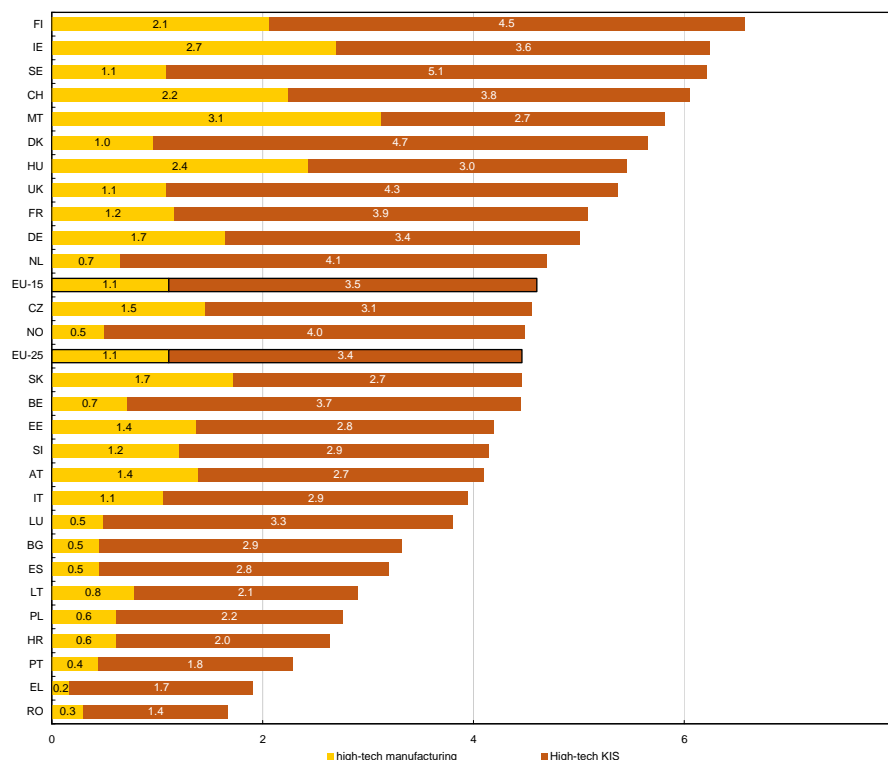


Employment and earnings in high-tech sectors

A considerable increase in high-tech services jobs in Portugal, Cyprus and Spain

Figure 1: Employment in high-tech manufacturing and in high-tech KIS sectors, as a percentage of total employment, in EU-25 and selected countries — 2005



Unreliable data: High-tech manufacturing sector for EE, LT, LU and HR.

Source: Eurostat, High-tech statistics

Statistics
in focus

SCIENCE AND
TECHNOLOGY

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Author

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Contents

Main findings	1
High-tech KIS well developed in Northern Europe	2
Women under-represented in high-tech sectors	3
Sizeable increase in high-tech services jobs in Portugal, Cyprus and Spain	4
High-tech KIS well developed around capitals	4
Women earn less regardless of sector	6

Main findings

- In 2005, there were 6.6 million employed persons (or 3.4% of total employment) working in EU-25 in high-tech knowledge-intensive services (KIS), which include post and telecommunications, computer and related activities, and research and development.
- High-tech manufacturing, which includes manufacture of computers, communications equipment and medical equipment, accounted for 1.1% of EU-25's total employment in 2005 (2.2 million persons employed).
- Women were, in general, under-represented in high-tech manufacturing and in high-tech KIS sectors in 2005. However, the proportion of women employed in these sectors was higher in the new Member States.
- Employment in EU-25's high-tech KIS sector grew at an annual rate of 2.7% between 2000 and 2005. The highest individual rates of growth were in Portugal (9.9%), Cyprus (8.8%), Spain (8.1%) and Luxembourg (6.0%).
- Irrespective of sector and country, women were less well paid than men. In general, the difference between women's and men's earnings was greatest in the high-tech manufacturing sector.



High-tech KIS well developed in Northern Europe

In 2005, 133 million people were employed in services in EU-25, compared to 36 million in manufacturing — Table 2.

Of the 36 million persons employed in manufacturing, approximately 2.2 million worked in high-tech manufacturing. This sector includes the manufacture of computers, and medical and communications equipment. In relative terms, it accounted for 1.1% of total employment in the EU-25 (Figure 1).

Half of the 132 million jobs in services in EU-25 were dedicated to knowledge-intensive services (KIS). However, only 6.6 million people were working in high-tech KIS, which comprise post and telecommunications, computer and related activities, and research and development.

In fact, almost 9 million people were employed in high-tech manufacture or high-tech KIS in EU-25. Germany, with approximately 1.8 million persons employed, ranked first in absolute terms, followed by

the United Kingdom, occupying second place in both sectors (high-tech manufacturing and high-tech KIS). These were also the only two countries that had over 1 million people employed in high-tech KIS.

In relative terms (Figure 1), Finland and Ireland led with 6.6% and 6.3% of total employment in high-tech manufactures and high-tech KIS respectively. Germany, which ranked first in absolute terms, was just above the EU-15 average (4.6%) in relative terms.

