European Commission

Research and Innovation performance in Sweden

Country Profile

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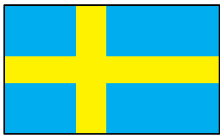


Sweden

World positioning in challenge-driven innovation

Summary: Performance in research and innovation

The indicators in the table below present a synthesis of research and innovation (R&I) performance in Sweden. They relate knowledge investment and input to performance and economic output throughout the innovation cycle. They show thematic strengths in key technologies and also the high-tech and medium-tech contribution to the trade balance. The indicator on excellence in science and technology takes into consideration the quality of scientific production as well as technological development. The Innovation Output Indicator covers technological innovation, skills in knowledge-intensive activities, the competitiveness of knowledge-intensive goods and services, and the innovativeness of fast-growing enterprises, focusing on innovation output. The indicator on knowledge-intensity of the economy focuses on the economy's sectoral composition and specialisation and shows the evolution of the weight of knowledge-intensive sectors and products.

Key indicators of research and innovation performance	
R&D intensity 2012: **3.41 %** (EU: 2.07 %; US: 2.79 %) 2007-2012: **-0.2 %** (EU: 2.4 %; US: 1.2 %)	***Excellence in S&T***[1] 2012: **87.9** (EU: 47.8; US: 58.1) 2007-2012: **+5.5 %** (EU: +2.9 %; US: -0.2)
Innovation Output Indicator 2012: **122.4** (EU: 101.6)	***Knowledge-intensity of the economy***[2] 2012: **65.3** (EU: 51.2; US: 59.9) 2007-2012: **+2.0 %** (EU: +1.0 %; US: +0.5 %)
Areas of marked S&T specialisations: Health, environment, energy, ICT, materials, and security	***HT + MT contribution to the trade balance*** 2012: **1.8 %** (EU: 4.23 %; US: 1.02 %) 2007-2012: **+0.5 %** (EU: +4.8 %; US: -32.3 %)

Sweden has one of the world's highest R&D intensities. The country also performs among the world leaders in terms of scientific and technological excellence, with a very positive evolution. The Swedish economy has a strong innovation output coupled with a highly knowledge-intensive structure. It has been resilient to the economic downturn, partly linked to the high and growing research excellence and knowledge-intensity.

However, despite increasing public investment in R&D, Sweden is still registering a stagnating R&D intensity, even though the trend of relative outsourcing of private R&D seems to have been reversed. Since 2002, the outflow of R&D business investment has exceeded the inflow. Sweden's good R&D position is vulnerable due to its strong dependence on a few large multinational companies, which are increasingly orienting themselves towards the global innovation system. At the same time, several larger Swedish corporations have been subject to acquisitions by foreign firms, contributing to the gradual delocalisation of strategic R&D activities.

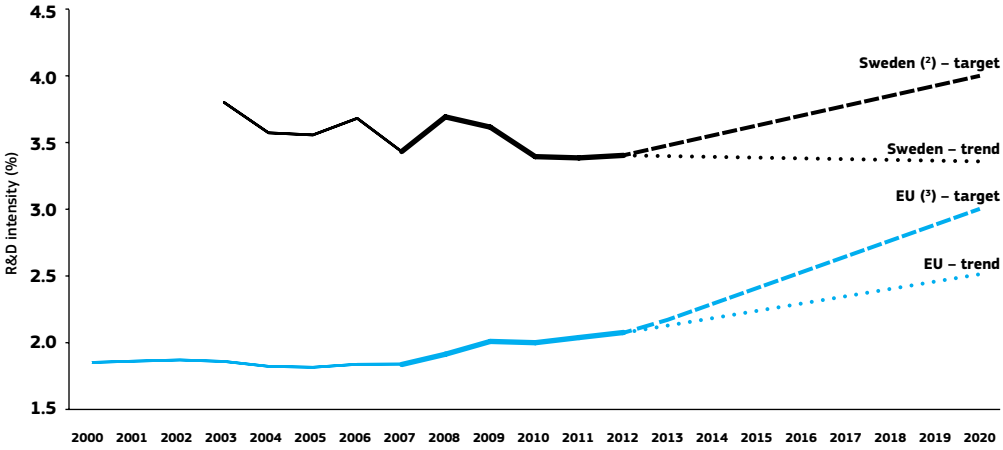
Progress is being made towards addressing these challenges. The fall in business R&D expenditure is slowing down, partly as a result of determined policies to create clusters and open innovation systems linking larger Swedish corporations to small and medium-sized enterprises (SMEs). The challenge-driven innovation approach is also being pursued, orienting innovation more closely towards global societal challenges. It aims to enhance both service and product innovations, with an increasing focus on systemic innovation. The current proposal to move towards a transport system based on non-fossil fuels by 2030 is a concrete example of such a broad innovative approach. Supply-side policies will be matched more closely with policies enhancing the demand for innovation, both from private actors and from public procurement and regulation.

