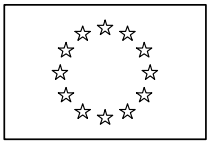

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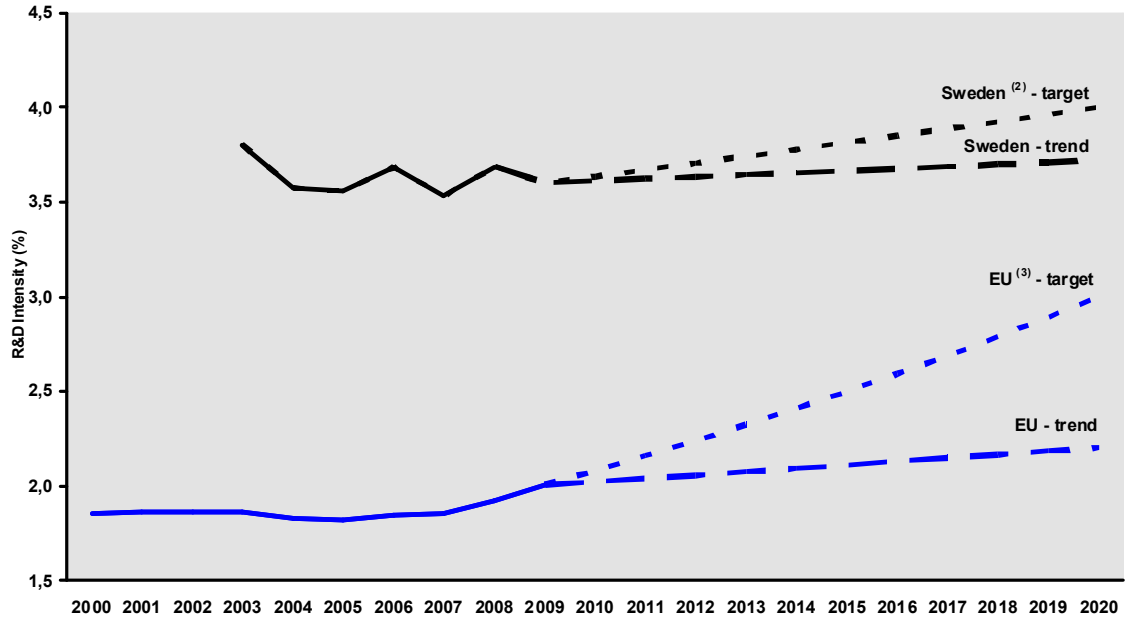
COMMISSION STAFF WORKING PAPER

Innovation Competitiveness report 2011

Progress towards meeting the Europe 2020 R&D intensity target

The most recent figures for Sweden on R&D intensity are 3.6% (1.06% public + 2.54% private). This is still below its probable[1] peak level of 2001 (4.18% of GDP). The downward variation is mainly due to changes in private sector R&D investments. In view of 2020, Sweden is considering a preliminary national R&D target of 4% of GDP. Given the trend scenario presented below, a 4% R&D intensity target is realistic given that both public and private R&D investments are increasing. In its most recent research bill, for the period 2009–2012, the government substantially increased its R&D expenditures, despite the financial crisis at the time. In this research bill, public R&D expenditures identified 'strategic areas' for research and innovation in Sweden in the coming years, in particular medicine, technology and climate.

Sweden - R&D Intensity projections, 2000-2020 (1)



