy production more efficient. That's one difference compared to our approach and it's the 'next stage' in the efficiency improvement chain."

In 2013 lessons from Germany will be added to the project's knowledge bank. Jan Nordling himself would like one of the project results to be for more people to realize that electricity is an energy carrier rather than an energy type.

"Electricity is also the best energy carrier. Coal will run out eventually. Electricity cannot. I am convinced that electricity consumption will increase while total energy consumption will decrease."

Lars Bergman is an economics professor and Chairman of the project's Steering Committee.

"Having new business models as a focus of the project is important if we are to succeed," he says.

Improving energy efficiency must pay off. If every household turns off one unnecessary light, the combined savings are substantial. The individual household will lower its electricity bill and the inconvenience is negligible.

But the savings seem so minimal that people probably spend their time doing more important things than looking for lights they should turn off.

It is also difficult to imagine that a company would take on the task of illuminating a large number of homes. The cost of motivating and controlling the various households would probably exceed the electricity cost savings that can be achieved.

"In other words, we have a case where there is significant technical and financial potential to save electricity but there is no 'business model' to turn this potential into a profitable venture. This is, unfortunately, something that applies to many of the 'low hanging fruits' that are usually highlighted in studies of energy saving opportunities."

"Merely talking about what is technically possible is not enough. We also need incentives to realise that potential. Without the financial aspect we cannot solve the problem. It's good that IVA recognises that," says Lars Bergman.

LARS BERGMAN

»Merely talking about what is technically possible is not enough. We also need incentives to realise that potential. Without the financial aspect we cannot solve the problem. It's good that IVA recognises that.«

JAN NORDLING

NTA & THE ENERGY BOOK

IVA AT SCHOOL

The school development programme, Science and Technology for All (NTA) is going to launch two digital packages on the themes of Space and the Human Body. The Energy Book, Aspects of Energy, contains a new chapter on energy and economics.

SCIENCE AND TECHNOLOGY FOR ALL

Modernisation is ongoing

The Science and Technology for All (NTA) programme continues to attract more and more school administrators. NTA was launched in 1997 by IVA and KVA (Royal Swedish Academy of Sciences). School children in Linköping were the first to conduct the programme's science experiments. Now well over 100 municipalities have joined the programme and the number of participating school children is more than 100,000.

The school development model, which includes multiple thematic units, aims to stimulate curiosity in science and technology among school children. The model also provides professional development for teachers.

IVA and KVA are jointly responsible for developing Science and Technology for All.

In 2012 work began on creating NTA Digital. The goal is to construct two digital packages on the themes of Space and the Human Body.

"The top computer-based visualisation technology will be used," says Johan Persson, the IVA Project Manager who is responsible for the development project.

The project teams working on this include representatives from NTA Production and Service. Professor Anders Ynnerman is Chairman of the Steering Committee and the Wallenberg Foundation is providing funding.

The digital NTA packages will be aimed at pupils in years 1 – 6.

"We are not developing new technology. Instead we are focusing more on content. The materials have to be attractive to children who are used to the high quality offered by commercial computer games."

The quality of the knowledge content is guaranteed through the expertise shared by academics qualified in each discipline.

"By summer 2013 the subject matter will be ready. Then production of the digital platform will be outsourced," says Johan Persson.

NTA's production company is responsible for launching the finished product.

THE ENERGY BOOK

New updated edition disappeared quickly off the shelves

The energy supply is undoubtedly one of the hottest issues of our day. The energy debate is intense in the media and among politicians. But getting a complete picture of the energy challenges we face is no easy task.

A project of IVA and KVA (Royal Swedish Academy of Sciences) called Science & Everyday Life – Aspects of Energy has been focusing for several years across a broad front on improving knowledge about energy. The book entitled "Energy – Possibilities and Predicaments" is one medium used for this.

The third updated edition of the book, which is usually called the Energy Book for short, came out in April.

New, up-to-date statistics and fresh and interesting examples are among the updates that have been made. The third edition also contains a new chapter offering an economic perspective in which political mechanisms are explored.

The basic idea is the same – a problematised, objective account of the energy area. Problematising involves, among other things, using facts, arguments and various viewpoints to shed light on great challenges and complex issues that lack simple solutions and answers.

Eva Stattin has been the editor and project manager for work on the new edition of the Energy Book.

"The book has been very well received to say the least. The April edition of 10,000 copies sold out in three weeks," says Eva.

In October the publisher's shelves were filled with an additional 8,000 copies. Two weeks later, they were empty.

The book is frequently used in schools. To add another knowledge transfer dimension, the project arranges professional development days for teachers. In 2012 they were held at science centres in several parts of the country.

"Now the book is set for a few years, but an online version will be updated with new statistics on an ongoing basis."

Project financing has come from a number of sources. In 2012/2013 the Swedish Energy Agency provided a large portion of the funding to create the concept of the professional development days. The Marcus and Amalia Wallenberg Foundation has also contributed.

SERVICE INITIATIVE

CONCLUDING SEMINAR

Within IVA's Service Initiative IVA members and members of the Business Executives Council have been working on increasing awareness of the importance of service production. The initiative, launched in 2010, has also helped build knowledge about the situation and the models used in the service sector. A concluding seminar took place on 21 May.

During the three years of the Service Initiative a number of seminars and round-table discussions have been arranged. Study visits to innovative service companies in various sectors – from car dealerships to poker gaming products to telecom – have all brought more insight into the diverse possibilities of services. The Service Initiative has submitted proposals for the Government's national strategy for developing service innovation.

One concrete result of the initiative is an anthology, The Swedish Service Sector, which was presented at the concluding seminar. The book was produced in cooperation with the Research Institute of Industrial Economics (IFN).

On the same occasion the Service Initiative submitted its final report to IVA. The report summarises reflections from the activities carried out and offers proposals for areas that need further study to determine the best way to generate growth in the service sector.

A panel discussion on outsourcing tax-financed activities was one element of the seminar. The participants were representatives from both the public and private sectors and researchers.

The discussion mainly addressed service quality and whether more research is needed on outsourcing of public sector services.

The Service Initiative's board consisted of IVA members Marie Ehrling (Chairman), Sven-Christer Nilsson (Vice Chairman), Karl-Olof Hammarkvist, Magnus Henrekson and Erik Lautmann, (Chairman of the Business Executives Council). Eric Giertz served as an adjunct member of the board. Arvid Söderhäll was Project Manager.

IT'S NOT THAT EASY TO MOVE FORESTS, ORE AND MINES OVERSEAS

Johan Sterte, President Luleå University of Technology

»What you get from an education in engineering is more than just subject knowledge; you learn to address and solve complex problems. The ability to analyse is a good engineering skill.«

Picture Norrbotten. What comes to mind are ore, mines and LKAB, right? You would hardly be thinking about the world's most modern organ. But the 9,000 pipe organ was revealed in Piteå in October 2012. Benny Andersson, an honorary doctor at Luleå University of Technology (LTU) played the Abba classic "Dancing Queen" on it.

LTU has more than a giant organ, the span of its activities has also become expansive.

In Piteå, for example, there are education programmes in music and media. Kiruna has space and in Skellefteå wood research and education programmes dominate. Luleå has engineering, social and health sciences. Geographically, it is just over 550 kilometres from the university's northernmost campus to the southernmost one.

Sweden's northernmost university has 1,600 employees and 17,000 students. Many of them come from the southern parts of Sweden.

Chemical engineering professor and IVA member Johan Sterte has been the university's president since 2009.

"I need to travel quite a lot between our various locations," he says dryly.

Having a strong university means a lot for his region.

"It's crucial for the future of the region. Not just for existing business and industry, but to attract talent as well."

More expertise makes the region more attractive to businesses, students and researchers.

Johan Sterte has had a long relationship with LTU. He became a professor there in 1994. But for most of the first decade of the 2000s he was president of what was then Växjö University.

Regardless of where a university president serves, education and research are important missions. But how do we actually get young people to choose an appropriate education?

"Providing information about the opportunities a certain education is likely to lead to is all you can do. We shouldn't push too hard even if it would be best if enough students chose an education in areas that match the labour market's requirements."

It is important to show respect for the dynamic among students. In the 1990s programmes with the word "design" in the course description exploded.

"At that time I wondered how all of them would be able to make use of their education. But the vast majority of them have succeeded. What you get from an education in engineering is more than just subject knowledge; you learn to address and solve complex problems. The ability to analyse is a good engineering skill."

Higher education also helps improve self-discipline. Simply put: those who study grow as people.

Education is essential for the knowledge society. More engineers are needed.

"Forecasts indicate that we need more engineers. Of course, the number depends on the structure of industry and how it develops. If we have more engineers, companies will be able to focus more on conducting R&D in Sweden. If there's a shortage of engineers, technology intensive companies will leave the country."

Partnerships with research-intensive companies are common at LTU.

"We are the university for industry and we're keen to work with researchers who are employed by companies."

LKAB is one important example and Volvo Aero is another. The list can be filled with many stock exchange listed companies.

"Even though Volvo Aero is located in Trollhättan, they've employed a lot engineers who have graduated from here."

Facebook is building its first server hall outside the USA in Luleå.

"A secure energy supply and the cold climate were among the reasons they chose Luleå. It will bring attention to our city and have a positive impact on our image. But I wonder if they would have chosen this location if LTU weren't here."

In time Johan Sterte would like to see Facebook as another of the university's research partners.

LTU is not alone in the country. Universities are competing for both students and research funding.

"It's really an optimisation problem. When it comes to research there's a point when too much time is spent on filling out applications and seeking external co-financing. Maybe the competition for funding has gone a bit too far. At the same time, I think competition is good. It leads to better quality."

And an alternative void of competition would, according to LTU's President, mean that whoever is best at lobbying the Ministry of Education would get the most resources.

Research should be carried out in areas where the results have the best chance of being put to use.

"The last research bill was good because it greatly increased resources. Life Sciences was the winner. Unfortunately the bill didn't contain much investment in research cooperation between universities and industry. That would have been better than increasing funding for research that might lead to a Nobel Prize."

Traditionally strong areas such as manufacturing industry, forestry and ore should, according to Johan, be more of a focus for publically financed research.

"It's not that easy to move forests, ore and mines overseas," he says.

Johan Sterte is a member of IVA's Division IV Chemical Engineering. He is also Vice Chairman of IVA North.

TECHNOLOGY LEAP

A CHANCE FOR YOUNG PEOPLE TO TRY OUT THEIR FUTURE DREAM JOB

Sweden needs more engineers. IVA and many others have been saying that for years. The Government also recognises that the shortage of engineers is a threat to growth, future prosperity and competitive industry. Simply put: Without enough qualified engineers Sweden will fall behind.

One initiative to get more young people interested in an engineering education is Technology Leap (Teknikspränget). The project was presented in April by Minister for Education Jan Björklund.

In the Technology Leap project upper secondary school students who have completed science and technology programmes will be offered a four-month internship at a Swedish technology-intensive company. The idea is that early contact with the "real world" within a company will open their eyes to the variation and the opportunities offered by an engineering career.

The original idea for Technology Leap came from investment companies Industrivärden and Nordstjernan. The Government is supporting the project through the Swedish National Agency for Education until 2016 with funding of up to SEK 100 million.

IVA is tasked with the practical implementation. The Teknikföretagen employers' association and the Swedish Association of Graduate Engineers are partnering with IVA for the project.

Jan-Eric Sundgren, Executive Vice President Public & Environmental Affairs at AB Volvo, is Chairman of the Steering Committee for Technology Leap.

"During the year we managed to get all of the puzzle pieces in place for this major project. We have everything established with the Government and the National Agency for Education," he said.

The first batch of interns, or in Technology Leap speak "Junior Trainees," have completed their four-month internship at one of the nine big companies that have already made positions available.

The companies that were the first to understand the long-term benefits of the programme are: Volvo, Ericsson, Sandvik, NCC, SCA, SSAB, Ramirent, Vattenfall and IBM.

"It would have been great to have been able to offer even more internships. But the interns who have taken part are happy. We will watch their future progress closely by, for example, creating an alumni community."

The most important task now is to scale up the programme. More companies and more internships are needed for Technology Leap to have the desired effect.

"When we've managed that, we'll have a solid platform for the next few years."

According to Jan-Eric Sundgren, the fact that Technology Leap is an interesting project is also evident in the commitment of the Steering Committee members.

"They're all very busy people, but they are really interested in making this a success."

From IVA's perspective, Technology Leap is both an unusual and a very large project.

"I'm certain that it will have an impact on interest in engineering education. Even though the number of interns isn't very high, there is a multiplier effect. Young people don't keep things to themselves. They spread the word."

International experiences support that opinion. In the Netherlands, for example, similar projects have turned the trend around and increased the number of students now applying to science and technology programmes.

"But it takes time. What we are doing now will not have an impact for a few years," says Jan-Eric Sundgren.

Staffan Eriksson is project Manager for Technology Leap.

"It's a great experience and a lot of people want to participate. The participants like what they get to experience and learn," he says.

For many years the relationships between schools and industry have been getting more distant.

"Internship opportunities like those offered through Technology Leap have been missing from the education system."

There are many benefits for the interns. They get to know adults that they would not otherwise have met and to participate in discussions while learning how companies actually function.

"And the companies have an opportunity to present themselves. This isn't charity on the part of the companies, but a way for them to show their commitment to the community while furthering their own interests."

International competition and a weak economy have resulted in companies being more restrictive about taking on job placement students in the conventional way.

"But Technology Leap has a ready-made format which makes it easier for companies who want interns but are reluctant for purely practical reasons. The companies I've spoken to think Technology Leap is a good idea."

In concrete terms, IVA's responsibility for the project involves marketing it to upper secondary students and, of course, getting companies involved. A special website and an application portal also have to be maintained.

But Staffan Eriksson points out that it's the companies that are recruiting the interns. Selections will primarily be made based on the web-based information provided by the applicants.

Engineers are needed everywhere. That's why Staffan Eriksson is happy that smaller companies, consulting firms and public sector players are also getting involved.

The programme will have a broader reach in 2013. Right now recruitment is under way to set up a department at IVA to make sure that when the Technology Leap programme ends in 2016, it will be considered a success by everyone involved.

»I'm certain that it will have an impact on interest in engineering education. Even though the number of interns isn't very high, there is a multiplier effect. Young people don't keep things to themselves. They spread the word.«

JAN-ERIC SUNDGREN

STAFFAN ERIKSSON

TEACHERS NEED TIME TO PLAN AND ANALYSE

Anna Ekström, Director-General at the Swedish National Agency for Education

»What's beneficial for the individual can be really useful for society. The knowledge conveyed must be well-grounded in facts and analysis.«

Optimistic, humble and considerate. A straightforward management style that breaks with tradition at the Swedish National Agency for Education. She says what she thinks – both about politicians and her colleagues. She has the ability to make everyone feel visible. That's how Director-General and IVA member Anna Ekström's management style can be described according to a manager test conducted by Chef magazine at the end of 2012.

To her corner office on Fleminggatan in Stockholm Anna Ekström brings plenty of experience in reaching agreements and interpreting laws. She has served as Secretary at the Swedish Labour Court, State Secretary at the Ministry for Enterprise, Energy and Communications and, not least, Chairman of Saco (Swedish Confederation of Professional Associations), to name but a few assignments.

The main mission of the National Agency for Education is to supervise, support, monitor and evaluate the work of municipalities and schools. The goal is for pupils in Sweden to leave school with the best possible education.

Anna Ekström has been in the Director-General chair for about a year and a half.

"I'm glad I took this job without realising how hard it was. I've never had such a diverse job. International trade, labour law and European gas issues are easy to handle. In those areas the experts soon find consensus. But that's not the case in education. And our education plays a role in determining how we turn out as people," she said.

Human development and education go hand in hand.

