

Science, Technology and Innovation in Europe

R&D expenditure in the EU27 stable at 1.85% of GDP in 2007

Researchers account for almost 1% of total employment

In 2007, the **EU27** spent 229 billion euro on Research & Development¹ (R&D). R&D expenditure as a percentage of GDP equalled 1.85% in 2007, stable compared with 2006. **Germany** (62 bn euro), **France** (39 bn) and the **United Kingdom** (37 bn) accounted together for 60% of total R&D expenditure in the **EU27** in 2007.

Eurostat, the Statistical Office of the European Communities, publishes the 2009 edition of **Science, Technology and Innovation in Europe**². This publication covers a wide range of indicators in line with the strategic goals set out by the European Council in the Lisbon strategy. These indicators include among others R&D expenditure and personnel, patents, innovation and other indicators related to high-tech and knowledge intensive sectors of the economy. A selection of the data available in the publication is presented below.

Highest R&D intensity in the Nordic Member States, Austria and Germany

In 2007, R&D expenditure as a percentage of GDP (R&D intensity) was highest in **Sweden** (3.60% of GDP) and **Finland** (3.47%), followed by **Austria** (2.56%), **Denmark** (2.55%) and **Germany** (2.54%), and lowest in **Cyprus** (0.45%), **Slovakia** (0.46%), **Bulgaria** (0.48%) and **Romania** (0.53%). The highest increases in R&D intensity between 2001 and 2007 were found in **Austria** (from 2.07% of GDP to 2.56%), **Estonia** (from 0.71% to 1.14%) and **Portugal** (from 0.80% to 1.18%).

The equivalents of 2.3 million persons working full-time were involved in R&D³ in the **EU27** in 2007. R&D personnel accounted for 1.6% of total employment in 2007. The highest proportions of R&D personnel in 2007 were found in **Finland** (3.2% of total employment), **Sweden** (2.7% in 2005), **Luxembourg** (2.6% in 2005), **Denmark** (2.4% in 2006) and **Austria** (2.1% in 2006), and the lowest in **Romania** (0.5%), **Bulgaria** (0.6% in 2006), **Cyprus** (0.7% in 2006), **Poland** (0.8%) and **Portugal** (0.9% in 2005).

Researchers³ accounted for 0.9% of total **EU27** employment in 2007. This share varied from 0.3% in **Romania** (in 2005) to 2.1% in **Finland**.

Almost 40% of EU27 enterprises involved in innovation activities

Between 2004 and 2006, 39% of enterprises⁴ from industry and services with at least 10 employees in the **EU27** were involved in some form of innovation activity⁴. The highest proportion of enterprises involved in innovation activities in this period was recorded in **Germany** (63% of enterprises), followed by **Belgium** (52%), **Austria** and **Finland** (both 51%) and **Luxembourg** (49%). The lowest rates were observed in **Latvia** (16%), **Bulgaria** and **Hungary** (both 20%), **Romania** (21%) and **Lithuania** (22%).

Research & Development expenditure, 2007

	R&D expenditure, (million euro)*	R&D intensity** (expenditure as % of GDP)		
		2001	2006	2007
EU27	228 682e	1.86e	1.85e	1.85e
Belgium	6 263p	2.08	1.88p	1.87p
Bulgaria	140	0.47	0.48	0.48
Czech Republic	1 955	1.20	1.55	1.54
Denmark	5 779e	2.39	2.48	2.55e
Germany	61 543e	2.46	2.54	2.54e
Estonia	174	0.71	1.15	1.14
Ireland	2 501p	1.10	1.30p	1.31p
Greece	1 311e	0.58	0.57e	0.57e
Spain	13 342	0.91	1.20	1.27
France	39 369p	2.20	2.10p	2.08p
Italy	16 831	1.09	1.13	:
Cyprus	70p	0.25	0.43	0.45p
Latvia	126	0.41	0.70	0.59
Lithuania	233	0.67	0.79	0.82
Luxembourg	591p	:	1.66	1.62p
Hungary	977	0.92	1.00	0.97
Malta	32p	:	0.61	0.59p
Netherlands	9 666p	1.80	1.71p	1.70p
Austria	6 946e	2.07e	2.46	2.56e
Poland	1 764	0.62	0.56	0.57
Portugal	1 921p	0.80	1.00e	1.18p
Romania	653	0.39	0.45	0.53
Slovenia	501	1.50	1.56	1.45
Slovakia	252	0.63	0.49	0.46
Finland	6 243	3.30	3.45	3.47
Sweden	11 936p	4.17e	3.74e	3.60p
United Kingdom	36 728p	1.79	1.76	1.79p
Croatia	348	:	0.76	0.81
Turkey	3 410	0.54	0.58	0.72
Iceland	401	2.95	2.99	2.75
Norway	4 665	1.59	1.52	1.64
Switzerland	8 486	:	:	:
USA	269 098p	2.75	2.65	2.67p
Japan	118 295	3.12	3.40	:

* 2004: Switzerland; 2006: Italy, Japan. USA data excludes most or all capital expenditure