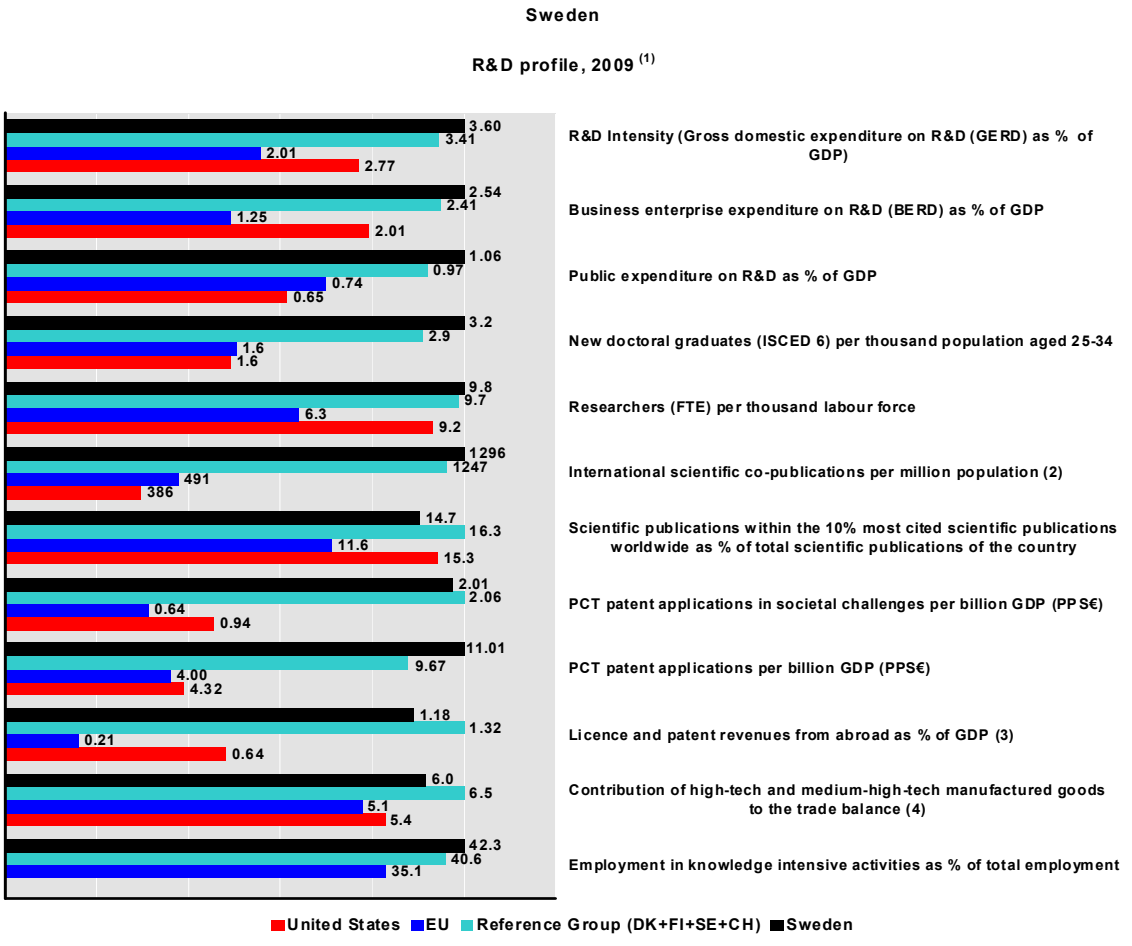
Source: DG Research and Innovation — Innovation Union Competitiveness Report 2011
Data: DG Research and Innovation, Eurostat
Notes: (1) The R&D Intensity projections based on trends are derived from the average annual growth in R&D Intensity for 2000-2009 in the the case of the EU and for 2005-2009 in the case of Sweden.
(2) SE: This projection is based on a tentative R&D Intensity target of 4.0% for 2020.
(3) EU: This 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.

Research and innovation performance

The Swedish research and innovation system is characterised by a dominating private sector combined with a public sector with a very high and expanding research and education

[1] There is a break in series of data over the period 2000–2009.

investment rate. The leading performer of research in Sweden is the business enterprise sector (that accounted for around 74% of the R&D expenditure in the last five years). The second main performer is the higher education sector, with the universities as the main actors (around 20% of the total R&D expenditure). Sweden is among the most knowledge-intensive countries in the world, with over 42% of the work force employed in knowledge-intensive activities. It has among the highest R&D intensities, high shares of researchers and skilled human resources in the economy, low unemployment rates for researchers and high levels of new academic-oriented tertiary education degrees. These efforts have resulted in very high and increasing quality of its scientific production (a ratio of 14% of the Swedish scientific publications are among the 10% most cited in the world) - although here Sweden is below the scientific quality of its Nordic neighbours and Switzerland of the United States. Sweden has also achieved high number of patent applications - as well as high-tech patent applications - to the European Patent Office per billion GDP.