"But there doesn't have to be a conflict between what children want to learn and what society needs. What's beneficial for the individual can be really useful for society. The knowledge conveyed must be well-grounded in facts and analysis."

Knowledge is a raw material for what we commonly call the Knowledge Society today.

"If society is to function efficiently we need lots of different types of knowledge. I haven't come up with my own definition of what constitutes a knowledge society. It's probably usually associated with academic knowledge. But there's a risk that other knowledge will be undervalued even if it's important."

To be successful, a lawyer needs to be good, for example, at criticising sources and really knowing how to write a judgement. That is not possible without a deeper understanding.

"And there's an art to leading a negotiation. A person who has both a deep understanding of the subject matter and craftsmanship will be the most successful. That applies to all trades and professions: engineers, carpenters, teachers... We can be misled if we put too much importance on the academic side at the cost of craftsmanship."

Unfortunately, the level of knowledge of Swedish school children is, to put it bluntly, on a downward slope.

At the beginning of the 2000s the OECD determined that Swedish schools were in pretty good shape. Children were doing well in mathematics and science. Reading comprehension was good. Access to computers was high as well. Admission to universities was higher than in most other OECD countries.

Then things declined. Not in computer access statistics presumably, but in the knowledge department.

Comparing one period with another can be tricky, according to Anna. But one cause for the decline is the situation and conditions for teachers.

"Their primary task is to teach. That can be done in an active way, often with a strong belief in the ability of children to learn what they need to know independently."

Based on analysis by the National Agency for Education, too much responsibility has been given to pupils and too little emphasis has been placed on the role of teachers. If Swedish students are to excel in international comparisons again, Sweden simply needs to improve its teaching standards. Teachers need to have time to plan and analyse their lesson plans.

"In countries with higher rankings, the teachers have a lot of support. Resources are allocated for cooperation. Teaching standards are evaluated. And their results are both higher and more stable."

Finland is often cited as an example of a country with good education. Its school system is quite similar to the Swedish one.

"There are important differences though. In Finland everyone agrees that education is important and that knowledge and learning will lead to success. We don't have that attitude to the same extent in Sweden."

In Finland teaching is a high-status job. The number of applications to teacher training programmes is high. Also, Finnish politicians across party lines agreed on the changes that were implemented.

"On the other hand, I think it's good that Swedish parents have the ability to demand high standards in education."

Perhaps a substantial increase in teachers' salaries in Sweden would change the status and attractiveness of the profession in time.

But Anna Ekström doesn't want to get into that argument.

"The wage weapon is not mine; other people will have to deal with that. The new career steps that are about to be introduced may well result in more career jobs and

wage increases over time, and make the profession more attractive."

Anna is often contacted by teachers with the message that the most important thing is to have the resources they need to provide really good quality education.

"Being assigned more administrative tasks has reduced the time they can spend on teaching. I want to change that. If our agency has given them unnecessary extra work, we are happy to change that. The right to choose a school is, of course, leading to a new kind of pupil selection process."

"In Finland people are able to choose a school in a similar way to Sweden. But there is one big difference: In Finland there is no capitation allowance following the pupil. Instead the mantra is: All schools must be good ones, including the one that's located closest to the pupil's home."

For pupils from homes without a strong tradition in education, having the opportunity in Sweden to choose a school with a good reputation and a strong academic environment can have a positive impact on their results.

"But those who are left behind at schools that are not doing as well are at risk of losing out."

The selection process clearly eases the problem of the increasing disparity between pupils and between schools.

"It's not easy to know what to do about this situation. There are two sides to the coin. The Education Act clearly states that the education system should compensate for any disparity so that schools where pupils aren't doing as well receive the resources they need to improve quality."

It's not just the schools that have changed. Attitudes in general have become more egocentric. Self-fulfilment has become a priority. That may also be playing a role in the decline in knowledge levels.

"A widespread notion in society is that talent will lead to success. But in societies with better school results, people know that it's hard work that matters. Talent is significant of course, but hard work is at least as important."

But Anna Ekström also recognises that a lot of upper secondary school students are really working hard. Some of them even contact her to complain and make the Director-General aware of their workload.

One of the Agency's responsibilities is teacher registration (base on a reform introduced in 2011 to raise the level of skills among teachers and the quality of education in Sweden). Around 180,000 registration applications are expected to be submitted.

"The purpose of teacher registration is a sound one. Children and youth should be assured that they're being taught by teachers who are educated in the subject they're teaching. If this reform had been introduced a decade or so ago, it wouldn't have been questioned now."

Registration may, according to Anna, give teachers more time and opportunities to be active in their own professional development and to develop the teaching profession.

"The Agency has found it hard to process all of the registration applications quickly enough and is very careful to ensure that decisions are both correct and fast."

Since 1990 the number of PhDs has doubled in Sweden. But not many of them are teachers.

"I think it's important for teachers to be more active in the research community as well."

Research in the field of education is often discussed. Many teachers would like to see more of it focusing on the classroom.

"The education research that I've read is, as I see it, fairly practical in its orientation. Different perspectives are needed in research as well. And schools need more teachers who have completed postgraduate studies and done their own research."

But it's not just teachers, school administrators, politicians and parents who care about education. Science and Technology for All, a programme started by IVA and KVA (Royal Swedish Academy of Sciences) in 1997 also cares. As do Ung Företagsamhet (Young Sweden) and Unga Forskare (Young Researchers).

"These and similar initiatives are important. It's important to have voluntary involvement in education. We should be happy about that."

Anna Ekström is a member of IVA's Division VI Management. The Government has assigned the Swedish National Agency for Education to partner with IVA in the Technology Leap project to encourage young people to study engineering.

ACADEMY ACTIVITIES

IVA IS AND ALWAYS WILL BE WHAT THE MEMBERS MAKE IT

JOHAN WEIGELT

After just under a year, Secretary to the Academy Johan Weigelt thinks that both his job and IVA match up to his expectations.

"It's been an exciting year. The scope of IVA's activities is bigger than I imagined. Not everyone sees that from the outside. But I thought there would be a greater international aspect to the day-to-day work within the divisions and projects. The perspective is almost entirely Swedish," he says.

In other words, good can be made even better. The many seminars arranged by the divisions are an example.; they provide one of the many windows to the outside world.

"The quality of the seminars is excellent, with relevant topics and speakers. But from a purely practical point of view, the planning process could be improved. That would allow us to reach a broader audience and attract more people to the meetings."

Johan thinks it might be a good idea for the divisions to focus more on IVA's strategic priorities, and preferably add a more international flavour – looking out at the international arena is important in understanding and influencing development of Swedish society.

Transverse academy activity is a good thing. IVA's regional networks in the south, west and north are good examples, according to the Academy Secretary. The projects and the Business Executives Council also work across boundaries.

"The divisions could perhaps experiment a bit more with their activities. But this should be at the initiative of the members."

The regional networks are very important, according to Johan.

"The regional activities aren't just essential for IVA; more and more decisions are now being made at the regional level. The national approach in general is becoming less significant."

Naturally, the divisions and the members are the actual linchpins of IVA. This is where the expertise which, if used correctly, can help create a better society.

"That's why it would be great if the members used that fact and were more involved in setting IVA's long-term agenda. But that means people will have to take the initiative. It's not enough to just have a good idea and hope someone else will implement it."

Johan Weigelt believes that there are different ways to look at the academy activities within the divisions. Should they provide intellectual exchange just for the moment or drive development of new IVA projects and generate new IVA activities?

SEMINARS WITH BREADTH AND DEPTH

The members of IVA's twelve divisions arrange numerous interesting seminars every year covering important and current topics. In common for all of the seminars is a high level of expertise – in content as well as among the participants. The meetings often conclude with lively discussions. Here are a few of the 2012 highlights.

IS CAPITALISM IN CRISIS?

25 April

IVA's Economics division asked itself that question. And it proved to be a question that attracted a lot of interest. The seminar that would straighten it out was quickly fully booked.

A little more specifically, the division had been thinking about the effects that deregulation, more market economies and globalised capitalism were having. While it is true that equalisation between regions and nations has been and still is going on, in countries like Sweden and the USA the gaps have widened.

The gist of arguments was the following: Opinions differ.

Björn Wahlroos thought that capitalism certainly is in deep crisis. But he thinks that what is normally called capitalism is not particularly capitalistic.

Klas Eklund disagreed. Yes there are problems, but they can be solved through reforms. Capitalism has reduced the number of poor people in the world and that is good. The crises that occur are part of the nature of capitalism, according to Klas.

Peter Wolodarski stated that the international crises reminded him a lot of the one Sweden went through in the beginning of the 1990s. It's not capitalism that's in crisis, but politics. He thinks that keeping a close eye on the various bubbles is important.

SUN, WIND AND SHALE GAS

14 May

The three fastest growing sources of energy with an eye to 2050 were discussed in depth by IVA's Electrical Engineering division.

Electricity generated from sunlight and wind is growing exponentially, at least internationally. Shale gas, which has been questioned by many for environmental reasons, is growing substantially as well. Shale gas has helped the US become almost self-sufficient in natural gas.

The rise in solar electricity is faster in Europe than anywhere else. The price of solar cell modules is falling; cut by half in just a few years. The competition among manufacturers is fierce.

In Sweden, however, solar electricity is barely visible in a chart over energy sources.

"Still, the opportunities for solar electricity in Sweden are quite good, said Linus Palmblad from the Swedish Energy Agency.

Wind power is quickly being expanded in Sweden. But Gunnar Fredriksson, Vice President of the trade association Vindenergi pointed out that despite the rapid expansion, Germany and Denmark have far more wind power plants.

"Natural gas accounts for almost a quarter of the world's energy use," said Anna Nordling of ÅF technical consulting group.

The much disputed shale gas is, at least, more environmentally sound than coal.

MINING POTENTIAL IN SWEDEN

13 September

The price of iron ore is on a roller coaster ride. Demand from China has slowed down.

But ore mining is a very long-term process. And prices are still higher than there were just a few years ago. The conditions in Sweden are favourable as well. The outlook is good.

These were the conclusions drawn when IVA's Mining and Materials division discussed the future.

Magnus Ericsson is CEO of Raw Materials Group, which monitors and analyses the global mining industry. He was one of the experts at the seminar.

"Urbanisation is still resulting in an increased demand for metals. Prices continue to fluctuate but they're significantly higher than before 2003," he said.

The fact that demand in China for foreign ore is not quite as red hot as it used to be does not worry Magnus.

"Global demand for steel will increase substantially up to 2030."

Nordic ore production will rise over the next decade.

Magnus stated his opinion that there is no risk of a shortage of metals.

"If something starts running out, the price goes up and then all of a sudden there's an unlimited supply."

INDUSTRIAL RESEARCH COMMITTEE, IFG

GATHERING YOUNG RESEARCHERS

The Industrial Research Committee (IFG) has 15 carefully selected members. Most are young scientists associated with Swedish companies, but people with other types of research-related knowledge are also considered. Together the members' knowledge covers almost all of the areas that are important for the future of Swedish industry. IVA member Eva Wigren, Director Industrial Development at Teknikföretagen, is Chairman of the IFG. Ingrid Jansson at the Office of the Academy is responsible for the IFG's activities.

Those activities include knowledge exchange between various fields, which takes place, for example, on field trips to the members' workplaces. The Committee's wide range of expertise is illustrated by the fact that the programme in 2012 included trips to GE Healthcare, Bombardier Transportation, Swerea Mefos, Stora Enso and the Ministry of Enterprise, Energy and Communications.

At the Assembly of the Academy on 22 November IFG arranged a symposium on how to improve the innovative capacity of companies. At the symposium examples were given of work being done on creativity, concept creation, improving innovative capacity and innovation processes.

The Committee get ideas and inspiration from other countries as well. Last year the IFG took a closer look at Switzerland. On a week-long trip a representative selection of Swiss industrial enterprises and academic institutions were visited, including Cern, IBM and ABB.

TECHNOLOGY TOUR

NORRBOTTEN COUNTY HAS A LOT TO OFFER

This year's Royal Technology Tour headed northwards. This is the second time that IVA has arranged a tour to take a closer look at industry and research in different parts of Sweden.

The two-day Royal Technology Tour took place in October.

The northernmost part of Sweden is not only an expansive region when it comes to heavy industry like mining, entrepreneurship and tourism also feature among the important things the region has to offer.

The world famous ice hotel in Jukkasjärvi was therefore one of the tour destinations.

A visit to the far north of Sweden with a technology focus must of course include Kiruna and LKAB. Here the delegates learned more about how technology and innovation are driving this leading mining company. LKAB's CEO, Lars-Eric Aaro, guided the visitors both above ground and 1,045 metres under ground.

On the second day Johan Sterte, President of Luleå University of Technology, informed the delegates about the university's new SKF-LTU University Technology Centre.

Europe's largest server hall, belonging to Facebook, was among the places the delegates learned more about. Technology intensive Swerea Mefos and Metasphere also gave the participants more insight into cutting edge technology in northern Sweden.

H.M. King Carl XVI Gustaf was joined on the tour by some 30 individuals from the business community, the public sector and academia. The delegation was headed by Chairman of the Academy Leif Johansson.

ASSEMBLY OF THE ACADEMY AND IVA SCIENCE AND SOCIETY FORUM

The Assembly of the Academy is held four times a year. For a number of years now the Industrial Research Committee has arranged a seminar in connection with the last Assembly of the year. In 2012 the theme was Innovation. 2012 was also the first year for the IVA Week aimed at generating interest in engineering and science issues. A seminar on visualisation was one element during the week.

HOW CAN COMPANIES BUILD THEIR INNOVATIVE CAPACITY?

22 November

IVA's Industrial Research Committee (IFG) invited guests to a symposium in connection with the Assembly of the Academy on 22 November.

Symposium participants learned about initiatives involving creativity, concept creation, improving innovative capacity and innovation processes. Studies presented included how design is used as an innovation tool and how "patent productive" individuals affect development work. The symposium audience also heard accounts of work involving great creativity and innovative capacity carried out by employees of various companies.

Improving a company's innovative capacity requires the involvement of all of its employees. Good ideas can come from anyone, anywhere in an organisation. That was one of the main themes at the symposium.

Marcus Jahnke, PhD from the School of Design and Crafts at Gothenburg University, has studied companies with little design experience but where innovations were being integrated.

For one company the task was to create a new shower cabin. At first the employees felt uncomfortable with the creative process. They felt their drawings were at preschool level and imprecise. Eventually they got over that and came up with a common theme: "Your moment."

It normally takes a very long time for the company to develop a prototype for a new shower. This time it took three hours.

Examples of creative processes at companies like Alfa Laval, Astra Zeneca and Ericsson were also highlighted during the symposium.

International studies on the link between personnel engagement and a company's success were also presented. Hans Björkman PhD Econ. and Group Manager at WSP Analysis & Strategy believes the link exists.

VISUALISATION AND VIRTUALISATION

25 October

New technologies that virtualise and visualise are changing society. They are impacting education and research and offer unique possibilities for conducting experiments. They are being used in practical applications in many areas.

Construct virtually before the first spade of dirt is ever turned in the construction of a physical building. The impact in terms of emissions, energy consumption and costs is significant.

"It cuts construction time down to one third compared to when conventional methods are used," says Professor Martin Fischer of Stanford University.

Norrköping's Visualisation Centre is popular. More than 100,000 people have visited this research centre.

"Images are the best way to sort through and derive information from the massive amount of data that flows over us," says Professor Anders Ynnerman of Linköping University who works at the Centre.

The images shown in Norrköping are not just any old pictures. The virtual autopsy table, for example, received a lot of coverage in the press when it was introduced. The 3D images are based on data from body scans. The enormous quantity of ones and zeros that those images generate are scaled down to a manageable amount. Fairly simple computers are sufficient for the visualisation process.