[1] Composite indicator that includes PCT per population, ERC grants per public R&D, top universities and research institutes per GERD and highly cited publications per total publications.

[2] Composite indicator that includes R&D, skills, sectoral specialisation, international specialisation and internationalisation sub-indicators.

Investing in knowledge

Sweden – R&D intensity projections: 2000–2020 (1)



Source: DG Research and Innovation – Unit for the Analysis and Monitoring of National Research Policies
Data: DG Research and Innovation, Eurostat, Member State
Notes: (1) The R&D intensity projections based on trends are derived from the average annual growth in R&D intensity for 2007–2012.
(2) SE: The projection is based on a tentative R&D intensity target of 4.0 % for 2020.
(3) EU: The projection is based on the R&D intensity target of 3.0 % for 2020.
(4) SE: There is a break in series between 2005 and the previous years.

Sweden has set an R&D intensity target of 4 % by 2020, which is more ambitious than the EU target although consistent with R&D intensity levels set by world innovation leaders such as Switzerland, Israel, the United States, Japan and South Korea. However, Sweden is not on track to meet its national target. In the period 2012-2020, the R&D intensity would need to experience an average annual growth of 2 %, which contrasts with the trend registered for 2007-2012 (-0.2 %).

The key policy for Sweden will be to continue to spur business R&D investments in the country, building on its growing clusters and the potential of lead markets. Business R&D intensity fell from 3.20 % in 2001 to 2.59 % in 2005 and to 2.31 % in 2012[3]. Within the business sector, R&D investment is highly concentrated in large, often foreign-owned companies, which makes the Swedish prima-facie good position vulnerable to change in company strategies. At the same time, R&D investment in SMEs fell almost 30 % between 2005 and 2009.

Public funding of R&D has been increasing since 2009-2016 due to investments reported in the research bills of 2008 and 2012, with a total increase of around EUR 1 billion foreseen for 2009-2016. Sweden raised its public R&D budget by 3.2 % in 2011, 4.5 % in 2012, and an additional 5.7 % in 2013. Structural Funds are an important source of funding for research and innovation (R&I) activities. Of the EUR 1.6 billion of Structural Funds allocated to Sweden over the 2007-2013 programming period, around EUR 405 million (24.9 % of the total) related to RTDI[4]. In addition, up to 2013, 4312 Swedish applications have been successful in the EU's Seventh Framework Programme (FP7), receiving a total of EUR 1.570 billion. The success rate of applicants was 23.94 % (above the EU average of 21.95 % but below comparable countries such as Switzerland, Norway and the Netherlands).

[3] There is a break in series between 2005 and the previous years for both R&D intensity and business R&D intensity in Sweden.

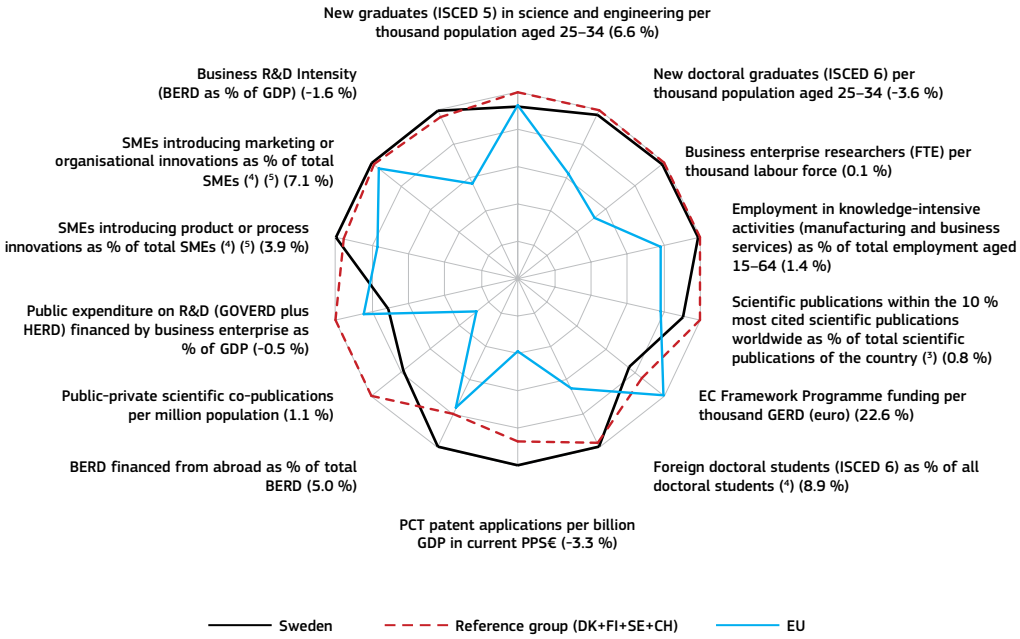
[4] RTDI includes the following sectors: (01) RTD activities in research centres, (02) RTD infrastructures and centres of competence, (03) Technology transfer and improvement of cooperation of networks, (04) Assistance to RTD, particularly in SMEs (and RTD services in research centres), (06) Assistance to SMEs for the promotion of environmentally friendly products and processes, (07) Investment in firms directly linked to research and innovation, (09) Other methods to stimulate research and innovation and entrepreneurship in SMEs, and (74) Developing human potential in the field of research and innovation.

