



# The Swedish Innovation Strategy



REGERINGSKANSLIET

Government Offices  
of Sweden



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# Foreword

Innovation begins with the human being. Human beings have ideas and develop knowledge. Human beings use their knowledge, skills and experience in new solutions in their businesses, in their workplaces, in their spare time or as consumers. Sweden's innovation capacity is essential to meet the challenges and opportunities of the global economy. Policy must therefore be based on a holistic view of how Sweden's innovation capacity can be maintained and strengthened over time. This is the starting point for the Government's national innovation strategy.

The world today is undergoing fundamental changes. Many countries in the EU and the OECD, as well as emerging countries such as China, India, Russia and Brazil, have an increased focus on developing the innovation climate of their countries. Sweden stands relatively strong in most international comparisons of countries' innovation capacities and competitiveness. However, global competition is increasing between companies and nations. The rising pressure on the earth's resources also requires new solutions that combine ecological, social and economic sustainability.

In Sweden, we need to be more innovative to meet the global societal challenges, to increase the competitiveness and to renew the future welfare and public services. This calls for an innovation climate that provides the best possible conditions for individuals, businesses, the public sector and civil society organisations to be innovative. The strategy presents long-term guidelines for how the work within many policy areas until 2020 can create better conditions for people in all parts of society to contribute to a more innovative Sweden through their knowledge, skills and creativity.



Photo Anna-Karin Nyman

This innovation strategy has been developed in a broad dialogue with many stakeholders. Now that the government has adopted the strategy, I would like to stress that this is the beginning of the real work to strengthen the innovation climate in Sweden in the long term, to empower us all to contribute to shaping the future Sweden in the global knowledge society: politicians, entrepreneurs, employees, citizens and consumers. In the process of developing this strategy, many people with different backgrounds and perspectives have shown a strong commitment and a willingness to contribute. This feels good and inspiring for the long-term work that we now need to continue together.



Annie Lööf  
Minister for Enterprise



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# 1. Why Sweden needs an innovation strategy

The purpose of this strategy is to contribute to a climate with the best possible conditions for innovation in Sweden with year 2020 in sight. People and organisations in industry, the public sector and civil society will be able to develop and more effectively contribute to new or improved solutions meeting needs and demand.

Societal challenges faced by Sweden, together with the rest of the world, are big and complex in nature. Therefore, no single actor or area of society has sufficient knowledge or resources to meet these challenges on their own. It is important to

further develop coordination between different actors in order to create the best conditions possible for innovation.

The development of this innovation strategy has taken place in broad consultation with stakeholders in different parts of society. The work was conducted with a high degree of involvement from all ministries within the Government Offices. This strategy constitutes a basis for a long term way of working in order to enhance the Swedish innovation climate and innovation capacity.

## Urgent societal challenges in Europe 2020

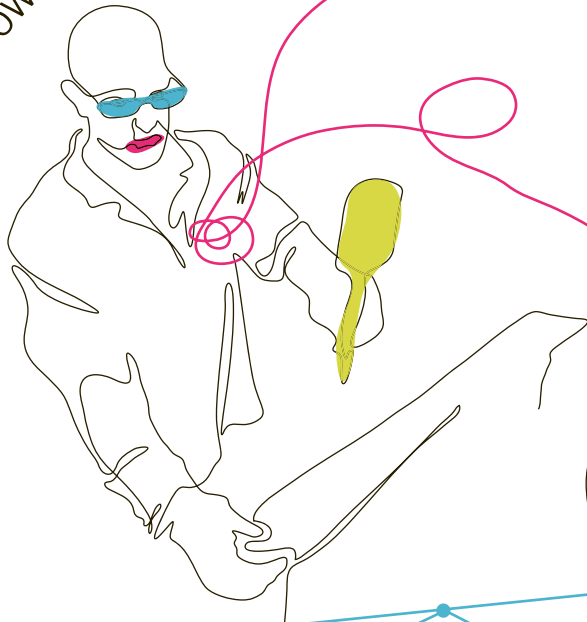
Based on the growth and jobs strategy, Europe 2020, and later clarified by the EU Council in the regulation of establishing Horizon 2020 – The Framework Programme for Research and Innovation (2014–2020), the following societal challenges has been highlighted as particularly important:

- Health, demographic change and wellbeing;
- Challenges for European bioeconomy: Food security, sustainable agriculture, marine and maritime research;
- Secure, clean and efficient energy;
- Smart, green and integrated transport;
- Climate action, resource efficiency and raw materials.
- Secure societies: Protecting freedom and security of Europe and its citizens.

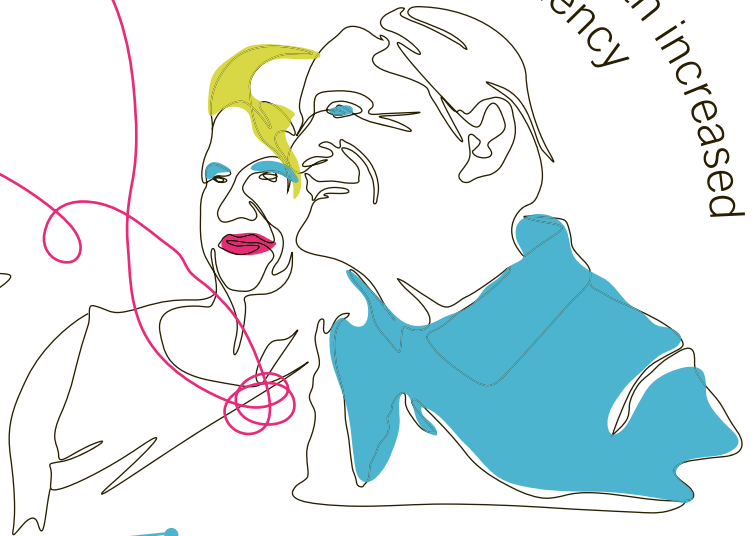
Meeting global challenges



Creating competitiveness and jobs in Sweden  
in a global knowledge economy



Deliver public services with increased  
quality and efficiency





*An innovation strategy for Sweden is needed in order to:*

### Meet global societal challenges

Together with other countries, Sweden needs to contribute to innovative and sustainable solutions to global societal challenges. This in turn can contribute to increased quality of life for people, a more sustainable development and also to making Sweden more attractive as a country. Furthermore, since demand for new solutions also lays the ground for future markets, this can generate growth and new jobs.

### Increase competitiveness and create more jobs in a global knowledge economy

Innovation is vital to long-term productivity development, and thereby to growth and future prosperity. A good innovation climate is a condition for the competitiveness of companies. Competing in increasingly global production and innovation networks requires constant renewal of offers, processes and organisation.

Clear and highly prioritised innovation policy work is particularly important for Sweden as a trade-oriented country with no major market of its own. Investments, operations and expertise are ever more internationally mobile. This increases competitiveness between countries and regions in terms of attracting individuals, organisations, head offices and other strategic operations.

### Deliver public services with increased quality and efficiency

Healthcare, school, care, police services, built and living environments, as well as systems for energy, communications, water, sewage and waste are examples of public services, i.e. welfare services, social security systems and other services that are publicly financed or otherwise important for a well-functioning society. As most European countries, Sweden is faced with a major demographic challenge to adapt to an ageing society, with more young and old people in relation to the number of people in the work force. By year 2030 it is estimated that more than one in five Swedish people will be over 65. In order to adapt to these changes, innovations are needed to deliver public services with increased quality and efficiency, but also in work life in order to attain participation in the work force at a higher level and a longer working life. When Swedish authorities, businesses and organisations manage to create new solutions for areas in global demand, this can also entail export opportunities.



## 2. Starting points

Innovation is about new or better ways of creating value for society, businesses and individuals. Innovations are new solutions that serve the needs and demands in daily life and in the world around us. The value arises in the utilisation and implementation of an idea. The value created may be economic, social or environmental. Innovation can occur in a step-by-step process or in disruptive leaps. OECD tends to differentiate innovation by degree of novelty: it may be new for an organisation, new for a market (or area of application) or new for the world. The substantial impact on value creation for society as a whole arises as new solutions are adopted and spread throughout society. The word innovation refers to both the process of developing new solutions and the result of the process, i.e. the new solutions.

### **Innovation:**

"Events through which new ideas, behaviours and procedures are introduced into a society and then spread"

*(translated from Nationalencyklopedin)*

"The implementation of a new or significantly improved product (good or service), or process, a new marketing method, or a new organisational method in business practices, workplace organisation or external relations."

*(OECD, Oslo Manual – Guidelines for Collecting and Interpreting Innovation Data)*

Productivity development is an important factor that in the long term creates growth and thereby lays the foundations for prosperity. Productivity is a measure of how much value is produced per unit of various input factors and is often measured in GDP or GVA (Gross Value Added) per hour worked. New studies, from the OECD among others, reveal that up to three quarters of productivity development in industry can be attributed to innovation. OECD believes that innovation in the public sector can decrease costs and increase efficiency and quality, with better use of resources and improved target fulfilment.

An innovation can take the form of new products or technological solutions. It may also be new ways of planning and developing urban or rural areas and built environments. It can be combinations of goods, systems and services for the global telecommunications market or smart transport solutions. Innovation can also take the form of new ways of designing or organising healthcare services for the elderly, new ways of submitting tax returns, new methods of involving customers or users in developing services or goods and new ways of taking advantage of and distributing art and artistic achievements. Innovation can also be new ways of using old, naturally occurring conditions, e.g., cooling energy-intensive data servers through localisation in cold climates or new ways of using land, ecosystem services, raw materials from nature and biologically/ecologically based technologies and methods.

### **How does innovation arise?**

Innovation begins in the creativity and power of initiative possessed by the individual. This strategy therefore has its starting point in people



who can and want to bring about improvement, whether individually or together.

In order for ideas to become innovations, several roles are required: visionaries, inventors or creators who have ideas, users and customers who have demands and who to an increasing extent participate in the creation of new products, services and processes, entrepreneurs who run and organise the realisation of ideas, salespersons who communicate ideas and financiers who believe in the potential value of ideas and provide capital and often business competence as well.

Power of innovation is being able to turn knowledge, expertise and ideas into new solutions in order to meet needs and demands. Factors that affect power of innovation have been defined by innovation researchers as:

- the knowledge and competence base for innovation that is developed through research, education or independent learning
- incentives for investments in knowledge and entrepreneurial activity
- demand and markets
- rules and regulations, organisational forms and communication between actors in innovation processes: businesses, the public sector, academia, civil society and individuals
- specialised resources for the development of technology, methods, organisation or processes.

The innovation processes are developed in relationships and through the exchange of information between individuals, businesses and other organisations. Central to these relationships is reciprocal learning about needs and demands, possible solutions and how these can be developed and improved on. Learning occurs when people and actors from different areas of knowledge, organisations, disciplines or sectors of society meet and collaborate. Physical or electronic meeting places and good incentives and processes for learning both within and between organisations are therefore a prerequisite for innovation.

### A broad view of innovation

Today, innovation is seen as broader than the creation of value based on research and technological development (R&D). In the knowledge based eco-

nomy activities such as design, business model and organisational development or marketing are becoming increasingly important. Innovation increasingly takes place in open processes of co-creation between diverse people and actors. Within organisations (whether businesses or others) innovation processes tend to involve collaborators from all functions instead of, as in the past, being regarded as the responsibility of a separate R&D department.

New ways of creating and sharing knowledge and other resources changes the innovation processes and investments in intellectual property. The digital revolution is creating entirely new possibilities for involving users and customers in innovations and creating new services, e.g., based on 'open data'. This concerns everything from transport solutions to culture and public services.

There is also an increased awareness of the importance of norms. Subconscious and unspoken notions such as innovators being men and innovations being technological solutions mean that there is a risk of overlooking the innovation potential among large groups of individuals and entire sectors.

An innovation policy based on current knowledge combines initiatives geared towards stimulating both the supply of and demand for new solutions. The supply perspective is a matter of different forms of support for the development of new knowledge or other innovation activities, such as protection for intellectual property. The intention is for businesses and other organisations to have a good capacity for innovation. The demand perspective is intended to stimulate the demand for new solutions, e.g., via innovation procurement, standardisation and legislation.

Both OECD and the EU emphasise the need to integrate these perspectives and start from a holistic view. This means, for example, that innovation policy initiatives in order to meet global societal challenges in the areas of climate and the environment must include measures for generating new knowledge or technology as well as measures to stimulate markets for new solutions.

### Starting point in international policy development

This innovation strategy is in line with international discussions and policy documents in the area.

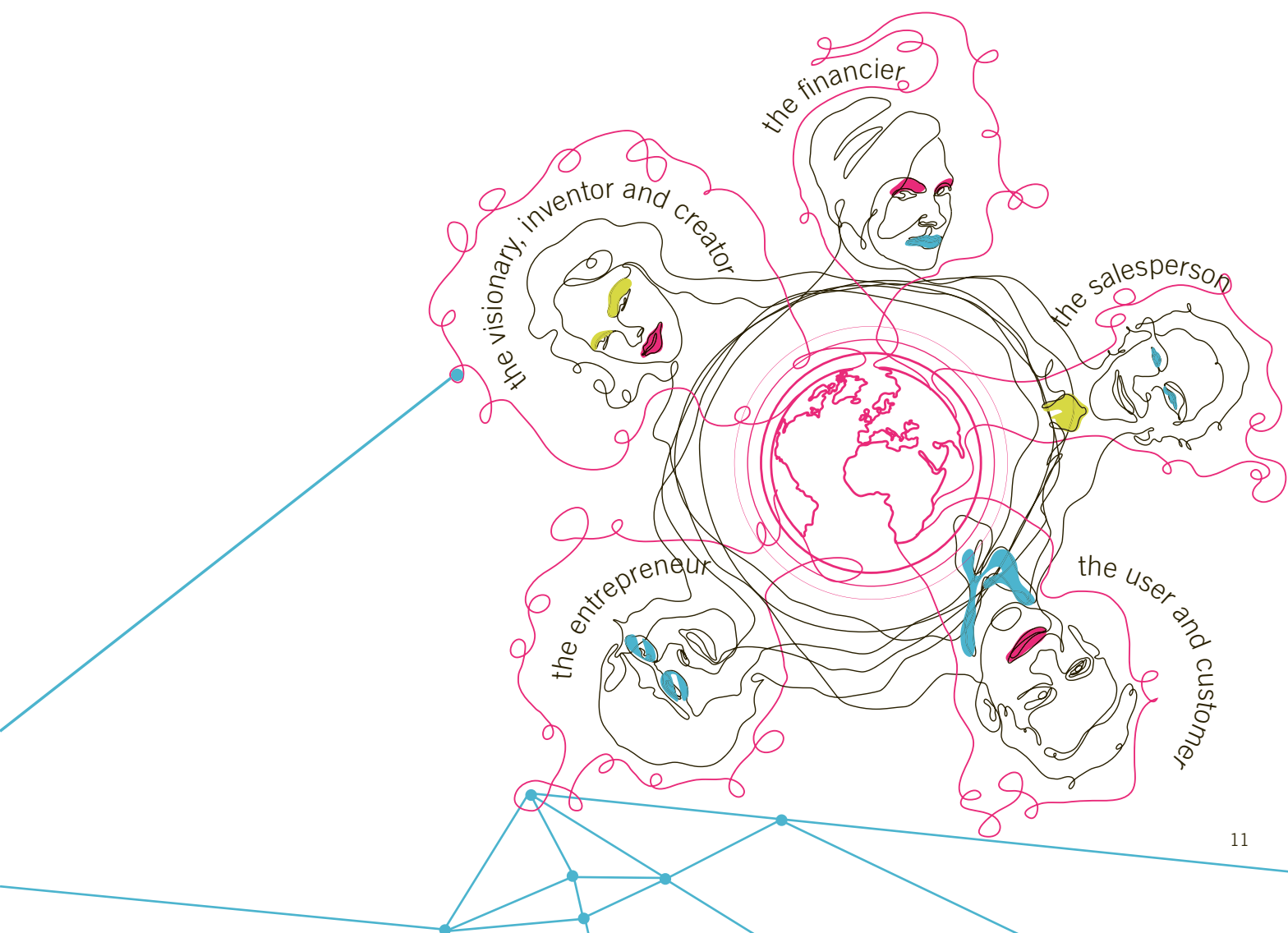
The broad view of innovation is a cornerstone

in both OECD's innovation strategy (The OECD Innovation Strategy: Getting a Head Start on Tomorrow, OECD 2010) and the strategy for jobs and growth in the EU (Europe 2020 – A strategy for smart, sustainable and inclusive growth, European Commission 2010). These strategies are permeated by the need for innovated goods, services, businesses and social solutions in order to facilitate the preservation and development of today's welfare and living standard and to meet future challenges. OECD's innovation strategy is based on the need for an holistic innovation policy that integrates a number of different policy areas in order to meet societal challenges.