Autonomous aircraft with artificial intelligence and advanced robotics are a concrete reality for Professor Patrick Doherty, also of Linköping University. The aircraft can be controlled by human hand gestures.

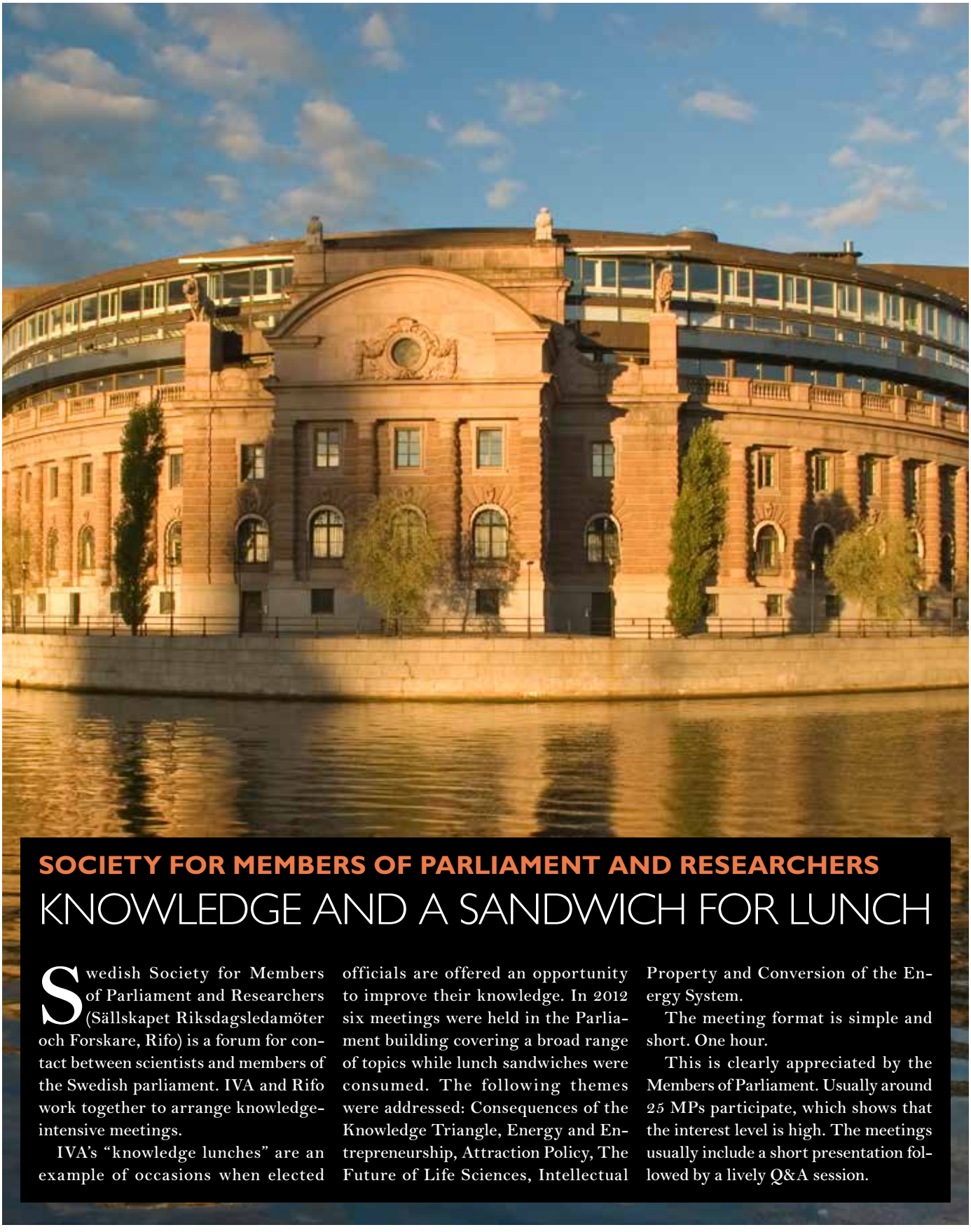
"In disasters like the one in Fukushima in 2011 they can provide decision-makers with information quickly," says Patrick Doherty.

Anders Ynnerman is getting rid of excess data. But at Recorded Future they are making use of all the data available on the internet.

"By collecting and analysing everything that people tweet or blog about, computers can predict the near future," says Staffan Truvé of Recorded Future.

The number of retweets increased, for example, in the days following the attack on the US consulate in Libya.

The speakers were all of the opinion that the virtual and physical worlds are well on their way to merging into one.



SOCIETY FOR MEMBERS OF PARLIAMENT AND RESEARCHERS

KNOWLEDGE AND A SANDWICH FOR LUNCH

Swedish Society for Members of Parliament and Researchers (Sällskapet Riksdagsledamöter och Forskare, Rifo) is a forum for contact between scientists and members of the Swedish parliament. IVA and Rifo work together to arrange knowledge-intensive meetings.

IVA's "knowledge lunches" are an example of occasions when elected officials are offered an opportunity to improve their knowledge. In 2012 six meetings were held in the Parliament building covering a broad range of topics while lunch sandwiches were consumed. The following themes were addressed: Consequences of the Knowledge Triangle, Energy and Entrepreneurship, Attraction Policy, The Future of Life Sciences, Intellectual Property and Conversion of the Energy System.

The meeting format is simple and short. One hour.

This is clearly appreciated by the Members of Parliament. Usually around 25 MPs participate, which shows that the interest level is high. The meetings usually include a short presentation followed by a lively Q&A session.

IVA SOUTH, IVA WEST & IVA NORTH

IVA's regional activities are mainly arranged through IVA South, IVA West and, since 2012, IVA North. The networks consist of members of IVA and representatives from the Business Executives Council who live or work in one of those areas of the country. The objective of the networks is, among other things, to give IVA a regional presence by creating meeting places for discussion. The three networks arrange seminars, visits to companies and institutions, and work groups to focus on specific issues.

IVA NORTH

New network created

Now northern Sweden is also on the map of IVA's regional networks. IVA North allows IVA members and members of the Business Executives Council who live or work in northern Sweden to join the local network. Among the objectives is creating a regional meeting place where the participants can follow and influence IVA's projects.

IVA North is also intended as a platform to focus on issues relevant to the north of Sweden in engineering, economics and industry. Another aim is for IVA North to be an arena for meetings between the business community, the authorities, municipal and regional organisations and academia.

Swerea MEFOS' Managing Director and IVA member, Göran Carlsson, is Chairman of IVA North's executive body.

"Since 2012 the executive body has held a number of meetings to discuss what we want to achieve in concrete terms."

In November the first webcast seminar took place arranged by IVA North. Appropriately enough it was about distance solutions in eHealth.

"It's a big area to cover; from Sundsvall in the south to Kiruna in the North. Mid Sweden University, Umeå University and Luleå University of Technology are all involved."

There is still, however, no physical location equipped with stable and modern technology from which to arrange webcasts for those who cannot be present in person.

"Vetenskapens Hus (House of Science) in Luleå, when it's finished, will be a good base for us."

LKAB and Luleå University of Technology in cooperation with IVA are behind the initiative for House of Science.

Despite the technical issues during its first year, IVA has received a positive response.

"The people I've spoken to are interested and there was no problem assembling an executive body," says Göran Carlsson, who believes that IVA North can be developed into a positive force in Northern Sweden.

"IVA is doing a lot of great things in Stockholm. But it's not always possible to go there. Having IVA North and the Web as a base, we can actively participate and make a difference," says Göran.

IVA SOUTH

Ikea is impressive

In 2012 IVA South arranged four seminars and three field trips.

The trip to Ikea in Älmhult was one of the highlights of the year for IVA South.

"An interesting and inspiring afternoon. The visit to Ikea Tillsammans (Ikea's corporate culture centre) clearly showed the culture that Ingvar Kamprad (Ikea's founder) has built up and that has led to Ikea's success," says Lennart Fredenberg, Chairman of IVA South.

The participants were also treated to a presentation of Ikea's product development which focuses on quality, sustainability, minimising materials use and finding ways to lower costs. And the most "holy" of all was a visit to a large floor containing the new range of products to be launched soon.

The seminars arranged by IVA South included an evening with Rune Andersson and IVA's Innovation Powerhouse Sweden project. Numerous "innovation stakeholders" took part in a stimulating discussion with Rune Andersson and Johan Carlstedt.

IVA WEST

Biggest seminar yet

IVA West gathered members in pleasant contexts and with characterised by intellectual vigour for a wide variety of seminars and field trips. The events included:

Railway in the West – an all time high in terms of the number and diversity of seminar participants (around 400 including government ministers). *The AP Funds* – a seminar examining the current pension debate and the announced changes to the AP funds. *Space Engineering* – a visit to RUAG whose antennas for weather satellites allow us to predict the weather all around the globe. *Food as Medicine* – a seminar highlighting the importance of both preventative (food) and reparative (medicine) measures to guarantee our health and well-being. *Diversity Embraced* – a seminar underlining the great significance that people with foreign origins have had historically, but are also expected to have in the future for the development of West Sweden.

INTERNATIONAL

IVA'S BROAD REACH

MAGNUS BREIDNE, PROJECT DIRECTOR, IVA

IVA has strengthened its cooperation with Chinese academies. Several memoranda of understanding have been signed. IVA has also increased its capacity to support development in Europe.

The partnership with the Chinese Academy of Engineering, CAE, which has been in place for a number of years, took another step forward in May when a delegation from CAE lead by the Academy's new president Professor Zhou Ji visited IVA. During the visit a new memorandum of understanding was signed to continue the exchange of knowledge in energy, e.g. smart grids, and in life sciences.

In September a joint symposium was held in Changsha, China with energy efficiency on the agenda.

In 2012 IVA initiated contacts with China Renewable Energy Society (CRES). A partnership agreement was also discussed with this organisation. A joint workshop has been arranged and a platform for exchange in bioenergy has been established.

New contacts were forged in 2012 with a prominent Chinese academy relating to some areas that have not traditionally been a focal point for IVA's cooperation with Chinese organisations.

In 2011 discussions got underway with the China Executive Leadership Academy Pudong (Celap) which led to a memorandum of understanding in 2012.

Celap educates administrators at the director general level or higher. The agreement stipulates exchange between lecturers with energy and innovation as key focus areas.

Through Euro-Case, the umbrella organisation for European engineering sciences academies, the ability of the academies to impact EU activity has improved. All 21 member academies are invited to participate. IVA and the German Acatech academy are at the helm.

The goal is to create a common platform for innovation issues. Meetings have been held in Stockholm, Brussels and London.

"The idea is to have a science-based body that can influence the European Commission at the early stages," says Magnus Breidne, IVA Project Director.

IVA has also, quite literally, taken a step closer to EU Brussels. IVA is now renting a desk in Acatech's offices. Who sits in the chair and how often is determined on an ongoing basis.

DELEGATION TO SOUTH KOREA

UNIVERSITY PRESIDENTS GATHERED INSPIRATION

For almost a week in November a delegation Swedish university presidents visited the Republic of Korea (South Korea). The purpose of the trip was to learn more about Korean higher education and to start or further develop cooperation.

The trip was arranged by IVA and Stint, the Swedish Foundation for International Cooperation in Research and Higher Education. Agreements and partnerships have been in place between Sweden and South Korea for some time.

Since 2008 Stint has been supporting a number of projects involving cooperation between Swedish and Korean universities.

South Korea is one of the fastest growing countries with regards to education – at all levels from primary to higher education. 80 percent of all South Korean youth go on to study at universities.

Competition to get into the best universities is tough. Admission is largely based on the national aptitude test that takes place once a year.

On that day, the test is taken throughout the school system. On test day people in the workforce go to work later in the morning to leave space for school children on the busses and trains so they can get to the test on time.

A good result on the test means the chance of a place at a respected university and a good start to a career.

An indication of the success of its investment in education is South Korea's ranking in the OECD Pisa study where it is in first place in reading comprehension, mathematics and science.

Ewha Woman's University was one of the universities visited by the delegates. Ewha is a private university in central Seoul. It is one of the city's largest and most renowned institutions of higher education and is currently the world's largest women's university. Ewha is considered among the better universities in South Korea.

University President Kim Sun-Uk pointed out that the founder's faith is reflected in the university's Christian values of peace and equality, love and justice. Ewha strives to maintain an open academic climate to influence the spirit of the times.

Several universities were visited during the week, but a visit to the National Academy of Engineering of Korea was also on the programme, as well as research councils, research foundations and institutes. A workshop was also arranged in cooperation with South Korean leaders in education on international strategic cooperation in research and higher education.

STUDENT COUNCIL

PROVIDING A BROADER PERSPECTIVE

Education and research are areas prioritised by IVA. The student perspective on higher education is needed to gain a complete picture. IVA's Student Council is a link between IVA's activities and university education. The Council promotes knowledge exchange between generations and is a forum for debate on important issues.

The members are top students from Swedish universities offering engineering programmes, the Swedish University of Agricultural Sciences, the Stockholm School of Economics and the School of Business, Economics and Law at the University of Gothenburg.

Valérie Pedersén, Royal Institute of Technology (KTH), is the Council's Chairman.

"IVA's Student Council is here to give IVA a student perspective when it's needed. In 2012 we worked, among other things, on fortifying a long-term internal structure that will optimize how we do this," says Valérie.

The Student Council also arranged field trips in 2012. The first one was to Lund with visits to what was then Sony Ericsson as well as Lund University and the Pufendorf Institute.

In October Council representatives travelled to Eindhoven Technical University, TU/e, in the Netherlands to look at the strategy that TU/e has developed to attract international Master's students. The goal is an increase from today's 18 percent to 35 percent by 2020.

A big obstacle for many non-European students is the cost of tuition. At TU/e, like at many Swedish universities, steps are being taken to alleviate the tuition issue and increase the inflow of foreign Master's students. The most direct and concrete measure is providing more scholarships.

The Student Council also participated in a seminar on PhD education arranged by IVA's Agenda for Research project. Student Council alumni commented on the project's proposals.

"We would like to be included in IVA projects that address higher education."

Valérie Pedérsen believes that membership in the Student Council gives students opportunities to get a broader perspective and increase their knowledge of both the research and business spheres.

"In 2013 we look forward to continuing to work towards being an even better council for the benefit of IVA."

ROYAL TECHNOLOGY MISSION

CZECH REPUBLIC – A COUNTRY LIKE SWEDEN

The 2012 Royal Technology Mission (RTM), with the Academy's patron HM the King Carl Gustaf participating, travelled to the Czech Republic in May. Academy Chairman Leif Johansson led the delegation. This was the 20th RTM for IVA and HM the King.

The Czech Republic is similar to Sweden in many ways, with a few differences of course. The challenge in a small country with a population of 10 million is to keep developing in an increasingly globalised world. Here investments are being made in research and education, and to stimulate development in business and industry. The Czech Republic is impressive and is an industrial nation offering great commercial opportunities for Swedish companies. We have more than ice hockey in common.

Despite memories of epic battles in Prague during the Thirty Year's War and tough struggles on the ice hockey rink, the delegates got a very warm welcome from their hosts.

The programme was comprehensive with visits to academic institutions such as the

Botanical Gardens in Pruhonice, the Academy of Sciences, the Engineering Academy of the Czech Republic and the Czech Technical University in Prague.

Meetings with politicians, including Prime Minister Petr Nečas in his capacity as Chairman of the Czech Research, Development and Innovation Council, the president at that time Václav Klaus, the Minster of Health and the Minister of Research.

The delegates met industry representatives from the Confederation of Industries (counterpart to the Confederation of Swedish Enterprise), Skoda Transportation, Diamorph, Aero Vodochody and Certicon.