An effective research and innovation system building on the European Research Area

The graph below illustrates the strengths and weaknesses of Sweden's R&I system. Reading clockwise, it provides information on human resources, scientific production, technology valorisation and innovation. Average annual growth rates from 2007 to the latest available year are given in brackets.

Sweden, 2012 (1)

In brackets: average annual growth for Sweden, 2007–2012 (2)



Source: DG Research and Innovation – Unit for the Analysis and Monitoring of National Research Policies
Data: DG Research and Innovation, Eurostat, OECD, Science-Metrix/Scopus (Elsevier), Innovation Union Scoreboard.
Notes: (1) The values refer to 2012 or to the latest available year.
(2) Growth rates which do not refer to 2007–2012 refer to growth between the earliest available year and the latest available year for which comparable data are available over the period 2007–2012.
(3) Fractional counting method.
(4) EU does not include EL.
(5) CH is not included in the reference group.

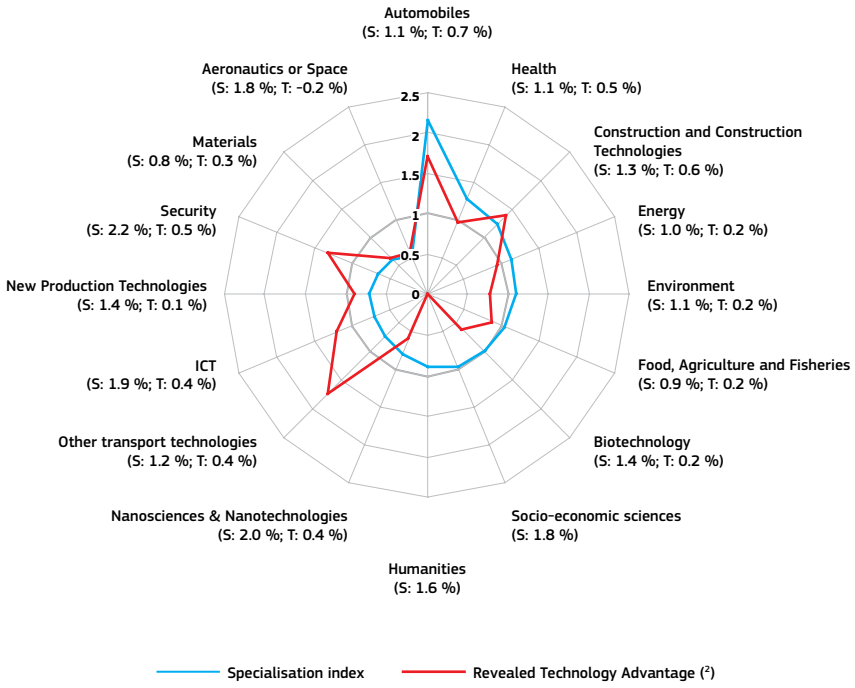
Compared to its reference group of other innovation leaders, Sweden stands out in PCT patent applications (in spite of a negative trend) and the internationalisation of its business R&D investment. Relative weaknesses are public-private cooperation, EU Framework Programme funding, the scientific impact of publications, and new graduates in science and engineering. Apart from the negative trend in business R&D intensity and new doctorate graduates, all other indicators of the Swedish R&I system point towards positive trends.

Higher education institutions perform over 26 % of R&D in Sweden. More than half of the funding for these institutions is competitive funding and part of their institutional funding is now subject to performance-based criteria. Given the small size of Sweden, the optimisation of R&I also depends on integration into the expanding European R&I system. In this context, Swedish research has become better connected to Europe in the health sector, while the second largest field of publications – in ICT – was linked more closely to European networks in 2000 compared to 2011. Currently, only the most research-intensive universities in Sweden cooperate extensively with international partners. In contrast, the business sector has developed strong co-patenting activities with firms in Germany, France and the United Kingdom.

Sweden's scientific and technological strengths

The graph below illustrates the areas, based on the Framework Programme thematic priorities, where Sweden shows scientific and technological specialisations. Both the specialisation index (SI, based on the number of publications) and the revealed technological advantage (RTA, based on the number of patents) measure the country's scientific (SI) and technological (RTA) capacity compared to that at the world level. For each specialisation field it provides information on the growth rate in the number of publications and patents.