In Europe 2020, the targets for smart, sustainable and inclusive growth have been set, and innovation is key in large parts of this work. Europe

2020 includes, among other things, the Innovation Union (Europe 2020 Flagship Initiative Innovation Union, European Commission 2010), the Single Market Act (Single Market Act – Twelve levers to boost growth and strengthen confidence "Working together to create new growth", European Commission 2011) and others, which serve as important bases for the innovation strategy.

OECD stresses that an innovation policy with a challenge-led perspective requires a system perspective. Climate changes and sustainability issues will continue to create new market opportunities. The ambitious Swedish targets for e.g., reduced carbon emissions may, according to OECD, work as a facilitator, together with targets for renewable energy and sustainable development.







### 3. Vision for increased innovation in *Sweden 2020*

A good innovation climate lays the foundations for more jobs, a more sustainable society with better quality of life for all inhabitants and growth throughout the country. The following vision for the innovation climate in Sweden 2020 serves as guidance for the national innovation strategy:

**Sweden is a creative country characterised by pioneering ideas and new ways of thinking and doing in order to shape our future in a global community. People in all parts of Sweden can and want to contribute to creating value for people, the economy and the environment through new or improved solutions.**

A strong innovation climate by 2020 will enable:

**People and actors**, by being more innovative, to contribute solutions to big societal challenges, in Sweden as well as globally.

**Businesses and environments**, by being more innovative, to create value, increase their competitiveness and attract expertise, investments and cooperation partners from around the world.

**Actors in the public sector and their partnership with private and civil society organisations**, by being more innovative, to supply public services of a high quality and efficiency.





## 4. A good starting point – but global pressure for change is increasing

Sweden is a small, trade- and globally orientated country. The domestic market amounts to around nine million people, corresponding to Chicago in the USA or Nagoya in Japan. In a ranking made by the World Bank, the Swedish economy was number 32 by size in the world in 2011. The total investments in research and development in Sweden – an important input for innovation – constitutes roughly one per cent of the world's total R&D investments.

Sweden has a strong standing in international comparisons of national innovation climate and competitiveness. On the Innovation Union Scoreboard 2011, Sweden is ranked as the leading country of the EU's 27 member states. In INSEAD's Global Innovation Index 2011, Sweden is in second place, and holds fourth place in the World Economic Forum's 2012 ranking of global competitiveness.

The strong position is based on Swedish industry being successful on international markets for a long time. The open economy of Sweden, with competition from outside, has led to a pressure for change that promotes innovation in Swedish businesses. Our strong position builds on what are, in comparison with other countries, big investments in education, ICT, research and development. Similarly, Sweden's position in terms of institutional framework is also good, with a high level of trust, good political stability and effective laws and regulations.

The Innovation Union Scoreboard 2011 compares EU countries regarding conditions for innovation. Here, Sweden stands out as particularly strong in terms of human capital (proportion of graduates, proportion of population aged 30–34

with university education and the proportion of young people with high school education) and investments in innovation (private and public). Areas in which Sweden appears relatively weaker are the result of innovation activities, e.g., in the form of the share of business' revenues originating from new or significantly improved products (goods and services), especially for small and medium-sized enterprises.

Sweden's R&D intensity (proportion of Sweden's GDP constituted by private and public investments in R&D) has decreased somewhat over the last decade. The statistics for international businesses reveal that the large international concerns dominate the investments in R&D in Swedish industry. They have increased their investments in R&D, but primarily outside of Sweden, which represents a considerable challenge.

In EU and OECD countries, just as in developing countries such as China, India, Russia and Brazil, the development of the innovation climate has a high political priority. This increases the pressure on the corresponding policy development, on both national and regional levels, for Sweden's attractiveness in the long-term.

China's investments in R&D are increasing rapidly; in 2010 they accounted for 60 per cent of the combined investments of EU27. India has proclaimed a decade of innovation and is in its innovation policy focusing on addressing the needs of the poor people of the world and planning to establish 14 "innovation universities". In many developing countries, innovations create new possibilities for poor people to improve their living conditions. Within information and communications technology, for example, the deve-

lopment of certain new functions and areas of application is moving quicker than in other more wealthy countries.

The President of the United States returned to the need for increased innovation in his annual “State of the Union” speech in February of both 2011 and 2012. The USA, the United King-

dom, Australia and others are also making big investments in increasing the pace of innovation in the public sector. The area of social innovation is receiving an increasing amount of attention in several countries. In Europe, a large number of countries have formulated national innovation strategies.

How Sweden’s economic prosperity is created

The economic value of the goods and services produced in Sweden, in GDP, amounted to SEK 3 492m in 2011, corresponding to SEK 369 600 per inhabitant. Just under 80 per cent of GDP is generated in the private sector, whilst the public sector accounts for 20 per cent.

Nearly two thirds, 65 per cent, of GDP in the private sector is generated in service industries. A fifth is created in the manufacturing industry, whilst the construction industry and electricity, heating and waste account for nearly 12 per cent. Agriculture, forestry, fisheries and mineral extraction have a 3 per cent contribution to the private sector’s GDP.

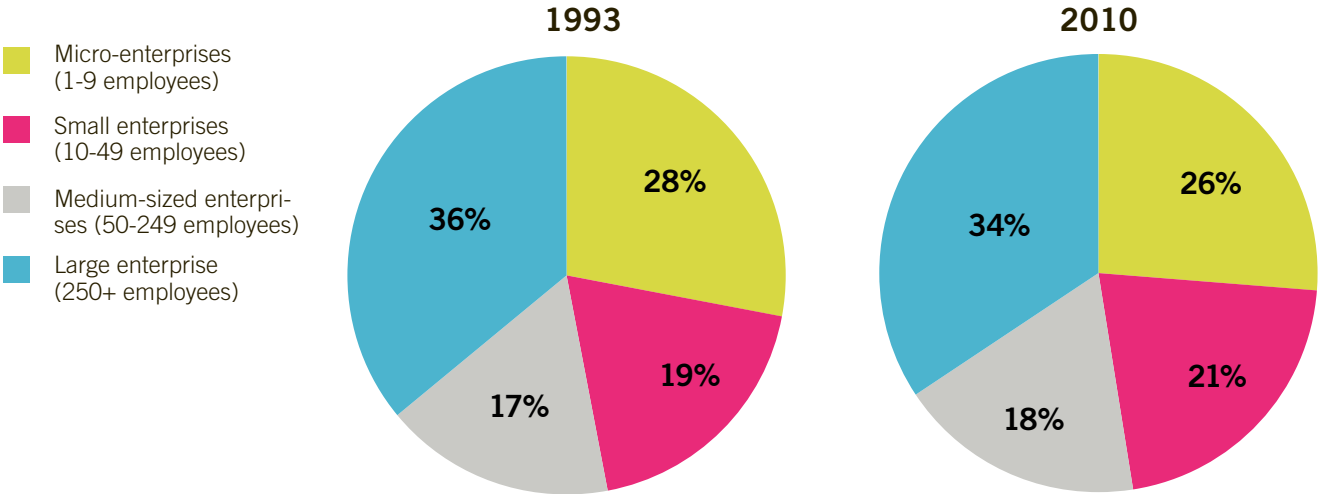
In 2011, 69 per cent of all employees worked in the private sector. The proportion of public sector employ-

ees has decreased over the past 20 years, from 34 per cent in 1993 to 28 per cent in 2011.

In 2012, 40 per cent of the employees in the private sector worked in small and medium sized enterprises (10 – 249 employees). Evidence points to much of future growth in employment being created in these companies, which is why the capacity of these companies to engage in systematic innovation activities is an important dimension in this strategy.

Sweden’s international trade has increased considerably in the last 20 years. The value of the export of goods and services corresponded to less than 50 per cent of GDP in 2011; SEK 1 703m. The importance of knowledge-intensive goods and services in export is increasing.

Table 1: Number of employees by enterprise size, out of those with at least one employee



Source: SCB, LISA and self-assessments.









# 5. Many have responsibility and ability to influence Sweden's innovation capacity

The Government has now adopted this strategy by Government decision. The State has an important role to play in continuing to provide good conditions for innovations in Sweden – a good innovation climate – but it is individuals in collaboration that ensure Sweden retains and strengthens its position as global leader in creativity and innovation capacity. Many public actors such as universities, public agencies, county councils, regions and municipalities have a role in the public commitment to a strong innovation climate in Sweden. Success also depends on commitment to the strategy's alignment from industry and civil society.

Public commitment, public action in society to strengthen the innovation climate and innovation capacity, can be motivated by market failures, system weaknesses or international policy development. Public initiatives should be designed to achieve the highest possible efficiency in the use of public funds. The conception of the public commitment to a strong innovation climate and innovation capacity is developed in line with the decision-makers' knowledge of how political decisions can affect innovation processes in businesses, public sector or civil sector organisations. Ultimately, it is the political position on the significance of public initiatives in economy and society that sets the framework.

The public commitment to a strong innovation climate on a governmental, regional or municipal level translates into practical politics within three areas:

## 1. Well-functioning framework conditions

Well-functioning, appropriate and stable framework conditions, incentives and means of control form the basis of a good innovation climate. Examples of such framework conditions are stable state finances, free and open markets with effec-

tive competition, functioning trade, regulations and structures for taxation, labour market, financial markets, education and research systems, and infrastructure. Other examples are laws and regulations pertaining to contracts and procurement. Suitable systems for intellectual property protection are of considerable importance. Not only public rules and regulations are relevant – standardisation, for example, is handled to a great extent by private actors. Norms and attitudes to creativity, the capacity for innovation and general entrepreneurship in society are other examples of framework conditions for innovation.

## 2. Innovation in public services and the public sector generating demand for innovation

This concerns first of all the capability of public services to be innovative. Secondly, it is about the public sector contributing to the demand for innovation in society at large. This includes setting political goals, influencing the formulation of standards, designing procurement processes so that they are open for new solutions, carrying out innovation procurements or designing processes for social planning in ways that promote new solutions.

## 3. Direct measures targeting innovation processes

Direct measures targeting innovation processes can take the form of financing of innovation activities and entrepreneurship, and advocacy – e.g., providing advice or support to collaborative projects for research and innovation. They may also be a matter of financing knowledge and innovation infrastructures such as incubators, the formation of clusters or networks, and test and demonstration facilities.

The main point is that the guidelines presented in the section The road to a world-class innovation climate in 2020 can primarily be implemented through prioritisation within existing financial boundaries.



# 6. The road to a world-class innovation climate in 2020

This strategy lays out the alignment of the work to develop a world-class innovation climate in Sweden with 2020 in sight. The work is about

- identifying and rectifying areas where today there are obstacles to innovation, or where Sweden reveals weaknesses in international comparisons
- protecting and developing areas in which Sweden is currently strong in comparison with other countries
- improving coordination between policy areas, between different levels and social sectors in order to make public initiatives more effective and have the biggest possible impact on renewal, sustainable growth and social development in Sweden.

The strategy will be implemented in concrete initiatives from the Government's side, but will also contribute to other actors' initiatives to strengthen innovation capacity in Sweden with 2020 in sight.

People's ability and willingness to contribute to innovation is central. In order for the innovation strategy to have a big impact, contributing to innovation must be of importance to many people.

**The strategy is based on three main principles:**

## 1 The best possible conditions for innovation:

- Innovative people
- High quality research and higher education for innovation
- Framework conditions and infrastructures for innovation

## 2 People, businesses and organisations that work systematically with innovation:

- Innovative businesses and organisations
- Innovation in the public sector
- Innovative regions and environments

## 3 Implementation of the strategy based on a holistic view:

- in developed coordination between policy areas and policy levels
- in dialogue with actors in industry, the public sector and civil society
- in a process of continuous learning

### Innovative people

Goal: People have the capacity, willingness and conditions to contribute to innovation

Innovation is reliant on people's capacity and conditions to develop new ideas and implement these in new solutions that change society, both on smaller and larger scales. It is people that seek out and develop knowledge, that are active in businesses, research environments, public organisations and civil society. People make consumer decisions, decide what is valuable and form regulations and attitudes. When people meet, ideas, knowledge and expertise from different sources and areas are pitted against each other, resulting in renewal. To utilise the capacity and power of initiative of the entire population is therefore the starting point for a powerful innovation strategy.