Conversations with representatives from emerging research institutions, Extreme Light Infrastructure, Biotechnology and Biomedicine Center and International Clinical Research Centre were also on the programme.

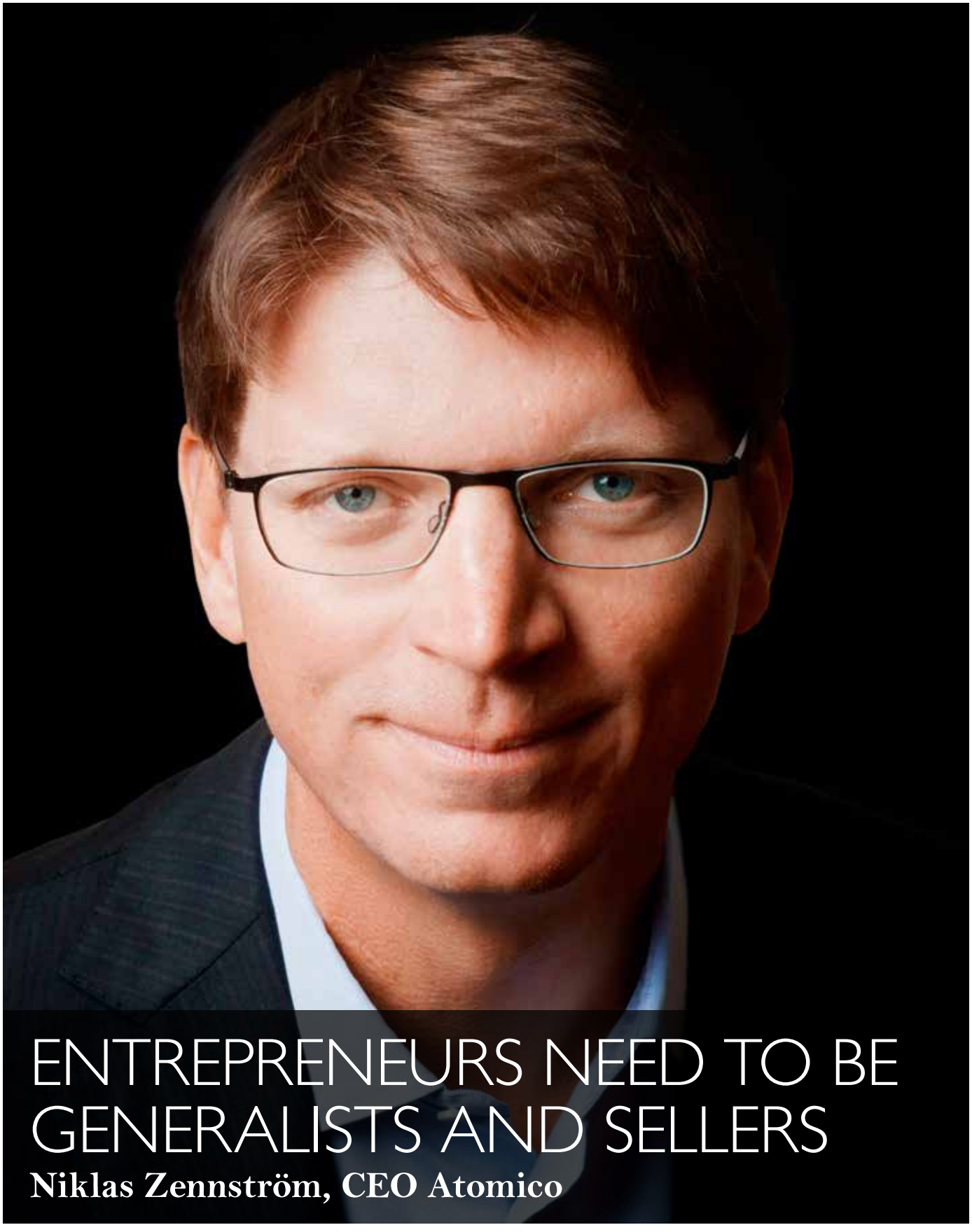
And not least, a satisfied air force commander who leases Gripen fighter jets from the Swedish Government.

In addition to all of the above were prominent economists who talked about the Czech economy.

The conclusion drawn was essentially that the Czech Republic is an exciting country with great opportunities for cooperation with Sweden. As already mentioned, the country has many similarities with Sweden with almost the same population size, a strong industrial tradition, research investment and a heavy dependence on exports.

Meanwhile the country is still struggling with the transition from its "east period" with somewhat underdeveloped infrastructure and a capital market that is not fully functional.

The country's Engineering Academy is based on the IVA model and was founded in 1995. IVA's former President, Hans G. Forsberg, helped the Czechs get started. And for that they are still grateful.



ENTREPRENEURS NEED TO BE GENERALISTS AND SELLERS

Niklas Zennström, CEO Atomico

»Solving problems in poor countries doesn't necessarily require expensive, cutting-edge technology. We can take something that used to be, but can now be produced inexpensively and use it to help change many people's lives.«

Over the past few years the destination of more and more of Niklas Zennström's trips from London has been Stockholm. It's not because of his Swedish roots, but the high quality of Swedish start-up, entrepreneur-led businesses that are the attraction.

There are, however, criteria involved in his choice of interesting companies. They have to be active in IT with business concepts that include the internet.

"When it comes to the internet, Stockholm is one of the leading cities in the world," says Niklas Zennström, founder of Skype and the venture capital company Atomico where he is CEO.

Europe, North and South America and Asia; Atomico has invested in all of these continents in companies with growth potential.

But Stockholm is one of Niklas Zennström's favourites. There, many forward-looking, internet-oriented companies have blossomed. Klarna, which offers secure e-commerce with payment by invoice is an example of one such fast-growing Swedish internet company. From 2005 the number of Klarna employees has grown to more than 600. Not surprisingly the company is in Atomico's portfolio.

"In Sweden entrepreneurs understand that if you're using the internet as a tool you might as well prepare yourself for a global market."

That's one difference compared to other sectors where companies start at home and then cautiously branch out into neighbouring countries.

"The companies we invest in must have a unique business concept. We aren't interested in ones that are just a version of something else."

But a business concept on its own is not enough. It's the people behind the companies that interest IVA member Niklas Zennström that are the deciding factor.

"The drive and capabilities of the founders are very important. If their company is to be a success, they need to be competitive people who won't accept second place."

An engineering background supplemented by a big dose of salesmanship are among the success factors for entrepreneurs.

Niklas has degrees in both engineering and business administration.

"I haven't actually used the quantum physics I studied, but I have had a lot of use for what I learnt about analysing and solving complex problems."

The same applies to his business degree. Accounting may be dull, but if you're going to succeed as a venture capitalist, the ability to write contracts that hold up is certainly an asset. As is financial law.

"Entrepreneurs need to be generalists and sellers. That's important if you want to get customers. You also need to be able to sell your vision for your company when you start recruiting."

Growing internet-oriented companies is not Niklas Zennström's only mission. He also uses his financial resources to make the world a better place for more people. He does that through Zennström Philanthropies.

"For me, it's obvious that we should help if we can and use our money and influence for worthy causes."

The environment, the climate and human rights are among the areas where Niklas Zennström would like to make a difference.

"Solving problems in poor countries doesn't necessarily require expensive, cutting-edge technology. We can take something that used to be, but can now be produced inexpensively and use it to help change many people's lives."

Energy and running water should be available to everyone. To achieve that Niklas points to the importance of simple solutions.

"Sometimes the simple solutions are the best ones. That approach is a challenge for many engineers. There's a lot of technology available that can solve difficult problems, but it needs to be user-friendly."

Like Skype. Behind it is a huge amount of programming that the users don't need to concern themselves with.

"That's why design is important."

Universities in Sweden and elsewhere are not the only places where you can learn how to be a successful entrepreneur. Niklas Zennström worked for almost a decade for a number of Jan Stenbeck's companies.

"There the entire culture is about the art of starting businesses. There's a lot of freedom. Jon might say: 'Here are the resources. Go to Denmark and start a company.' That's a fantastic opportunity and the best education in entrepreneurship you can find."

Niklas Zennström is a member of IVA's Division XI Information Technology. He is also one of the experts working within the Prince Daniel Fellowship project.

SIWA 2012

PEPSI WON

The Stockholm Industry Water Award (SIWA) was established in 2000 by the Stockholm Water Foundation and IVA.

As the 2012 winner the jury chose Pepsi Co. The jury made special mention of Pepsi's efforts to reduce its own water consumption. The company saved almost 16 billion litres of water in 2011, compared to its 2006 consumption. The savings were achieved through water saving equipment and production technology, by recycling and by introducing guidelines for water use in all of its production processes.

MENTOR4RESEARCH

GALIA POZINA DID BEST

Fifty-seven researchers from seven universities took part in the seventh round of Mentor-4Research.

Eight of the research students briefly presented their research and their new knowledge of the business world at the finale on 7 November.

The winner, Galia Pozina, Linköping University, won the hearts of the jury members as well as a scholarship of SEK 100,000. Her mentor, Robert Forchheimer, who is a researcher and an entrepreneur described his protégé as a distinct academic who has learnt a lot about how research can be commercialised.

The purpose of the Mentor4Research programme is to give research students commercialisation experience through an opportunity to work with a business-focused mentor for a closer look at the business world and the commercialisation process.

JOHN AND MARGARETHA ASPEGREN SCHOLARSHIP

ULRIKA BJÖRKSTÉN

The John and Margaretha Aspegren Scholarship for better understanding between engineering sciences and the humanities is awarded alternately to an engineer/scientist and a humanities scholar. This year's scholarship went to Ulrika Björkstén, Editor-in-Chief of Vetenskapsradion (Science Radio).

Through knowledge, insight and critical analysis in various media, Ulrika Björkstén has helped to promote a better understanding of engineering sciences, science and the humanities.

BUSINESS EXECUTIVES COUNCIL

EXPANDING IVA'S INTERFACES WITH THE BUSINESS WORLD

ERIK LAUTMANN

An active Business Executives Council is an essential asset in maintaining IVA's expertise and profile with respect to enterprise and industry at the highest possible level.

"The Business Executives Council is a platform from which issues relating to business and industry can be brought into the academic world," says Erik Lautmann, Chairman of the Council.

Member companies help sustain IVA's independent activities by providing financial support. While through the Council, IVA is able to expand its interfaces with the business world.

One of the Business Executives Council's aims for 2012 was to expand its geographical reach.

"In many places people are interested in bringing 'Stockholm' out into the rest of the country. That's why we want our activities to reach out as far as possible."

They are succeeding. The two breakfast meetings that took place in Gothenburg with speakers Börje Ekholm, CEO Investor, and Anders Nyrén, CEO Industrivärden, are good examples. On both occasions it was cramped around the breakfast tables.

In June the Council arranged a discussion in Luleå attended by the County Governor, academics, local politicians and business leaders.

"The format was quite small, but the discussions were all the more rewarding."

The Business Executives Council is now, through contacts, established within IVA's regional networks, South, West and North. And, following a successful partnership with Samarkand in Ludvika, the Council is represented in that part of the country too.

The breakfast meetings held in Stockholm have attracted large audiences. The term fully-booked sums up the level of interest. The breakfast speakers represented everything from heavy academic research, international technology consulting firms, government, media and top Swedish corporations.

"The Business Executives Council can also be a way of getting young business leaders to see the value of being part of the IVA community."

To this end, the Council was the inspiration behind the launch of the Leadership for the Future programme hosted by Leif Johansson.

"It has been a success. People are thinking beyond their own spheres. That is what IVA is best at."

The Business Executives Council has 200 member companies, about the same number as the year before.

"Considering the weak economy, we should be happy about that," says Erik Lautmann.

BUSINESS EXECUTIVES COUNCIL

A SELECTION OF MEETINGS IN 2012

Interest in the Business Executives Council's breakfast meetings continues to grow, with no space left around the breakfast tables. This is not surprising considering the highly competent and influential speakers that grace the meetings. In addition to meetings in Stockholm, the Business Executives Council also arranged breakfast meetings at various other locations in Sweden in 2012. The Council's Annual Meeting attracted many participants as well; the 2012 theme was entrepreneurship.

ENERGY AND THE ENVIRONMENT

Breakfast Meeting 11 May

How can we guarantee our energy supply? How can we get safe energy? How much should energy be allowed to cost? How can we ensure a sustainable energy supply?

For the UK's biggest technology consulting firm, Amec, these questions are always relevant. The company operates in areas such as oil, gas, minerals, metals, energy, the environment and infrastructure. Samir Brikho is the CEO.

The amount of renewable energy is quickly increasing, but globally, fossil energy will still dominate in 2035. This was what Samir Brikho said in his breakfast speech.

Samir Brikho is more than the CEO of Amec. He is also, among many other things, Energy Ambassador for the British government. In other words, he's a powerful figure in the global energy landscape.

"Growing populations and economic growth in many parts of the world are increasing the demand for energy," he said.

And even though demand for renewable energy will grow – almost double – up to 2035, oil, coal and gas will still dominate.

In 2010 oil, coal, and gas accounted for around 80 percent of the total energy demand. In 25 years this will probably have gone down to 75 percent. But in absolute terms, demand for energy in 2035 will have increased globally by 40 percent. The need for oil, gas and coal is therefore expected to increase by around 30 percent. All this is compared to 2010.

There is no shortage of challenges when it comes to the global energy supply. The percentage of the world's population with no access to electricity is declining, but not very quickly.

"Around 20 percent have no access to electricity. Enormous investments are needed to rectify this. And it not a problem-free endeavour."

LIFE SCIENCE IN TRANSITION

Breakfast Meeting 28 August

On 28 August IVA's Business Executives Council welcomed guests to a breakfast meeting with Torbjörn Bjerke, CEO of Karolinska Development.

Life Science in Sweden is going through a major transition. The debate about the closure of Astra Zeneca's research facility in Södertälje has dominated in Sweden.

Generics, rising healthcare costs, global recession, governments trying to lower their debt, these are a few of the factors behind the tough situation for large (and small) companies conducting research to find new medicines, according to Torbjörn Bjerke.

Still, the global market for pharmaceuticals is expected to increase from 2006 to 2016 by 85 percent. Meanwhile, the percentage of generics will increase from 20 to 40 percent.

"That of course impacts the ability to produce new medicines," said Torbjörn Bjerke.

The countermove from pharmaceutical developers is simple – innovation.

"Now the focus is on the demand for orphan drugs. Medicines that can be prescribed at clinics are not as interesting to research."

Research is becoming more virtual and fewer researchers are directly involved. The big companies simply do not want to invest in expensive facilities and equipment. They are instead increasing their dependence on small companies with cutting-edge expertise.

"But rising wages in China and India are working in our favour. We have the knowledge in Sweden, but it needs to be matched with the political will to see what Swedish Life Science can achieve."

According to Torbjörn Bjerke, the outlook is optimistic for his own company, Karolinska Development. Exclusive access to the expertise at Karolinska Institute is a plus.

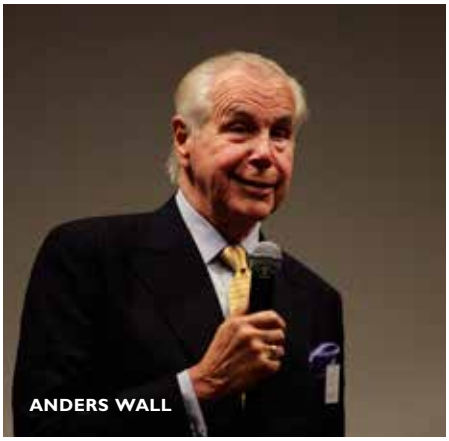
SANDVIK – INNOVATION IN A GLOBAL MARKET

Breakfast Meeting 7 November

In 2012 Sandvik celebrated 150 years in business. The journey has taken it from being the local plant with responsibility for development in the community surrounding it, to a global corporation with CSR on the agenda. What is the significance of regional presence these days? Does it matter where the head of-


OLOF FAXANDER


MERNOSH SAATCHI


ANDERS WALL

fice is located or where R&D are carried out? Olof Faxander, President and CEO of Sandvik, addressed these questions at the Business Executives Council breakfast meeting on 7 November.