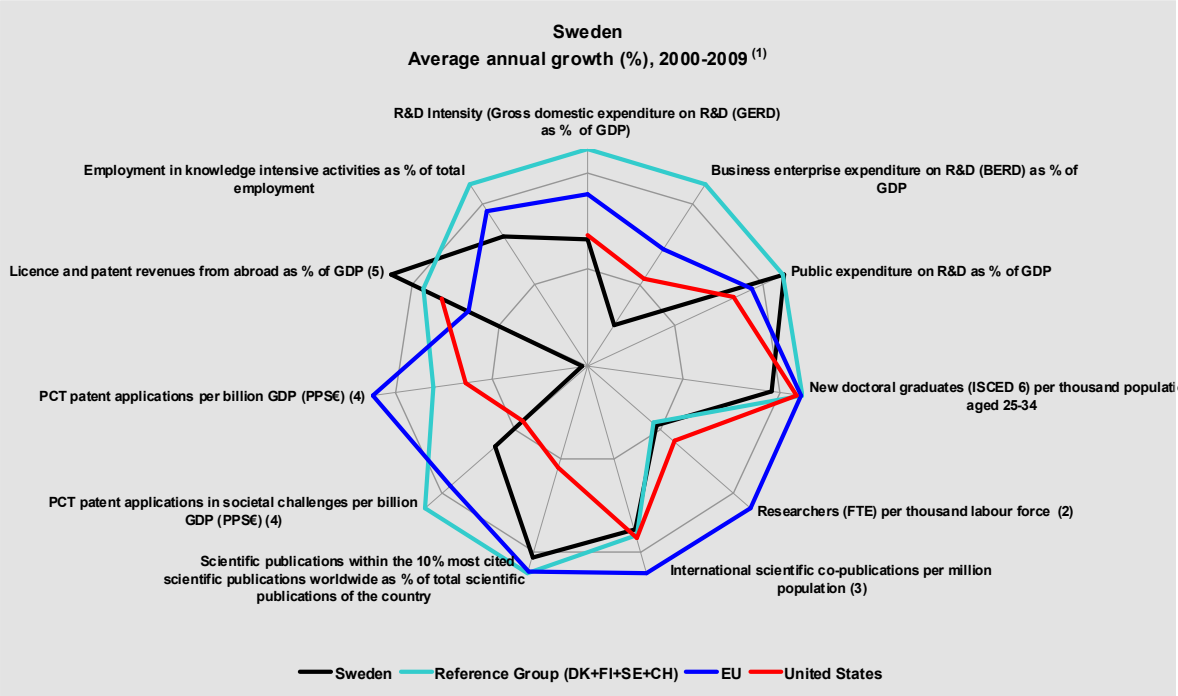


Source: DG Research and Innovation — Innovation Union Competitiveness Report 2011
Data: Eurostat, OECD, Science Metrix / Scopus (Elsevier)
Notes: (1) The values refer to 2009 or to the latest available year.
(2) (i) The EU value refers to the median rather than to the average; (ii) CH is not included in the Reference Group.
(3) EU refers to extra-EU.
(4) (i) EU does not include BG, CY, LV, LT, MT, RO; (ii) EU refers to extra-EU; (iii) CH is not included in the Reference Group.
(5) Elements of estimation were involved in the compilation of the data.

As shown in the report, the Swedish national innovation framework conditions show clear strengths in several areas: a stable macroeconomic environment, a highly trained workforce, a handful of R&D-intensive multinational corporations, one of the highest level of venture capital availability in the world (both for early stage and expansion capital), and high rate of

broadband access by firms. These strengths are reinforced by Sweden's integration into global markets.

The main vulnerability is business-sector knowledge intensity and dynamics, given its overall importance in the Swedish R&I system. Sweden benefits from expanding knowledge-based firm dynamics, with high R&D investment rate and new-to-the-market products by SMEs. However, the firm-knowledge dynamics are less intensive than could be expected from the high level of S&T production and favourable framework conditions. Similar countries have higher private R&D investment growth and more dynamic patenting activity than in Sweden, both for PCT patents and for SME patenting. The overall birth rate of new firms in Sweden is also low compared to other European countries. More generally, since 2000 patent application rate has grown faster in Denmark, Finland, and the United States than in Sweden.