# *The road to a world-class innovation climate in 2020*

## **Innovative people**

### **Goal:**

People have the capacity, willingness and conditions to contribute to innovation

### **Sub target:**

People have the knowledge, skills and expertise to contribute to innovation

### **Sub target:**

People have the courage and willingness to contribute to innovation as an entrepreneur, manager, employee, user and citizen

### **Sub target:**

Sweden's working life is attractive on an international level and welcomes diversity and mobility

## **Research and higher education for innovation**

### **Goal:**

Research and higher education in Sweden is of a high quality by international standards and contributes to innovation in many ways

### **Sub target:**

Education and research at universities with world-class quality and relevance contribute to innovation

### **Sub target:**

World-class research institutes meet knowledge and development needs in businesses and society

### **Sub target:**

Strong Swedish research nodes have strong positions in global knowledge networks

## **Framework conditions and infrastructure for innovation**

### **Goal:**

Framework conditions and infrastructure that lays the foundation for a strong innovation climate

### **Sub target:**

Regulations, market conditions and norms that promote innovation

### **Sub target:**

Functioning access to competent capital that promoted businesses' capacity for innovation and growth

### **Sub target:**

Sustainable physical and digital communication that promote innovation

## Vision

*Sweden is a creative country characterised by pioneering ideas and new ways of thinking and doing in order to shape our future in a global community. People in all parts of Sweden can and want to contribute to creating value for people, the economy and the environment through new or improved solutions.*

### Innovative businesses and organisations

#### Goal:

Businesses and organisations in Sweden have world-class innovation capacity

#### Sub target:

Businesses in Sweden grow by offering innovative solutions on global markets

#### Sub target:

Businesses in Sweden grow by offering innovative solutions on global markets

#### Sub target:

Using the potential in social innovation and social entrepreneurship to contribute in meeting societal challenges

### Innovative public services

#### Goal:

Innovative and collaborative public service organisations that are legally secure and effective, and has a high degree of quality, service and availability

#### Sub target:

Public sector organisations work systematically with innovation in order to increase efficiency and quality

#### Sub target:

Public sector organisations contribute in developing innovative ways of meeting societal challenges

#### Sub target:

Efficient public sector support for innovation with a focus on customer benefit

### Innovative regions and environments

#### Goal:

Sweden's regional innovation environments have international appeal

#### Sub target:

Sweden's regions are increasing their innovation capacity based on their unique conditions

#### Sub target:

Regional strategies for innovation are grounded in combined regional leadership

Sub target: People have the knowledge, skills and expertise to contribute to innovation

Innovative capacity is influenced by a broad range of knowledge, skills and expertise, not least creativity and the capacity for lifelong learning and re-learning, as well as the capacity to interact with others.

The education system has a crucial role in order for young people to develop knowledge, skills and approaches needed to be able, together with others or individually, to translate ideas to reality in work life as well as in other contexts in society. The capacity of the education system – from preschool to vocational training and university – to develop subject knowledge is of fundamental importance to innovation capacity. The education system also plays an important role in the development of people's creativity, entrepreneurship as well as an understanding of sustainable development in society, etc. In the global knowledge economy, which is changing at a rapid pace and where ICT is an integral part of daily life, working life, entrepreneurship and relationships, the importance increases of digital literacy, good language skills, and the capacity to familiarise oneself with different cultures. It is becoming increasingly important for people to continuously

learn and re-learn in order to adapt their expertise in a changeable working life.

Sweden's population has a level of education that in international comparisons is relatively high. Sweden's position in terms of school pupils' ability to read and skills in maths and scientific subjects has however come out weaker in international comparisons. The Government's education policy is designed to turn this development on its head, in order for Sweden to be a competitive nation and retain its level of expertise.

The main role of the education system is to convey subject knowledge, but it also has a role in developing social skills and entrepreneurship. The importance of social skills and entrepreneurship is increasing as society is becoming more and more complex and the pace of change is growing. The OECD among others have drawn attention to the need for developing entrepreneurial skills, also in the education system.

Life-long learning is increasingly important for innovation, including different forms of professional and adult training and digital learning services. The main part of lifelong learning takes place as professional training of employees within companies and other organisations.

Part of the responsibility for a lifelong learning process is found in labour market policies. Employment training is aimed at helping jobseekers to find work and at counteracting labour shortages. The rate of employment in Sweden is high in an international perspective, a contributing factor of which is that the proportion of women gainfully employed in Sweden is higher than in most other countries. Among young men and women and foreign nationals, however, the rate of employment is relatively low.

During the course of developing this strategy, the supply of people with appropriate skills has been emphasised repeatedly as one of the biggest challenges for Sweden's innovation capacity. It is both a matter of having a sufficient quantitative supply of people for all parts of the labour market in different parts of Sweden, and about the supply of people with the required knowledge, expertise and skills. As the pace of change is high in economy, people and organisations are increasingly required to renew in order to adapt to the changing demand for knowledge and skills.



### Sweden therefore needs to:

- Continue the work to improve the knowledge output of the educational system.
- Continue to develop an educational system that supports individuals – irrespective of gender, age, social, ethnic or cultural background or– in developing knowledge, skills and expertise for innovation, creativity and entrepreneurship throughout their lives.
- Promote free choice of studies and profession without stereotypical expectations and limitations, e.g., in terms of gender, age social, ethnic or cultural background.
- Develop methods and approaches in education and working life that promote the capacity to combine knowledge and skills from different fields of knowledge and spheres of activity.
- Evolve the matching of supply and demand on the labour market, with regard to both quantities and expertise, through closer cooperation between the educational system and working life.

Sub target: People have the courage and willingness to contribute to innovation as an entrepreneur, manager, employee, user and citizen.

Entrepreneurship is about the capacity to identify opportunities and create or coordinate resources in order to implement these in activities that create value. An important element of entrepreneurship is the willingness and driving force to change and improve. People can be entrepreneurial in both new and existing businesses, public services and other organisations.

### Entrepreneurship:

*"... activities in economy that are intended to create value. This occurs when actors identify and realise new products and processes, implement organisational changes or reach new markets"*

(OECD/Eurostat, 2007)

The population's willingness to change and capacity to quickly adopt new solutions are factors that benefit businesses' innovation capacity, just as in the public sector and civil society. Sweden is at the forefront in international comparisons that measure these factors. Internationally, Sweden is regarded as a country well ahead in terms of global responsibility and social and environmental accountability, and also perceived as a creative country.

Sweden's employment has for a long time depended heavily on large industrial businesses and the public sector. Even if these structures are changing somewhat, there is still a general perception in Swedish society that completed studies lead to employment rather than to self-employment. This can repress people's innovation capacity. The capacity for and interest in entrepreneurship is important for people's attitude to innovation in their roles as entrepreneurs, managers, employees, users and citizens. The educational system is an important arena in which to form attitudes, interests and skills related to entrepreneurship.

According to data from Panteia/EIM, Sweden has a lower proportion of entrepreneurs than the EU average, though the development trends with regard to entrepreneurship are positive. Statistics from Swedish Agency for Growth Policy Analysis show that the creation of new businesses in Sweden has increased in recent years and analyses from the Swedish Jobs and Society Foundation indicate that young people are increasingly positive in their attitude to entrepreneurship. In Sweden, businesses are primarily created on the basis of new opportunities. A high level of opportunity-based entrepreneurship has proven to have a positive connection with a country's growth. The proportion of people starting up a business as a result of unemployment or risk of unemployment is very low in Sweden.

Leadership and organisation of work in order to promote the capacity of employees to contribute to innovation are fundamentally important factors in businesses and non-profit organisations as well as in the public sector. A creative, involved working environment is not only a result of, but also to a great extent a prerequisite for managers and employees' capacity and willingness to contribute to development and renewal. Good relationships between people in a workplace encourage certain constructive behaviour, which in turn strengthens productivity and innovation capacity.



Knowledgeable and well-informed citizens, users and consumers are significant driving forces for innovation. The capacity to involve people in co-creation and open innovation is therefore ever more important. In addition, the capacity of people being active and well informed consumers is increasing. This capacity is facilitated by well-developed consumer support. Active involvement of users and consumers in innovation processes is facilitated via new social tools and digital platforms, among other things. To an increasing degree, groups of users and consumers in Sweden actively contribute to innovation by influencing e. g. methods of delivery, design or other characteristics.

People who have a lot of personal experience in business development and entrepreneurship, and who can support others who have business ideas, are important to a good innovation climate. Different forms of mentoring can provide access to experienced entrepreneurs' business knowledge and networks. In cases involving "business angels", this is combined with financial resources.

#### Sweden therefore needs to:

- Continue to develop good conditions, incentives and framework conditions for entrepreneurship
- Promote positive attitudes to entrepreneurship and innovation in society, by e.g., highlighting good examples and role models and developing forms of mentoring.
- Continue long-term development of entrepreneurship throughout the educational system, based on the Government's Strategy for entrepreneurship in the field of education presented in 2009.
- Continue developing knowledge and good practice in management and methods of work to promote innovative workplaces and a work environment in which employees' expertise, creativity and capacity for cross-border work are utilised.
- Develop conditions for citizens, users and consumers to contribute to innovation, by e.g., promoting innovation brought about by users and appropriate, effective consumer support that is equal for all of the country's consumers.

Sub target: Sweden's working life is attractive on an international level and welcomes diversity and mobility

Innovation thrives in difference and diversity. When people move between workplaces, regions and countries across the world, the opportunity to develop and combine knowledge, skills and experience increases. Innovation and creativity also benefit from meetings and collaboration between people of different genders, ages and ethnic origin.

An open, inclusive society that benefits people's mobility and welcomes and utilises their differences is therefore of fundamental importance to innovation. This is crucial in a global and fast-paced society, in order to take advantage of all sources of creativity, innovative ideas and the capacity for change.

In international comparisons, people living in Sweden are prominent in terms of both creativity and diversity. Here we find one of the highest percentages of foreign nationals in Europe, and a country in which nearly 200 languages are spoken. People who come to Sweden from other countries contribute to a great extent to prosperity. At the same time, Sweden has not taken full advantage of the expertise of certain groups of foreign nationals. Likewise, it is very important to utilise the expertise and capacity for new lines of thinking of young people in particular.

Sweden's position as an attractive country for people with international peak competence in different areas of society is becoming increasingly important. In addition, the demographic challenge presented by the ageing population means there is a growing need for labour. International mobility or migration, including the influx of foreign labour, is important factors for Sweden's innovation capacity.

It is therefore important to make efforts to utilise the expertise of foreign nationals living and working in Sweden to a greater extent, in order to promote innovation capacity and growth. People, who have come to Sweden to work, start a business, study or conduct research, are important groups in this context.

Many foreign nationals come from countries with well-developed small-scale trade and a strong innovation climate. Creation of new businesses is more common among certain groups of immigrants than among people born in Sweden.

Foreign nationals are also an important source of knowledge about users, markets and contacts in other countries, which can promote international trade and other relations.

It is ever more common for people living in Sweden to work, run a business, study or conduct research in other parts of the world for shorter or longer periods. A globalised labour market and increased mobility has meant that the practice of moving back and forth between countries – circular migration – has become more commonplace. This helps to enlarge Sweden's contact surface with the rest of the world and can promote the transfer of knowledge and experience that are contributing factors in development and innovation capacity, both in Sweden and in other countries.

The development towards equality has come a long way in Sweden. At the same time, the Swedish labour market is somewhat segregated in terms of gender, and the mobility on the labour market is relatively weak, especially among the elderly and people with a low level of education.

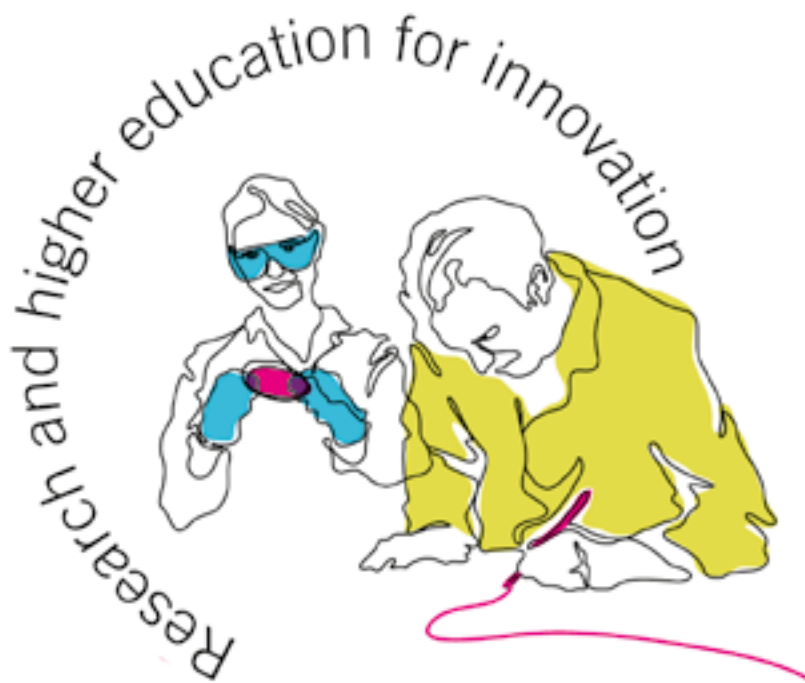
#### Sweden therefore needs to:

- Facilitate men and women's mobility between businesses, organisations, sectors, regions and countries, by different means among which good conditions for validation and valuation of merits and knowledge from different study and career paths and other parts of the world.
- Develop knowledge and methods for workplaces to take advantage of diversity as a driving force for increased innovation.
- Develop incentives and structures that attract foreign entrepreneurs, employees, students and researchers. Sweden's appeal for people with the kind of expertise that is in particular demand requires some attention.

#### Research and higher education for innovation

Goal: Research and higher education in Sweden is of a high quality by international standards and contributes to innovation in many ways

Research is the systematic and methodical quest for new knowledge. Research contributes both



directly and indirectly to problem solving and learning in innovation processes throughout society. This concerns not least the development of new knowledge with a view to meeting global societal challenges. Research is of fundamental importance to the quality of higher education. A high level of knowledge and expertise in the work force is therefore dependent on excellent research in Sweden, as well as of the capacity to tap into and make use of new knowledge originating from other countries.

Sweden is among the countries who invest most, in both the private and public sector, in research and development (R&D) in relation to GDP. This activity is conducted in Sweden primarily in large international business groups and universities.

Investments in R&D and education in Sweden contribute to high academic standards in research and a well-educated work force. This has been of fundamental importance for a high level of innovation capacity and competitiveness in Swedish industry. In the global knowledge economy, where competition for investments and expertise is increasingly tough, it is crucial to be able to offer attractive conditions in terms of the retention of expertise, research collaboration, and established and functioning knowledge networks and research environments. Access to leading innovation and research infrastructure, including test and demonstration facilities, is important in this context.

An important requirement for Sweden's ability to successfully contribute to addressing societal challenges is leading research within key enabling technologies, i.e. research with applications in a variety of areas of society.

Strong, government-funded research for innovation is promoted by and excellent level of research results. It also benefits from a good connection to research in education and a functioning collaboration between producers of research and the surrounding society. Increased collaboration can contribute to higher scientific quality and have a positive impact on growth and societal development.

Sub target: Education and research at universities with world-class quality and relevance contribute to innovation

Knowledge from universities has a fundamental value for society and constitutes a central prerequisite for innovation. Universities are social forums for people who develop their knowledge, creativity, expertise and driving forces and who implement these in new solutions and the creation of value in new or existing businesses, as well as in public and civil society organisations.

The results of university research constitute an important source of innovation. The efforts to increase the creation of value with a basis in such research has, in Sweden for a long time, focussed on developing incentives and expertise among researchers in order to encourage them to start and develop their own businesses. This way of valorising research is an important yet lesser part of the ways in which research can contribute to innovation. In fact, research at universities is contributing to the development of new solutions in many different ways. The introduction of innovation offices at many universities has contributed to broadening this view.