More than half of the group's employees work in Europe. But the growth markets are elsewhere.

"Europe is no longer an obvious domestic market for us," he said.

According to its top executive, Sandvik is one of the most exciting companies in Sweden.

"The company's strength over these 150 years has always been our ability to constantly adapt to customers and markets."

Soon Sandvid's operations will need to move closer to the markets in developing countries.

"That's why we're investing outside in Europe."

Even for a frontrunner in the world like Sandvik the competition is growing.

"In just a few years we'll be competing with companies in developing countries. Chinese companies will always produce products of an inferior quality compared to ours."

Sandvik has a handle on the existing, traditional competitors. Their moves are rarely a surprise.

"But how will a competing Chinese company behave? We don't know as much about that."

In order to meet future challenges Sandvik continues to invest in R&D.

"It's also important to have common values; a value foundation without compromises. The more international we become, the more important it is for our core values to guide us."

He also pointed out that it takes more than small businesses to create prosperity. Sweden lives off its big industrial corporations. That's why we need to get more young people interested in studying science and technology. According to Olof, that is critical for Sweden's future prosperity.

THE ENTREPRENEUR AS A HERO

Annual Meeting 20 November

How does society actually view entrepreneurs? In the media, among young people and established business leaders? What do the entrepreneurs themselves say? Is there status associated with being an entrepreneur?

In connection with its Annual Meeting, the Business Executives Council arranged a seminar with IVA's Management division entitled "The entrepreneur as a Hero – the courage to fail" to answer those questions.

Many were interested in the answers. All of the chairs in the conference room at Hotel Scandic Anglais in Stockholm were occupied, even though it was streamed live.

Ivo Zander, Professor of Entrepreneurship at Uppsala University, spoke under the heading "That's what an entrepreneur looks like" and described some research conclusions.

Entrepreneurship means acting under a cloud of genuine uncertainty. But there are no specific personality traits that distinguish an entrepreneur. And the non-entrepreneurs' view of entrepreneurs doesn't really match reality.

"Researchers have being trying to figure out what distinguishes entrepreneurs for 20 or 30 years, but they still haven't found anything specific," says Ivo Zander.

According to the research, the desire for wealth, independence and control is the same among the general population. Entrepreneurs are not looking to distinguish or fulfil themselves any more than the average in the rest of the population.

On one point entrepreneurs do, however, deviate from the norm. They actually expect success.

The audience also got to learn about the experiences of two younger and two older entrepreneurs. Across the generational lines they agree that attitudes and the climate are better for entrepreneurs now than before.

"I never used to mention that I'd started a company. Now I do," said Mernosh Saatchi, founder and CEO of communications firm Humblestorm.

"In the '60s and '70s it was neither popular not politically correct to invest in small businesses. At that time you might even hear a government minister tell you to stay away from them. But in the ´80s things got a bit better," said Anders Wall.

Salvatore Grimaldi, founder of Grimaldi Industri, and Saeid Esmaeilzadeh, co-founder of Serendipity Innovations, also shared their entrepreneurial experiences.

Pia Kinhult, Chairman of Region Skåne, talked about the region's entrepreneurship policy.

COURAGE AND CREATIVITY ARE KEY FOR INFLUENTIAL CORPORATION

Eva Hamilton, CEO Sveriges Television

»We are one of the forces with the biggest impact on Sweden. During the last election we conducted a survey of what had the biggest influence on people's choice of party. First it was their friends, and then came SVT.«

At Oxenstiernsgatan 26 in Stockholm is an ordinary, box-like four-storey building. The exterior doesn't exactly invoke creative associations. But this is the headquarters of Sveriges Television (SVT), Sweden's public service television company. The programmes are produced in the building to the left.

It's easy to get into the reception area. But to get any further you need the proper papers.

On one wall beyond the guard and key card secured one-at-a-time swing doors you can read in black and white what the company stands for. The audience comes first, independence and urgency, courage and creativity, and value for money. A clear message.

Replace the word audience with customer and the core values would fit any company in any line of business. But SVT isn't just any big corporation. It doesn't have a quarterly goal of creating hard cash value for shareholders. Still, SVT is a big corporation. The company has around 2,000 employees and a financial framework in the neighbourhood of four billion kronor.

On the third floor is where SVT's CEO Eva Hamilton has her corner office.

The fact that the company has the power, or perhaps it's better to say the mission, to influence social development, is an obvious truth for Eva.

"We are one of the forces with the biggest impact on Sweden. During the last election we conducted a survey of what had the biggest influence on people's choice of party. First it was their friends, and then came SVT."

In the past, when SVT had the monopoly on TV broadcasting in Sweden, it wasn't sensitive to what people needed. Now it is essential to know what their needs are. This is a basic question of democracy. But sometimes it's about more prosaic things like which food choices to make.

"In a way SVT is an educator. But it has to be entertaining. Important topics need to be made imperative and enjoyable," says Eva.

If the goal was to always win the popularity contest, SVT would only show entertainment and sports programming across its channels. (With the likely exception of The Children's Channel).

Just like other corporations, SVT has subcontractors. And many of them.

"We always produce the morning and news programmes ourselves. Most of the rest is outsourced."

In the drama category, 80 percent of programming is produced by external suppliers. Half of the entertainment programmes come about in the same way.

"There are plenty of very competent companies. Our doors are open for the brilliance that's outside."

When SVT buys programming it provides opportunities for other companies to grow and expand. The TV company is, in other words, helping to make Sweden more entrepreneurial.

"Combined with Radio Sweden, we are the biggest employer in 'Cultural Sweden'."

Unlike other big Swedish companies, SVT is not 100 or older. It all started in 1956. Nothing much changed for many years until TV2 came along in 1969. The first commercial channel, TV3, was launched in 1987 without creating much of a stir.

"SVT had the monopoly on TV broadcasts from the start. But when TV4 went on the air via cable in 1990, it was a jolt to the system."

A year later the new commercial channel was on top. And was the most popular one with the audiences.

"People saw SVT as a government agency."

The journey since then has been similar to that of other now dismantled monopolies. Posten (Swedish postal service), Televerket (telecommunications) and SJ (national rail service) all have competitors now. But only Telia (telephone company) can compare itself with SVT in terms of pressure from competition.

"We still have employees who were around back then. For them it's been a heck of a journey. When changes come along it's easy to have the 'we are better' attitude – a classic reaction to protect yourself from your surroundings."

The 1990s were synonymous with chaos for foundation-owned companies. Viewer ratings fell and TV4 was to be a commercial public service with commercials only airing between programmes. Those were the days!

"In 2009 it all turned around. Both viewership and satisfaction increased. Costs have gone down and quality has gone up."

But the uncomfortable monopoly existence belongs to television history. Now there are countless competing channels eager for the remote to point in their direction.

So at Oxenstiernsgatan they are not exactly lulled into a sense of false security.

If competing TV companies are keeping SVT on their toes, there are plenty of other reasons to keep an eye on what's going on outside. Technology is one of them.

A decade or so ago experts predicted that various technologies were about to converge. Now we have the internet, smart phones and various types of tablets, and people can watch TV on all of them. To say technological development has been fast would be an understatement.

"But it doesn't matter to me which device people use to watch our programmes. All platforms are OK. We're no longer a TV company but a programme company.

This is most obvious in programmes for young people in which viewers are invited

to contribute, upload clips or comment on what's being shown.

But it's not enough to just stay on the technology carousel and check out what the competitors are doing. The legal aspect is another factor that makes SVT's situation unusual among what we normally call corporations.

"Re-broadcasting a film requires us to contact all of the rights holders. That means everyone, even down to the person who made the wigs."

A new way of showing programmes requires a new set of negotiations. If it's even possible to find all of the rights holders.

SVT has eight lawyers on staff.

In this fast-moving environment, leadership issues are nothing to be taken lightly.

"No, they are critical. When a department or a person is not doing well or is getting burned out, there's a 90-percent chance that the focus should be on the boss. SVT can't be managed by orders or decrees."

What management says must, like at all companies, carry weight and instil confidence. At companies where, unlike at SVT, the profit requirement is really the determining factor, it's probably a little easier to make decisions.

"When a decision needs to be made by me it means there was no obvious answer. If there were, the decision would have already been made further down the organisation. Usually a CEO's decisions have something to do with a conflict or risk-taking. That means that a CEO's decision is rarely a clear-cut one or 100 percent right. Hopefully, though, it's the best decision in the given situation. I'm not afraid of changing a decision. There's actually not a lot that is irrevocable."

Eva Hamilton is a member of IVA in the Management division. She is also on the board of the Business Executives Council and she can see some similarities between SVT and IVA.

"Both want to make an impression on society. And in both organisations there are many interests and areas of expertise that have to be coordinated. Another similarity is that it's difficult to measure our success."

SVT's results are measured using soft criteria such as credibility and audience appreciation. The demands of the popularly elected must be met.

"And the viewer ratings of course; we check them on a daily basis."

Credibility is an important factor for IVA too. In IVA's case it's combined with experience and knowledge. That's why most of the members are on the older side.

"But if young people don't become interested in IVA as they mature, that would be bad. The organisation needs to be perceived as attractive."

Eva Hamilton has a strong journalistic background. She worked as a journalist on daily newspapers such as Aftonbladet, Svenska Dagbladet and Dagens Industri. She has also been a news reporter on the primetime news programmes Aktuellt and Rapport and a foreign correspondent in Brussels.

"It was quite frustrating going from print to TV journalism. It's hard to present a developed argument in the short time that's available for TV news. On the other hand, images are powerful and can make a stronger impression in TV than in print."

Eventually Eva Hamilton got an offer which she found somewhat surprising, to become the CEO of a smaller company.

"I didn't see myself as a boss. I didn't think I was management material. But SVT offered me training. The big step was taking over responsibility for the news division and the many people working there. Rapport and Aktuellt were to merge."

That was certainly not an easy job.

It has obviously gone well for Eva. She was named Leader of the Year in 2009, Industry Personality of the Year, and has been ranked among the most powerful women in the industry. Her most recent distinction is a place on the list of Sweden's 20 "bråkigaste kvinnor" (literally "rowdiest/noisiest women"). Not at the top, but still...

"Whatever that distinction means."

She doesn't watch a lot of television.

"I watch SVT Play (on-demand service) when I want to. And I check out the pilots of new series. I keep up with what we're doing for children and young people. But I don't watch very many programmes on the external channels.

Eva Hamilton is a member of IVA's Division VI Management. She is also a member of the board of the Business Executives Council.

LEADERSHIP FOR THE FUTURE

SOCIETY'S ISSUES IN FOCUS

IVA has introduced a new element in the form of a programme called Leadership for the Future. The participants are young, top business leaders and the programme is being hosted by IVA's Chairman Leif Johansson.

The purpose is dialogue, external analysis and new knowledge about the broad issues facing society. The format is round table discussion.

"The programme offers participants an opportunity to meet other young leaders with experience from diverse sections of society. They can also take advantage of the expertise in IVA's network," says Leif Johansson.

The exchange goes both ways. For IVA this is an important opportunity to learn what young, successful leaders consider to be important and how they think.

Thirty or so business leaders are participating in Leadership for the Future which will involve two round table discussions a year.

The programme started in June with the theme of leadership and social debate in an international milieu. In November the demands of the media society on today's leaders was the topic discussed.

ANNUAL MEETING

HIGH POINT STEEPED IN TRADITION

On Friday 26 October IVA held its 93rd Annual Meeting.

At Stockholm Concert Hall around 850 guests in evening attire listened to what IVA President had to say about progress in several areas of science and technology over the past year.

Four prominent individuals were presented by His Majesty the King Carl XVI Gustaf with IVA distinctions.

Professor Gunnar Svedberg presented the man and the scientist, Carl Wilhelm Scheele, who was honoured in a commemorative booklet.

GOLD MEDAL
MARIA STRØMME

Look up "meteoric career" and don't be surprised if a photo of Maria Strømme pops up.

At 34, Maria Strømme was Sweden's youngest professor with a chair in an engineering discipline. At 42 she was awarded IVA's Gold Medal for her research and entrepreneurship in nanotechnology.

But what does the 2012 IVA Gold Medallist actually do?

"We gather tools from many different monodisciplines and use them to tailor materials at the nano level to give them the properties we desire at our normal macro level."

This means that Maria has to employ people from many different disciplines to work together in a large and diverse research team.

She therefore needs the ability to see how specific areas affect others and how they can work together to change the properties of different materials.

"Let's take a couple of concrete examples: We have developed implants that can be quickly refilled with medicine but that still allow the medicine to be released very slowly."

The implant project involves cooperation between orthopaedists, biomaterials scientists and medtech companies.

The algae battery that Maria Strømme has become known for was created by her with a team of researchers using the common green algae Cladophora, a conducting polymer and a little salt-water. The result is a low-cost battery that can be charged in 10 seconds!

Altogether Maria Strømme has published more than 160 international scientific articles and a hundred or so conference papers. She also has 27 patents in all of eight different patent families.

How do you keep track of all the knowledge in so many patent areas?

"From my perspective, they aren't all that different. That's the great thing about nanotechnology; it's a technology of possibilities where a certain type of material can be used in many application areas."

What drives Maria Strømme?

"I've always loved science, maths, physics etc. I'm also really result-oriented so I can push myself and my colleagues quite hard to achieve results!"

COMMEMORATIVE BOOKLET
C.W. SCHEELE

Wilhelm Scheele, born in Stralsund, Swedish Pomerania in 1742, came to Sweden as a 14-year old. Although he would speak and write in German throughout his life, we of course consider this great scientist to be Swedish.

The achievement that is often considered to be Scheele's most significant is that he was the first to produce pure oxygen. Scheele's work in chemical mineral analysis led to discoveries of several metal acids and metals.

Scheele started his apothecary career in Gothenburg but moved to Malmö after a few years and then, after a short period in Stockholm, settled in Uppsala. There he developed a good relationship with the leading chemistry professor of the day, Torbern Bergman. Their collaboration was highly fruitful. But Scheele eventually wanted to branch out on his own so he took over an apothecary and married the 24-year old widow who held the rights to it.

Scheele turned down a number of attractive offers from near and far. One of his responses was the following: "I cannot do more than eat my fill and I can do that in Köping too." In 1775 at age 32 Scheele was elected as a member of the Royal Swedish Academy of Sciences.

GREAT GOLD MEDAL

LARS E.O. SVENSSON

I am deeply honoured, particularly as I understand that the only economists to receive this great distinction are Professors Erik Dahmén and Assar Lindbeck, says Professor and Deputy Governor of the Riksbank Lars E. O. Svensson, recipient of IVA's Great Gold Medal.

Lars E.O. Svensson is being recognised for "most outstanding work as an international macroeconomist, in particular in the areas of monetary theory and monetary policy, international trade and general equilibrium theory."

It wasn't always clear that Lars E.O. Svensson would become an economist. His gift for mathematics took him to the Royal Institute of Technology in Stockholm (KTH) where he studied engineering physics, but after graduating and before he started applying for jobs as an engineer he took a year's sabbatical.

He studied economic history at Stockholm University under Professor Rolf Adamson.

"Both my friend and I became fascinated by the subject and after studying it for a couple of months, we went unabashed to our professor and asked him if we could become economics historians and make a living at it."

Rolf Adamson explained that they first needed to get a PhD which would involve a lot of hard work in dusty archives, and then the job market was unfortunately very bad.