** Hungary 2001: Defence excluded

e Estimated

p Provisional

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Data not available

Source: Eurostat, OECD and IMF for USA, Japan

Research & Development personnel and enterprise innovation

	R&D personnel			Researchers, % of total employment 2007***	Enterprises with innovation activities, 2004-6 (% of all enterprises)
	Total 2007*	Annual average growth 2001-2007** (%)	% of total employment 2007***		
EU27	2 314 627e	2.2	1.6e	0.9e	38.9
Belgium	56 244p	0.1	1.9	1.2	52.2
Bulgaria	16 940	2.1	0.6	0.4	20.2
Czech Republic	49 192	11.1	1.5	0.9	35.0
Denmark	46 029e	2.4	2.4	1.6	46.9
Germany	493 858e	0.5	1.8	1.1	62.6
Estonia	5 002	4.9	1.4	1.0	48.2
Ireland	18 556p	5.7	1.5p	0.9p	47.2
Greece	35 629e	2.8	1.4	0.8	40.9
Spain	201 108	8.1	1.6	1.0	33.6
France	363 867p	1.5	1.8	1.0	:
Italy	192 002	4.5	1.3	0.6	34.6
Cyprus	1 285p	10.9	0.7	0.4	39.5
Latvia	6 378	2.6	1.0	0.7	16.2
Lithuania	12 656	1.0	1.2	0.9	22.3
Luxembourg	4 585p	3.3	2.6	1.3	48.5
Hungary	25 954	2.1	1.3	0.8	20.1
Malta	845p	12.2	1.0	0.7	28.0
Netherlands	91 090p	0.3	1.4p	0.6p	35.5
Austria	53 019e	6.4	2.1	1.3	50.6
Poland	75 309	-0.4	0.8	0.6	23.0
Portugal	34 593p	7.1	0.9	0.7	41.3
Romania	28 977	-2.0	0.5	0.3	20.7
Slovenia	10 369	3.2	1.4	0.9	35.1
Slovakia	15 421	1.1	1.0	0.8	24.9
Finland	56 243	0.9	3.2	2.1	51.4
Sweden	76 815e	1.0	2.7	:	44.6
United Kingdom	333 671e	0.7	:	:	38.1
Croatia	10 124	-4.8	1.1	0.7	30.6
Turkey	63 377	14.8	0.6	0.5	31.4
Iceland	2 982	0.5	3.1	2.3	:
Norway	34 086	3.9	2.5	1.7	35.5
Switzerland	52 250	0.0	2.1	1.1	:
Japan	935 182	0.9	1.8	1.4	:

* Data in full time equivalents. 2004: Switzerland; 2006: Italy, Japan

** 2000-2007: Luxembourg; 2000-2004: Switzerland; 2001-2006: Italy, Japan; 2002-2007: Malta, Austria, the United Kingdom, Croatia

*** % of total employment based on head count. 2006: Bulgaria, Denmark, Ireland, Spain, France, Italy, Cyprus, Malta, Austria, Slovenia, Japan; 2005: Belgium, Germany, Greece, Luxembourg, the Netherlands, Portugal, Sweden; 2004: Switzerland.
France: Defence excluded.

e Estimated

p Provisional

:

Data not available

Source: Eurostat, and OECD for Japan

1. The EU goal in Research and Development expenditure, as set by the Lisbon summit strategy, is to achieve a R&D intensity of at least 3% by 2010. The most recent data available in the Eurostat database are used in this News Release. These data might therefore differ from those presented in the publication "Science, technology and innovation in Europe".
2. Eurostat, "**Science, technology and innovation in Europe**" 2009 edition, can be downloaded free of charge in PDF format. Paper copies can be ordered through the Eurostat website at <http://ec.europa.eu/eurostat>.
3. R&D personnel are defined as persons employed directly on R&D as well as those providing direct services such as R&D managers, administrators and clerical staff. Those providing indirect services, such as canteen and security staff, are excluded. Researchers, a subgroup of R&D personnel, are professionals engaged in the conception or creation of new knowledge, products, processes, methods and systems, and in the management of the projects concerned. R&D may be either the principal activity of a worker or a subsidiary task. Counting only persons whose primary function is R&D would underestimate the actual amount of labour devoted to R&D and including every person who invests at least some time in R&D activities would overestimate the results. The number of persons engaged in R&D is therefore expressed in full-time equivalent (FTE) which corresponds to one year's work by one person. Thus, someone who devotes 40% of his/her time to R&D is counted as 0.4 FTE.
4. Only enterprises with more than 10 employees involved in the following economic activities are included: mining and quarrying; manufacturing; electricity, gas and water supply; transport, storage and communication; financial intermediation; wholesale trade and commission trade, except of motor vehicles and motorcycles; computer and related activities; architectural and engineering activities as well as technical testing and analysis. Innovation includes both product and process innovation. A product innovation is the market introduction of a new or a significantly improved good or service. A process innovation is the implementation of a new or significantly improved production process, distribution method or support activity for goods or services.

Issued by: **Eurostat Press Office**

Johan WULLT
Tel: +352-4301-33 444
eurostat-pressoffice@ec.europa.eu

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For further information on data:

Reni PETKOVA
Tel: +352-4301- 31 790
reni.petkova@ec.europa.eu

Håkan WILEN
Tel: +352-4301- 37 335
hakan.wilen@ec.europa.eu