Universities are actively interacting with the surrounding society including work with valorisation of research based knowledge. Well-educated students, who apply knowledge and methods or implement ideas in their professional life including their own business, are important for the valorisation of research. Students, from basic to research level, contribute to innovation to a large extent. Attention has been drawn to the importance of their ability to develop their crea-

tivity and capability for innovation and entrepreneurship, e. g. in the Strategy for entrepreneurship in the area of education presented by the Government in 2009. Apart from being employed or starting their own businesses, students have numerous areas of contact in many forms with businesses and other organisations during their studies, such as placements and degree projects.

Universities also work to ensure knowledge gained from research is refined, transferred or commercialised by means of patents, licensing and the creation of new businesses, through research institutes and consultancies. The work at universities aiming at valorisation of research also include research collaboration with existing large and small enterprises or actors in other areas of society.

The knowledge economy is becoming more and more complex, societal challenges tougher and international competitive pressure greater. Businesses and other organisations therefore need to increase their interaction with universities in their innovation work. The capacity of these actors' to collaborate with each other is crucial to development and renewal in society at large.

Universities have an important role in making global business groups see the appeal of investing in their own and others' R&D in Sweden. Global competitiveness between knowledge centres across the world for financing, research with peak competence and students is intense. In order to remain competitive, Swedish universities must be able to conduct research and provide education of a high scientific and artistic excellence and of relevance to society and industry.

#### Sweden therefore needs to:

- Continue to develop excellence in research at universities.
- Promote the development of leading research environments at universities by means of the recruitment of internationally prominent researchers.
- Continue to lay the foundations at universities to support the efforts of researchers and students' in valorising research based knowledge.



- Continue to develop incentives and structures for collaboration between universities and the surrounding society, including long term collaboration with a view to develop knowledge and solutions to address societal challenges as well as key enabling technologies with wide applications in many areas of society.
- Continue to work on opportunities for students to develop entrepreneurial skills in line with the Strategy for entrepreneurship in the area of education presented by the Government in 2009.

Sub target: World-class research institutes meet knowledge and development needs in businesses and society

Research institutes are an important part of the infrastructure for knowledge development and innovation in Sweden. In Sweden there are many different forms of research institutes. Many work with research and development aimed at meeting the needs of industry and society in general. Some are mostly focussed on the needs in different parts of industry. Others work primarily on needs on areas of society with substantial national and international public stakeholders such as Swedish Environmental Research Institute (IVL), Swedish National Road and Transport Research Institute (VTI) and Swedish Defence Research Agency (FOI). Advancement of scientific knowledge development in different research areas is a prerequisite for the long term quality and competitiveness of research institutes.

Research institutes are often organised in order to facilitate cooperation between industries, sectors and fields of knowledge. They often have extensive collaborations with universities and international research organisations. Therefore they have an important role in developing knowledge and solutions addressing societal challenges.

An important function of many research institutes is to offer environments to certify, test, verify and demonstrate possible solutions. The possibility to practically explore new ideas in real environments involving a dialogue with users is important in order to understand needs and to evaluate and develop various potential solutions. Access to and use of infrastructure for test and demonstration is therefore important for innova-

tion capacity among businesses and in the public sector in Sweden. Such infrastructure can play an important role in making regions and locations in Sweden an attractive prospect for international investors, businesses and people with peak competence.

The Industrial Research Institutes are research institutes more focussed on the needs in different parts of industry. The majority of these are gathered under RISE Holding AB. They have a special task for supporting small and medium-sized enterprises that often have limited resources of their own for research and development. In recent years, the development of Industrial Research Institutes in Sweden has led to larger and fewer units with increased focus on this task, not least in collaboration with universities.

#### Sweden therefore needs to:

- Enhance collaboration of research institutes with universities, industry and the public sector on national and regional levels.
- Develop the role of research institutes in providing facilities for test and demonstration of new solutions, including collaboration with users.
- Continue to develop the Industrial Research Institutes' work to support small and medium-sized enterprises innovation capacity in collaboration with other actors, including consultancy and financing actors and universities.

Sub target: Strong Swedish research nodes have strong positions in global knowledge networks

Many countries are investing intensely in increased research for the development of their knowledge base and innovation capacity. The research in Sweden is in many respects of high international standards, with good links to research in other countries. At the same time, research in Sweden constitutes around one per cent of all research in the world. The total volume of research in the world is rapidly increasing. In order to strengthen Swedish knowledge development and competitiveness, it is therefore of increasing importance for Swedish universities, businesses,



public and civil society organisations to develop strong positions in global knowledge networks through international cooperation.

Important European knowledge networks are formed via cooperation within the scope of the EU's research and innovation initiatives. Programmes in which the EU Member States contribute through funding, known as "partnership programmes", are expected to become more and more common. This places new demands on Swedish coordination.

It is also important to create good research connections with actors in the countries combining high economic growth rates with research and innovation policy investments. Important networks are formed via bilateral research and innovation cooperation, for example in the scope of the agreements and memoranda of understanding that Sweden has with a number of countries.

Sweden has research and innovation infrastructures of international interest that can contribute in making Sweden an attractive prospect for foreign actors. Among these, are unique data bases and registry data with person based information and multidisciplinary research facilities such as MaxLab and SciLifeLab, and European Spallation Source.

The development of strong Swedish research nodes in international knowledge networks is important for maintaining high quality in Swedish research and education, for businesses' capacity for development and competitiveness and in society at large, just as they are for Sweden's ability to contribute to addressing grand societal challenges.

#### Sweden therefore needs to:

- Improve conditions for attracting international investments and peak competence for research and development in the public and private sectors.
- Participate in high priority EU research and innovation initiatives and promote a high level of Swedish participation in relevant EU programmes, in such a way that the combined Swedish participation contributes to strengthening the innovation capacity of Sweden.

- Develop and simplify forms of supporting international flow of knowledge as a supplement to individual actors' international cooperation.
- Develop international collaboration with countries where research and innovation potential is high or otherwise deemed to be of strategic importance.

#### Framework conditions and infrastructure for innovation

Goal: Framework conditions and infrastructure that lays the foundation for a strong innovation climate

Framework conditions for entrepreneurship and infrastructure are a very important factor in Sweden becoming an attractive prospect for investments and innovative activities. Open markets with healthy competition form the basis for a dynamic industry that can adapt to developments in a global knowledge economy with rising competitive pressure and pace of change. Rules and regulations must provide good conditions for creativity and the creation of value. How rules and regulations are formed affect incentives both directly and indirectly, via norms and attitudes. Digital and physical infrastructures provide opportunities for people and organisations to meet and exchange knowledge and ideas, and implement these in new solutions.

#### On innovation and markets

Successful innovation processes will entail changes of existing markets and the development of new markets. It is difficult to foresee in advance how best to organise new or transformed markets. Markets change and new markets are formed in a continuous learning process between actors. Digitalisation and globalisation are changing the very basis of market development.

Balancing different actors' interest and taking potential future development into consideration is a vital public commitment. Depending both on the nature of goods or services, and of political posi-

tions, markets can be more or less regulated. Taking into account the evolution of society, and ensuing changes in demand and supply of new solutions, market regulations must be constantly updated.

Sub target: Regulations, market conditions and norms that promote innovation

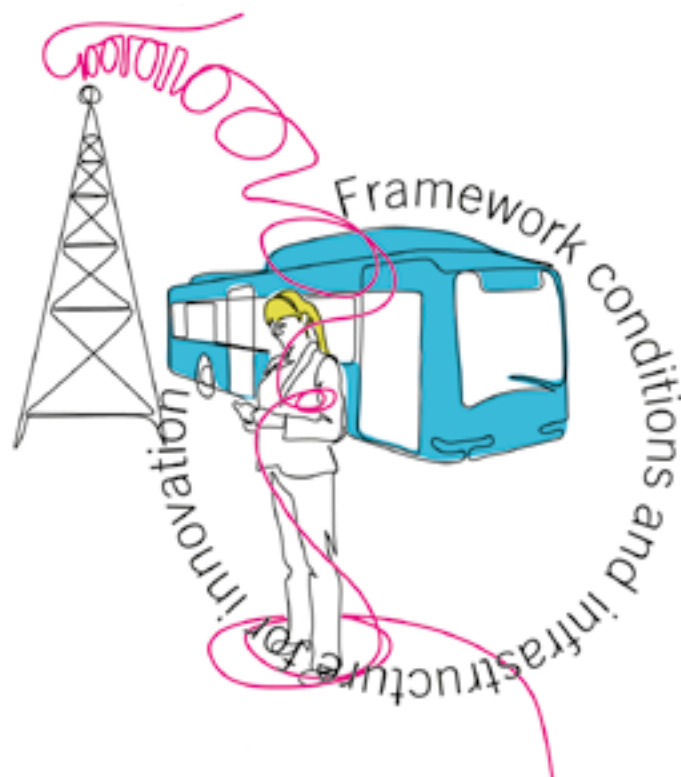
Good general framework conditions for businesses and entrepreneurship are crucial for the innovation climate and in order for Sweden to be an attractive prospect for investments, businesses and individuals and in order to facilitate structural transformation. Functioning markets and industry depend on relevant regulation that provides a stable set of rules, facilitates desirable development in society and does not result in unnecessary costs for businesses and society. Regulation can also lay the foundations for new markets. Examples of regulation and framework conditions that are important for the innovation climate are the design of the tax system, competition legislation, state aid regulation, standards and intellectual property rights.

Sweden has in principal a well-functioning institutional framework and is in international comparisons at the top in this respect, e. g. in Global Competitiveness Report from World Economic Forum and Global Innovation Index from World Intellectual Property Organisation. Stable state finances constitute a strong foundation for a good innovation climate, as this provides businesses and society with good long-term conditions. For a long time, work has been underway to simplify for businesses by creating effective and practical regulations so that they can spend their time and efforts on development and running their businesses. In international comparisons Sweden and other Nordic countries are considered to have the most effective administration in the EU. Administrative costs associated with starting and running a business are relatively low. In terms of regulations and costs for trade and investments, however, Sweden's position is somewhat low. Though the starting position of Sweden is good, many countries are working intensively to develop competitive framework conditions. The international competition for investments and expertise is increasingly tough.

The formulation of the tax system is crucial to investments and growth and businesses' competitiveness as capital, investments and people are becoming more and more globally mobile. Changes to the regulations for corporate taxation affect the access to capital, which in turn affects productivity and welfare. Tax regulations also influence what businesses and individuals' invest in, how investments and recruitments are financed, and even attitudes towards risk-taking and entrepreneurship. In many countries, there are particular tax regulations formulated to promote investment in innovation activities including R&D.

It is crucial that the tax system provides good incentives for investment in innovation and provides equity or loaned capital for investment in renewal and expansion. This is central to existing businesses' expanding, foreign businesses being established and new businesses being formed.

Framework conditions, such as legislation concerning the environment and competition, state aid regulations, trade agreements, regulation concerning furthering use of public data, intellectual property rights, are to an increasing extent formulated at the EU level or in other internatio-



nal contexts. Sweden's international cooperation for the formulation of such regulations and structures is therefore very important to the innovation climate in Sweden. EU membership offers free mobility of goods and services on the Single Market and increased free trade on international markets; important factors for driving innovation and growth in Sweden as they increase the market volume for new goods and services.

The regulations on government subsidies are intended to maintain competitive on the EU Single Market. State subsidies for research, development and innovation are permitted on certain terms, especially when the purpose of the subsidies is to facilitate the development of certain business activities or regions and provided that they do not have a negative effect on trade to an extent that goes against the common interest. The subsidies are regulated through special framework regulations for state subsidies for research, development and innovation. There is a need for an overhaul of this regulation and a revision of these is therefore underway. The new regulations will take effect from 1 January 2014.

For a number of years, various market solutions for the implementation of public services have been state or public monopolies. Readjusting and opening up for both public and private executors may have an impact in terms of increased freedom of choice, accessibility, entrepreneurship and more effective use of resources.

Society's attitudes towards entrepreneurship and risk-taking are fundamental to the willingness and capacity of people to contribute to innovation and pursue various forms of entrepreneurship. It is a matter of having the courage to venture out into unknown territory and take risks, to accept failure and learn from experience.

Challenging norms and attitudes is fundamental to innovation, which by definition involves the creation of new things. Innovation can be hampered by norms, which are very limiting, dictating what innovation is and who can contribute. Highlighting the great number of innovative people and the value they create may contribute to making innovation more natural and important to more people. The way in which the image of Sweden as an innovative country is communicated, both in this country and internationally, also affects our appeal and innovation capacity.

## Standards and intellectual property rights – two examples of rules and regulations for innovation

**Standards** promote the exchange of knowledge about technology or methods. Standards are more and more often elaborated in close connection to other development activities; this applies not least to the ICT sector. Rules and regulations based on standards can facilitate business development for individual businesses as well as international cooperation surrounding important societal challenges. Clear development of standards in areas such as the environment, ICT, life science or nanotechnology may facilitate the growth of new markets and thereby drive innovation. For example, ambitious demands for Eco design or energy labelling and Eco labelling developed within the EU help the consumer to make more sustainable choices. Standards also contribute to spreading innovations throughout the economy. Standardisation can sometimes complement the protection of intellectual property rights when businesses want to establish a new product or service.

**Intellectual property rights** are an important part of the infrastructure for innovation in that they provide the opportunity for the developer of an idea or a creative work to protect their right to profit from their creation. The intellectual property rights systems also facilitate the dissemination of new solutions. The protection creates rights that can be transferred and licensed. A well thought-out business strategy for management of intellectual property that includes the protection of intellectual property rights is particularly important for small and medium-sized enterprises on an increasingly global market.

### Sweden therefore needs to:

- Maintain and develop good framework conditions for innovation and all phases of entrepreneurship: start, growth and liquidation. In particular, the work to simplify the day to day life of businesses and identify and rectify rules and regulations that hamper innovation must continue.
- Continued development of framework conditions to give people, businesses and other organisations incentives to invest in innovation and take risks in order to develop new solutions and grow through internationalisation. This includes reviewing the possibility of changing tax regulations in order to promote investments in innovation – including R&D – and attract investments to Sweden.
- Continue to strive for appropriate and effective protection for intellectual property rights on a national scale as well as a functioning, uniform patent protection and a uniform patent court in the EU.
- Promote standardisation as a driving force for innovation, e. g. for increasing green innovation and the development of a greener economy.
- Continue to strengthen the Single Market and open global market through international agreements and cooperation.
- Continue to strive for appropriate formulation and implementation of framework conditions for state subsidies for research, development and innovation within the EU.
- Continue to develop the work to communicate the image of Sweden as an innovative country, both nationally and internationally.

Sub target: Functioning access to competent capital that promoted businesses' capacity for innovation and growth

Access to capital is of fundamental importance for a business's capacity for growth and innovation. A prerequisite for starting up and developing a business is therefore good framework

conditions and a financial system for business's demand for capital at different stages of development. It is a matter of capital both to develop business ideas and stimulate growth on new and existing markets. Initiatives geared towards the development of the financial system and promotion of a business's supply of capital are therefore an important element of the improvement of the innovation climate.