"So he advised us instead to study economics. That's one of the best pieces of advice I've ever received."

Forty years later he still hasn't applied for a job as an engineer. He has, on the other hand, had a brilliant career as an economist.

He earned his PhD in 1976 at the Institute for International Economic Studies (IIES) at Stockholm University.

In 1984 he was appointed as a professor at the IIES. He has also been a guest lecturer at universities such as Harvard, Columbia, Berkeley and Princeton. In 2001 he was granted a professorship at Princeton.

"At the IIES we strived to be world-class economists. The environment there reminds me a lot of the best US universities. Princeton was of course extra special."

He got into monetary policy in earnest when he became an advisor at the Riksbank (Sweden's central bank) in 1990.

"I had no idea how exciting and interesting it would be."

At that time Sweden had fixed exchange rates. The krona was, however, exposed to speculative attacks which came to a head in September 1992. The Riksbank defended the exchange rate with a marginal rate target of 500 percent. In November the krona was subject to a new speculative attack. The Riksbank released the fixed rate and allowed the krona to float.

"There was no plan at the Riksbank for

an alternative to fixed exchange rates. I was asked to work with a number of internal and external economists to quickly write something on the monetary policy alternatives. In a very short space of time we produced a paper on monetary policy with floating exchange rates. It turned out quite well considering the circumstances."

The General Council of the Riksbank decided in January 1993 on an inflation goal of 2 percent and the krona rate would continue to float.

"This was something new and untested so there was very little experience to indicate how it would work. It was very exciting to be part of building up the new monetary policy regime."

The Riksbank is now also supporting the general economic policy goals.

"Modern monetary policy with inflation targets requires a lot of analysis, which is evident not least by the increasingly well-educated employees, including an increasing number of economics PhDs."

In May 2007 Lars E. O. Svensson was appointed as Vice Governor of the Riksbank.

"The offer from the Riksbank was one that I couldn't turn down," he says.

Professor Svensson enjoys debating monetary policy.

"When Ben Bernanke holds press conferences he gets asked a lot of well-informed questions about the Fed's policies. It would be great if Swedish journalists were as pushy and asked equally forward questions about the Riksbank's monetary policy."

Sweden's central bank is, according to Lars E. O. Svensson, one of the most transparent ones in the world.

"It's good to have outside observers scrutinising what we do. If we make a mistake it could have serious economic consequences."

Lars E.O. Svensson is an Affiliated Professor at the Institute for International Economic Studies at Stockholm University. He still conducts research when he has the time.

"The practical tasks involved in monetary policy give me a lot of research ideas. Working at the Riksbank is in many ways a dream job, but my other jobs have been as well. I really did get fantastic advice from Rolf Adamson about studying economics."

It was a happy, surprised and extremely qualified person who received IVA's Gold Medal in 2012. Björn Fjæstad has conducted research at Stockholm School of Economics for ten years and has been Editor-in-Chief of the magazine Forsking & Framsteg (Research & Progress) for 32.

What does this journalist think about the significance of science journalism?

"It's important for it to be fact-based and relevant. On the other hand, I'm more sceptical about terms like 'impartiality' and 'from all perspectives' because it isn't always clear who the different parties or sides are. Journalism should be accurate and true. We should inform people about things of general interest as well as things that are important for them to know."

In research it can take a long time from an initial discovery until a new vaccine is produced or there is a new way of designing a computer memory. That is when journalism acts as a democratic verification of where Government funding is going.

"At Forskning & Framsteg I have all of my interests in one place: research, economics and journalism. I probably wasn't the most qualified applicant for the job in any one of the three areas, but I was most likely one of the few who knew a bit about everything."

At that time, in 1979, it wasn't easy being a science writer. Confidence in science among the general public was low.

"Since then attitudes have shifted in a much more positive direction."

Good science journalism involves trying to include analysis and context as well.

"If, for example, you're writing about new technical energy systems, the text is basically meaningless unless you include the economic aspect. You shouldn't let yourself be blinded by ideology or what happens to be in fashion. Ideology can be like a wet blanket over slow research processes. Critical and sensible points of view can easily get neglected."

GOLD MEDAL

BJÖRN FJÆSTAD

Carl Borrebaeck, Professor of Immunotechnology and Assistant Vice-Chancellor at Lund University, was awarded an IVA Gold Medal in 2012 for his "fundamental and ground-breaking research in immunotechnology," and for his "considerable entrepreneurial expertise."

Carl Borrebaeck has published more than 300 scientific articles and holds 40 patents. He is also the creator of Create Health, a world-class cancer centre, and has been involved in forming four research-based companies.

So IVA's Gold Medal can't really be a surprise, can it?

"Oh yes, it's one Sweden's finest distinctions, so of course it was a surprise," answers an honoured Carl Borrebaeck.

Scientist, entrepreneur, assistant vice-chancellor, which role do you identify with the most?

"I'm primarily a scientist and researcher because everything else I do stems from that."

Carl emphasises the close link between research and how it is put into practice and turned into innovation.

"There are, of course, many scientists working with basic research, but in the end I think that all researchers like to see their results put to use somewhere. Many of them today are involved in at least a part of the chain leading to commercialisation."

If you were to explain your research to a layman, what would you say?

"Briefly, I would say that I'm studying how the molecules in the human body can be activated and improved to more effectively fight complex diseases such as cancer. This involves things like therapies based on antibodies."

How far are we from a big breakthrough in cancer research?

"In the past people often talked about 'solving the cancer puzzle'. But cancer is a disease of the cells and the body has around 200 types of cells, which means that there is a corresponding number of distinct cancer indications – often with different characteristics. Now researchers are focusing on how we diagnose cancer. Many types of cancer can be cured if they are found at an early stage."

GOLD MEDAL
CARL BORREBAECK

IVA DOCUMENTATION 2012

THE EXECUTIVE COMMITTEE 2012
Chairman Leif Johansson (Div. VI), Chairman of the Academy 2012–2014
Professor Staffan Josephson (Div. X) Vice Chairman 2010–2012
Björn Savén PhD Economics (Div. IX) Vice Chairman 2011–2013
President Lena Gustafsson (Div. X) Vice Chairman 2012–2014
Professor Margareta Norell Bergendahl (Div. I) Vice Chairman 2012–2014
Board Chairman Erik Lautmann (Div. VI) Business Executives Council Chairman 2012–2015
Professor Björn O. Nilsson (Div. X) President of the Academy 2008–2014

THE ADVISORY COUNCIL
The Advisory Council includes the Chairman of the Academy, the chairmen or vice chairmen of the Academy's divisions, chairmen of the regional chapters and the President. The Executive Committee's other members are entitled to be present at the Advisory Council's meetings. The Chairman of IVA's Business Executives Council and committees may also be called to the meetings.

Board Chairman Leif Johansson, Chairman 2012–2014
Professor Björn O. Nilsson, President 2008–2014
Chief Technology Officer Ulf Södergren, Chairman Div. I 2012–2014
CEO Bo Normark, Chairman Div. II 2010–2012
Research Director Kyösti Tuutti, Chairman Div. III 2010–2012
Owe Fredholm PhD, Chairman Div. IV 2011–2013
CEO Göran Carlsson, Chairman Div. V 2012–2014
Director Staffan Håkanson, Chairman Div. VI 2010–2012
General Manager Thomas Laurell, Chairman Div. VII 2011–2013
Director Stina Blombäck, Chairman Div. VIII 2012–2014
Board Chairman Gabriel Urwitz, Chairman Div. IX 2010–2012
Consultant Annika Åhnberg, Chairman Div. X 2011–2013
Chief Investigator Ola Asplund, Chairman Div. XI 2012–2013
Vice President Gösta Lemne, Chairman Div. XII 2011–2013
Associate Professor, Johan Weigelt PhD, Secretary to the Academy
Director Erik Lautmann, Chairman Business Executives Council 2010–2012
Department Director Eva Wigren, Chairman Industrial Research Committee, 2011–2013
Anna Nilsson-Ehle PhD, Chairman IVA West 2011–2013
Director Lennart Fredenberg, Chairman IVA South, 2011–2013

IVA MEMBERS
Details about the Academy's members are included in the 2012 IVA register of members. As of 31 December 2012, IVA had 905 Swedish members and 263 foreign members. Membership changes in 2012 are noted below.

Elected Swedish member
Director-General Thomas Allard (Div. I)
Vahid Kalhori PhD (Div. I)
Senior Executive Vice President Anders Dahl (Div. II)
Professor Karl-Erik Årzèn (Div. II)
Professor Wolfgang Kropp (Div. III)
CEO Anna Sander (Div. III)
Professor Johan Woxenius (Div. III)
Professor Göran Lindbergh (Div. IV)
Professor Magnus Skoglundh (Div. IV)
Chairman Viveca Ax:son Johnson (Div. IX)
Senior Economist Klas Eklund (Div. IX)
CEO Jens Henriksson (Div. IX)
Irma Rosenberg PhD (Div. IX)
Professor Per Strömberg (Div. IX)
Director Gunnar Wetterberg (Div. IX)
CEO Christian Clausen (Div. IX)
Entrepreneur Peje Emilsson (Div. IX)
Director Per-Erik Lindvall (Div. V)
President & CEO Jonas Abrahamsson (Div. VI)
Professor Sofia Börjesson (Div. VI)
Professor Bo Edvardsson (Div. VI)
CEO Magdalena Gerger (Div. VI)
CEO Fredrik Lagergren (Div. VI)
Professor Jan Löwstedt (Div. VI)
CEO Mats Svegfors (Div. VI)
Senior Partner Annette Brodin Rampe (Div. VI)
CEO Eva Hamilton (Div. VI)
CEO Håkan Sörman (Div. VI)
Vice President Strategy Ann Louise Johansson (Div. VII)
Professor Laszlo Fuchs (Div. VII)
Professor Sophia Hober (Div. VII)
Professor Anne L'Huillier (Div. VII)
CEO Magnus Hall (Div. VIII)
Board Chairman Ingrid Petersson (Div. X)
President Arne Andersson (Div. XII)

Elected foreign members
Professor Martin Fischer, USA
Dr David Jarvis, the Netherlands

Deceased members
Mining engineer Börje Bergsman (Elected Div. V 1964)
Professor Kurt Boström (Elected Div. V 1976)
Professor Bo Broms (Elected Div. III 1973)
Bengt Delaryd MSc Engineering (Elected Div. VI 1984)
Professor Kari Ebeling (Elected foreign member 1992)
Associate Professor Karl-Olof Faxén (Elected Div. IX 1976)
Mr Rodolfo Felix Valdes (Elected foreign member 1984)
Research Director Niles Fail (Elected 1988)
Professor Göran Gerber (Elected Div. I 1987)
Professor Lennart Hjalmarsson (Elected Div. IX 1983)
Knut Jacobsson PhD (Elected Div. VI 1984)
Directeur Honoraire Jacques Levy (Elected 1989)
Honorary Chairman Sergio Pininfarina (Elected 1988)
Professor John M Quigley (Elected 2006)
Executive Adviser Shoichi Saba (Elected 1984)
Director Christer Zetterberg (Elected Div. IX 1988)

IVA DIVISIONS

Division I – Mechanical Engineering
Chief Technology Officer Ulf Södergren, Chairman 2012–2014
Inken Faber MSc Eng., Vice Chairman 2011–2013
CEO Peter Holmstedt, Vice Chairman 2012–2014
Secretary: Ingrid Jansson
Number of members as of 31 December 2012: 90, of whom 37 below the age of 65.

Division II – Electrical Engineering
CEO Bo Normark, Chairman 2010–2012
Professor Lars Nielsen, Vice Chairman 2010–2012
Gunnar Holmberg PhD, Vice Chairman 2011–2013
Secretary: Jan Nordling
Number of members as of 31 December 2012: 44, of whom 20 below the age of 65.

Division III – Building and Construction
Research Director Kyösti Tuutti , Chairman 2010–2012
Per-Erik Petersson PhD, Vice Chairman 2011–2013
Professor Georgia Destouni , Vice Chairman 2010–2012
Secretary: Staffan Eriksson
Number of members as of 31 December 2012: 73, of whom 33 below the age of 65.

Division IV – Chemical Engineering
Owe Fredholm PhD, Chairman 2011–2013
Research Director Rolf Andersson, Vice Chairman 2010–2012
Professor Martin Malmsten, Vice Chairman 2012–2014
Secretary: Jan Westberg
Number of members as of 31 December 2012: 65, of whom 29 below the age of 65.

Division V – Mining and Materials
CEO Göran Carlsson, Chairman 2012–2014
Technical Director Jan Tengzelius, Vice Chairman 2011–2013
Professor Karin Larsson, Vice Chairman 2012–2014
Secretary: Ulla Svantesson
Number of members as of 31 December 2012: 64, of whom 24 below the age of 65.

Division VI – Management
Director Staffan Håkanson, Chairman 2010–2012
Chairman Anna Ekström, Vice Chairman 2010–2012
Professor Eric Giertz, Vice Chairman 2010–2012
Secretary: Lotta Thörn
Number of members as of 31 December 2012: 125, of whom 47 below the age of 65.

Division VII – Basic and Interdisciplinary Engineering Sciences
General Manager Thomas Laurell, Chairman 2011–2013
Professor Ewert Bengtsson, Vice Chairman 2010–2012
Former Director-General Marianne Treschow, Vice Chairman 2010–2012
Secretary: Johan Persson
Number of members as of 31 December 2012: 91, of whom 37 below the age of 65.

Division VIII – Forest Technology
Director Stina Blombäck, Chairman 2012–2014
Professor Carl-Johan Johansson, Vice Chairman 2010–2012
Director Elisabet Salander Björklund, Vice Chairman 2012–2014
Secretary: Magnus Breidne, Johan Persson
Number of members as of 31 December 2012, of whom 24 below the age of 65.

Division IX – Economics
Board Chairman Gabriel Urwitz, Chairman 2010–2012
Director Kerstin Hessius, Vice Chairman 2012–2014
Director Tomas Nicolin, Vice Chairman 2012–2014
Secretary: Hampus Lindh
Number of members as of 31 December 2012: 98, of whom 42 below the age of 65.

Division X – Biotechnology
Consultant Annika Åhnberg, Chairman 2011–2013
Associate Professor Maris Hartmanis, Vice Chairman 2010–2012
Director-General Inger Andersson, Vice Chairman 2011–2013
Secretary: Arvid Söderhäll
Number of members as of 31 December 2012: 63, of whom 30 below the age of 65.

Division XI – Education and Research Policy
Chief Investigator Ola Asplund, Chairman 2012–2013
CEO Maria Khorsand, Vice Chairman 2012–2014
Professor Mats Benner, Vice Chairman 2012–2014
Secretary: Elin Vinger, Johan Weigelt
Number of members as of 31 December 2012: 76, of whom 30 below the age of 65.

Division XII – Information Technology
Vice President Gösta Lemne, Chairman 2011–2013
Professor Kristina Höök, Vice Chairman 2011–2013
Urban Karlström PhD, Vice Chairman 2012–2014
Secretary: Marie Owe
Number of members as of 31 December 2012: 60, of whom 29 below the age of 65.