Sweden – S&T National Specialisation ([1]) in thematic priorities, 2000–2010
in brackets: growth rate in number of publications ([3]) (S) and in number of patents ([4]) (T)

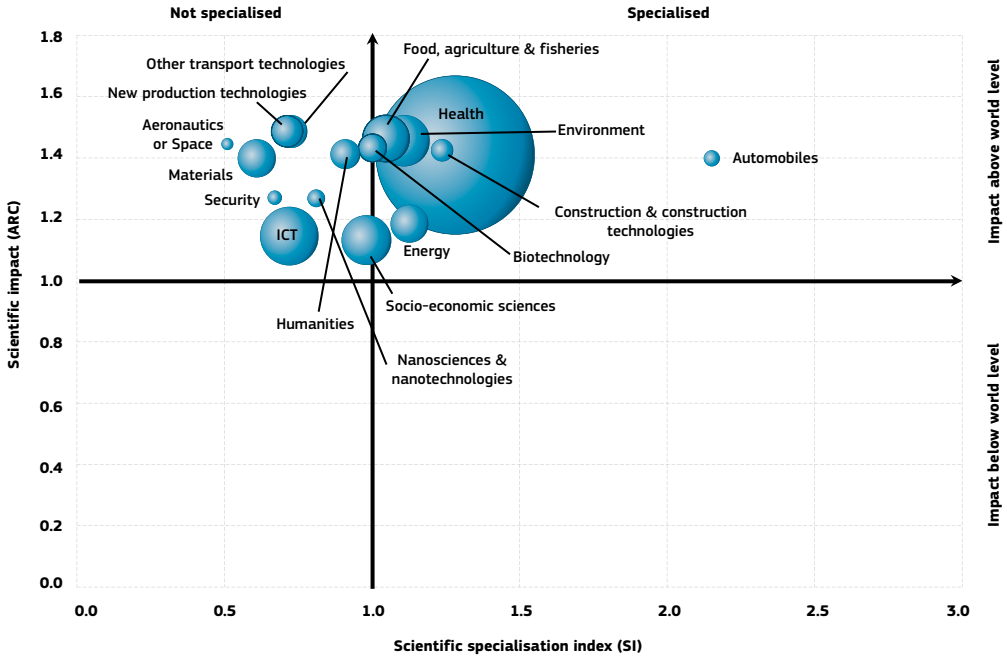


Source: DG Research and Innovation – Unit for the Analysis and Monitoring of National Research Policies
Data: Science-Metrix Canada; Bocconi University, Italy
Notes: ([1]) Values over 1 show specialisation; values under 1 show a lack of specialisation.
([2]) The Revealed Technology Advantage (RTA) is calculated based on the data corresponding to the WIPO-PCT number of patent applications by country of inventors. For the thematic priorities with fewer than 5 patent applications over 2000–2010, the RTA is not taken into account. Patent applications in 'Aeronautics or Space' refer only to 'Aeronautics' data.
([3]) The growth rate index of the publications (S) refers to the periods 2000–2004 and 2005–2009.
([4]) The growth rate in number of patents (T) refers to the periods 2000–2002 and 2003–2006.

Sweden performs well in most areas of science and technology production. In terms of specialisation profile, the automobile and construction sectors stand out as having a high specialisation in both science and technology. The country also has a scientific specialisation in health, energy, and environment research, while its technology specialisation covers security, transport, and ICT, too. In the field of automobiles, other EU Member States, such as Germany, have a similar specialisation as Sweden, while Finland, the United Kingdom, Portugal and Hungary have a scientific specialisation in this field. In the construction sector, the United Kingdom, Lithuania, Portugal and Turkey are possible cooperation partners having a similar specialisation in both science and technology.

The graph below illustrates the positional analysis of Swedish publications showing the country's situation in terms of scientific specialisation and scientific impact over the period 2000-2010. The scientific production of the country is reflected by the size of bubbles, which corresponds to the share of scientific publications from a science field in the country's total publications.

Sweden – Positional analysis of publications in Scopus (specialisation versus impact), 2000–2010



Source: DG Research and Innovation – Unit for the Analysis and Monitoring of National Research Policies
Data: Science-Metrix Canada, based on Scopus
Note: Scientific specialisation includes 2000–2010 data; the impact is calculated for publications of 2000–2006, citation window 2007–2009.

Overall, Sweden has a very high scientific quality in almost all fields, in particular in transport technologies, new production technologies, health, environment, and research in food, agriculture and fisheries. One of Sweden's particular strengths is the good match between the fields where it produces most research (i.e. health and environment) and the fields of scientific excellence. In this context, there is room for improvement in ICT, energy, and research in socio-economic sciences. However, the Swedish scientific specialisation profile does not correspond to its technological strengths, with the exception of research for the automobiles, construction, health, energy, and environment sectors.