Investments in innovation often entail great uncertainty and require the capacity to combine many competencies with financial and non-financial resources. This is why the term competent capital is often used.

The need of business's for development capital is primarily satisfied by the private market. Public capital supply actors today represent around two per cent of all supply of financing to businesses.

A functioning supply of capital often depends on good interplay between private and public sources of financing. Both formal (bankers, professional investors) and informal capital (such as family, friends and angel investors) are required. In very early stages, informal capital has a substantial role. Business angels have a particularly important function in private supply of capital for innovation, as they combine economic resources with considerable knowledge of business and with networks. There is potential to increase the scope of capital from business angels in Sweden. In order to realise this potential, tax regulations need to be formulated in a manner that facilitates the formation of private funds and encourages risk-taking from individual investors.

Growing businesses that intend to expand, for which loan opportunities are limited, are in need of external equity capital to a greater extent than other businesses. For this group of companies, according to new studies, a well-developed venture capital market is of particular importance including fund directed to investment and development of growth companies.

Against this background an important point of departure is to strengthen incentives for risk taking and entrepreneurship. Taxation should be formulated to promote enterprise, investments and increasing employment.

Early stages of business development are characterised by high levels of risk, asymmetries of information and assessment of value as well a



long time spans to financial buoyancy which means that the private market seldom have the possibility or the will to invest capital on their own.

As pointed to by the OECD, the socio-economic gains of investments in the earliest stages can be considerable despite that the majority of investments may fail. There may therefore be a socio-economic value added to limited public financing that complement the market for companies in early investment stages. All developed countries therefore have a public commitment to public financing that bolsters the markets at an early stage in order to favour an entrepreneurial and innovative climate. Public financing is often conditioned by the inclusion of some extent of private financing.

Public capital for innovation support in early stage businesses can include investment support, soft and other types of loans, equity etc. It can also include incentives for various innovation-related activities such as development activities or the acquisition of expertise in intellectual property rights or design services in established companies.

Different categories of innovators and businesses have different needs and conditions to utilise capital: individual innovators, social entrepreneurs, small, medium-sized or large enterprises. In line with the changing conditions in economy, on different markets and in the world around us, there is a need to continuously develop principles and structures for a functioning supply of capital. The Government therefore overhauls both mandates and roles for its public capital supply actors. This work includes improving customer benefit and governance by means of measurable goals in terms of e. g. societal impact, rate of capital utilisation and financial return.

Sweden is an attractive country for foreign capital, but international competition for investments is increasing. From a global perspective, there is a relatively good supply of private and public venture capital in Sweden. However, in relation to a number of other comparable countries, a lesser volume of capital is allocated to the very early stages. In addition, according to the Swedish Private Equity & Venture Capital Association (SVCA), in recent years financing of businesses from the private market in early stages has decreased. This entails a risk of negative impact on innovation and renewal, and thereby on Sweden's competitiveness and growth.

### Sweden therefore needs to:

- Strive for more equal conditions in terms of taxation between equity and lent capital.
- Investigate the conditions for collaboration between public and private capital with a view to increase private investments in early stages.
- Strengthen incentives for investments from private individuals in companies, e. g. through investor deduction.
- Develop effective and appropriate structures, forms and regulations for the supply of capital for innovation that takes into consideration the conditions and needs on local, regional, national and EU levels.
- Continue the improvements of state initiatives as a complement to market solutions concerning the supply of capital in order to increase the benefit to customers through a clearer and more effective system.

Sub target: Sustainable physical and digital communication that promote innovation

Innovation processes are dependent on physical and digital infrastructures that dictate how people, businesses, authorities and organisations can meet and communicate. They are also necessary for functioning markets. National and regional border are also challenged and the flow of information, goods and services is moving quicker and is taking new paths as Sweden becomes a part of the global knowledge economy. In the planning and development of both physical and digital infrastructures, it is therefore important to take into consideration how knowledge and information networks, markets and trade can be developed.

The increase in digitalisation entails the development of new forms of contacts and exchanges between people across national borders. It also means that more and more information and knowledge is produced, stored and can be made available globally. Both of these trends provide great opportunities to develop and supply new solutions that better respond to needs and demands in society, not least in addressing pressing societal challenges. At the same time, this development entails

challenges in terms of personal integrity and regulations as well as for power structures in society.

Sweden is in many ways a prominent ICT nation with good infrastructure, advanced services and a population with a high proportion of people regularly using ICT and the internet. There is however differences in accessibility between densely and sparsely populated areas.

In the budget bill of 2012 (prop. 2011/12:1) the Government established that Sweden will be a global leader in the utilisation of the possibilities offered by digitalisation. This goal is the point of departure for ICT in the service of mankind - a digital agenda for Sweden, an agenda launched in 2011, which in short imply that Sweden will be a leader in terms of using ICT to achieve political goals for growth throughout the country, social welfare, democracy and improved climate conditions. It will be easy and safe to use the internet and other digital services. There will be good conditions for e.g., the development of new e-services within both the private and public sector. Fundamental infrastructures such as broadband and simple and safe methods of identification are extremely important conditions for the development of new services. Improved conditions for cross-border and global trade in electronic services and goods are necessary in order to fulfil the targets for growth. Digital information and digital tools will be utilised in the best way possible within research and innovation and in order to contribute to a green economy. The capability of utilising the possibilities offered by digitalisation is increasingly a competitive advantage as software and services are becoming means of differentiating products and delivering value.

The globalised economy, with its increased trade and competition as well as urbanisation and the expansion of the labour market, creates a great demand for renewal of built environments and transport systems with a focus on efficiency and sustainability. In order to meet the expected sharp increase in demand for transportation of both people and goods, a robust and reliable transport system is required, with higher quality and capacity than today. Building to meet increased demands for transport capacity will not be enough. Initiative to develop the efficiency of existing transport systems and developing new transport solutions will be required.

Transport systems are both important parts of

and instruments for sustainable urban and regional planning. Systems for built environment and transports are partly each other's prerequisites. This is why a more cohesive urban, regional and transport planning can contribute to good conditions for innovation in society at large as well as for the development of a sustainable transport system and good quality living environments. This will require development and application of new knowledge as well as new forms of collaboration combining different actors and sectors.

### Sweden therefore needs to:

- Continue to work towards the goal for Sweden to be a world leader in the utilisation of the possibilities offered by digitalisation in line with what is stated in the budget bill of 2012 (prop. 2011/12:1) and ICT for Everyone - A Digital Agenda for Sweden.
- Continue to work towards world class broadband in Sweden.
- Continue to work towards a transport system that is socioeconomically efficient and sustainable, by means of developing a robust and reliable infrastructure with high quality and capacity.
- Continued development of a more cohesive urban, regional and transport planning to create good conditions for innovation with a point of departure from the 2012 Government Bill for Infrastructure.

### Innovative businesses and organisations

Goal: Businesses and organisations in Sweden have world-class innovation capacity

Businesses' capacity to be competitive is among other things based on the fact that they can make offers that are competitive in terms of price, higher quality or unique formulation. The fact that businesses are able to develop and adapt their offers to markets, i.e. the demand from customers and users and changing market conditions, is therefore a matter of survival. Studies from the OECD among others, show that businesses that work systematically and persistently with innovation show a tendency of having a higher added

value per employee, higher salaries, turnover and profits than other businesses.

### Diversity in forms of businesses

From a socio-economic viewpoint, a diversity of business forms is important. Businesses – organised operations in which people work towards a common goal – can have different legal forms, for example joint-stock companies, one-person businesses, foundations, associations or cooperatives. The forms of creating value that businesses can pursue must be economical, to ensure the long-term viability of operations. But the creation of value can also, to a varying extent, take the form of social or environmental values. It is often the actual business idea or the business's goals that dictate the alignment in terms of what values will be created and for whom (customers, users, citizens). This way of looking at businesses makes the dividing lines between businesses driven by profit, organisations in the civil society or idea-based organisations, less significant.

The world economy is currently undergoing fast-paced transformations and large markets are materialising in China, India, Brazil, Russia and many African countries, in line with the improvement of living standards associated with speedy urbanisation. This increases pressure on all of the earth's resources and the need for more sustainable production and consumption thus rises in, for example, the energy and materials sectors. At the same time, this also entails an increase in global business opportunities. In order to take advantage of global growth opportunities and contribute to a green economy and sustainable society, it is essential for businesses in Sweden to continue to develop knowledge and expertise and strengthen their capacity to develop world-leading offers based on unique combinations of technology and service content.

### Unique offerings – the core of a business's creation of value

Through innovation, businesses develop their offers in order to create value that meets the needs and demands of customers and users. The level of integration between goods and services is constantly rising. This means that different forms of innovation are being incorporated in new and better offerings. The value for customers or users is first realised when the demand product or service is used. Innovation in all its forms – new ways of creating value – is ever more important for businesses' competitiveness as the added value in production increases and global value chains become more and more complex.

The proportion of innovative businesses in Sweden is high in international comparisons. At the same time, it is important for Sweden's economy, the competitiveness of the industry and Sweden's capacity to supply welfare services that the innovation capacity in all sectors and for all types of businesses increases.

As the international pressure for change increases and markets and value chains transform, a diversified industry can increase the capacity for adaptation in the economy.

### New connections between different industries and fields of knowledge

The cultural and creative industries are experiencing an increased importance for the Swedish economy. They often act in global contexts and contribute to new ways of interconnecting different industries and fields of knowledge. Businesses within e. g. fashion, design, music, literature, digital games, film and food are growing rapidly in Sweden and contribute to Sweden's international attractiveness. New connections between different knowledge areas and industries are taking place in all parts of the country, from metropolitan areas to rural communities. Traditional agricultural businesses are

transforming and new businesses are being created in the fields of e.g., hunting, tourism and in the experience industry. At the same time, new business models are being developed in for example the music industry by means of new digital tools, and game development is used for everything from educational tools to simulations in heavy industry. Links like these between different industries and fields of knowledge contribute to the renewal of industry throughout Sweden.

Sub target: Businesses in Sweden grow by offering innovative solutions on global markets

To enable businesses to grow, there is an increasing need for a capacity to act on global markets. Sweden is a small market whilst development and production across the world is becoming more and more specialised. This produces markets that are niched for different goods and services globally. Digitalisation and globalisation allow for the development of new solutions and for businesses to produce and offer goods and services in global networks. In order to develop the Swedish innovation climate, it is therefore important that businesses in Sweden, both large and small, have a strong position in interlinked global value chains and knowledge networks.

As global markets grow, the opportunities increase for more innovative products to find an outlet, which in turn leads to greater export opportunities as well as other internationalisations. New offers of goods and services from the local to the global are made possible thanks to digitalisation. Sweden's industry produces a large proportion of knowledge-intensive goods and services, not least corporate services. There is potential for further improvement of the conditions for service innovation and export, for example through continuing the development of access to systems for digital commerce.

Today, exports represent half of Sweden's GDP. Exports will continue to be of crucial importance to Sweden's growth potential. Businesses can also grow internationally by participating in international networks of businesses and organisations. The proportion of small enterprises in Sweden (up to 49 employees) that export goods and/or services has not increased in the last ten

years. Though the volumes have not decreased, Sweden's total share of the world's export to the fastest growing countries such as China, India, Brazil and Russia is decreasing. There is therefore a reason to facilitate export and internationalisation, not least among small and medium-sized enterprises, which represent the majority of new job opportunities.

At the same time, a large percentage of the Swedish work force is in multinational business groups. These business groups also represent the majority of export from Sweden and a considerable proportion of industry's investments in innovation. These businesses are a cornerstone in Sweden's growth and future welfare. They have extensive connections with other businesses, suppliers and customers in Sweden and globally. These connections entail great potential for a strong international position for large parts of Swedish industry.

At the same time, Sweden's strong dependence on the global industry is also a weakness. Decisions pertaining to investment and localisation in these businesses have a considerable impact on employment, export and knowledge development in Sweden. In order for Sweden to be able to maintain and develop a position as a leading innovative country, it is important that framework conditions, work force, cooperation partners (including other businesses), research-, test- and demonstration facilities are attractive prospects on a national as well as regional level.

Businesses with a firm international foothold are also important partners for other businesses and organisations. Such collaboration is important for the development of strong innovation environments in Sweden with unique conditions in terms of the retention of knowledge and expertise as well as leading suppliers, users and customers.

#### Sweden therefore needs to:

- Develop internationally competitive conditions for both domestic and foreign businesses to develop their operations in Sweden and deliver offers with a high added value on global markets.
- Create good conditions for strategic cooperation between global business groups



in Sweden, smaller enterprises, universities, research institutes, public organisations etc.

- Facilitate the growth of small and medium-sized enterprises with growth ambitions, to grow through export and other forms of internationalisation.
- Take advantage of linguistic and cultural expertise among foreign nationals and people with international experience in order to promote trade.

Sub target: New and existing businesses work systematically to increase their innovation capacity

According to studies from the OECD among others, businesses that carry out systematic innovation work and are in themselves innovative tend to have higher added value and export to a greater extent. Systematic innovation work within businesses includes a wide variety of activities. As services become an increasingly larger part of businesses' creation of value, the scope of innovation-related work in direct interaction with customers and users in the development of new solutions and offers, increases

### Open and user-driven innovation

In the light of the development of new business models and global value chains with faster and simpler transfer of knowledge across borders, methods of developing and protecting knowledge and new solutions are changing rapidly. Innovations arise to an increasing extent in the borderlands between different actors – large and small enterprises, public organisations and individuals – in processes that are increasingly open and complex.

Open innovation is about businesses combining knowledge and ideas developed internally and externally. Open innovation implies that businesses actively involve external actors in their own innovation work. Phenomena such as "crowd sourcing", which is facilitated by new digital and social tools, enable involvement of expertise from a number of different

sources, not always involving monetary rewards. Other forms of incentives for sharing knowledge, such as acknowledgement and the desire to make a difference are becoming ever more important.

Many businesses, from global business groups to smaller enterprises, are re-organising their research and innovation activities towards open innovation. The level of investment in innovation can be retained, but the work is carried out by a small number of in-house personnel in collaboration with external actors in universities, research institutes and other businesses, as well as with individual users and experts. The networks and relation of people, businesses and other organisations are therefore core factors in open innovation processes. The development of networks is facilitated by the mobility of people and efficient digital tools for social interaction.

The systematic innovation work within a business can include in-house R&D and, design, test and demonstration operations, development of expertise, organisation of work, external relations or marketing methods as well as investment in software, patents and other intangible assets. As innovation processes become more open, complex and international, the handling of intellectual property becomes a central part of a business strategy. This applies not least to cultural and creative industries, where the business potential is largely based on intangible assets. Businesses therefore need to work in new ways in order to valorise their intangible assets and exploit them for their strategic business development.

According to the EU's inquiry into innovation in businesses, which in Sweden is carried out by Statistics Sweden (SCB), Sweden is somewhere in the middle layer in terms of the proportion of businesses pursuing innovation-related activities. The proportion of businesses introducing products that are new to the market is relatively high in Sweden. On the other hand, the inquiry reveals that the turnover generated by these products is lower than in other countries.

