



# **SCIENTIFIC CULTURE IN SWEDEN**

A report prepared for the PLACES EC FP7 project

*VA Report 2012:3*



# Preface

VA (Public & Science – acronym for Vetenskap & Allmänhet) is an independent Swedish membership organisation that works to advance and encourage dialogue between researchers and the public. To investigate the attitudes towards knowledge, science and researchers, as well as the relationships between the research community and key societal groups, VA conducts a variety of studies.

This report (VA report 2012:3) describes the scientific culture in Sweden, focusing on the place of science in society and scientific culture in local policies. Some of the main science centres, museums and science events in Sweden are also described.

The report was composed for the EU funded FP7 project PLACES (Platform of Local Authorities and Communicators Engaged in Science), [www.openplaces.eu](http://www.openplaces.eu). Similar national reports are available for all 27 countries involved in the project.

The Swedish report from the European project MASIS, Monitoring Policy and Research Activities on Science in Society in Europe, has provided some of the information in this report, as well as has literature, article, surveys, statistics, interviews and experiences gathered during VA's ten years of work. Please refer to the Bibliography section for further information.

This report can be cited, provided that VA is referred to. All VA reports can be downloaded from [www.v-a.se](http://www.v-a.se).

We do hope that this report will provoke interest and stimulate discussions on science's role in society and provide valuable knowledge for the important work of developing new formats for strengthening the dialogue between the public and researchers.

Vetenskap & Allmänhet, VA, in April 2012

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# 1. Introduction: national context

Public interest in science and technology (S&T) has been strong in Sweden since the 1970s together with a high level of education. Political decisions such as increased expenditure in educational systems, changes in the tax system to promote a higher percentage of women in the workforce, and the development of state child care provision across the country have led to a rise in the number of highly educated people in Sweden. In 2010, approximately 40 per cent of Swedes held a university degree (Statistics Sweden, SCB 2010).

This high level of education comes with a high level of confidence in technology. Since the 1980s, a rise in “technology optimism” can be seen. In 2010, 79 per cent of the Swedes said they think technological developments make life better or much better, compared to only 60 per cent in 1978 (Fjæstad 1996). Today, public attitudes to science are very positive, although there have been some tendencies toward a decrease in trust and confidence in research over the past decade (VA Barometer 2010/2011).

Sweden’s expenditure on R&D has also risen over the recent decades. Currently Sweden is one of the top countries globally in terms of expenditure on R&D as percentage of GDP. R&D expenditures in both the public and private sectors coupled with a high level of well-educated people make Sweden one of the most innovative countries in the European Union. For several years it has held a high position in European innovation statistics (European Innovation Scoreboard, Innovation Union Scoreboard).

Thus, science and technology have played a crucial role in Swedish society over the last decades. In recent years, political discussions and critiques about the quality of schools and universities have also strongly increased. These discussions have intensified even more since 2006 when Sweden elected a new right-wing government after decades of social democratic political leadership. Sweden’s education and research policies are now much more focused on increasing the quality at schools and universities and advancing excellence and elite institutions. There are several examples of recent policies that could have an eventual impact on the relationship between science and society:

## **(1) School policy**

PISA (OECD Programme for International Student Assessment) and TIMSS (Trends in International Mathematics and Science Study) results have been constantly going down at compulsory and upper secondary school for Swedish pupils, especially in maths and natural sciences. Former Ministers for Education and Research Lars Leijonborg and Tobias Krantz, as well as the current Minister Jan Björklund, have strongly criticised Swedish schools for being too “fudgy and soft” (“flumskolan”) (Leijonborg & Björklund 2002). Consequently, in 2011 a new school law incorporating new teaching programmes was launched with an emphasis on research and evidence based education in schools (Skollag 2011, §5; Läroplan 2011). One stipulation is that both teaching methods and the content of education should be based on

current scientific standards. It also includes stricter rules in relation to pupil assessments and grades systems. The government also decided on a new programme for teacher education at universities (Government bill 2009/10:89).

## **(2) Higher education and research policy**

A similar debate was triggered about the quality of universities and university colleges (Government bill 2009/10:139). The Minister for Education and Research Jan Björklund criticised the quality of education at Sweden's universities, saying it is often too low. In 2011 a new programme to secure quality in university education was introduced. This programme caused much controversy within the education community. The approach is to evaluate students' results in university courses based on the quality of their master theses and self-assessments of the universities (Swedish National Agency for Higher Education 2010). In 2009, the autonomy of universities was also increased with the aim to improve quality (Government bill 2009/10:149). Björklund also suggested merging several of the regional universities with larger ones, with the aim of increasing quality (Dagens Nyheter Oct 24, 2011). Furthermore, a governmental investigation has recently suggested a way to reorganise the agencies of higher education. The current three agencies (HSV, VHS, IPK) will merge into two in 2013: one agency with a stronger focus on service tasks, such as access to universities, and one with a focus on evaluation and quality assessment of the Swedish higher education institutions (SOU 2012:1).

The Swedish research policy aims to make Sweden one of the leading research countries in the world. This policy can be seen in action by the already high levels of R&D expenditures as well as by a strong focus on innovation. The government decided in the research bill *A boost for research and innovation* in 2008 to define several strategic areas in which research funding was to be increased (Government bill 2008/09:50). In total there were approximately 20 different strategic areas under the headings medicine, technology and climate & environment, which were considered strategically important for Sweden and therefore received additional funding.