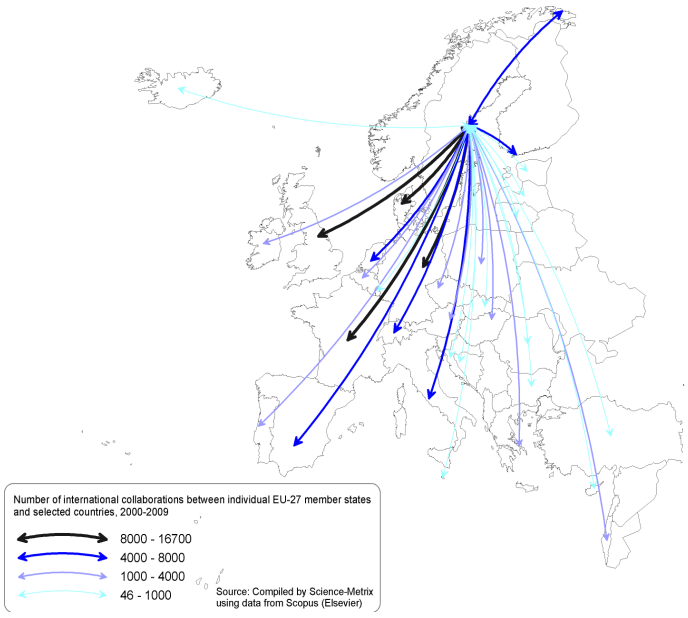


Source: DG Research and Innovation — Innovation Union Competitiveness Report 2011
Data: Eurostat, OECD, Science Metrix / Scopus (Elsevier)
Notes: (1) Growth rates which do not refer to 2000-2009 refer to growth between the earliest available year and the latest available year over the period 2000-2010.
(2) Average annual growth for Sweden refers to 2007-2008 - there is a break in series between 2007 and the previous years.
(3) (i) The EU value refers to the median rather than to the average; (ii) CH is not included in the Reference Group.
(4) Average annual growth refers to real growth.
(5) EU refers to extra-EU.
(6) Elements of estimation were involved in the compilation of the data.

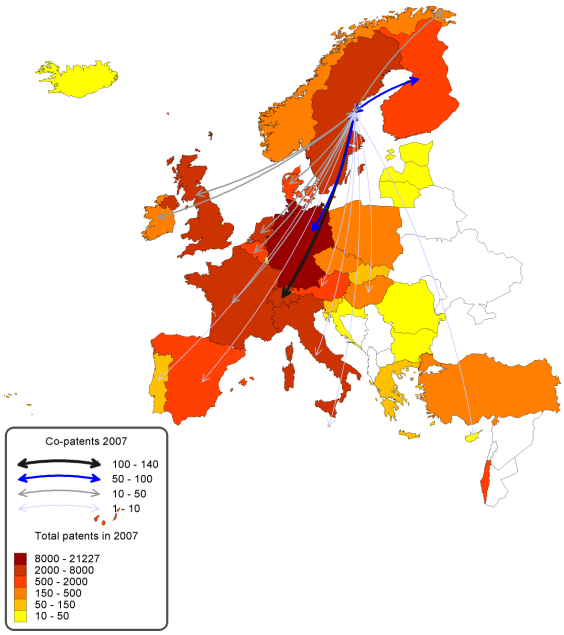
Participation in the European Research Area: scientific and technological collaborations

Sweden is a small and open country. The efficiency of the research system is being strengthened by an opening up to and integration into the European research system. In Sweden, openness towards other European organisations has increased, and its integration in European scientific networks is improving. The report illustrates several aspects of scientific and technological cooperation. Europe-wide maps in part II illustrate the manner in which Sweden is connected to the main nodes of the networks, which are located in the dominant research countries of Western and Central Europe. As also seen below, the strongest links of Swedish science and technology cooperation are with neighbouring countries, as well as Germany, France and the United Kingdom, but intensive cooperation is also visible with researchers from Southern and Central European countries. More generally, Swedish researchers have a high integration of international scientific knowledge flows, visible in international co-publications including cooperation with the United States and Asia. Given that Sweden is among Europe's scientific and technological leaders, it can be expected that the country is well-connected to international knowledge flows. In this sense, it is noticeable that Sweden is still not in the centre node of the intra-European science and technology networks, although factors of critical mass do play a role.