Policies and reforms for research and innovation

The current Swedish policy is following the 2008 and 2012 R&I bills, which stress the links between R&I. In the broad sense of innovation policy, governance issues are crucial to actively enhancing innovation in several policy areas and reinforcing comprehensive framework conditions for business innovation. In a narrower sense, the bills reinforced the funding and strategic focus of R&I. Following the 2008 bill, public funding was boosted in 24 research areas important to the Swedish business sector and society. Within the 2012 bill, strong emphasis was given to R&D in strategic innovation and in core areas for Swedish industry, such as mining, steel, wood products and the construction of a sustainable society. Also the Swedish innovation agency, Vinnova, is moving towards a challenge-driven strategy responding to business opportunities in addressing global challenges. For this reason, the agency has currently focused its international cooperation activities on four societal challenges: information society 3.0; sustainable attractive cities; future healthcare; and competitive production.

Public funding for R&D will be increased progressively and funding allocation systems for universities will be reformed progressively to enhance scientific excellence. The Swedish Research Council has an assignment to propose additional peer-review processes to evaluate the quality of Swedish universities. It is expected that 20 % of institutional funding will be allocated to universities on the basis of specific quality criteria. Moreover, Vinnova will develop and propose a model for evaluating collaboration between universities and the surrounding society, including industry, and will distribute more than EUR 20 million to the best-performing universities during 2013-2016. As regards public-private collaboration, the Swedish programmes are also supporting changes in the approach of university managers through specific training. Many initiatives are now being channelled through the management of the universities, which means they should then be able to lead and prioritise in a way that facilitates the commercialisation of research results.

Over the last five years, several initiatives have been launched to enhance the effectiveness of the Swedish R&I system, with a focus on innovation in SMEs through reinforced public-private cooperation with universities and better access to seed funding and venture capital. Industrial research institutes have been restructured and reinforced to be specific innovation intermediates and act as an interface between academic research and product development in the business sector. The model involves the private business sector buying R&D services from the institutes, while the state funds their facilities and skills development. In addition, the bill established innovation offices at each university to foster the commercialisation of research results. In recent years, Sweden has seen quite an important increase in the number of new enterprises. This is also due to improvements in the framework conditions, thanks to a dedicated focus on final users – i.e. entrepreneurs – and less red tape. The government is also promoting measures specifically addressed to women and young people. At the same time, business vouchers have been launched for the internationalisation of SMEs. The idea is to support SMEs via consultancy services before they take their first steps in foreign markets. Companies with between two and nine employees can apply for these business vouchers.

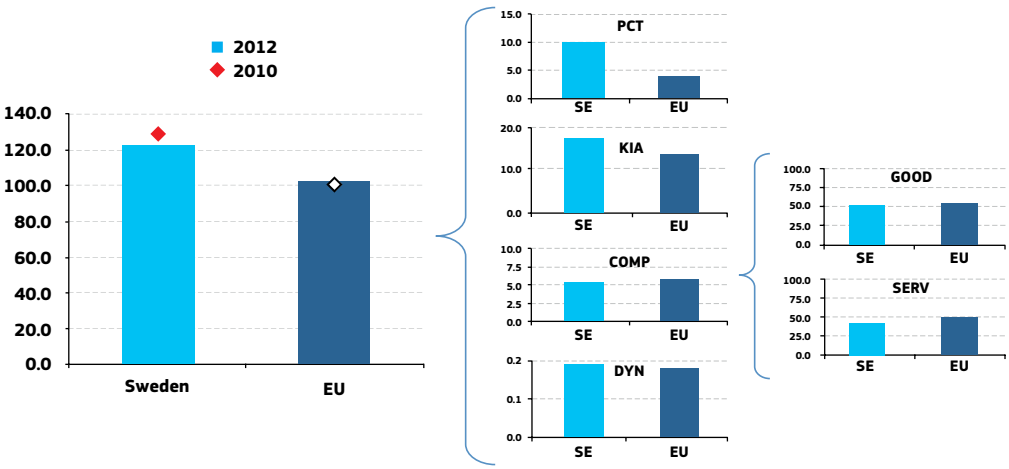
The new National Innovation Strategy, adopted at the end of 2012, comprises a holistic approach to innovation policy aimed at the year 2020. Interesting proposals have been made for both demand-side measures (i.e. introducing a new procurement law fostering innovation-friendly procurement) and supply-side measures (in particular to fund testing, demonstration infrastructure and reinforcement of incubators for new research-based products). The role of the public sector as driver of innovation is stressed. The 2011 Innovation Procurement inquiry proposed the introduction of a new law on pre-commercial procurement. Increasing importance is given to innovation in services, mobilising knowledge in the broad sense, and enhancing societal challenge-driven innovation, new business models and design-based thinking. Vinnova funds programmes which develop new knowledge and expertise within four strategic areas for Sweden: health and healthcare; transport and environment; services and ICT; and manufacturing and working life. In 2011, an Innovation Procurement programme was launched aiming to increase and extend the development of innovation procurement, mainly in the public sector. A call for proposals under this programme was issued in the same year and remained open throughout 2013.