At the same time there has been an increased focus on "excellence" and a concentration of resources into the best universities and the best performing research groups. Top universities are gaining from the new funding schemes and the current innovation research policy (Sandström 2011). Furthermore, there is a current debate on using assessments of research quality as a basis for allocating governmental resources to universities (Ministry of Education and Research, U2010/4151/SAM).

## **(3) Science in Society "policy"**

In the 1990s the Swedish government took the decision to include collaboration with the society as the third task for universities alongside education and research (Högskolelagen 1992:1434). It is stated that higher education institutions should collaborate with the surrounding

society, to inform people about its research results and to work to ensure that its research is also of use to society. Since then many universities have indeed enlarged their activities in this respect and engage with various societal actors.

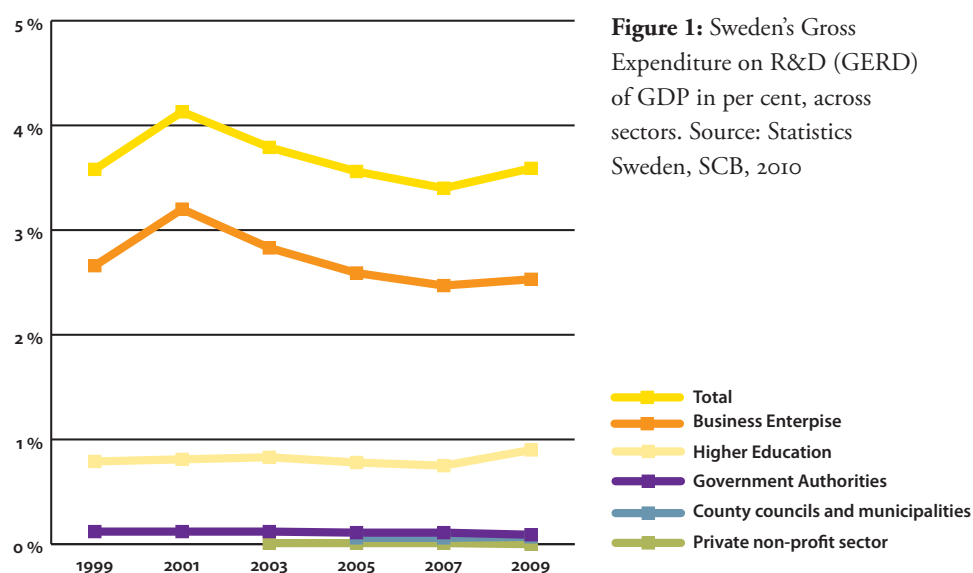
However, there was a reorganisation of research councils in the beginning of 2000. The Council for Planning and Co-ordination of Research (FRN) was transferred into four different councils, of which one is the Swedish Research Council (SRC, Vetenskapsrådet). The former FRN was to a large extent responsible for science-in-society activities and public understanding of science. The reorganisation of FRN diminished the prominence of science-in-society tasks in research and reduced it to science communication for which the SRC was now nationally responsible. But there was another change within the SRC, and its remit is now rephrased into “coordinate research communication” in Sweden.

It is also evident that several funding bodies have decreased their grants to science-in-society events such as the International Science Festival in Gothenburg (Vetenskapsfestivalen) or the Researchers' Square (Forskartorget) at the International Book Fair in Gothenburg. The current trend is that the third task is predominately being interpreted as to increase cooperation with the business sector rather than with the general public.

## 2. The place of science in society

Science and technology plays a crucial role in Swedish society, and the country claims to be “a land of engineering and innovations”. More than 6 per cent of the 4.5 million Swedish employees are working within the technological industry (Teknikföretagen 2012). Swedish politicians today, as well as historically, frequently refer to engineering as one of the cornerstones for building national wealth. A variety of world famous innovations have also been developed in Sweden over the years: the universal screw spanner, the pacemaker, Skype and Spotify are some examples.

### S&T indicators

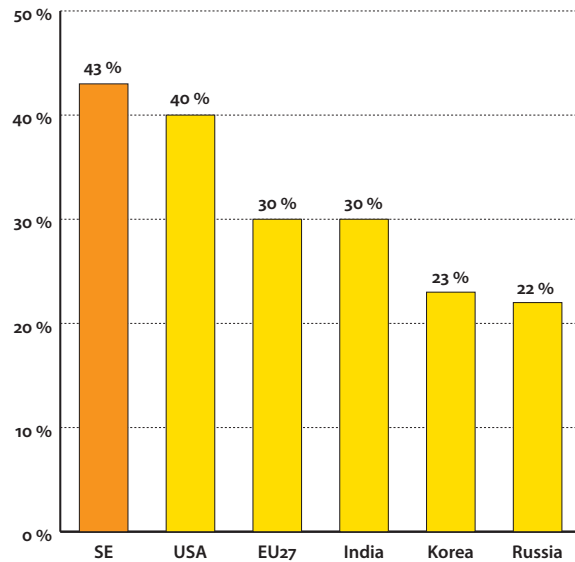


The aim of the government is to make Sweden one of the leading research nations in the world. In recent years, gross expenditure on R&D (GERD) has been between 3.5 and 4 per cent of the GDP (see figure 1). Sweden has therefore one of the highest levels of R&D spending (relative to GDP) within the OECD countries and in the world. It achieved the Lisbon target to spend 3 per cent of GDP on R&D by 2010. In Sweden, the business sector funds more than two thirds of GERD and the government finances around one third. The government wants to increase the level of publicly funded GERD to one per cent of the GDP in accordance with the Lisbon goal. The majority of R&D funding is spent in the Stockholm and Gothenburg regions and in Southern Sweden, areas where many large companies and universities are located. There is currently a discussion within Sweden that private R&D funding is too strongly focused on only a few larger companies. The decision by AstraZeneca to withdraw its R&D activities from Sweden has reinforced this debate.