Sweden's large business groups are catalysts for the development of innovation and competitive-

ness in Swedish society. They invest in innovation in many forms. Investments in R&D by large international enterprises in Sweden constituted more than half of all the industry's R&D investment in Sweden in 2009. They are thereby an important factor in Sweden's knowledge infrastructure and for Sweden's strong international position as a research country. These investments have however decreased in recent years. This means there is a risk that Sweden will lose its competitive edge. Studies of quotations in scientific journals reveal that the research conducted in large enterprises is often of the highest quality, which also has a positive effect on the quality of the researchers in universities as well as research institutes in Sweden or in other countries, which work with these enterprises.

Small and medium-sized enterprises can have a varying capacity of innovation and ambitions of growth. Therefore the innovation work can take many shapes, depending on, among many things, the one person-business kind of business, market, competence and collaborations. Innovation activity is taking place in many types of smaller enterprises – e.g. research companies within bioscience or materials technology, engineering firms or consultancies that are subcontractors to large enterprises in the vehicle or telecommunications industries, film producers and businesses in the agricultural and forestry industries, as well as in energy, tourism or healthcare, welfare and services.

The proportion of small and medium-sized enterprises in Sweden that conduct innovation work internally or in collaboration with others is experiencing a weaker increase than in other countries. Research from the OECD, among others, shows that small and medium sized enterprises sees lack of time and resources as the main obstacles for engaging in different forms of systematic innovation work.

One way to overcome the lack of time and resources is in fact to cooperate with other businesses, customers and suppliers. Cooperation of this nature can take the form of collaboration in networks or clusters, where geographical proximity and density in relations can be important factors. Small and medium-sized enterprises that cooperate through networks, often locally or regionally grounded but branching out internationally, grow faster and become more competitive. Networks of businesses, universities, public players and the civil society's organisations within e.g. the EU,

the Nordic countries or the Baltic region, have a great potential. Within the EU's Single Market there is a population of almost 500 million people, in the Nordic countries 25 million and in the Baltic region 100 million. Despite the great potential, there is still only a small proportion of small and medium-sized enterprises in Sweden that collaborate through networks. According to surveys from the Swedish Agency for Economic and Regional Growth, their collaboration seem to be decreasing.

Publicly-financed resources at universities and institutes such as R&D, peak competence, specialised equipment or test and demonstration facilities, are important resources in the innovation work conducted by small and medium-sized enterprises with little or no resources of their own for systematic innovation work. This applies to businesses in many sectors in all parts of the country.

Studies of the effects of investments in research and development on productivity and growth reveal that businesses with good in-house expertise that invest in R&D find it significantly easier to absorb knowledge acquired externally. As it appears in studies from the OECD among others, publicly financed resources for businesses, whether direct or indirect via tax incentives, can contribute to an increase in these businesses' investments in R&D. The formulation of this type of support does however require careful consideration, in order for it to be socio-economically effective.

The capacity of small and medium-sized enterprises to take advantage of the opportunities offered by digitalisation is of fundamental importance to their innovation capacity. In international comparison, Sweden is considered to be in a good position in terms of ICT usage in small and medium-sized enterprises. There are however indications that Sweden is no longer at the top in a European perspective, which in the long run risk hampering the competitiveness of these businesses.

The start, development and liquidation of businesses are important to industry dynamics and thereby for the innovation climate and economic growth. New businesses are often key players in the development and introduction of new goods, services, processes, and business models, etc. They are also important for spreading new solutions, not least where new markets are appearing. Academic spin-offs have a very important function in renewal and dynamics in this context. As is

evident in the Global Entrepreneurship Monitor, Sweden is relatively low in international comparisons in the creation of new businesses even though the interest in starting a business as well as the number of new businesses, according to the Swedish Agency for Economic and Regional Growth, has increased over the past decade. The number of new businesses in relation to the total number of businesses is lower in Sweden than in most other countries. Sweden is somewhere in the middle among innovation-driven countries when focussing on expectations of future growth among new and young businesses.

#### Sweden therefore needs to:

- Promote increasing numbers of innovative businesses and promote the propensity of these companies to carry out systematic innovation work internally as well as in collaboration with external partners, for increased competitiveness, sustainable growth and welfare. This applies to new as well as established businesses.
- Create good conditions for collaboration in the innovation process between businesses, as well as between businesses, universities, research institutes, the public and civil society organisations.
- Based on identified needs, promote increased ICT usage in small and medium sized enterprises to strengthen growth potential and increase market opportunities nationally and internationally.

Sub target: Using the potential in social innovation and social entrepreneurship to contribute in meeting societal challenges.

Social innovation and social entrepreneurship is about processes aimed at solving societal problems in new ways, with innovative ideas and methods. These processes often take place in the borderland between industry, the public sector and civil society.

It is of great importance to better understand and develop the conditions for social innovation and social entrepreneurship. The society as a whole, as well as businesses, organisations in the civil society and the public sector, has much to

gain in finding new ways of using the potential in social innovation and social entrepreneurship.

#### Civil society and non-profit organisations

The civil society represents an arena – separate from the state, the market and the individual household – in which people, groups and organisations act together in pursuit of common goals. Idea-based organisations comprise organisations in the civil society and the cooperative movement. The term is somewhat broader than the civil society. The organisations can be profit-driven, but the profit is not the sole or dominant goal. Even though social innovation and social entrepreneurship take place in all parts of society civil society organisations can play a particularly prominent role.

There is a growing focus on business and investments aimed at achieving desirable changes in society. Among many things, it is about reaching the insight that the people with the lowest incomes in the world (sometimes called the base of the pyramid), despite their limited individual purchasing power, have great needs, and together constitute large markets. In a report from World Resources Institute 2007, the total market volume for households with a purchasing power below USD 3,000 per year was estimated at USD 5,000 million. Together, they constitute the majority of the world's households.

Social innovation and social entrepreneurship is receiving more and more attention in Sweden as well as in the rest of the world. Social innovation and social entrepreneurship is largely about people's driving force; about utilising opportunities we identify in order to create a positive societal development on a local, regional, national or global level, based on the needs in the individual's reality. The aim is to meet environmental or societal needs. The needs can be satisfied by businesses, civil society organisations or in interaction between businesses, the public sector and civil society. This can take many different forms, from developed private or non-profit organisations to pure grassroots initiatives. This type of initiatives



can have a special meaning in rural areas and in villages for the development of solutions for service and infrastructure.

In addition, there is a development in the work with Corporate Social Responsibility (CSR), where ever more businesses also build their businesses on contributing to positive societal development and long-term creation of value. Previously, much focus in this work has been about handling risks through following regulations and ethical, social and environmental codes as well as shaping their brand to attract customers and employees. With this development, the work with Corporate Social Responsibility is becoming ever more integrated in their innovation work.

More and more businesses now see possibilities in the needs in which poorer countries as well as poor people face, which in turn results in a need of new business models, goods, services or systems. It is seldom effective to adapt existing models and solutions after these needs. Instead one has to start from the needs in the context of which they exist to develop goods, services etc. that are adapted for these needs. A continuous dialogue between many stakeholders among the groups that are affected by a business operation on the actual market is therefore central. Through the dialogue the businesses can create an agenda and priorities for a long-term responsible undertaking of business and also get a picture of which sustainable innovations that are sought after.

There is also a development of new forms of investments geared to meeting societal challenges, through the development of e.g., crowd funding, social bonds and new models for integrating the creation of economic value with other social values. On many of the markets formed in the borderland between services previously carried out under public auspices which are now more and more commonly offered by the private sector, social innovation and social entrepreneurship are becoming increasingly large elements.

This is an important part in driving innovation to meet societal challenges, or innovation driven by challenges.

### Sweden therefore needs to:

- Increase the knowledge in how social innovation and social entrepreneurship can contribute to meeting societal challenges on a global, national, regional, and local level.
- Increase knowledge about the needs for new goods, services, systems and business models that are adapted to single countries challenges within e.g. water and sanitation as well as poor peoples' needs and purchasing power.
- A diversity of performers of public services, including civil society organisations.

### Innovative public services

Goal: Innovative and collaborative public service organisations that are legally secure and effective, and has a high degree of quality, service and availability

Publicly financed activities need to be innovative and effective, not least in order to cope when fewer workers in the workforce will need to provide for an ever increasing elderly population.





### The administrative policy objective

In 2010, the Swedish Parliament established the administration policy objective "an innovative and collaborative state administration that is legally secure and effective, has a high degree of quality, service and availability, and thereby contributes to Sweden's development and an efficient EU work."

To be 'innovative' entails, among other, the capacity to successfully develop and introduce new processes, services and methods that result in significant improvements of quality, efficiency or appropriateness. It can be a matter of new perspectives on old problems, redefining the purpose or objectives of an activity, improving the quality of existing services, changing the manner in which services are provided and finding new or improved forms of collaboration. This particularly applies to finding new ways of organising and carrying out public services based on the various needs of citizens and businesses.

In order to increase the efficiency and standards of public services, the National Council for Innovation and Quality in the Public Sector, which was established in 2011, will support and stimulate innovation and change in public services, which can result in significant improvements for citizens and businesses.

Innovation in the public sector is largely a matter of developing governance, organisation of work and leadership, and finding new ways of defining and carrying out public sector tasks. Increasing focus on creating value, simplifying matters for citizens and businesses and involving them in public sector development are all central to this. From a public administration perspective, procurement issues such as innovation procurement, authorities' roles on markets, the retention of expertise in states and municipalities, methods for co-creation, dialogue with users, etc. are all important tools for developing an innovative administration.

Today, Sweden has one of the highest depen-

dependency ratios among comparable countries. In addition, this is estimated to increase in the coming decades. Analyses from the Swedish Public Employment Service reveal that 44 per cent of public sector employees will leave the labour market between 2010 and 2025, and at the same time people's average life expectancy is rising. The public sector will struggle to fill the positions left open by retirees with new labour. The dependency ratio will be particularly burdensome in certain rural areas.

The demographic challenge entails great demand on innovation and renewal in order to provide social services with efficiency and quality within the scope of the public undertaking, whether this takes place under private or public auspices.

### Public policy instruments for strengthened innovation climate and innovation capacity

The public policy instruments for carrying out the public commitment to strengthen the innovation climate and innovation capacity can be divided into three types: administrative, economic or informative. Administrative instruments include laws and other regulations, including authority control through, for example, instructions, appropriation directions, government commissions and organisational and appointment power. Economic instruments include taxes, fees and subsidies. Informative instruments are information and communications initiatives used to influence the behaviour of individuals, businesses or organisations.

### A programme for the renewal of state administration

In order to support the state authorities' development of administration, the Government has established a programme for the development of state administration. The programme "En statsförvaltning i förnyelse" [State administration in renewal] describes the Government's alignment and priorities for the administration policy and deals with the areas

of innovation and quality, working with values, collaboration, service, promotion of growth, supervision, increasing the efficiency of administrative services and EU work.

The programme's point of departure is that the Government and the authorities have a common task based on their respective roles to develop the state administration based on the existing challenges. The programme emphasises that good collaboration and an open dialogue between the Government and authorities is crucial to positive development, and that the public, businesses and other organisations need to participate in the process of change.

Sub target: Public sector organisations work systematically with innovation in order to increase efficiency and quality

Trust in the public sector organisations among citizens, businesses and users, is at the centre of a functioning society. In order to protect and strengthen such trust, public sector organisations must focus on users' different needs and conditions to use public services. This may involve the development of new ways of organising public services. In Sweden, there are good conditions for public services to benefit from involving citizens and users.

In a developed e-government, there is a great potential for new solutions that facilitate citizens and businesses' daily communication with the public sector. Providing access to public information for the development of digital services from third parties increases the possibilities for creating value based on public data that constitutes a unique resource for Sweden. Access to the information must be made secure and anonymous, which calls for the development of standardised structures for digital information. New solutions in the area are developed in cooperation between public and private actors.

Sweden is a global leader in e-government and is at the top of the UN's e-government readiness index, which measures countries' capacity to develop and implement e-government services. A developed e-government will contribute in making the public sector more open and to work

more efficiently and offer services which are easy. The target is a more open and smarter public sector which supports innovation and participation, an easier everyday life for individuals and businesses as well as higher quality and efficiency in public services.

When the public sector develops new services and methods, this generates a demand for new knowledge and expertise, or the need to procure new or better solutions. Retention of expertise in the public sector and procurement issues such as innovation procurement are therefore strategically important instruments in the development of an innovative public sector activity.

By opening what used to be public markets for providers under private administration – through e.g., deregulation competition neutrality and systems for freedom of choice – the offer of new solutions, quality and diversity in welfare services and public services for citizens, users, patients and relatives can increase. In order to push renewal and quality development via innovation, it is important to develop competence in procurement as well as methods of pinpointing and measuring both quality and achievement of results.

Public services are parts of a wider context. A developed collaboration between different public services is necessary in order to unify the need of a holistic perspective with an innovative development of the core activities.

In the work with the strategy, clearer mandates and better incentives have been highlighted as central prerequisites for an increase in innovation in the public sector.

### Innovation for efficiency and productivity in the public sector

In publically financed activities, it is often more appropriate to use the broader term "efficiency" instead of the more limited "productivity". Efficiency means both "doing the right things" and "doing them in the right way". Publically financed activities have a specific purpose and are often regulated by laws and other regulations. It is therefore desirable that the activities are run according to the objectives, to ensure that everything is done correctly. This may include optimal use of resources with consideration for the

objectives and based on the prevailing conditions.

International studies of innovation in public sector reveals that through new ways of working with public sector tasks, there is considerable potential for reducing costs and simultaneously increasing the benefit for citizens and users.

#### Sweden therefore needs to:

- Continue to develop and intensify the public sector's work for finding new solutions and more effective processes aimed at creating greater benefit for citizens and the surrounding society, based on for example the results produced by the National Council for Innovation and Quality in the Public Sector.
- Continue the development of e-government and increase opportunities for private actors to develop new services through providing public data, among other.
- Continue to develop the expertise, methods and networks of actors in the public sector in order to effect increased application of innovation procurement, including function or performance-based innovation competitions.
- Develop processes of reregulation and management by objectives, as well as systems for freedom of choice and competitive neutrality, in more areas.

Sub target: Public sector organisations contribute in developing innovative ways of meeting societal challenges

The task of the public sector is to create a well-functioning society and a good quality of life for the citizens. By this token, the public sector's work is closely associated with important societal challenges (in fields such as the environment, healthcare and poverty alleviation) on global, national, regional and local levels. The complexity of the societal challenges means that the responsibility for coordinating solutions cannot be down to individual actors. The public sector there-

fore plays an important role in engaging actors with different knowledge, expertise and resources in collaborating with the purpose of developing new solutions.

People living and working in Sweden have good opportunities to contribute to meet global societal challenges. Sweden has an internationally renowned capacity to develop knowledge and innovative societal solutions within a number of areas; including childcare, traffic safety, and security in society via e.g., risk assessments. Sweden also has a longstanding tradition of ambitious work with the environment through, for example, the environmental quality objectives established by the Swedish Parliament.