Innovation Output Indicator

The Innovation Output Indicator, launched by the European Commission in 2013, was developed at the request of the European Council to benchmark national innovation policies and to monitor the EU's performance against its main trading partners. It measures the extent to which ideas stemming from innovative sectors are capable of reaching the market, providing better jobs and making Europe more competitive. The indicator on innovation focuses on four policy axes: growth via technology – (patents); jobs (knowledge-intensive employment); long-term global competitiveness (trade in mid/high-tech commodities); and future business opportunities (jobs in innovative fast-growing firms).

The graph below enables a comprehensive comparison of Sweden's position regarding the indicator's different components:

Sweden – Innovation Output Indicator



Source: DG Research and Innovation – Unit for the Analysis and Monitoring of National Research Policies
Data: Eurostat, OECD, Innovation Union Scoreboard 2014, DG JRC
Notes: All data refer to 2012 except PCT data, which refer to 2010.
PCT = Number of PCT patent applications per billion GDP, PPS.
KIA = Employment in knowledge-intensive activities in business industries as % of total employment.
DYN = Innovativeness of high-growth enterprises (employment-weighted average).
COMP = Combination of sub-components GOOD and SERV, using equal weights.
GOOD = High-tech and medium-high-tech products exports as % total exports. EU value refers to EU-28 average (extra-EU = 59.7 %).
SERV = Knowledge-intensive services exports as % of total service exports. EU value refers to EU-28 average (extra-EU = 56 %).

Sweden is a top performer in terms of innovation output. However, its performance declined slightly between 2010 and 2012. A particularly strong performance is visible in the PCT and KIA pillars, while there is room for improvement in the share of knowledge-intensive services in the overall service trade balance. Sweden is a good EU performer as regards the innovativeness of fast-growing firms. This is the result of a high share of computer programming, scientific R&D, and architectural and engineering companies among fast-growing enterprises. The relatively lower performance on the export share of medium-/high-tech goods is due to a high share of wood and paper exports. It should be noted that these sectors do not impede the strong technology orientation in the Swedish economy, also because they are more innovative in Sweden than in most other countries.

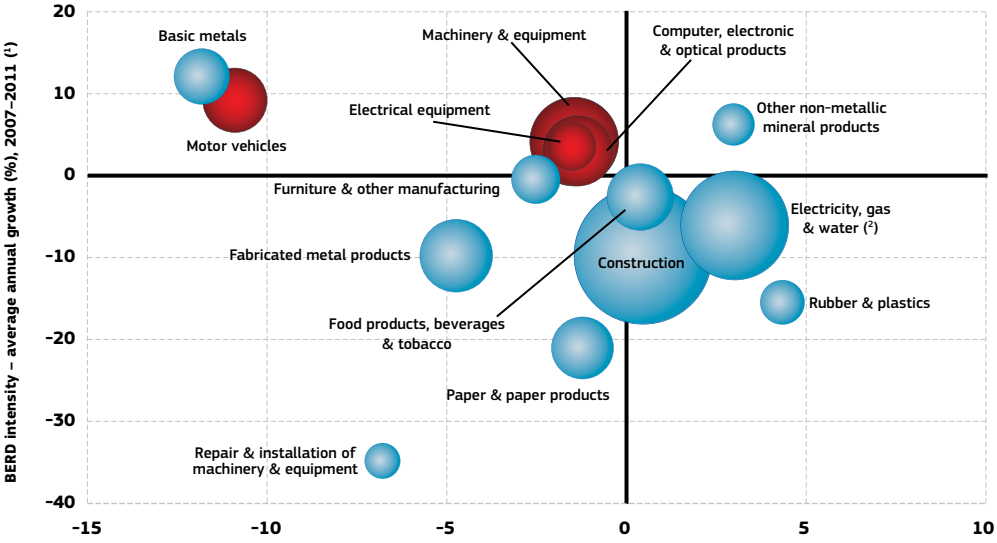
Sweden offers good framework conditions for innovation in business activities, in particular for the creation of new firms. In general, barriers to entrepreneurship are lower than in most OECD countries. The share of doctoral graduates is high (although less focused on science and technology). Clusters in some sectors (i.e. ICT, power generation, biotechnology) have grown around some of the larger research-intensive firms. Early-stage funding as a share of GDP is the highest among the EU Member States. Likewise, venture-capital investment as a share of GDP is among the highest in the OECD. However, the share of early-stage funding in total risk capital is lower than in other EU Member States and, following the financial crisis, there has been a sharp decline in risk finance.