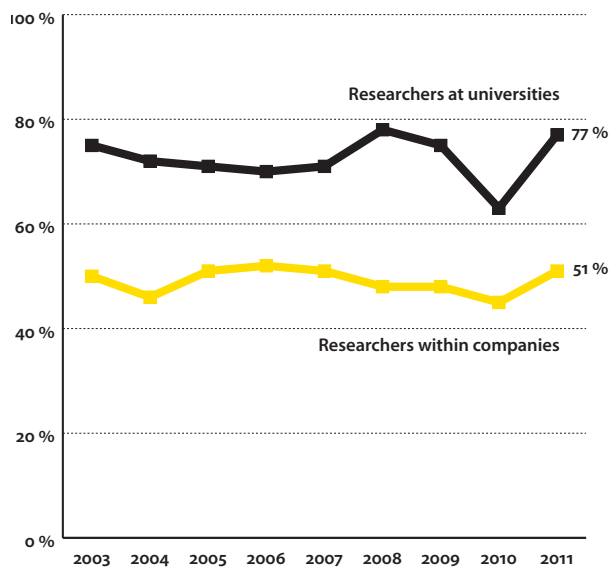


## Public's perception of S&T

The public's interest in S&T is high in Sweden compared to other countries. According to the Eurobarometer and other international data, 43 per cent of Swedes said they were very interested in new scientific discoveries and technological developments in 2010, compared to an average of 30 per cent across the EU27 countries (see figure 2).



**Figure 2:** Interest in S&T in Sweden and other countries. Sources: Eurobarometer 2010, India Science Report 2005, Korea Science Foundation 2005, Russian Public Opinion 2003, National Science Foundation 2008.

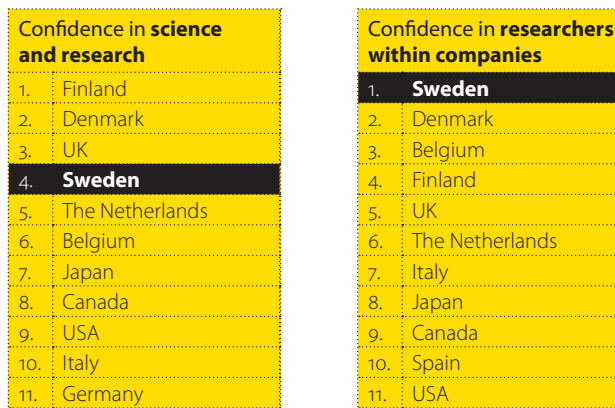


**Figure 3:** Confidence in researchers in Sweden. Source: VA Barometer 2011/2012

The Swedes also have a high level of confidence in their researchers in comparison with other nationalities, although there was a decline in 2010. 77 per cent of Swedes have high or very

high confidence in researchers at universities. This reduces to 51 per cent for researchers in companies (see figure 3). Researchers also enjoy a very high standing within society and rank highly for level of confidence in comparison to other professions.

Furthermore, Swedes have a comparatively high level of confidence in science and research (see figure 4). An analysis of the results ranks Sweden fourth in terms of confidence in science and research and in top position when it comes to confidence in researchers within companies. Sweden also stands out when it comes to trust in people in general. Data from the World Values Survey shows that Swedes have the highest level of trust in most people compared to all other countries surveyed (Delhey et al 2011). Also, Sweden is a strongly secular country with only a small proportion of the population claiming to be religious believers or regularly taking part in religious services. Consequently, there is little conflict between religious and scientific belief systems in Sweden.



**Figure 4:** Confidence in researchers across nations. Source: German Institute for Economic Research, DIW Berlin, 2009.

## Media and science

Swedish journalists share the same attitudes to science and researchers as most of the highly educated members of the public. This can be seen with respect to trust in researchers; which research it is important to fund; and in what subjects they consider to be scientific.

These are some of the main results from a study where 550 Swedish journalists were interviewed (VA report 2005). Journalists are particularly interested in research that addresses social issues. They have a high level of trust in researchers at universities, but other studies have shown that this is not reciprocated – researchers have relatively low trust in journalists (VA report 2003).

Journalists have a great deal of contact with researchers and the majority of their experiences have been positive. However, they would like researchers to be more accessible and express a desire for easily understandable research information – preferably on the internet.

Journalists consider their own lack of knowledge as being the biggest obstacle to producing quality reports on research, but lack of time, resources and publication space are also limiting factors. The study also included a contents analysis of local newspapers and magazines (VA report 2005). The total amount of scientific content was found to be relatively low: only two per cent of the pages in regional publications contained scientific material. In the youth press and family press, the figures were 9 and 7 per cent respectively. Research and researchers were however generally presented in a positive light in those publications analysed.

