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Research and development in the regions of the EU

Regional R&D expenditure highly concentrated

More than half of all high-tech patent applications submitted by 13 regions out of 211 in 2000

While expenditure on research and development (R&D)[1] accounted for an average of 1.87% of GDP in the **EU** in 1998, the four regions[2] that were most active in this field (**Braunschweig**, **Stuttgart**, **Oberbayern**, **Tübingen**), all in **Germany**, each spent more than 4% of their GDP on R&D activities. In absolute terms, the **Ile de France** region spent most (EUR 13.4 billion) on R&D in 1999 and alone accounted for almost 9% of all R&D expenditure in the **EU**. Overall, spending on R&D was highly concentrated, with 28 out of 211 regions accounting for more than half of all spending in 1997.

In terms of R&D personnel, however, it was **Stockholm** (**Sweden**) which topped the ranking of **EU** regions, with 3.65% of its total labour force directly involved in R&D in 1998. Next came two regions in **Germany** - **Oberbayern** (3.33% in 1997) and **Braunschweig** (3.18% in 1997) - followed by **Wien** in **Austria** (3.14%).

In 2000 nearly 57 500 applications for patents[3] were submitted by the **EU** to the **European Patent Office** (**EPO**). They included 10 500 applications for high-tech patents[4]. These increased by 22% per year on average between 1995 and 2000, a rate of increase that was twice as much as the rate for patents in general. The Member State that accounted for most patent applications in the **EU** was **Germany**, with 42% of **EU** applications. Here, too, there was strong regional concentration: 21 regions out of 211 accounted for more than half of the patent applications filed with the **EPO**, and only 13 regions produced more than half of the high-tech applications.

These figures come from two reports on R&D in the **EU**[5], which are published today by **Eurostat, the Statistical Office of the European Communities in Luxembourg**.

Five German regions in the ten regions with highest R&D intensity

The ten **EU** regions which devoted the largest proportion of their GDP to expenditure on R&D were located in four countries: **Germany** with five regions (**Braunschweig**, **Stuttgart**, **Oberbayern**, **Tübingen** and **Rheinhessen-Pfalz**), **Finland** with two (**Pohjois-Suomi** and **Uusimaa**), **France** with two (**Midi-Pyrénées** and **Île de France**) and one in the **United Kingdom** (**Eastern**).

Ten EU regions with highest R&D intensity

	Member State	NUTS 2 region	Year	Expenditure as % of GDP	Expenditure in current euro (mio)
1	Germany	Braunschweig	1997	4.84	1 675
2	Germany	Stuttgart	1997	4.79	5 045
3	Germany	Oberbayern	1997	4.38	5 911
4	Germany	Tübingen	1997	4.05	1 608
5	Finland	Pohjois-Suomi	1998	3.82	410
6	Finland	Uusimaa (Suuralue)	1998	3.73	1 571
7	France	Midi-Pyrénées	1998	3.70	1 803
8	United Kingdom	Eastern*	1998	3.64	4 595
9	Germany	Rheinhessen-Pfalz	1997	3.50	1 527
10	France	Île de France	1998	3.43	12 416

* NUTS 1 region

Oberbayern, Ile de France and Noord-Brabant ahead for high-tech patent applications

Three regions in Europe stood out from the rest for the number of high-tech patents filed in 2000: **Oberbayern** (**Germany**) with 1 132 applications, **Ile de France** (**France**) with 854 and **Noord-Brabant** (**Netherlands**) with 633. When the number of applications is related to the size of a region's labour force, three regions in **Finland** and three in **Sweden** were ranked in the top 15.

15 EU regions with most high-tech patent applications per million labour force in 2000*

	Member State	NUTS 2 region	High-tech patent applications per million labour force	High-tech patent applications	High-tech patents as % of all patent applications
	EU-15		**60.6**	**10 480**	**18%**
1	Germany	Oberbayern	540.9	1 132	37%
2	Finland	Uusimaa (Suuralue)	530.4	416	52%
3	Netherlands	Noord-Brabant	524.2	633	40%
4	Sweden	Stockholm	430.0	416	40%
5	Sweden	Sydsverige	336.3	199	35%
6	Finland	Pohjois-Suomi	312.1	86	54%
7	United Kingdom	East Anglia	236.3	265	39%
8	Finland	Etelä-Suomi	202.4	188	37%
9	Germany	Mittelfranken	189.7	160	19%
10	United Kingdom	Gloucestershire, Wiltshire & North Somerset	169.6	197	39%
11	United Kingdom	Hampshire & Isle of Wight	169.0	156	43%
12	Germany	Stuttgart	162.9	315	12%
13	Sweden	Övre Norrland	160.5	39	35%
14	Germany	Oberpfalz	159.6	84	20%
15	France	Île de France	155.1	854	25%

* Provisional data

Strong regional concentration in most Member States

A strong concentration of R&D in one or two regions of a Member State is a common feature. In eight of the 12 Member States comprising more than two NUTS 2 regions, a single region accounted for more than a third of all national patent applications in 2000, with **Attiki** accounting for 66% of national applications in **Greece**, **Uusimaa** for 49% in **Finland**, **Lisboa e Vale do Tejo** for 47% in **Portugal** and **Noord-Brabant** for 46% in the **Netherlands**.