The Swedish economy has become slightly more knowledge-intensive even during the period of economic downturn. Employment in knowledge-intensive activities as a share of total employment, both overall and in the business sector, grew between 1.0 % to 1.6 % between 2008 and 2011. Similar growth is visible in the technology sectors, measured by value added in high-tech and medium-high-tech manufacturing and knowledge-intensive services between 2008 and 2011.

Upgrading the manufacturing sector through research and technologies

The graph below illustrates the upgrading of knowledge in different manufacturing industries for the period 2007-2011. The position on the horizontal axis illustrates the changing weight of each industry sector in value added over the period. The general trend to the left-hand side reflects the decline in manufacturing in the overall economy. The sectors above the x-axis are those where research intensity has increased over time. The size of the bubble represents the sector share (in value added) in manufacturing (for all sectors presented on the graph). The red sectors are high-tech or medium-high-tech sectors.

Sweden – Share of value added versus BERD intensity: average annual growth, 2007–2011 (1)



Source: DG Research and Innovation – Unit for the Analysis and Monitoring of National Research Policies
Data: Eurostat
Notes: (1) 'Construction', 'Furniture and other manufacturing', 'Repair and installation of machinery and equipment', 'Rubber and plastic products': 2009–2011.
(2) 'Electricity, gas and water' includes 'sewerage, waste management and remediation activities'.
(3) High-tech and medium-high-tech sectors (NACE Rev. 2 – two-digit level) are shown in red.

The Swedish economy has managed to maintain an important manufacturing industry since the mid- 1990s. This has also been achieved during the economic downturn. Most manufacturing sectors maintained their share of value added in the economy over the 2007-2011, with the notable exception of basic and fabricated metals and motor vehicles. In general, countries with a strong manufacturing sector have been more resilient to the economic crisis. However, over the economic downturn period, and compared to other EU Member States, the Swedish manufacturing industry presents a lower dynamic in terms of upgrading knowledge, in particular R&D. This is particularly true of the larger manufacturing sectors, such as paper and paper products, the electricity, gas and water industries, fabricated metal products, rubber and plastics, and construction – all important sectors in the Swedish economy both currently and historically. There are some promising exceptions, such as machinery and equipment, computer and electronics, electrical equipment, motor vehicles and basic metals, which all increased their R&D intensity over the period 2007-2011.

R&D-intensive firms in Sweden are found in the ICT sector (Ericsson, Axis), energy (parts of ABB), pharmaceuticals (parts of Astra Zeneca), automobiles (Volvo, Scania), industrial engineering (Alfa Laval, SKF, Husqvarna), healthcare equipment (Elektra, Getinge, Indap) and materials (Sandvik). As illustrated in the EU Industrial Scoreboard, the large Swedish R&D-intensive enterprises broadly maintained or even increased their global R&D intensities in 2011 as compared to 2009. On average, Swedish firms increased their R&D investment between 2007 and 2011, although there were exceptions – companies in the motor vehicles, software, biotechnology, and pharmaceutical sectors.