In the major daily newspapers, science and researchers are covered more frequently. According to a report in the frame of the European project MASIS (Monitoring Policy and Research Activities on Science in Society in Europe), about two articles per day in each publication include terms like “university”, “research” and “science” (Sandström 2011). Furthermore, researchers representing a large variety of research areas are regular guests at the news studios of the main Swedish TV and radio channels alongside other invited experts and commentators.

### 3. Science centres and museums

Swedes are comparatively active in visiting informal science facilities. Data from Eurobarometer 2005 shows that 36 per cent of the Swedes have visited a science museum, technology museum or a science centre in the last twelve months. The EU average lies at only 16 per cent (Eurobarometer 2005).

#### Science Centres in Sweden

There are currently 18 science centres spread across Sweden. Most of these are located in southern Sweden, which is the most densely populated part of the country. Every year, more than 2.2 million people visit a science centre. Of these visitors, over 300.000 are school pupils who come to meet scientists in the framework of school visits. Approximately 6.000 are schoolteachers taking part in training and seminars. The total number of employees at the 18 science centres is around 600.



**Figure 5:** Location of science centres in Sweden.  
Source: Association of Swedish Science Centres.

The first science centres were founded in the 1980s, several more were founded in the 1990s and the remainder in the 2000s (see table 1). The historic motivation behind the foundation of all Swedish science centres was to increase interest and understanding in science and technology amongst the local population, and particularly amongst children and young adults. This remains the same today. In some cases a science centre was inspired by local industries or universities who wanted to see an increase in the number of science and technology students, or in the number of highly educated employees. The *Universeum* in Gothenburg, for

instance, was founded by Volvo, SKF and AstraZeneca, along with several local communes. The aim was to increase the number of engineers, researchers and technicians within the region by inspiring a large number of young people to study S&T. The aim of *Molekylverkstan* in Stenungsund was to inform about and increase interest in the local chemical industry amongst the resident population. In Lund, the science centre *Vattenhallen* was strongly supported by Lund University, and particularly the engineering department, in order to secure the future recruitment of engineering students. Several science centre foundations focus on the education of teachers within S&T. For example, one of the main ideas for the *Tom Tits Experiment* in Södertälje was to increase teachers' competences and didactical skills within S&T.

The aim of all science centres today is the same; to increase interest, curiosity and understanding of S&T among the local population with a focus on children, school pupils and teachers. Some are open every day to the general public whereas others reserve weekdays for school classes and weekends for the general public. In short, the purpose of many science centres is to educate the local population and to offer entertainment for families and the general public during weekends.

Activities at the science centres includes interactive exhibitions and experiments, scientific shows and planetariums. In most science centres there are special programmes for school classes, such as guided tours, special projects or competitions as well as science camps during holidays. Several science centres offer special training sessions for teachers and organise regular workshops in which teachers can meet, discuss and exchange ideas relating to teaching S&T classes. Some other centres also have special programmes for businesses and entrepreneurs. They offer for example team building sessions or specific events for companies.

## **Museums in Sweden**

There are more than 400 museums spread across Sweden. Most frequently visited are the national museums located within the Stockholm area. In 2009 for example, approximately 40 per cent of the 17.9 million annual visitors found their way to the national museums *Skansen*, *Vasamuseet* or *Moderna Museet*. Another 40 per cent of these visitors went to regional or municipal museums such as *Malmö museer*, *Stockholms stadsmuseum* or *Värmlands museum* (Swedish Art Council 2009). These regional museums focus primarily on the cultural heritage and history of a specific city or region.

Children and teenagers, including in particular pre-school and school classes, are also attracted to the different museums. Of the 17.9 million annual visitors to Swedish museums, 1.3 million were children and teenagers visiting as part of pre-school or school excursions. The top destinations for children in 2009 were *Naturhistoriska riksmuseet*, *Skansen* and *Tekniska museet*, all national museums based in Stockholm. Approximately 80 per cent of Swedish museums offer special activities for children and teenagers (Swedish Art Council 2009).

In 2009, there were more than 1.600 different exhibitions on display in museums across Sweden, two thirds of which shown by communal or regional museums. There were 139 travelling exhibitions at 446 different locations across Sweden. In total, almost 100.000 different public activities were organised by museums of which almost 40.000 were organised for pre-school and school children (Swedish Art Council 2009).

Table 2 provides information about the most frequently visited museums in Sweden. The high number of visitors indicates that they are a significant factor in making knowledge available and increasing the understanding of science amongst the general public.

**Table 1: Selected science centres in Sweden**

Sources: Homepages, own specifications from science centres, Association of Swedish Science Centres