Co-publications Sweden and European countries in 2000-2009



Co-invented patent applications Sweden and European countries, 2007



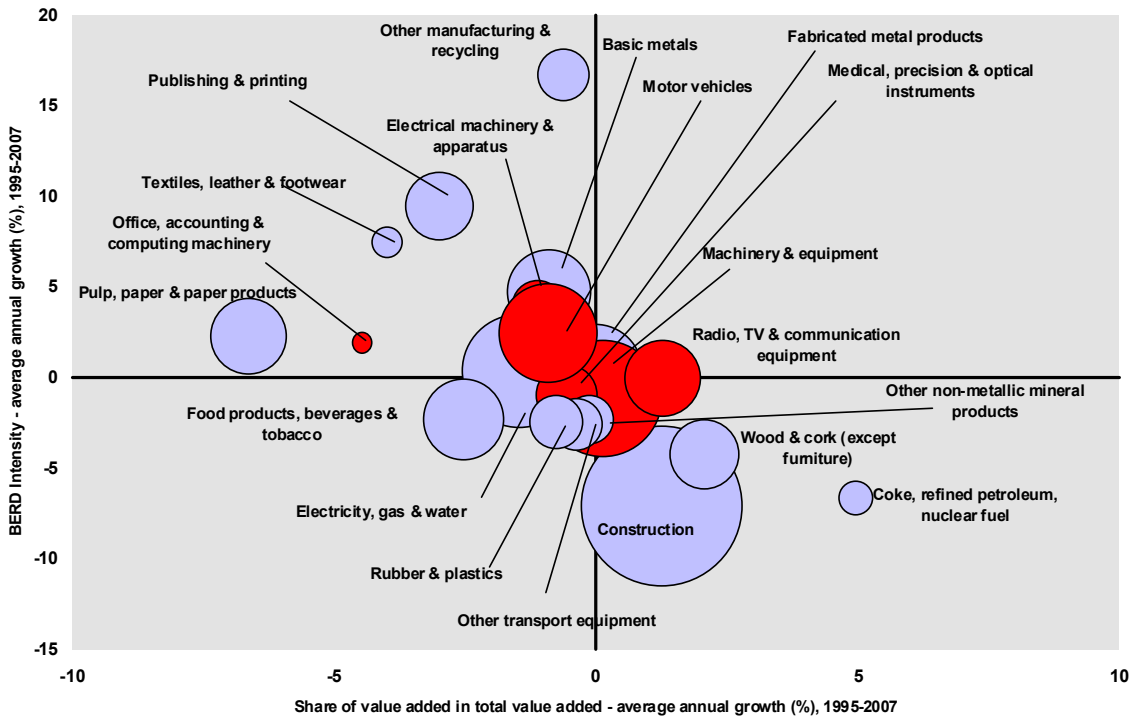
Source: DG Research and Innovation
Data: Scopus/ Science Metrix and Eurostat

Structural change towards a more knowledge-intensive economy

The slightly lower dynamics of knowledge-intensive firms has contributed to a lack of major structural change in the Swedish knowledge economy over the period 1995-2007. Many of the large research-intensive firms are close to the world technology frontier in their domains and therefore have small margins to increase their R&D intensity relative to international competitors. However, as shown in the figure below, the Swedish manufacturing sector is showing signs of diversification, with knowledge and R&D being injected into and invested in medium-and low-tech sectors, both more traditional (such as textiles or basic metals) and newer sectors (in particular recycling and publishing–printing).

The Swedish economy has not shifted towards a larger weight of knowledge-intensive manufacturing sectors in the economy. This stable sectoral composition of Sweden shows that the increases in R&D intensity inside sectors have not been enough to compensate some decreases. Sweden needs the emergence of new sectors.

Sweden - Share of value added versus BERD Intensity - average annual growth, 1995-2007



Source: DG Research and Innovation — Innovation Union Competitiveness Report 2011
Data: OECD
Notes: (1) High-Tech and Medium-High-Tech sectors are shown in red. 'Other transport equipment' includes High-Tech, Medium-High-Tech and Medium-Low-Tech.
(2) 'Chemicals and chemical products' is not visible on the graph.

FP7 Key facts and figures

Applications:
As of 2011/03/16, a total of

- 7.027 eligible proposals were submitted in response to 248 FP7 calls for proposals
- involving 9.551 applicants from Sweden (3,58% of EU-27*) and
- requesting EUR 3.688,27m of EC contribution (4,18% of EU-27*)

Among the EU-27* Sweden (SE) ranks:
- 9th in terms of number of applicants and
- 8th in terms of requested EC contribution

Success rates:

- The SE applicant success rate of 24,9% is higher than the EU-27* applicant success rate of 21,6%.
- The SE EC financial contribution success rate of 21,9% is higher than the EU-27* rate of 20,7%.