REGIONAL NETWORKS

IVA North
CEO Göran Carlsson (Div. V), Chairman 2012–2014
CEO Lars-Eric Aaro (Div. V), Vice Chairman 2012–2014
President Johan Sterte (Div. IV), Vice Chairman 2012–2014
Professor Emeritus Lennart Elfgren (Div. III), Secretary 2012–2014

IVA South
Director Lennart Fredenberg (Div. I), Chairman 2011–2013
Senior Advisor Claes-Göran Beckeman (Div. X), Vice Chairman 2011–2012
Professor Lena Neij (Div. III), Vice Chairman 2012–2013
Secretary: Ulla Svantesson

IVA West
Anna Nilsson-Ehle PhD (Div. VI), Chairman 2011–2012
Associate Professor Rolf Andersson (Div. IV), Vice Chairman 2011–2013
Anders Brännström PhD (Div. VI), Vice Chairman 2011–2013
Secretary: Linda Vidén Ljungars

BUSINESS EXECUTIVES COUNCIL

Executive body
Chairman: Director Erik Lautmann (Div. VI) (2010–2012)
Vice Chairman: Annette Brodin Rampe, Senior Partner Brunswick Group (Div. VI) (2011–2013)
Vice Chairman. Bank Director Peter Nygårds, Swedbank (Div. III) (2010–2012)
Pia Sandvik, CEO Länsförsäkringar Jämtland (Div. XI) (2010–2012)
Peter Wallenberg Jr., Chairman of the Board FAM – Foundation Asset Management (2011–2013)
Lars-Eric Aaro, CEO LKAB (Div. V) (2011–2013)
Åke Svensson, CEO Teknikföretagen (Div. I) (2011–2013)
Eva Hamilton, CEO SVT (Div. VI) (2012–2014)
Saied Esmaeilzadeh, CEO Serendipity Innovations (2012–2014)

Number of members and contact persons
At the end of 2012 the Business Executives Council consisted of 202 enterprises, national government agencies and organisations that carry out, utilise or fund technical research and development. These were represented by202 members, 91 alternates and 321 contact persons.

INDUSTRIAL RESEARCH COMMITTEE, IRC
IVA's Industrial Research Committee (IRC) builds networks between young decision-makers in industry and research in the academic world. The IRC has fifteen members each with a three-year mandate. The IRC Alumni network has around one hundred former members.

Chairman: Eva Wigren, Department Director Teknikföretagen (Div. I)
Ruben Aronsson, CEO SBUF
Mats Blomqvist PhD, Optoskand AB
Karin Byman Lic Eng, ÅF Infrastruktur AB
Pia Falk MSc Engineering, Saab AB Electronic Defence Systems
Anders Holmén, Project Director AstraZeneca, Medicines
Anna Körner PhD, SCA, Global Hygiene Category
Mikael Larsson PhD, Swerea MEFOS AB
Jan Lif PhD, Stora Enso Research
Head of External Research Collaboration Helena Malmqvist , ABB AB Corporate Research
Deputy Assistant Undersecretary Sofia Medin, Ministry of Enterprise, Energy and Communications
Petter Sundberg Lic Eng, Ericsson AB, Development unit radio, systems and technology
Johan Tiberg MSc Eng, Bombardier Transportation
Susanne Wallenborg PhD, GE Healthcare Life Sciences
Per Wiklund PhD, Nynas AB
Associate Professor Annika Zika-Viktorsson, Vinnova
Secretary: Ingrid Jansson, IVA

MEETINGS
For more information about the meetings in 2012, please visit: www.iva.se/kalendariearkiv-2012

13 January: 2012 – How are businesses doing?
Axholmen Consulting and Linköping University presented a survey in which 129 CEOs were asked for their views on the economy in 2012-

26 January: Service innovation in dynamic environments!
IVA's Service Initiative arranged a meeting to provide perspectives on the historical development of the Swedish service sector up to today's clusters.

1 February: ESS – Advantage Sweden
Business Executives Council breakfast meeting with Colin Carlile, ESS and Per Eriksson, Lund University.

6 February: Five years of REACH – What are the results?
Five years after REACH went into force, IVA's Division IV wanted answers to a number of crucial questions about the EU provisions.

8 February: Investor and value creation
Business Executives Council breakfast meeting with Börje Ekholm of Investor in Gothenburg.

8 February: Seminar with foreign members Herbert Wirth and Jean-Pierre Birat arranged by IVA's Division V.

14 February: Is there a future for research and development in green biotech in Europe?
Seminar arranged by IVA's Division X

16 February: Internal joint division meeting with Div. I, VI, VII and XI. Discussion with IVA's Chairman Leif Johansson.

17 February: State ownership – today and in the future
Business Executives Council breakfast meeting with Peter Norman.

21 February: Internet of Things (IoT) in Sverige – from sensors to commercial benefits
IVA project Internet of Things (IoT) discussed how the internet can improve efficiency in Swedish industry and create new IT companies in Sweden

21 February: Railway in the West – main lines and high-speed lines. Railway of the future.
Presentation of the technical and economic requirements for both expanding of existing main lines and constructing separate high-speed ones. Arranged by IVA's Division III, IVA West and the West Sweden Chamber of Commerce.

23 February: 30 TWh wind power by 2020 – Is it possible?
Joint meeting with Div. II, VIII, IX and XII to discuss the consequences of the goal of 30 TWh wind power and what obstacles and opportunities exist.

24 February: Swedbank – a social commitment that became a bank and not a bank with social commitment.
IVA West invited Swedbank's new regional director Lena Smeby Udesen, to take us from the start in Gothenburg in 1820 to Swedbank today.

28 February: Field trip to Medicon Village arranged by IVA South

12 March: AP-fonderna – How can we combine security with growth?
IVA West invited guests to discuss the significance of AP-fonderna pension funds in Sweden based on a study of the organisation and mission of AP-fonderna.

13 March: Technology becomes service – Visit to Ericsson's Global Services
A field trip arranged by IVA's Service Initiative to promote a better understanding of why is it that some service companies are so successful that they are setting new standards for their industry.

14 March: ABB's role in the sustainable society
Business Executives Council breakfast meeting with Johan Söderström, ABB.

15 March: Meeting Point Japan 2012
IVA, the Export Council and the Sweden-Japan Foundation arranged a meeting where anyone with a professional interest in, relations with and ambitions for cooperation in Japan could share their experiences.

20 March: From Idea to Success – Creating the right conditions for innovative companies to grow!
The seminar discussed the challenges that regional chemical, food and life science companies face at the beginning of their journey from idea to success, and how various actors in society can help them develop. Arranged by IVA West, IVA's Division IV and X.

20 March: Successful Service Companies – critical success factors
IVA's Service Initiative arranged a meeting to examine what distinguishes successful service companies.

22 March: Innovative Sweden – national self-confidence based on fact?
IVA and GE invited guests for a presentation of GE Innovation Barometer in which international and Swedish executives were surveyed to get their opinion on the criteria for successful innovation.

26 March: Internet of Things (IoT) in Sverige – systems for industry and society
The IVA project Internet of Things (IoT) showed examples of applications and technologies where IoT can give Sweden a prominent position and improve competitiveness.

26 March: MAX IV and ESS – benefitting South Sweden
IVA South arranged a seminar to discuss unique development and growth being created for the region's private sector.

27 March: Assembly of the Academy and seminar on the theme: An Energy Efficient Society – 50 percent more efficient energy consumption by 2050
IVA presented the new project "An Energy Efficient Society" which will help to remove obstacles and find ways to increase incentives to implement cost-effective energy efficiency improvements in various sectors in society.

17 April: IVA West meets the vision for West Sweden
At this seminar a 100-point vision for a borderless West Sweden prepared by West Sweden Chamber of Commerce's Vision Council was presented and discussed.

18 April: Quality in the research and education system and the value of research
Internal meeting of IVA's Division XI.

19 April: The Global Financial System in Transition – the history of RBS
Business Executives Council breakfast meeting with Reinhold Geijer, Royal Bank of Scotland, RBS.

19 April: Better wood through breeding and genetic engineering
Presentation of how tree breeding is done today and what has been achieved, as well as which new techniques are available now and will be in the future. Arranged by IVA's Division VIII and KSLA.

19 April: Internal meeting with IVA's Division VI and field trip to Plockmatic International.

24 April: The Energy Book Re-launched
A new updated edition of the Energy Book was launched and a new concept of professional development for teachers. Arranged in cooperation with IVA's Division II.

25 April: Electricity Dependence and Secure Electricity Systems
A workshop in cooperation with the Royal Swedish Academy of War Sciences to provide a basis for a strategy for a safer society based on electricity and electricity system.

25 April: Is capitalism in crisis?
What would a new phase of capitalism look like? What needs to be done to infuse new confidence in the system? What role will the financial system play? Arranged by IVA's Division IX.

25 April: Internal discussion meeting for IVA's Division XII

26 April: Fusion is not a dream, but the real target: Bringing the Sun to Cadarache
Seminar about fusions important environmental and economic advantages: no carbon emissions, no air pollution, unlimited fuel, intrinsically safe. Arranged by IVA's Division VII.

26 April: IVA's Division I arranged a trip to Chalmers University of Technology in Gothenburg with energy as the theme.

2 May: This is how government authorities are using research
The IVA project Agenda for Research arranged a seminar to present and discuss two studies of how Swedish authorities are obtaining research-based knowledge.

10 May: Technology for Safer Care and Better Health
A workshop jointly arranged by IVA and the Royal Swedish Academy of War Sciences on technology for safer care and better health with a focus on producing vaccines and antidotes.

8–10 May: Technology Leap at Technology Days
The Swedish Association of Graduate Engineers, IVA, Sandvik, Saab and others arranged Technology Days – a series of activities aimed at children from the preschool to upper secondary levels.

11 May: Energy and the Environment – driving forces in a global world
Business Executives Council breakfast meeting with Samir Brikho, AMEC

15 May: The Future of the Baltic Sea – a threatened environment or a sea of opportunities?
At the seminar the current situation of the Baltic Sea was discussed; what needs to be done and how can people agree across borders. Joint meeting arranged by IVA's Div. III, IV, V and X.

21 May: The Service Initiative's concluding seminar and book launch
The book entitled Den svenska tjänstesektorn – outsourcing i offentlig sektor och näringsliv (The Swedish Service Sector – outsourcing in the public and private sectors) was presented in conjunction with the Service Initiative's concluding seminar.

24 May: Cyber security and defence
At this workshop IVA and the Royal Swedish Academy of War Sciences discussed various security aspects of efforts to improve communication security by the communication actors in Sweden,

30 May: Visit to IKEA in Älmhult arranged by IVA South

13 June: The Construction Industry – sustainability for the future?
Business Executives Council breakfast meeting with Jan Johansson, President of Peab

14 June: Assembly of the Academy and summer party
More than 150 guests gathered for a summer party in connection with the Assembly of the Academy. In addition to members of IVA's twelve divisions and members of the Business Executives Council, the guests included representatives from the Student Council, the Industrial Research Committee, associated organisations, Parliament and ministries among others.

18 June: Obstacles and opportunities for cutting energy consumption by 50 percent by 2050.
The IVA project An Energy Efficiency Society arranged a seminar to present and discuss the work it is doing on energy efficiency in multi-dwelling buildings.

19 June: Symposium: Managing Technology for Security and Defence
An international outlook on disruptive innovations and excellence achieved within the project of the Royal Swedish Academy of War Sciences and IVA called Sustainable Security for Sweden after 2014.

2 July: Billions for regional Growth – but what do we know about the results?
A seminar during Almedal Week arranged by the IVA project Innovation Powerhouse Sweden to discuss how we can measure and monitor our joint investments in growth.

2 July: Innovative Public Sector – the next export success?
Innovation Powerhouse Sweden discussed how to increase the Swedish public sector's service exports in a seminar during Almedal Week.

3 July: Innovation Support System – the right actors with sufficient coordination?
A mini hearing in Almedalen where Innovation Powerhouse Sweden gathered politicians, government agencies and actors in the innovation system to get answers.

3 July: Invest in Sweden's security for threats of tomorrow as well as opportunities!
The Royal Swedish Academy of War Sciences presented a sample of the conclusions from a project entitled Sweden's Security after 2014 in which IVA has examined the technology and the role and significance of technological developments.

5 July: Domestic energy at what price?
The IVA project An Energy Efficient Society welcomed guests for a debate on the political agenda for the energy market during Almedal Week.

5 July: New vision for research – how can research be a broader force for society?
During Almedal Week the IVA project Agenda for Research presented relevant goals for research and research policy in Sweden and how they should be achieved.

21 August: A framework for Innovation Policy – How can Sweden be more entrepreneurial?
The Swedish Entrepreneurship Forum, IVA and the Research Institute of Industrial Economics invited guests to the launch of a book Ett ramverk för innovationspolitiken – Hur göra Sverige mer entreprenöriellt? (A framework for Innovation Policy – How can Sweden be more entrepreneurial?) At the same time an IVA report on an innovation policy framework was presented.

28 August: Life science in transition
Business Executives Council meeting with Torbjörn Bjerke, CEO of Karolinska Development.

29 August: Swedish researchers' international cooperation – how are we doing in an international comparison.
The IVA project Agenda for Research presented a study on Sweden's international research interactions and how the Swedish research system is dealing with changes in the global research map.

30 August: Sustainable Agriculture – does it need modern biotech?
A book presentation of "Tomorrow's Table" arranged by KSLA, IVA and the Swedish Seed Association.

30 August: Visit to Skånemejerier dairy in Malmö arranged by IVA South

7 September: New ways of organising research – aging faculties and interesting departments
IVA's Agenda for Research project arranged a seminar on the best way to organise practical research. A brand new study was presented on this topic.

10 September: The World's Biggest Power Cuts – exactly how secure is our electricity supply?
At a seminar a description given of what happened in India and of a risk perspective on our own power supply. Arranged by IVA's Division II.

11 September: Internal meeting for IVA's Division VIII

12 September: Media Queens – media in transition
Business Executives Council breakfast meeting with Gunilla Herlitz, Editor-in-Chief and CEO of DN (national daily newspaper) and Annie Wegelius, Programme Director at SVT.

12 September: The construction industry's ethical challenge
The seminar presented a number of studies to answer current questions and provide guidance for future work. Arranged by IVA's Division III, Transparency International Sweden, the Ethical Council for the Swedish Construction Sector, Swedish Association of Local Authorities and Regions (SKL) and Byggcheferna.

12 September: Research Quality – What does research say about research?
Internal seminar for IVA's Division XI.

13 September: Potential for mining in Sweden.
An overview of conditions and market development as well as the industries efforts to be more competitive through R&D. Arranged by IVA's Division V.

17 September: Food as Medicine – effective prevention of lifestyle diseases and a visit to Astra Zeneca in Mölndal
The seminar discussed various options to prevent and treat costly, lifestyle-related diseases. Arranged by IVA's Division IV, Division X and IVA West.

18 September: Internal discussion meeting for IVA's Division I followed by a visit to Technology Leap.

19 September: Assembly of the Academy and presentation of the John and Margareta Aspegren Scholarship.
Ulrika Björkstén PhD and Editor-in-Chief of Science Radio was among the 2012 scholarship recipients for her work using knowledge, insight and critical analysis through various media to create a better understanding of engineering sciences, natural sciences and the humanities, individually and combined, and how they are contributing to a deeper approach to knowledge and the development of a better society.

19 September: IT meets Nanotechnology: nanoradar, nanocommunication, nanoantenna and tiny nanocircuits.
Seminar arranged by IVA South at the Faculty of Engineering, Lund University.

20 September: The Research Front in light and electron microscopes
Seminar on major progress in technology and methodology over the past few years in light and electron microscopes. Arranged by IVA's Division VII.

25 September: Innovation Powerhouse Sweden – Growth and development in Gävleborg
The IVA project Innovation Powerhouse Sweden and a number of regional players arranged a meeting to explore innovation and growth in Gävleborg.

26 September: The Internet Myth
Internal seminar for IVA's Division XII.

27 September: PhD students and research
The IVA project Agenda for Research presented a study which posed the question of whether it is true to say that too much research in Sweden is being conducted by PhD students.

3 October: Innovation Powerhouse Sweden in Skellefteå
The IVA project Innovation Powerhouse Sweden participated in a gathering to explore innovation and growth at the conference Norrland 2012.