Name	Start	History	Aim	Target group	Type of exhibits and activities	Benefit to the city/region
Dalénium Stenstorp	1999	The original idea was to create more young S&T entrepreneurs, such as the local industrialist "Gustaf Dalén"	Inspire interest in S&T, increase curiosity and creativity	Families, companies, associations, pupils, teachers	Interactive experiments, science shows, training for teachers in maths, science and technology	Entertainment and education
Främstidsmuseet, Borlänge	1986	The original idea was to create interest in science, to inspire people to learn about science and to understand that science is fun and also comprehensible	Stimulate interest in S&T	Children, teenagers, pupils, teachers, general public	Interactive exhibitions, planetariums, experimental workshops, experiments for schools classes, guided tours for school classes, girls' summer school on S&T, design school projects and competition (e.g. building and programming Lego robots)	Education for children, pupils, teachers, general public in the county of Dalarna
Innovatum Science Center, Trollhättan	1997	The original idea was to increase cooperation between industry, higher education and politics at local and regional level, to increase interest in S&T	To create a positive attitude towards S&T	Children, teenagers, adults, schools, enterprises	4400 square meters of interactive exhibitions	Education, entertainment
Molekylverket, Stenungsund	1992	The original idea was to inform the general public about the local chemical industry, to increase the understanding and interest in chemistry.	Increase interest and understanding in S&T and chemistry	Families, schools	Hands-on experiments, exhibits about the local chemical industry and its role in society	Education, network building between industry, society and schools
Technichus, Hämönsand	1988	The original idea was to increase interest in S&T, inspire school teaching with S&T, improve recruitment to higher education through increasing peoples education	Increase interest in S&T and entrepreneurship, act as meeting point for different societal actors	Children, teenagers and adults	Permanent exhibitions about mathematics, human skeleton, etc. planetarium; temporary exhibitions; school class visits plus teaching material; goes out to schools with portable planetarium or a bus with experiments	Education of regional population
Teknikens Hus, Luleå	1987	Started as a project at the University of Luleå. Independent foundation from 1988 with university, communities and industry as founders.	Interest in S&T Recruitment to higher education Resource for teachers and students Public understanding of science and technology.	Students K-12 Teachers Families General public	Permanent exhibitions with a strong industrial and reality base. 5-10 temporary exhibitions every year. Educational programs Shows and demonstrations Theatre	Educational resource for the region. Arena for debate and science communication. Visitor attraction.
Tom Tits Experiment, Södertälje	1988	The original idea was to increase teachers' education in S&T	Increase interest in S&T	Children, teenagers, school classes (half of the visitors are children)	Hands-on exhibitions; teacher training, classes for secondary schools, scientific camps during summer holidays, cooperation with universities	Education (most of the visitors come from locations outside Södertälje)
Universeum, Göteborg	2001	Local industry wanted more engineers, researchers and technicians. The original idea was to inspire a large number of children and teenagers about S&T every year	Increase interest in S&T among children and teenagers, improve teachers' competencies, develop new ideas by providing a meeting point for schools, companies and society	Children and teenagers	Permanent and temporary exhibitions about the rain forest, water, space, etc., organising school class visits, providing teaching material for "Living in space", "creative mathematics", "Body and health", "Swedish animals and nature", "Living in the rain forest", etc., teacher training, teacher meetings, organising workshops with academics, business people, general public	Education of population in the Gothenburg region and beyond, should contribute to a rise in student numbers at universities and companies
Upptech, Jönköping	2001	The original idea was to inspire an interest in S&T from an early age, targeted especially at girls whose interest in studying sciences is particularly low	Increase interest in S&T among children and teenagers	Children and teenagers	Permanent exhibitions with experiments, planetarium, auditorium, workshops and seminars with the cooperation of Jönköping University "ekobuss" for school visits	Education of the population in the Jönköping region
Vattenhallen, Lund	2009	The original idea was to increase interest in S&T and therefore to improve student recruitment at the Lund University engineering faculty (LTH)	Increase interest in S&T among children and teenagers	Children, teenagers, school classes, companies	Hands-on experiments and shows (flight show, chemical show, geology show, etc.), planetarium, school visits (technical project, lab experiment), company events (teambuilding, trainings, etc.), internships for pupils, teacher trainings	Education in Lund region

**Table 2: Selected museums in Sweden**  
Sources: Homepages, Association of Swedish Museums

Name	Year	History	Aim	Target group	Type of exhibits and activities	Focus
Skansen	1891	Artur Hazelius founded the world's first open-air museum. The aim was to preserve Swedish farming culture after societal transformations in the late 19th century	Providing insights into Sweden's heritage and natural history, portraying life and nature in Sweden	General public, children, teenagers, school classes	Open-air museum, zoo, rebuilt, original towns and cottages from the 19th century, several dance and music events, events for major public holidays (Christmas, Easter, Midsummer, etc.)	National, international
Vasamuseet	1990	King Gustaf Adolf's II ship "Vasa" sank in 1628 and was salvaged in 1961	Providing insights into Vasa and beyond	General public, children, teenagers, school classes	The ship "Vasa", history of Vasa, special exhibitions about living in the 17th century, etc., school visits, providing school material	National, international
Naturhistoriska Riksmuseet	1786	Museum with a long tradition, first exhibits shown in the early 18th century	Increasing interest in and knowledge about animals, plants, biology and environment	General public, children, teenagers, school classes	Exhibition of museum's collections, plants, special exhibitions, school class programmes, teacher training	National
Tekniska museet	1936	Sweden's largest technical museum with a focus on saving the cultural heritage in the field of technology and industrial history	To make the world more understandable through reflecting technology from a contemporary viewpoint, alongside historical and future perspectives	General public, children, teenagers, school classes	Interactive exhibitions, special exhibitions, school class programmes, teacher training, teaching material	National
Stockholms stadsmuseum	1937	Largest municipal museum in Sweden	Spread knowledge about the cultural heritage and history of Stockholm	General public, children, school classes	Collections, special exhibitions, school class programmes	Municipal
Värmlands museum	1980	Set up to preserve the history and art of Värmland	Spread knowledge about culture, history and contemporary life in the Värmland region	General public, children, teenagers, school classes	Collections, exhibitions, school class programmes	Regional
Nobelmuseet	2001	Founded 100 years after the first Nobel Prize Winners (1901)	Spread knowledge about the Nobel Prize, Alfred Nobel, Nobel Prize winners and their discoveries, and to increase interest in science	General public, children, teenagers, school classes	Collections, exhibitions, seminars, conferences, school class programmes	National, international
Uppsala linnéanska trädgården	17th century	Sweden's oldest botanical garden situated at the former summer house of botanist Carl von Linné	Provide plants and seeds for research and teaching, spread knowledge about botany	Researchers, teachers, general public	Guided tours, school class programmes	National