The public sector, with clients that can put high demands and well-developed structures in many areas, offers opportunities of international interest in terms of demonstration and test bed operations, particularly for various new system solutions. In Sweden, there is a well-established tradition of collaboration across sectors and areas of society between businesses, labour market parties, universities, research institutes, other actors in the public and civil society.

The increased and ever more urgent global pressure on the earth's resources sets demands on increased green innovation. The rapid global societal changes make it even more important for actors on various levels, even internationally, to develop new knowledge and new constellations for cooperation on innovation that meets the new and shifting needs of society.

#### The plan of action for environmental innovation – public policy instrument for sustainable growth

An example of public policy instrument towards a green economy is the EU-commission's message Innovation for a sustainable Future - The Eco-innovation Action Plan (KOM(2011)899). The message concerns among other how environmental policy and environmental legislation can be shaped to drive environmental innovation, and points among other at the importance of the support of demonstration projects and partnership to facilitate the growth of markets for environmental innovations.

### Increased focus on innovation in the aid policy

In the Swedish aid, there is now more focus on developing and supporting new and innovative solutions for reduced poverty by developing new ways of working and better utilising the ideas and initiatives of collaboration partners, particularly the local actors in partner countries and the private industry. Examples of initiatives are Swedish International Development Cooperation Agency's (Sida) Innovations Against Poverty programme and DemoEnvironment (administrated by the Swedish Agency for Economic and Regional Growth). Within foreign aid, various forms of aid will be used: innovation promoting as well as interaction between solutions from both the private and public sectors. Swedish aid should complement other resources and stimulate other actors to financially contribute to initiatives geared towards reducing poverty in Sweden's partner countries.

The reform of aid also involves taking advantage of the opportunities afforded by digitalisation, in order to achieve a more effective aid and better development results. This means that information technology and digital services will be used to open up for new ways of thinking, ideas and forms of collaboration with various actors, as well as to establish new working methods and processes. This includes initiatives for increased transparency, accountability, civil insight and participation, anti-corruption work and an effective and transparent administration.

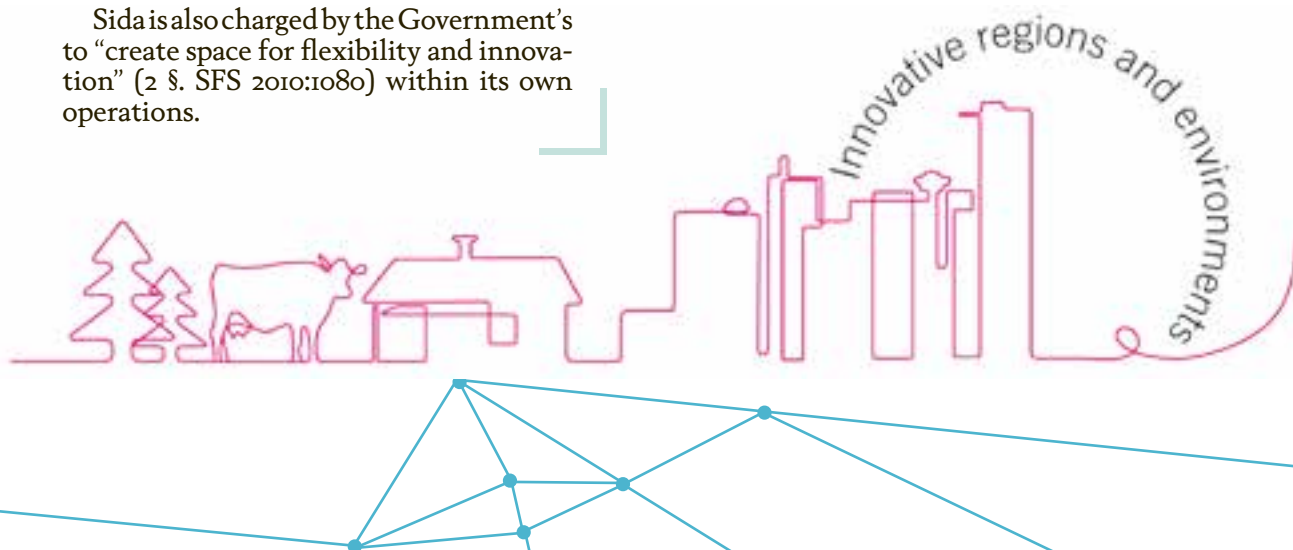
Sida is also charged by the Government's to "create space for flexibility and innovation" (2 §. SFS 2010:1080) within its own operations.

### Sweden therefore needs to:

- Have public services that based on their purpose and area of responsibility initiate and get involved in collaboration with relevant actors in innovation processes, in order to meet important societal challenges - innovation driven by challenges on global, national, regional and local levels, among other through innovation procurement
- Continue to develop methods and expertise for innovation promotion as a part of the global development policy, in multi-lateral and bilateral cooperation.
- Identify the areas and sub targets in the system of environmental objectives, where eco-innovation has in a broad sense a particularly important role in achieving the generational goal and to develop the environmental quality objectives.
- Develop the international cooperation around eco-innovations in order for Sweden to take advantage of new knowledge and solutions from other countries as a part of the internationally competitive Swedish system solutions.

Sub target: Efficient public sector support for innovation with a focus on customer benefit

All public services, irrespective of their purpose, can be more or less innovative and also act as a driving force for innovation in other parts of society to a greater or lesser extent. A number of public services are also tasked with promoting innovation capacity and innovative climate in industry,





other public services and other areas of society.

Firstly, these activities are involved in financing, analysis or guidance, all with the purpose of supporting knowledge development and the creation of value based on the needs of different actors or areas of society. They include research boards and sector and expert authorities as well as development offices in regions, county council and municipalities.

Secondly, they work with regulation, financing or the implementation of initiatives that in different ways enable innovation and promote entrepreneurship and transformation by means of e.g., incubators, guidance, test beds, demonstration facilities or network building.

In addition, certain activities handle and systematise information and knowledge critical to innovation processes such as standardisation, measurement, accreditation and intellectual property rights.

These activities fill important roles in counteracting weaknesses in the system and market failures. They must work both independently and together in order to develop a clear division of labour, simple structures from a customer perspective and efficiency in the use of public funds.

There is a need to formulate initiatives that support innovation for competitive solutions, to find out whether the recipient of the support is situated in a rural or urban area, in the private, public sector or civil society or if the initiatives are primarily targeted at individual innovators, researchers or students at universities, small enterprises, public services, non-profit organisations or global concerns. The formulation should also take into account the context in which the new solutions are to be formulated. The formulation of the support may differ depending on e.g., whether it is intended for services, goods, systems, business models, development of communication or the organisation of work, and to what extent the market and user base is in Sweden or internationally-based. As the time between start to result in different types of innovation processes varies, it is urgent to further increase the focus on effects in the innovation supporting interventions. It is also important to continue the work with developing improved forms for measuring and monitoring outcomes and impact on different time horizons.

In the process of shaping the strategy the need for increased awareness of intellectual property rights protection and knowledge about intangible assets as a strategic business tool in small and medium sized enterprises, has been highlighted. This underlines the importance of continuing to develop the competence of private as well as public advisors, to be of support on these questions.

Also, short-sightedness and fragmentation of public funds for innovation support have time and time again arisen as hindrances to more efficient initiatives. Short project cycles and rigid prerequisites can lead to difficulties in adapting the implementation to unforeseen developments. This can sometimes result in counter-productive driving forces such as the start of new activities rather than focusing on the long-term development of activities that function well.

#### Sweden therefore needs to:

- Develop more coordinated public sector initiatives that support innovation with a firmer focus on customer benefit and effects. One important part in this is to develop forms for measuring effects and results in different horizons of time.
- Review the needs and possibilities to increase the longer term orientation of large parts of the initiatives supporting innovation.
- Continue developing initiatives that support innovation on local, regional, national and European level, to create easier, clearer and more effective structures with well-functioning collaboration between actors in the public sector as well as relevant supporting actors in the private sector..
- Continue developing the expertise of supporting actors in the public sector to, within the scope of their existing mandates, work with intangible assets as a business strategy resource and to work with different forms of innovation.

## Innovative regions and environments

Goal: Sweden's regional innovation environments have international appeal

The innovation climate is essential to the regional potential for development. The capacity to attract, retain and develop expertise, capital, businesses and other activities is crucial if Sweden is to keep up with the increasing national competition.

When businesses become more and more internationalised and dependent on the development of markets in other countries the need for strategic work on regional level to create conditions for strong innovation environments, increase. The possibilities for businesses to collaborate with other businesses and public actors, among other universities, in their geographical proximity to strengthen their innovation capacity and long-term competitiveness become increasingly central as criteria's for investment and location decisions for businesses and entrepreneurs. Therefore it is pressing that strategies for the regional growth and development work are distinct concerning areas of strength, internationally unique competitive advantages, including the opportunities of collaboration with customers, users, suppliers and knowledge producers in a global context.

Sub target: Sweden's regions are increasing their innovation capacity based on their unique conditions

Sweden's regions hold many opportunities that are unique in the world. Several of these opportunities are based on resources that are in various ways dependent on their environment. They are found everywhere from sparsely populated rural areas to densely populated urban areas. These opportunities characterise businesses' capacity for innovation as well as people's chances to develop and live a full life.

Urbanisation and the demographic development entail a number of challenges in terms of the possibility of a development that is economically, socially and environmentally sustainable for several parts of the country. At the same time, these challenges entail the possibility for development of innovative service solutions, services and goods. There are also a number of synergies that can be achieved by strengthening the links between urban areas and the surrounding countryside, as well as other national and international

collaborations. It is important to take advantage of the potential in each region and make use of possible synergies.

In the global knowledge economy, the importance of proximity in relationships between different actors in innovation processes is increasing. Physical distance is an important factor in this context, even though globalisation and digitalisation are changing the conditions for interaction and exchange over long distances. At the same time as it gets easier to communicate over long distances, the increased specialisation makes trustful relations ever more important. This creates new challenges and possibilities for urban as well rural areas, non the least considering geographic proximity to strong innovation environments and knowledge centres.

There is a tendency to differentiate between formal knowledge and tacit knowledge, where the latter is not as easy to transfer between people without meeting in person, which can be facilitated by geographic proximity. Other resources that are closely linked to a certain geographical area are resources that are extracted at given areas or climate conditions, natural or cultural environments or other unique cultural values attached to a certain area (e.g. through history, film, music or literature). Such site-specific resources are of particular importance for innovation in Sweden. This includes increasing the added value of activities that are based on these resources, including natural resources (such as forests, minerals, water, cold and sparsity). Sweden's unique nature and "allmansrätten", the right of public access, entail good opportunities for nature tourism and the development of employment in rural areas. In the same way, the digitalisation of cultural heritage constitutes a source of innovation.

The supply of people with relevant knowledge, skills and expertise for businesses and the public sector is crucial to innovation and the capacity for change in Sweden's regions. Better matching between the supply and demand of expertise is a key issue in this. As a means of ensuring the retention of expertise throughout the country, regional "competence platforms" have now been established in all countries as strategic tools for this matching. Long-term work is required in order to achieve a functional organisation and good cooperation in the scope of these platforms.

Collaboration in and between innovation envi-

ronments can take many different forms, where interlinked business networks and clusters in connection with research and education are important elements. The growth and development of transnational networks within the EU and among the Nordic countries have a special potential in terms of the combination of geographical proximity and increased market volume. The EU Strategy for the Baltic Sea Region is an example of this.

As a catalyst for development, the underlying infrastructures for research and innovation – e.g. European Spallation Source, MAX IV and SciLife Lab or test and demonstration facilities – are very important, especially in their contribution to the international appeal of regional innovation environments. Test and demonstration facilities are important in many areas, including sustainable urban development, materials based on bio and nano technology, energy-efficient buildings, smart ICT solutions and environmentally adapted goods and services.

Strong international marketing of Sweden as a country with particular focus on opportunities for innovation is crucial, to enable regions of Sweden to attract businesses, capital and people. The desire of people with different backgrounds and expertise to live in Sweden is key to innovation capacity and sustainable regional growth. An attractive environment in which to live and work is therefore a prerequisite for innovation capacity in all areas of the country. The possibility to offer an attractive living environment and lifestyle is affected by several different factors, such as a dynamic industry, a functioning labour market, accessibility and service, planning of the physical environment, access to culture and good recreational prospects.

It is essential that the development of regional innovation environments in Sweden embodies a strategic approach to the international development. There is a special potential for sustainable growth and renewal in the regional economy in the connection between different sectors and fields of knowledge. Creating social forums, for example in the form of clusters or networks, is therefore important for innovation capacity and regional growth. Collaboration in these innovative environments can be a driving force for renewal and competitiveness and has the possibility to become attractive nodes in global knowledge and innovation networks and platforms for collabora-

tion regionally, nationally and internationally. A development of tourism and cultural and creative industries can also contribute to more attractive innovation environments. These industries are experiencing rapid international growth and Sweden has good opportunities to increase export and the creation of value in these areas.

#### Sweden therefore needs to:

- Take advantage of the unique national and regional opportunities that the nation has to offer in the development of globally attractive innovation environments
- Develop collaboration between actors on different levels that strengthen the regional appeal, based on e.g., clusters and test and demonstration facilities where relevant.
- Strengthen and further develop the collaboration in the regional competence platforms, among other through expanded cooperation with universities and industry.
- Enable regional actors to benefit from international collaboration agreements that Sweden has in different areas and continue to develop regional and national collaboration in the promotion of export and investments.
- Continue utilising the opportunities for development and internationalisation of environmental innovation from test and demonstration facilities with base in the environment regarding sustainable urban development that is being developed in many areas in Sweden, as well as through the incentives carried out within the Government's Strategy for Development and Export of Environmental Technology 2011–2014. Areas like sustainable urban and regional planning, transports, energy, water and sewage and waste are examples of important linchpins for regional and local growth and development.





Sub target: Regional strategies for innovation are grounded in combined regional leadership

Regional growth takes place in interaction between national and regional levels. Important opportunities are further developed in the Cohesion Policy on an EU level. Functioning regional growth relies on the involvement of the concerned actors in industry, the public sector and civil society.

The cohesion policy has as a target to contribute to economic, social and territorial cohesion within the EU through decreasing regional differences and inequalities between people. The implementation of the policy takes place through the programme of Structural Funds on the basis of regional and national strategies and in collaboration with a broad partnership of actors. The programme of structure funds includes all parts of the nation, and the EU-funds are co-financed by national, regional and local public co-finance and private actors. The cohesion policy programme is a part of the regional growth policy in Sweden. For the next programme period 2014 to 2020, closer cooperation has been proposed between the Structural Fund programmes and programmes that are co-financed by the European Agricultural Fund for Rural Development and the European Fisheries Fund. The proposal also states that the Structural as well as the Agricultural Fund programmes shall to an even greater extent be targeted at measures that increase innovation capacity among businesses and develop innovative environments in line with the EU's common strategy for labour and growth, Europe 2020. Especially within the target for investment in growth and employment shall programmes co-financed by the European Regional Development Fund focus on initiatives that creates good conditions for, as well as they support, research and innovation, green economy and entrepreneurship.