4 October: How should AP-fonderna be managed? Is there a need for changes? What can be achieved?
A seminar to discuss the buffer fund commission's proposal for changes in both management and regulations for the AP-fonderna pension funds. Arranged by IVA's Division VI and IX.

8 October: Overview of Clinical Trials
A hearing with IVA's project Trials for Swedish Medicine to examine what is going on in clinical trials, which problems and challenges remain and what needs to be done.

9 October: From Crisis to New Opportunities – diversity embraced
IVA West arranged a seminar to examine how to improve our international competitiveness by making better use of the power and wealth of ideas in the diverse population of people who are in or may move into the region.

10 October: Innovation Powerhouse Sweden in Växjö
Innovation Powerhouse Sweden examined innovation and growth issues in Kronoberg with regional players.

12 October: What is happening with the Government's innovation policy?
IVA's project Innovation Powerhouse Sweden arranged a breakfast meeting with Anna Lööf, Minister for Enterprise, Energy and Communications, who presented work being done on the Swedish national innovation strategy.

18 October: Space Engineering facilitating everyday life and benefitting society
Field trip to RUAG Space AB organised by IVA West.

22 October: Technologies for the Future – Visions and Opportunities
The symposium brought together leading scientists, visionaries and entrepreneurs to discuss the future potential impact on society of cutting edge research and new technologies.

24 October: Green Innovation, including Sustainable Energy
A lecture by Professor Masaaki Morikawa, Hokkaido University Japan arranged by Embassy of Japan, IVA and Sweden-Japan Foundation.

24 October: Entrepreneurship and Innovation
IVA South invited representatives for IVA's project Innovation Powerhouse Sweden to discuss what needs to be done to make Sweden more competitive and how innovation strategies at the national and regional levels can lead to concrete action.

25 October: Visualisation and Virtualisation
IVA Science and Society Forum brought together speakers that develop and/or use visualisation and virtualisation methods for different applications. A wide range of examples and future directions were presented and discussed.

26 October: IVA's Annual Meeting 2012
Almost 850 people listed to the speech given by IVA President Björn O. Nilsson on progress in research, science and technology at IVA's 93rd Annual Meeting. The theme for 2012 was research cooperation.

6 November: Innovation Powerhouse Sweden – Growth and development in Östergötland
The IVA project Innovation Powerhouse Sweden gathered experts and provided inspiration on innovation and the regional strategy for Östergötland was also presented. The conference was part of an even called Week 45 – Innovation & Entrenpreneurship.

6 November: Perspectives on Research Quality – an international perspective
Internal seminar for IVA's Division XI.

7 November: Sandvik – innovation in a global market
BEC breakfast meeting with Olof Faxander, CEO of Sandvik.

7 November: Mentor4Research 2012 – the start of a commercialisation journey
Galia Pozina, Associate Professor in Material Physics at the Department of Physics, Chemistry and Biology at Linköping University, was awarded the 2012 scholarship of SEK 100,000.

7 November: Internal meeting for IVA's Division IV

8 November: Internal meeting with IVA's Division VII on the ongoing strategy process

9 November: Annual Meeting followed by a seminar on the theme: Distance Solutions in e-Health.
IVA North invited guests to its Annual Meeting and e-Conference to discuss some of the experiences gained in the area of e-Health.

12 November: Research to Enrich Society
IVA's project Agenda for Research held a concluding seminar – a full evening focusing on research as an important future issue for Sweden – Minister for Education Jan Björklund participated.

13 November: Perspective on Sweden's – grid construction plans
At the seminar Perspective Plan 2015 from Svenska Kraftnät (Sweden's national grid) was presented and discussed. The meeting was arranged by IVA's Division II

15 November: IVA's Division I paid a visit to IKEA in Älmhult

19 November: Is Swedish forestry on the right path?
The seminar attempted to create a greater understanding of the complex role of the forest in society of today and tomorrow. Arranged by IVA's Division VIII

20 November: Cutting energy use in half in Swedish buildings – is it possible?
The IVA's project AN Energy Efficient Society.

20 November: Business Executive Council's Annual Meeting followed by a seminar on the theme: The Entrepreneur as a Hero – the courage to fail.
The seminar aimed to identify what it takes to be an entrepreneur. Participants heard from four established entrepreneurs who talked about their successes, failures and what drives them. Co-arranged with IVA's Division VI.

21 November: Life Science Foresight
Internal seminar for IVA's Division X.

22 November: Assembly of the Academy and seminar on the theme: How can companies build their innovative capacity?
IVA's Industrial Research Committee arranged a seminar on creativity, leadership and work processes.

27 November: Progress in Research and Technology 2012
IVA and RIFO – Sällskapet riksdagsledamöter och forskare (Swedish Society for Members of Parliament and Researchers) – invited Members of Parliament to listen to IVA's President talk about progress in science and technology over the past year. The 2012 theme was research collaboration.

28 November: The importance, of long-term, responsible owners
Breakfast meeting with Anders Nyrén, CEO of investment firm Industrivärden arranged by IVA West and IVA's Business Executives Council

28 November: Stainless Steel – the first 100 years and the future
The history of stainless steel from its first century and recent trends and drivers in the use and development of stainless steel. Arranged by IVA's Division V.

28 November: IVA's Division XII organised a visit to Ericsson Studio, Kista.

3 December: Beyond Globalisation – What does the new map look like?
IVA and SEK (Swedish Export Credit Association) arranged an inspiring breakfast meeting and discussion on risks, opportunities and challenges that come along with globalisation.

4 December: Annual Meeting and Technology Evening with IVA South – Progress in Research and Technology 2012.
IVA South invited IVA's President, Professor Björn O. Nilsson, to talk about progress in science and technology over the past year. The 2012 theme was research collaboration.

5 December: Annual Meeting and Technology Evening with IVA South – Progress in Research and Technology 2012.
IVA West invited IVA's President, Professor Björn O. Nilsson, to talk about progress in science and technology over the past year. The 2012 theme was research collaboration.

11 December: Ratos – the strategy remains firm
Business Executives Council breakfast meeting with Susanna Campbell, CEO of Ratos.

18 December: Cycles Create the Future
Participants at this seminar heard why long cycles occur, how they created trends in the 1800s and 1900s and what perspective they provide on the 2010s. Arranged by IVA's Division IX.

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DISTINCTIONS, SCHOLARSHIPS AND AWARDS

Great Gold Medal
The Academy's Great Gold Medal was awarded to Lars E.O. Svensson for his most outstanding work as an international macroeconomist, in particular in the areas of monetary theory and monetary policy, international trade and general equilibrium theory.

Gold Medals 2012
The Academy's Gold Medal was awarded to Carl Borrebaeck for his fundamental and ground-breaking research in applied immunology and for his entrepreneurial expertise. He started a number of companies but also helped others turn innovations into products.

The Academy's Gold Medal was awarded to Björn Fjæstad for his exceptional work in the area of research information. As editor-in-chief and research publicist for many years for the magazine Forskning & Framsteg (Research & Progress) among other publications, he has provided excellent information to a broader public and discussed scientific discoveries in all fields of science and technology.

The Academy's Gold Medal was awarded to Maria Strømme for her fundamental and applied research in nanotechnology and for her extensive entrepreneurial efforts in the fields of physics and medicine.

John and Margaretha Aspegren Scholarship
The John and Margaretha Aspegren Scholarship was awarded to Ulrika Björkstén who through knowledge, insight and critical analysis in various media, has helped to promote a better understanding of engineering sciences, science and the humanities. The John and Margaretha Aspegren Scholarship or better understanding between engineering sciences and the humanities is awarded alternately to an engineer/scientist and a humanities scholar.

Mentor4Research
Galia Pozina, Associate Professor in Material Physics at the Department of Physics, Chemistry and Biology at Linköping University, was awarded the 2012 scholarship of SEK 100,000.

Mentor4Research is a joint programme of the Royal Swedish Academy of Engineering Sciences (IVA) with Vinnova who provides funding for the programme. The purpose of the programme is to give talented researchers a better network of contacts in industry and help them realise the commercial potential of their own research.

Stockholm Industry Water Award
Stockholm Industry Water Award went to 2012 Pepsi Co because the company managed to save almost 16 billion litres of water in 2011, compared to 2006. The award goes to an enterprise that contributes to sustainable water management by reducing consumption and environmental impact. The award was established in 2000 by the Stockholm Water Foundation in cooperation with IVA and the World Business Council for Sustainable Development. It is administered by the Stockholm International Water Institute (SIWI).

RESPONSES TO PROPOSALS

IVA's opinion on the final report from the commission on activities at universities to support innovation SOU 2012:41.

IVA's opinion on Svensk Kärnbränslehantering AB's (SKB) application to construct a repository for spent nuclear fuel, reference number SSM2011-3522.

IVA's opinion on the submission of the Swedish Post and Telecom Authority (PTS) report on commercial potential of broadband canalization (N2011/7075/ITP).

IVA's opinion on the report on support systems to manage innovation and intellectual property at universities (U2012/2313/F).

IVA's opinion on the report on quality assurance of research and development at government agencies (U2012/2148/F).

IVA's opinions on the final report on work commissioned by the Swedish Energy Agency in preparation for the upcoming decision on research and innovation in the energy area (N2012/6345/E).

IVA's statement on the implementation of the revised EU directive on energy performance in buildings etc, Memorandum II – proposal on "close-to-zero" buildings (Response N2011/7477/E).

IVA's statement on response to performance-based resource allocation for universities (2011/7356/UH).

IVA's statement on report from the corporate tax committee on tax incentives for research and development SOU 2012:66.

PUBLICATIONS

IVA-aktuellt 2012
In October 1998 the first issue of IVA's news magazine IVA-aktuellt was published and the magazine has had the same format since then. Around 125 editions have been distributed to letter boxes, not only in Sweden, but to subscribers all around the world. Issue nine in 2012 was distributed to recipients in 35 countries.

It is gratifying to note that the magazine's circulation has increased year after year. The final issue last year was sent to 6,600 subscribers. Over the past decade the net circulation has increased by almost 20 percent. Not many other printed magazines or newspapers can boast the same growth.

The magazine's editors have also published short news articles from international sources on IVA's website. These have also attracted more and more attention. The number of hits on articles under the news heading at iva.se has increased by almost 20 percent in 2012 compared to the previous year.

Ultimately, these positive statistics indicate that IVA's activities and what the Academy achieves in projects and seminars are of interest to many, far beyond the Academy's offices on Grev Turegatan.

In 2013 IVA's news magazine will have an entirely new format. The editorial content will change to some extent. There will be fewer issues, but more pages. What is published will most certainly continue to attract readers.

IVA-M-series
IVA-M 427: Energi – Möjligheter och dilemman (Energy – Possibilities and predicaments, third revised version of the Energy Book), 2012, 132 pp.

IVA-M 428: Tjänsteinitiativet Magasin (Service Initiative Magazine), 2012, 28 pp.

IVA-M 429: Forskningsbaserad kunskap i svensk förvaltning – En rapport från IVA-projektet Agenda för forskning (Research-based knowledge in Swedish administration – A report from IVA-the Agenda for Research project), 2012, 48 pp.

IVA-M 430: Förutsättningar för ett innovationspolitiskt ramverk – En forskningsöversikt (Requirements for a research policy framework – A research overview), 2012, 48 pp.

IVA-M 431: Commemorative Booklet, A Tribute to the Memory of Carl Wilhelm Scheele (1742–1786), 2012, 50 pp.

IVA-M 432: Forskning för det 21:a århundradet – Slutrapport från IVA-projektet Agenda för forskning (Research for the 21st century – Final report from IVA's Agenda for Research project, 2012, 52 pp.

IVA-M 433: Energieffektivisering av Sveriges bebyggelse – Hinder och möjligheter att nå en halverad energianvändning till 2050 (Energy efficiency in Sweden's buildings – Obstacles and possibilities of cutting energy consumption in half by 2050, 2012, 36 pp.

IVA-R-series
IVA-R 469: Energieffektivisering av Sveriges flerbostadshus – Hinder och möjligheter att nå en halverad energianvändning till 2050 (Energy efficiency in Sweden's multi-dwelling buildings – Obstacles and possibilities of cutting energy consumption in half by 2050), 2012, 20 pp.

IVA-R 470: Kunskap i det allmännas tjänst – En kartläggning av fem fristående forskningsorganisationer och utvärderingsmyndigheter (Knowledge in public service – A description of five independent organisations and evaluation agencies), 2012, 34 pp.

IVA-R 471: Vem ska göra vad? – En studie av kopplingen mellan forskning och utbildning (Who should do what? - A study of the link between research and education), 2012, 40 pp.

IVA-R 472: Svenska forskarutbildade fem år efter disputation – En enkätstudie inom IVAs projekt Agenda för forskning (Swedish research graduates – A survey within IVA's Agenda for Research project, 2012, 16 pp.

IVA-R 473: Review of literature on scientists' research productivity – A study within IVA's Agenda for Research project, 2012, 12 pp.

IVA-R 474: Dimensionering av svensk forskarutbildning – En delstudie om doktorandernas roll i forskningssystemet inom IVAs projekt Agenda för forskning (Dimensioning of Swedish postgraduate programmes – A study on the role of PhD candidates in the research, 2012, 8 pp.

IVA-R 475: Hur når man en ökad professionell nytta från forskningen och andra kunskapsbaserade organisationer? – (How can we achieve greater professional benefits from research and other knowledge-based organisations?) A study within IVA's Agenda for Research project, 2012, 26 pp.

IVA-R 476: "Publish or Perish" – How to researchers who engaged in external activities experience the consequences of bibliometrics? A study within IVA's Agenda for Research project, 2012, 22 pp.

IVA-R 477: Forskningens uppgifter i samhället – en analysmodell (The mission for research in society – and analysis model). A study within IVA's Agenda for Research project, 2012, 8 pp.

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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

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PROJECT MANAGEMENT: Henrik Lagerträd
LAYOUT: Pelle Isaksson & Henrik Lagerträd
DESIGN: Pelle Isaksson
TEXTS: Staffan Eriksson, Joakim Rådström, Teresa Söderhjelm, Pär Rönnberg, Kenneth Leverbeck & Caroline Ankarcrona
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GOALS FOR IVA'S ACTIVITIES

A POSITIVE ATTITUDE TO ECONOMICS, ENGINEERING AND SCIENCE, AND IN PARTICULAR A GREATER INTEREST AMONG YOUNG PEOPLE IN HIGHER EDUCATION IN MATHS, NATURAL SCIENCES, IT AND ENGINEERING. IMPROVED CLIMATE FOR ENTREPRENEURS AND INNOVATION. INCREASED GROWTH AND INTERNATIONAL COMPETITIVENESS FOR KNOWLEDGE-INTENSIVE COMPANIES. GUARANTEED ACCESS TO ENERGY AT COMPETITIVE PRICES WHILE ATTAINING THE GOALS OF MORE EFFICIENT ENERGY CONSUMPTION AND REDUCED GREENHOUSE GAS EMISSIONS. MORE GOVERNMENT RESEARCH INVESTMENT FOR GROWTH AND COMPETITIVENESS. EFFECTIVE AND EFFICIENT INFRASTRUCTURE, TRANSPORT SYSTEMS AND BUILT ENVIRONMENT. INTERNATIONALLY COMPETITIVE EDUCATION PROGRAMMES. SWEDEN AS A WORLD LEADER IN ENERGY TECHNOLOGY, CLEANTECH, BIOTECH AND IT. ALLEVIATE THE PROBLEM OF AN INADEQUATE SUPPLY OF EDUCATION, WATER, ENERGY AND FOOD IN DEVELOPING COUNTRIES. HELP MEET THE "GRAND SOCIETAL CHALLENGES."

Royal Swedish Academy of Engineering Sciences