## 4. Science events

There are two major science festivals and several science events held annually across Sweden. The aim of these events is to stimulate interest and increase understanding of science amongst the general public, as well as to generate direct exchange and interactivity between researchers and the public, often with a specific focus on children and young adults. The most important events in terms of visitor numbers and public profile are the International Science Festival in Gothenburg (*Vetenskapsfestivalen*) and Researchers' Night (*ForskarFredag*). Both of them consist of hundreds of activities, free and open to everyone.

Every year since 1997 the International Science Festival brings science and research out into the streets of Gothenburg, Sweden's second largest city. The activities – including workshops, debates, private shows, music, theatre, exhibitions and seminars – entice about 100.000 visitors in all. There is also an attractive and extensive school programme offering a large variety of activities, as well as a specialist programme. The main audience groups are the general public and school classes, but business people and politicians also find their way to the festival in order to discuss scientific issues with researchers and other societal groups.

Researchers' Night is a European-wide event partly funded by the European Commission. The Swedish event (*ForskarFredag*) has been held every year since the launch of the project in 2005, and reaches over 20.000 Swedes each year. Held on the fourth Friday of September, Researchers' Night is an evening event, competing with more traditional Friday night entertainments. *ForskarFredag* takes place at 25–30 locations across the country, including in the more remote areas. Activities are varied with an emphasis on face-to-face interactions with researchers. Many sites have spectacular science shows, science film nights and science cafes alongside hands-on experiments and workshops. The target audience is the general public, and there are also activities during the afternoon aimed at school classes. In particular, mass experiments in which school classes can participate have been part of Researchers' Night for the last three years.

The annual Gothenburg International Book Fair includes a specific programme for scientific books. As part of this programme it organises lectures and panel discussions with the authors. There is also a "Researchers' Square", an area in the science section of the fair, offering a variety of panel discussions, lectures and presentations.

The Nobel Museum film festival "Film and Science" screens scientific movies followed by audience discussions with researchers and filmmakers. Both events are targeted at the general public.

There are also a number of science events and open house events specifically related to school pupils. Many universities offer open days with open lectures, hands-on experiments or workshops. Each year universities across Sweden hold specific subject days, for instance Geology, Chemistry or Physics Day. These aim to encourage pupils to take an interest in natural sciences with hands-on experiments and lectures held throughout the day. Furthermore,

several school competitions related to science are organised and sponsored by foundations and non-profit organisations.

The Nobel Prize award ceremony takes place each December in Stockholm. During this period, called “Nobel week”, many science activities including several public lectures aimed at the general public take place in Stockholm and other university cities. The Nobel award ceremony and the Nobel dinner are also broadcast live on Swedish Television, raising the profile of science and particularly the achievements of the laureates.

The general trend is for the number of event attendees in Sweden to increase. Many of the events mentioned above also benefit from extensive media coverage. Activities offering two-way communication and interactivity have increased in recent years, but still a majority of the research communication activities organised in Sweden focuses mainly on one-way communication. Also, most activities involve researchers working in academia, whereas activities including researchers within companies are far less common.