Specifically, following evaluation and selection, a total of

- 1.678 proposals were retained for funding (23,9%)
- involving 2.380 (24,9%) successful applicants from Sweden and
- requesting EUR 806,37m (21,9%) of EC financial contribution

Among the EU-27*, Sweden (SE) ranks:
- 4th in terms of applicants success rate and
- 7th in terms of EC financial contribution success rate

Signed grant agreements
As of 2011/03/16, Sweden (SE) participates in

- 1.458 signed grant agreements
- involving 18.247 participants of which 2.063 (11,31%) are from Sweden
- benefiting from a total of EUR 5.453,14m of EC financial contribution of which EUR 746,01m (13,68%) is dedicated to participants from Sweden.

Among the EU-27* in all FP7 signed grant agreements, Sweden (SE) ranks:
- 8th in number of participations and
- 7th in budget share

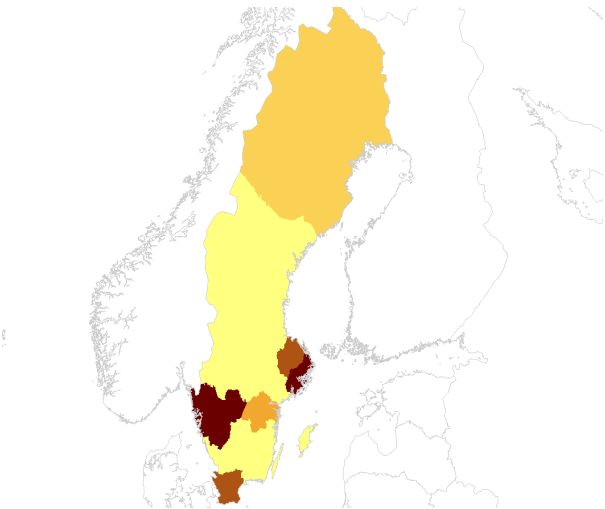
SME performance and participation

- The SE SME applicant success rate of 22,20% is higher than the EU-27* SME applicant success rate of 19,33%.
- The SE SME EC financial contribution success rate of 19,91% is higher than the corresponding EU-27* rate of 18,26%.

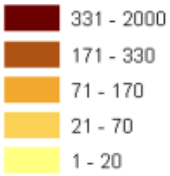
Specifically,

- 1.851 SE SME applicants requesting EUR 522,75m

**Nr. of Researchers		
as % of population	N/A	0,40%
Rank in EU-27* Innovation scoreboard (2008)	- 1st	
- Above EU-27 average		
- Innovation Leader		
Nr. of FP7 applicants		
(% EU-27*)	9.551	
(3,58%)	266.507	
Req. EC contribution by FP7 applicants in EUR million		
(% EU-27*)	3.688,27	
(4,18%)	88.295	
Nr. of successful FP7 applicants		
(% EU-27*)	2.380	
(4,02%)	59.199	
Req. EC contribution by successful FP7 applicants in EUR million		
(% EU-27*)	806,37	
(4,42%)	18.262,02	
Success rate FP7 applicants	24,9%	21,6%
Success rate FP7 EC contribution	21,9%	20,7%
Nr. of FP7 grant holders		
(% EU-27*)	2.063	
(4,02%)	51.279	
EC contribution to FP7 grant holders in EUR million		
(% EU-27*)	746,01	
(4,50%)	16.578,15	
Nr. of FP7 coordinators		
(% of grant holders)	340	
(16,48%)	9.383	
(18,30%)		
Nr. of FP7 SME grant holders		
(% grant holders)	268	
(12,99%)	8.845	
(17,25%)		
EC contribution to FP7 SME grant holders in EUR million		
(% of grant holders)	75,90	
(10,17%)	2.207,73	
(13,32%)		



- 411 (22,20%) successful SMEs requesting EUR 104,07m (19,91%)



In signed grant agreements, as of 2011/03/16,

- 268 SE SME grant holders, i.e., 12,99% of total SE participation
- EUR 75,90m, i.e., 10,17% of total SE budget share

Top 3 collaborative links with:

- DE - Germany (2.564)
- UK - United Kingdom (1.954)
- FR - France (1.694)