Key indicators for Sweden

SWEDEN	2000	2005	2006	2007	2008	2009	2010	2011	2012	Average annual growth 2007–2012 (1) (%)	EU average (2)	Rank within EU
ENABLERS												
Investment in knowledge												
New doctoral graduates (ISCED 6) per thousand population aged 25–34	2.47	2.40	3.28	3.40	3.16	3.10	2.93	2.88	2.8	**-3.6**	***1.81***	**1**
Performance in mathematics of 15-year-old students: mean score (PISA study)	:	:	502	:	:	494	:	:	478	**-24.1 (3)**	**495 (4)**	**21 (4)**
Business enterprise expenditure on R&D (BERD) as % of GDP	:	2.59	*2.75*	2.51	*2.74*	2.55	*2.33*	2.33	*2.31*	***-1.6***	**1.31**	**2**
Public expenditure on R&D (GOVERD + HERD) as % of GDP	:	0.96	*0.92*	0.92	*0.95*	1.06	*1.06*	1.04	*1.09*	***3.3***	**0.74**	**1**
Venture capital as % of GDP	0.86	1.01	1.34	0.89	1.00	0.45	0.90	0.56	0.48	**-11.5**	**0.29 (6)**	**3 (6)**
S&T excellence and cooperation												
Composite indicator on research excellence	:	:	:	67.4	:	:	:	:	87.9	**5.5**	**47.8**	**1**
Scientific publications within the 10% most cited scientific publications worldwide as % of total scientific publications of the country	:	12.5	12.8	12.5	12.6	12.7	:	:	:	**0.8**	**11.0**	**5**
International scientific co-publications per million population	:	1164	1224	1333	1341	1451	1533	1636	1712	**5.1**	**343**	**2**
Public–private scientific co-publications per million population	:	:	:	140	139	140	144	147	:	**1.1**	**53**	**2**
FIRM ACTIVITIES AND IMPACT												
Innovation contributing to international competitiveness												
PCT patent applications per billion GDP in current PPS (EUR)	13.3	10.1	10.7	11.1	10.5	10.9	10.0	:	:	**-3.3**	**3.9**	**2**
License and patent revenues from abroad as % of GDP	0.52	0.94	1.00	1.02	0.96	1.13	1.25	1.18	1.28	**4.7**	**0.59**	**5**
Community trademark (CTM) applications per million population	153	128	165	200	175	200	223	248	243	**4.0**	**152**	**6**
Community design (CD) applications per million population	:	52	52	61	63	62	58	61	63	**0.6**	**29**	**3**
Sales of new-to-market and new-to-firm innovations as % of turnover	:	:	:	:	9.2	:	8.4	:	:	**-4.4**	**14.4**	**21**
Knowledge-intensive services exports as % total service exports	:	41.2	41.2	40.4	40.7	42.3	39.9	39.8	:	**-0.4**	**45.3**	**10**
Contribution of high-tech and medium-tech products to the trade balance as % of total exports plus imports of products	2.51	1.89	2.41	1.76	1.97	2.30	1.83	1.95	1.80	-	**4.23 (7)**	**15**
Growth of total factor productivity (total economy): 2007 = 100	88	97	99	100	98	94	99	100	100	**0 (8)**	**97**	**4**
Factors for structural change and addressing societal challenges												
Composite indicator on structural change	:	:	:	59.0	:	:	:	:	65.3	**2.0**	**51.2**	**3**
Employment in knowledge-intensive activities (manufacturing and business services) as % of total employment aged 15–64	:	:	:	:	16.6	16.8	16.9	17.2	17.6	**1.4**	**13.9**	**4**
SMEs introducing product or process innovations as % of SMEs	:	:	40.7	:	40.6	:	43.8	:	:	**3.9**	**33.8**	**6**
Environment-related technologies: patent applications to the EPO per billion GDP in current PPS (EUR)	0.56	0.57	0.64	0.66	0.64	0.85	:	:	:	**13.6**	**0.44**	**3**
Health-related technologies: patent applications to the EPO per billion GDP in current PPS (EUR)	1.94	1.78	1.71	1.50	1.03	1.25	:	:	:	**-8.6**	**0.53**	**2**
EUROPE 2020 OBJECTIVES FOR GROWTH, JOBS AND SOCIETAL CHALLENGES												
Employment rate of the population aged 20–64 (%)	77.7	78.1 (5)	78.8	80.1	80.4	78.3	78.1	79.4	79.4	**-0.2**	**68.4**	**1**
R&D intensity (GERD as % of GDP)	:	3.56	*3.68*	3.43	*3.70*	3.62	*3.39*	3.39	*3.41*	***-0.2***	***2.07***	**2**
Greenhouse gas emissions: 1990 = 100	96	93	93	91	89	83	91	86	:	**-5 (9)**	**83**	**13 (10)**
Share of renewable energy in gross final energy consumption (%)	:	40.4	42.4	43.9	45.0	47.7	47.9	46.8	:	**1.6**	**13.0**	**1**
Share of population aged 30–34 who have successfully completed tertiary education (%)	31.8	37.6	39.5	41.0	42.0	43.9	45.3	46.8	47.9	**3.2**	**35.7**	**5**
Share of population aged 18–24 with at most lower secondary education and not in further education or training (%)	7.3	10.8	8.6 (11)	8.0	7.9	7.0	6.5	6.6	7.5	**-1.3**	**12.7**	**7 (10)**
Share of population at risk of poverty or social exclusion (%)	:	14.4	16.3	13.9	14.9	15.9	15.0	16.1	*18.2*	**5.5**	**24.8**	**4 (10)**

Source: DG Research and Innovation – Unit for the Analysis and Monitoring of National Research Policies
Data: Eurostat, DG JRC – Ispra, DG ECFIN, OECD, Science Metrix / Scopus (Elsevier), Innovation Union Scoreboard
Notes: (1) Average annual growth refers to growth between the earliest available year and the latest available year for which compatible data are available over the period 2007–2012.
(2) EU average for the latest available year.
(3) The value is the difference between 2012 and 2006.
(4) PISA (Programme for Internatonal Student Assessment) score for EU does not include CY and MT. These Member States were not included in the EU ranking.
(5) Break in series between 2005 and the previous years.
(6) Venture capital: EU does not include EE, HR, CY, LV, LT, MT, SI and SK, These Member States were not included in the EU ranking.
(7) EU is the weighted average of the values for the Member States.
(8) The value is the difference between 2012 and 2007.
(9) The value is the difference between 2011 and 2007. A negative value means lower emissions.
(10) The values for this indicator were ranked from lowest to highest.
(11) Break in series between 2006 and the previous years.
(12) Values in italics are estimated or provisional.

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