### Table 3: Selected science events in Sweden

Sources: Homepages

Name	Type	Start	No. of participants	Organiser/funder	Activities	Target audience
Researchers' Night ( <i>Forskarfredag</i> )	Science festival at 25-30 different locations across Sweden	2005	More than 20.000	Organiser: VA (Public & Science), universities, science centres, communes. Funders: EC, several Swedish research funding organisations; local funders	Hands-on activities, experiments, workshops, lectures, science shows, science cafés	General public, children, teenagers, pupils, school classes
Researchers' Night ( <i>Forskarfredag</i> ), mass experiment	Mass experiment within the frame of Researchers' Night aimed at school classes	2009	3.000 pupils	Organiser: VA (Public & Science), universities, science centres, communes. Funder: EC, national funders	Joint research project between school classes embedded within a university research project, for example in 2011, measuring the temperature in fridges	School classes, pupils
The International Science Festival in Gothenburg ( <i>Vetenskapsfestivalen</i> )	Science festival in Gothenburg	1997	100.000 visits	Gothenburg & Co	Lectures, workshops, debates, interactive activities	General public, school classes, teachers, business, media, politicians
Researchers' square ( <i>Forskartorget</i> ) at the International book Fair in Gothenburg	"Market place" where researchers present their research and meet book fair visitors	2004	Information not available	Organiser: Popular Projects AB. Funders: Several Swedish research funding organisations	Book presentations, workshops, short lectures	Fair visitors, general public
Geology Day ( <i>Geologins dag</i> )	Open house, up to 100 activities across Sweden	2000	10.000-15.000	Organiser: Non-profit organisations, enterprises, universities, museums, associations Funders: Members of NPO, private sponsors	Lectures, hands-on experiments, excursions, teaching material provided	School classes, pupils, teachers, general public
Chemistry Day ( <i>Kemins dag</i> )	Open house	Information not available	Information not available	Organiser: The Swedish Plastics and Chemicals Federation, science centres. Funder: The Swedish Plastics and Chemicals Federation	Chemical experiments together with science centres, teaching material provided	School classes, pupils, teachers
Physics Day ( <i>Fysikens dag</i> )	Open house	2005	Information not available	Organiser and funder: Malmö University	Lectures, experiments in physics, hands-on experiments, teaching material provided	Secondary school classes, teachers
Archive Day ( <i>Arkivens dag</i> )	Open house at public archives across Sweden	1998	35.000	Organiser: Archives and libraries across Sweden	Open house in libraries and public archives	General public
Open house events and a series of popular science lectures at several universities, e.g. <i>Forskardagarna</i> at Stockholm University organised annually	Open house	Since 1990s	Varies with university	Organisers: Universities and university colleges	Open house, short and understandable lectures, panel discussions	General public, secondary school classes, pupils, teachers
Film & Science	The Nobel museum International film festival	2010	Information not available	Organiser: Nobel museum. Funder: Swedish research funding organisations, cultural foundation	Screening of science-related movies, discussions before and after the movie with researchers and film makers	General public, school classes
Cultural nights in different cities across Sweden	Festival	Since 1980s	Information not available	Different cities	Extensive programme covering a variety of mainly cultural but also some scientific issues in a specific city	General public
The Nobel Week	Science event/award ceremony	Since late 1990s	Information not available	The Nobel foundation	On Nobel day (10th December) the Nobel award ceremony and dinner is broadcast live on Swedish Television; several public lectures are given and printed popular scientific materials are published	General public
Mail box to researchers ( <i>Frågeådan</i> ), Discover ( <i>Finn upp</i> ), <i>Snillebixtarna</i> , First LEGO League, <i>Berzeliusdagar</i>	Science events for school pupils	Since 2000s	Varies	Diverse foundations, universities	Different activities aimed at pupils promoting scientific literacy and interest, for example: question-answer sessions with researchers, class competitions about new discoveries; provisions of teaching material	School pupils, teachers

## 5. Scientific culture in local policies

Since the 1990s, *university statutes* (Högskolelagen 1992: 1434) in Sweden include collaboration with society as the third task alongside education and research. In 2009, the Swedish government went a step further and declared that it is the duty of a university (or other Higher Education institute) to collaborate with the surrounding society, to inform people about its research results and to ensure that the work of the university is also of use to society. Several universities have included engaging with the societal actors within their strategy, mission statement or policies aimed at increasing quality in research and education. These universities emphasize the fact that both the university and society will gain from interacting and cooperating with each other. The Swedish word for collaboration with the society (“samverkan”) appears on the front page of many university homepages alongside “education” and “research”. Several studies have shown that many university-level societal engagement activities have been launched since university statutes were changed to include collaboration with society (National Agency for Higher Education 2004, 2008).

In 2011, the Swedish government launched a *formal investigation* into using assessments of research quality as a basis for allocating governmental resources to universities (Ministry of Education and Research, U2010/4151/SAM). One aspect of research quality focused on the quality of the societal collaboration activities of universities. It was proposed that the level of contract research and contract education within a university should be used as one measure of the degree of societal collaboration within that university, and that this should be a factor when deciding upon the level of governmental resource allocation (Flodström 2011). Those universities with higher incomes from contract research and contract education should be rewarded with more governmental resources. The investigation also proposed a pilot project where universities report on the scope and impact of their societal collaboration activities. This pilot project should lead to better insights into best practices of societal engagement within higher education institutions. The government will take a decision on these proposals in 2012.

Meanwhile, several Swedish universities have started discussing their engagement activities, have taken steps to monitor and measure these collaboration activities or have appointed staff with particular responsibility for societal collaboration activities. The Swedish University for Agricultural Sciences, for instance, has recently appointed 18 senior lecturers that will spend half their working time on collaboration activities with the society. Currently employed professors and lecturers will also be evaluated in terms of their societal collaboration activities.

There are several *governmental and non-governmental institutions* in Sweden that foster the dialogue between science and society and promote public participation on science and technology. The *Swedish National Agency for Higher Education* (Högskoleverket) works to encourage and improve the interaction between universities and society. In 2004, it carried out its first survey into the level of collaboration activities with society within Swedish universities. This survey has made a significant contribution to a clearer understanding of different aspects of science-society interactions. In 2007 this survey was revised to include questions about how best to measure the level of science-society engagement within universities. The most

common suggestions for indicators included the number of popular science articles, public events, commissioned research and education, internships, post-graduate theses and research projects carried out in cooperation with industry or other societal group, patents and licenses.

The *Swedish Research Council* (Vetenskapsrådet), Sweden's major research funding organisation, is also engaged in science communication. In addition to funding research, the Swedish Research Council is also responsible for coordinating the communication of research results on a national level.

*Vinnova* is the second largest research-funding organisation in Sweden. One of its activities is to increase the cooperation between universities and other societal actors in their local areas. Vinnova funds collaborations between universities, companies, and other organisations within the Swedish innovation system.

*VA (Public & Science)*, is a non-governmental organisation which supports, organises and researches activities and interactions between science and the public. For example, VA organises science cafes and an annual national Researchers' Night event (Forskarfredag). It carries out studies into the Swedish public's attitudes to science and research as well as into societal collaboration indicators, and analyses the extent to which research is accessible to different sections of society such as policy-makers, schools and industry. VA is an independent member organisation founded in 2002. Members include universities, research funding organisations, adult education associations, museums, political parties and companies.