SE - Sweden - most active FP7 research priority areas by number of applicants applying for the research projects						
FP7 priority area	Nr. of applicants	Requested EC contribution by applicants (M euro)	Nr. of mainlisted applicants	Success Rate (applicants)	Requested EC contribution by mainlisted applicants (M euro)	Success Rate (requested EC contribution)
Information and Communication Technologies	1.992	848,89	384	19,28 %	153,71	18,11 %
Marie-Curie Actions	1.324	n/a	305	23,04 %	n/a	n/a
Health	1.077	575,44	295	27,39 %	140,06	24,34 %
Transport (including Aeronautics)	804	250,86	273	33,96 %	80,08	31,92 %
Environment (including Climate Change)	637	196,11	135	21,19 %	34,65	17,67 %
Research for the benefit of SMEs	590	82,92	137	23,22 %	17,81	21,47 %

SE - Sweden - most active FP7 research priority areas by EC contribution granted to the research projects				
FP7 Priority Area	Number of grant holders	% of all SE grant holders	EC contribution (EUR million)	% of total EC contribution to SE
Information and Communication Technologies	380	18,42%	144,95	19,43 %
Health	275	13,33%	134,25	18,00 %
ERC	69	3,34%	116,31	15,59 %
Marie-Curie Actions	235	11,39%	64,87	8,70 %
Transport (including Aeronautics)	218	10,57%	59,55	7,98 %
Nanosciences, Nanotechnologies, Materials and new Production Technologies - NMP	163	7,90%	54,81	7,35 %

SE - Sweden - participation in the FP7 research projects by organisation activity type									
Activity Type	Nr. of applicants	Requested EC contribution by applicants (M euro)	Nr. of mainlisted applicants	Success rate (applicants)	Requested EC contribution by mainlisted applicants (M euro)	Success rate (requested contribution)	Nr. of grant holders	EC contribution to grant holders	% ot total EC contribution to grant holders
HES	4.951	1.635,88	1.167	23,57%	360,22	22,02%	1.122	483,59	64,82%
PRC	2.174	641,77	555	25,53%	163,97	25,55%	513	145,47	19,50%
REC	1.138	413,87	319	28,03%	106,30	25,68%	270	89,64	12,02%
PUB	461	112,65	181	39,26%	26,29	23,34%	134	24,38	3,27%
OTH	357	88,33	86	24,09%	17,69	20,03%	24	2,94	0,39%
SME	1.851	522,75	411	22,20%	104,07	19,91%	268	75,90	10,17%

HES - Higher or secondary education, PRC - Private for profit (excl. education), REC - Research organisations, PUB - Public body (excl. research and education), OTH - Others,

SE - Sweden - the most active NUTS3 regions, by EC contribution granted to the FP7 research projects				
SE - Sweden region	Number of grant holders	% of all SE - Sweden grant holders	EC contribution (M euro)	% of total EC contribution to SE
Stockholms l��n (SE110)	802	38,88%	320,99	43,03%
V��stra G��talands l��n (SE232)	443	21,47%	161,25	21,61%
Sk��ne l��n (SE224)	231	11,20%	83,44	11,18%
Uppsala l��n (SE121)	210	10,18%	72,47	9,71%
��sterg��tlands l��n (SE123)	114	5,53%	43,82	5,87%

SE - Sweden - most active organisations in terms of EC contribution granted to the FP7 research projects				
Legal Name	Number of Participations	% of all SE grant holders	EC contribution (M euro)	% of total EC contribution to SE grant holders
KAROLINSKA INSTITUTET (KI)	179	8,68%	102,66	13,76%
KUNGLIGA TEKNISKA HOEGSKOLAN	150	7,27%	67,93	9,11%
LUNDS UNIVERSITET	163	7,90%	66,72	8,94%
CHALMERS TEKNISKA HOEGSKOLA AB	129	6,25%	52,37	7,02%
UPPSALA UNIVERSITET	113	5,48%	46,52	6,24%

NOTES:
Report generated on: 2011/03/28,10:49 AM
FP7 proposal and application figures are valid as of the 2011/03/16
FP7 grant agreements and participation figures are valida as of the 2011/03/16
*EU-27 includes the 27 country-members and JRC as a separate entity
**E-STAT Reference year: 2007
**European Innovation Scoreboard is available at the website of DG Enterprise and Industry