The negotiations before the upcoming programme period of the Cohesion Policy emphasise the importance of the regional growth policy's collaboration with strategic initiatives in research and innovation, e.g., linked to the EU's research and innovation policy. On an EU level, the term Smart Specialisation is used to describe a more strategic way of working with regional areas of strength.

There is a considerable potential for increased resource efficiency and synergies between regional, national and international instruments, stra-

tegies and programmes. This entails the need to develop cooperation and coordination between EU, national, regional and local levels in order to take full advantage of synergies. Realising this potential places great demands on sustainability, strategic planning and a combined regional leadership in the regional growth agenda. This is especially true for the strategic alignment of the Structural Fund programmes and the priorities made in the implementation. This also calls for valorising experiences from national, regional and international level through improved forms of providing feedback, making available and discussing these experiences, in order to increase learning among actors on various levels.

#### Sweden therefore needs to:

- Develop the work with long-term regional strategies, with particular focus on strong innovation environments such as clusters.
- Develop the interaction between national authorities, regional development actors and the work with projects and programmes within the EU.
- Continue to promote learning in the context of regional growth, both nationally and regionally, by e.g., developing the use of policy intelligence and evaluations.







# 7. Implementation of the Innovation strategy

Goal: Sweden will learn from other countries' work with developing the innovation policy and be a source of inspiration globally by means of a long-term and coordinated work to strengthen the innovation climate

The national innovation strategy is a sustainable work to keep and further develop Sweden's leading position in terms of innovation climate and innovation capacity to meet the global societal challenges, increase the competitiveness and renew the future welfare and public services.

The vision for 2020 will be a target for initiatives in many policy areas. Innovation geared towards meeting societal challenges will permeate the policy's implementation. Increased innovation will contribute to faster and better fulfilment of policy objectives in different areas.

The Government intends to present an overview of the implementation. As the implementation of the strategy is also a matter that concerns many actors in society, the Government also intends to report at regular intervals on the development of the innovation climate in Sweden.

## A holistic view through collaboration

The starting point of this strategy, in line with the correspondent innovation policy work within the OECD and the EU, is that the challenges that Sweden and the rest of the world faces requires a holistic view. This includes an approach towards the policy for strengthened innovation climate and innovation capacity, to an increased extent, gathered regard, needs and conditions for initiatives from different policy areas, policy levels and societal actors.

“As no single actor has the knowledge and resources to tackle the innovation challenge unilaterally, all countries – in one way or another – face the task of better co-ordinating actors in formulating and implementing policy.”

The OECD Innovation Strategy; Getting a Head Start on Tomorrow, p 196. OECD 2010

## Continuous dialogue

Many actors in the public sector, industry and civil society have important roles in supporting Sweden's innovation capacity. A shared understanding of challenges and opportunities as a basis for initiatives is therefore needed. An important part of developing the innovation policy is therefore the creation of functioning venues for dialogue and coordination between different areas as well as between local, regional, national and international levels. The importance of leadership on different levels cannot be stressed enough.

The Government's point of departure is that the implementation of the strategy, within respective areas of responsibility, relies upon the continuation of international, regional and thematic work to further establish what needs to be carried out. A continued focus on an open and inviting dialogue, thematic as well as between regional and national level, around pressing areas is an important way of implementing the national innovation strategy.

## A learning innovation policy

The Government intends to continue promoting and developing a policy for increased innovation

that is knowledge-based, grounded in available evidence, utilising lessons learnt and good examples, both nationally and from other countries.

An effective way of monitoring initiatives is required in order to develop and adapt initiatives without compromising the long term character and clarity of ambitions. Monitoring and evaluation of implemented initiatives are important in contributing to increased focus on results, effects and learning.

Policy intelligence aimed at following developments in other countries and regions should be further developed in order to develop strategic initiatives from a competitive perspective, and to gain inspiration and to learn from different types of initiatives.

To enable continuous learning, objectives that are possible to monitor over time, as well as good analyses for well-founded priorities are needed. To facilitate such analyses, calls for access to indicators that reflect the analysed conditions in the best possible way. A learning innovation policy also contributes to developing and improving of collaboration processes and methods of working.

A learning policy for innovation contributes to strengthening the innovation climate in Sweden and the innovation capacity of people, businesses, civil society and public sector organisations.









# 8. Glossary

## Bottom of the Pyramid

Represents the part of the world's population with the lowest incomes.

## Business Angel

A private person, who invest capital and provides business knowledge to unlisted companies with growth potential, either as an individual or through a company. A business angel is usually a person with experience and knowledge of entrepreneurship that helps businesses develop by providing capital, expertise, commitment, and networks.

## Crowd Funding

A method of funding projects or ideas by appealing to a large number of donors, often via Internet-based systems.

## Crowdsourcing

A method to seek proposals for solving problems with the contributions from many parties, often via internet-based systems.

## Entrepreneurship

The ability to identify opportunities and create or coordinate resources to put these into value-creating activities.

## Formalized Knowledge

Knowledge that can be expressed in writing and transmitted via a formal and systematic language.

## Information Asymmetry

A situation where the parties entering into a contract have access to different information in advance.

## Innovation activities

Scientific, technical, organizational, financial and commercial steps, including investments in the development of new knowledge, which in practice lead to, or are intended to lead to, the introduction of innovations. The activities may themselves be innovative, or prerequisites for the introduction of innovations.

## Innovation procurement

Procurement for development and implementation of new solutions, i.e. innovations. Innovation procurement includes both procurement made in such a way that it does not rule out new solutions, so-called innovation-friendly procurement and procurement of innovations, i.e. procurement of the development of new solutions not yet available on the market.

## Innovative businesses

Enterprises engaged in innovation are characterized as innovative.

## Key Enabling Technologies

Research areas with applications in a large number of sectors. Examples of such Key Enabling Technologies include biotechnology, nanotechnology, information technology, and software and service innovation.

## Market failure

A situation justifying a public commitment, where the free market does not create an optimal use of resources in society, according to neoclassical economic theory. Market failures can occur due to collective goods, asymmetric information, monopolies, cartels and external effects, among others.

### Offering

Good, service or experience, often in combination, offered a customer and the value of which arises when it is demanded and used by the customer.

### Products Subsidies

Products subsidies are subsidies payable per unit of produced or imported goods or services.

### Products Taxes

Product taxes are taxes that are payable per unit of a good or service produced or that are a part of a transaction. Import duties, energy taxes and VAT are examples of product taxes.

### Regional Competence Platforms

In 2010 the Government mandated actors with regional growth responsibilities to establish competence platforms for short and long-term collaboration and education planning. The aim is to contribute to a better matching of supply and demand for skilled labour all over the country.

### Structural Transformation

Changes in the composition of the economy occurring as the society changes, and markets, industries and social sectors emerge, transform or disappear.

### Social Bonds

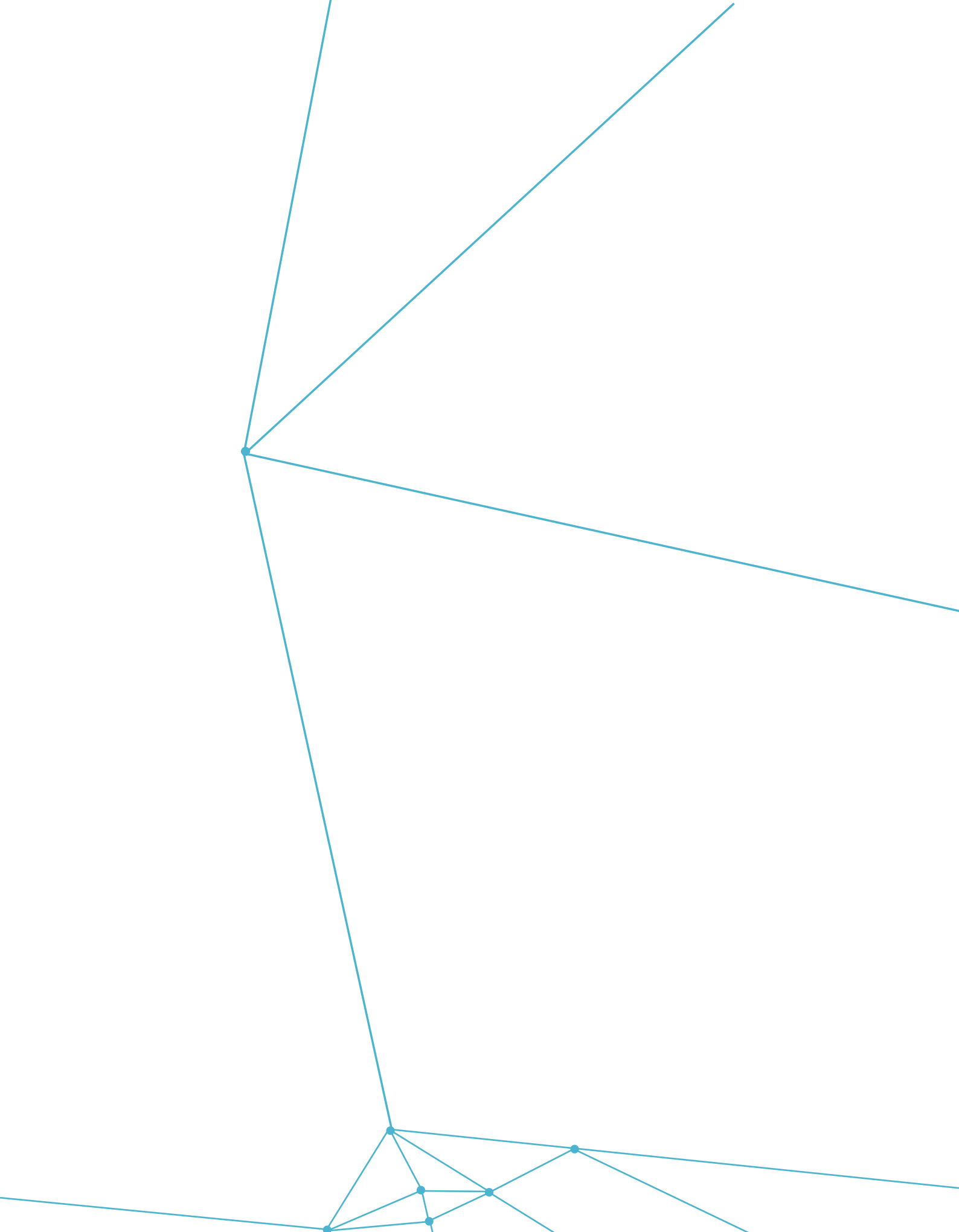
A financial instrument that implies that, if a social enterprise can venture private capital, the State guarantees the investment of the financier on condition that the agreed social objectives have been reached.

### Social Entrepreneur

An entrepreneur who has chosen to address social issues as a central part of his entrepreneurship.

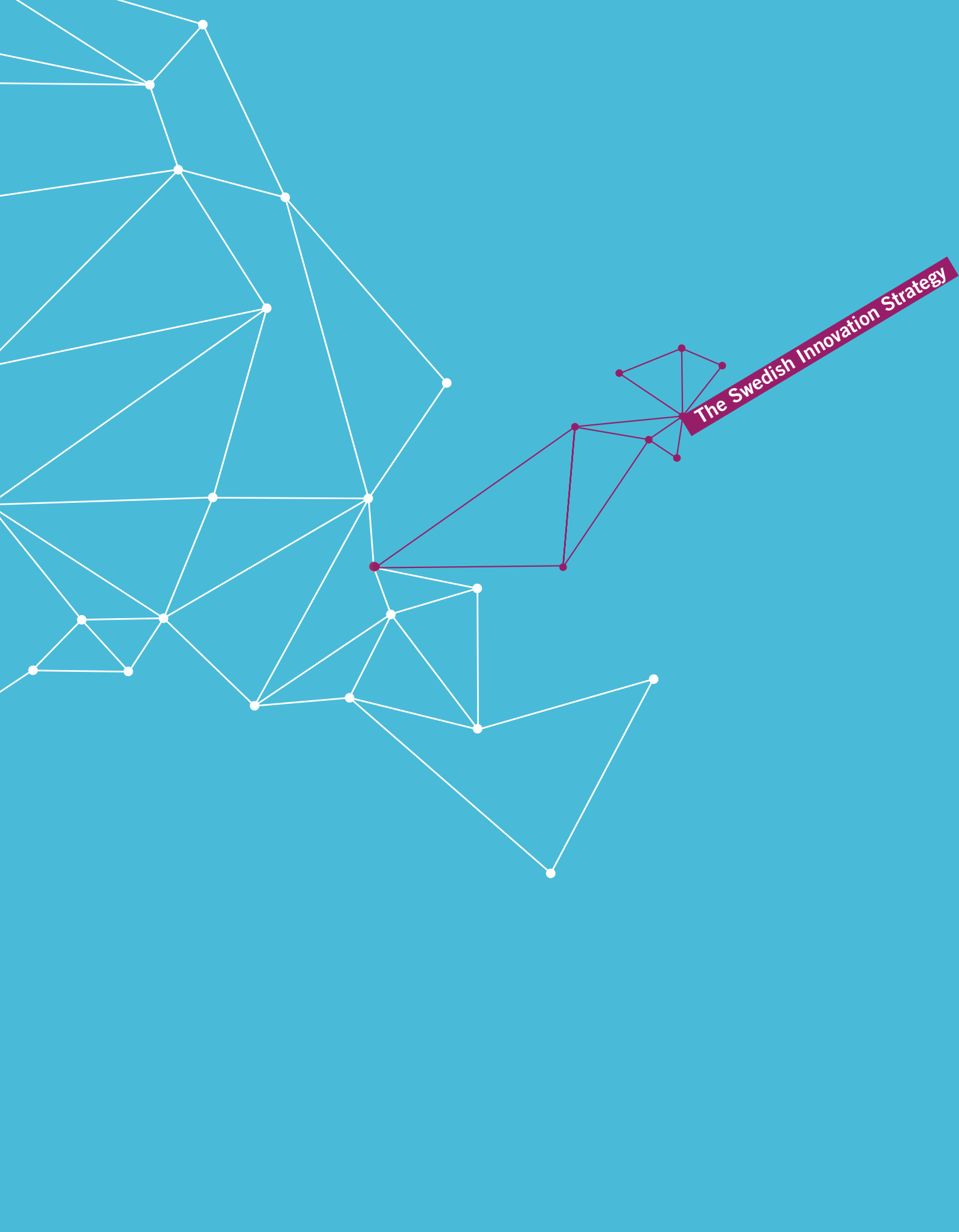
### System Weaknesses

A situation justifying a public commitment where there are weaknesses in the system of interdependent actors and institutions relevant for innovation. These weaknesses are usually divided into four types: infrastructural weaknesses, institutional weaknesses, interaction or network weaknesses and resource weaknesses.











[www.government.se/innovationstrategy](http://www.government.se/innovationstrategy)



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