There are several regions and cities that use science in their local brand. In 2009, the Stockholm County council decided to rename Stockholm as *Knowledge Region Stockholm*. The idea behind this branding was to make Stockholm more attractive to highly educated people in Sweden and abroad. There is a lack of individuals with a higher education within the Stockholm county and this deficiency could lead to substantial problems for enterprises and public organisations in the future. A further idea is to improve the capacity of the region's higher education institutions in order to increase the number of graduates in the region.

Another example is the city of Lund. Lund has the second oldest university in Sweden (after Uppsala) and therefore already has a long scientific tradition. Lund promotes its world-class scientific education as well as the vast number of innovations coming from this region with the slogan *Lund – City of Ideas*.

A further approach to science branding can be seen in Uppsala, the city with the oldest university in Sweden. The tourist board in Uppsala advertises scientific activities such as a science walk or visits to libraries, museums or the botanical garden under the heading *Science Uppsala*.

The city of Norrköping has incorporated the word "knowledge" into its vision for 2020. The slogan *Knowledge City Norrköping* stands for a fundamental transformation from an industrial city in the beginning of the last century to a modern city and society with a focus on science and knowledge.

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- Högskolelagen (University Statutes) (1992, 1434): "I högskolornas uppgift ska ingå att samverka med det omgivande samhället och informera om sin verksamhet samt verka för att forskningsresultat tillkomna vid högskolan kommer till nytta."
- Läroplan 2011, see [www.skolverket.se](http://www.skolverket.se)
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## Links to cities and regions branding science:

- Linköping: <http://www.mjardevi.se/sv/om-mjardevi/nyhetsarkiv/349-science-city-linkoeping>
- Lund: <http://www.lund.se/en/Business--Science/>
- Växjö: <http://www.vaxjo.se/Kommun--politik/Om-Vaxjo-/Internationellt/Other-languages/Engelska--English/Business-in-Vaxjo/Videum-Science-Park/>
- Norrköping: <http://www.nordiccitynetwork.com/news/august/idea-store-london>
- Uppsala: <http://www.uppsalatourism.se/DynPage.aspx?id=32381>

## Links to museums

- The Association of Swedish Museums: <http://www.sverigemuseer.se>
- Skansen, <http://www.skansen.se/>
- Vasamuseet, <http://www.vasamuseet.se/>
- Naturhistoriska Riksmuseet, <http://www.nrm.se/>
- Tekniska museet, <http://www.tekniskamuseet.se/>
- Stockholms stadsmuseum, <http://www.stadsmuseum.stockholm.se/>
- Värmlands museum, <http://www.varmlandsmuseum.se/>
- Nobelmuseet, <http://www.nobelmuseum.se/>
- Uppsala linneanska trädgården, <http://www.botan.uu.se/>



## Links to science centers

- Association for Swedish Science Centres includes links to science centres in Sweden:  
<http://fssc.se/>

## Links to science events

- Researchers' Night (*Forskarfredag*), <http://forskarfredag.se/>
- The International Science Festival in Gothenburg (*Vetenskapsfestivalen*),  
<http://vetenskapsfestivalen.se/>
- Researchers' square (*Forskartorget*) at the International book Fair in Gothenburg  
<http://www.forskartorget.com/>
- Geology Day (*Geologins dag*), <http://www.geologinsdag.nu/>
- Chemistry Day (*Kemins dag*), <http://www.plastkemiforetagen.se/kemins-dag/Pages/default.aspx>
- Physics Day (*Fysikens dag*), <http://www.mah.se/fysikensdag>
- Archive Day (*Arkivens dag*), <http://www.arkivensdag.nu/>
- *Forskardagarna* at Stockholm University, <http://www.su.se/om-oss/evenemang/forskardagarna>
- Film & Science in the Nobel Museum, <http://www.nobelmuseum.se/sv/film-and-science>
- The Nobel Week, <http://www.nobelprize.org/>
- Mail box to researchers (*Frågelådan*), <http://www.frageladan.se/>
- Discover (*Finn upp*), <http://www.finnupp.se/>
- *Snilleblixarna*, <http://www.snilleblixarna.se/>
- First LEGO League, <http://www.firstlegoleague.org/>
- *Berzeliusdagar*, <http://www.berzeliusdagarna.se/>

## **VA promotes dialogue and openness between the public and researchers!**

Public & Science (Vetenskap & Allmänhet, VA) is an independent non-profit membership organisation based in Stockholm, Sweden. Founded in 2002, VA's mission is to advance and encourage dialogue between researchers and the public. Since its foundation, VA has organised hundreds of dialogue events and carried out more than 30 studies into science-society interactions.

VA's main aims are

To **increase knowledge** by:

- Studying the public's view of science and researchers
- Studying the interaction between science and different societal groups
- Mapping researchers' engagement with society
- Developing methods for science communication

To develop new meeting formats and organise **dialogues** and **workshops** around research and research communication

To **communicate** and disseminate experiences and knowledge gained.

VA is a knowledge hub for collaboration between science and society. Members from the scientific community as well as from other sectors of society and the general public are represented in the organisation.

**For more information, please visit**  
**[www.v-a.se](http://www.v-a.se)**



Vetenskap & Allmänhet