Similarly, in nine out of the ten countries for which adequate sub-national data were available, the two leading regions accounted for more than 40% of national spending on R&D. The concentration was particularly strong

in **Portugal**, where the **Lisboa e Vale do Tejo** region accounted for 54% of national expenditure, and in **Austria**, where the figure in **Wien** was 52%. **Germany** seems to be the country where R&D spending is most evenly spread among the various regions.

Two regions with most patent applications per Member State in 2000*

Member State	First NUTS 2 region	Patent applications in 2000	Applications as % of national total	Second NUTS 2 region	Patent applications in 2000	Applications as % of national total	Total for both regions
Belgique	Vlaams Brabant	274	**18%**	Antwerpen	268	17%	**35%**
Denmark	Denmark	903	**100%**				
Germany	Oberbayern	3 092	**13%**	Stuttgart	2 533	10%	**23%**
Greece	Attiki	36	**66%**	Kentriki Makedonia	9	17%	**83%**
Spain	Cataluña	305	**35%**	Comunidad de Madrid	199	23%	**58%**
France	Île de France	3 424	**41%**	Rhône-Alpes	1 323	16%	**57%**
Irlande	Southern and Eastern	288	**87%**	Border, Midlands & Western	41	12%	
Italy	Lombardia	1 371	**33%**	Emilia-Romagna	645	15%	**48%**
Luxembourg	Luxembourg	74	**100%**				
Netherlands	Noord-Brabant	1 585	**46%**	Zuid-Holland	490	14%	**60%**
Austria	Oberösterreich	244	**20%**	Wien	239	19%	**39%**
Portugal	Lisboa e Vale do Tejo	18	**47%**	Norte	12	31%	**78%**
Finland	Uusimaa (Suuralue)	806	**49%**	Etelä-Suomi	503	30%	**79%**
Suède	Stockholm	1 038	**34%**	Sydsverige	571	19%	**52%**
United Kingdom	East Anglia	682	**9%**	Berkshire, Bucks & Oxfordshire	664	9%	**18%**

* Provisional data

Two regions with highest R&D expenditure per Member State

Member State	Year	First NUTS 2 region	Expenditure in current euro (mio)	Expenditure as % of national expenditure	Second NUTS 2 region	Expenditure in current euro (mio)	Expenditure as % of national expenditure	Total for both regions
Denmark	1999	Denmark	3 305	**100%**				
Germany	1997	Oberbayern	5 911	**14%**	Stuttgart	5 045	12%	**26%**
Greece	1997	Attiki	267	**49%**	Kentriki Makedonia	96	18%	**67%**
Spain	1999	Comunidad de Madrid	1 589	**32%**	Cataluña	1 130	23%	**55%**
France	1999	Île de France	13 426	**45%**	Rhône-Alpes	2 966	10%	**55%**
Italy	1996	Lombardia	2 372	**24%**	Lazio	1 869	19%	**43%**
Netherlands	1998	Zuid-Holland	1 698	**25%**	Noord-Brabant	1 222	18%	**43%**
Austria	1993	Wien	1 218	**52%**	Steiermark	331	14%	**66%**
Portugal	1999	Lisboa e Vale do Tejo	438	**54%**	Norte	169	21%	**75%**
Finland	1999	Uusimaa (Suuralue)	1 804	**47%**	Etelä-Suomi	1 152	30%	**77%**
United Kingdom	1999	South East*	6 021	**24%**	Eastern*	4 595	18%	**42%**

* NUTS 1 region

1. R&D expenditure according to the *Frascati Manual*, OECD, 1993.
2. Level 2 regions according to the Nomenclature of Territorial Units for Statistics (NUTS).
3. A *patent* is a public title of industrial property conferring on its owner the exclusive right to exploit an invention commercially *for a limited period in a specific territory*. The data given here refer solely to patent applications filed with the EPO for use in the European market.
4. The following fields are defined as "high technology": aviation, computers and automated business equipment, communication technology, lasers, micro-organism and genetic engineering, semi-conductors.
5. Eurostat, Statistics in Focus, Science and Technology, No 1/2002, **"Patent activities in the EU: towards high tech patenting 1990 to 2000"**, and No 2/2002, **"R&D expenditure and personnel in European regions 1997-99"**. No 1/2002 also contains national statistics on patents, together with comparisons with the United States and Japan. See also the recent Eurostat publication, "**Research and Development: annual statistics, data 1990-2000**", 180 pages, price €29.50, ISBN 92-894-2060-X.

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