Finland's top ranking was mainly due to the high level of employment in high-tech KIS. For Ireland, on the other hand, high-tech manufacturing was the main factor determining the employment level.

If the high-tech KIS sector alone is taken into account, Sweden led with 5.1% of total employment in this sector, followed by Iceland (5.0%), Denmark (4.7%) and Finland (4.5%).

Table 2: Employment in manufacturing and in services sectors, in thousands and as a percentage of total employment, EU-25 and selected countries — 2005

	Manufacturing						Services					
	Total		High-tech		Medium high-tech		Total		Knowledge intensive services			
	thousands	% of employment	thousands	% of employment	thousands	% of employment	thousands	% of employment	thousands	% of employment	thousands	% of employment
EU-25	35 910 s	18.3 s	2 175 s	1.1 s	10 923 s	5.6 s	132 709 s	67.5 s	65 495 s	33.3 s	6 581 s	3.4 s
EU-15	29 385 s	17.6 s	1 852 s	1.1 s	9 378 s	5.6 s	116 267 s	69.5 s	58 076 s	34.7 s	5 842 s	3.5 s
BE	727	17.2	31	0.7	245	5.8	3 103	73.3	1 624	38.3	158	3.7
CZ	1 288	27.1	69	1.5	378	8.0	2 680	56.4	1 188	25.0	147	3.1
DK	443	16.2	26	1.0	146	5.3	1 986	72.5	1 173	42.8	128	4.7
DE	7 939	21.9	597	1.7	3 179	8.8	24 532	67.8	12 097	33.4	1 218	3.4
EE	146	24.0	8 u	1.4 u	21	3.4	366	60.1	176	29.0	17	2.8
EL	560	12.8	7	0.2	86	2.0	2 854	65.1	1 074	24.5	76	1.7
ES	3 103	16.4	85	0.5	799	4.2	12 306	65.1	5 095	27.0	519	2.8
FR	3 975	16.4	282	1.2	1 259	5.2	17 498	72.0	8 822	36.3	954	3.9
IE	272	14.1	52	2.7	64	3.3	1 279	66.3	655	33.9	69	3.6
IT	4 797	21.2	240	1.1	1 430	6.3	14 780	65.3	6 755	29.8	655	2.9
CY	41	11.9	: u	: u	4	1.1	247	71.0	93	26.8	7	2.0
LV	151	14.7	: u	: u	15	1.5	635	61.8	265	25.8	27	2.7
LT	255	17.3	12 u	0.8 u	26	1.8	845	57.4	376	25.6	31	2.1
LU	17	8.7	1 u	0.5 u	2	0.9	157	80.9	81	42.0	6	3.3
HU	868	22.3	95	2.4	224	5.8	2 444	62.8	1 100	28.3	118	3.0
MT	30	20.0	5	3.1	5	3.5	101	68.1	45	30.4	4	2.7
NL	1 061	13.1	52	0.7	215	2.7	5 876	72.4	3 401	41.9	328	4.1
AT	697	18.6	52	1.4	190	5.1	2 544	67.7	1 163	31.0	102	2.7
PL	2 878	20.6	85	0.6	624	4.5	7 387	53.0	3 376	24.2	300	2.2
PT	973	19.0	23	0.4	144	2.8	2 962	57.7	1 167	22.7	94	1.8
SI	278	29.4	11	1.2	80	8.4	506	53.4	236	24.9	28	2.9
SK	590	26.9	38	1.7	168	7.7	1 231	56.0	562	25.6	60	2.7
FI	444	18.3	50	2.1	114	4.7	1 674	69.0	983	40.5	109	4.5
SE	662	15.2	47	1.1	237	5.4	3 287	75.4	2 083	47.8	224	5.1
UK	3 716	13.2	305	1.1	1 269	4.5	21 428	76.3	11 903	42.4	1 201	4.3
IS	22	13.8	: u	: u	3	1.8	115	70.6	70	43.1	8	5.0
NO	261	11.5	11	0.5	78	3.4	1 732	76.0	1 042	45.7	91	4.0
EEA	36 193 s	18.2 s	2 187 s	1.1 s	11 004 s	5.5 s	134 556 s	67.6 s	66 606 s	33.4 s	6 680 s	3.4 s
CH	591	14.9	89	2.2	199	5.0	2 822	71.0	1 590	40.0	151	3.8
BG	740	24.6	13	0.5	126	4.2	1 701	56.5	662	22.0	86	2.9
HR	278	17.8	9 u	0.6 u	52	3.3	848	54.2	326	20.8	32	2.0
RO	2 043	22.0	28	0.3	474	5.1	3 392	36.5	1 276	13.7	127	1.4

Source: Eurostat, High-tech statistics

Women under-represented in high-tech sectors

Figure 3 shows the share of women in employment in high-tech manufacturing and in high-tech KIS.

In 2005, women accounted for approximately one third of employment in EU-25's high-tech sectors. At 35.1%, women's share was larger in the high-tech manufacturing sector than in high-tech KIS (32.7%).

Women's share of employment in the high-tech manufacturing sector exceeded 50% in three new Member States: Lithuania (51.8%), Hungary (52.5%) and Slovakia (57.7%).

In all other countries for which data are available, female employment in high-tech manufacturing was under 50%.

However, women also accounted for at least 40% of employment in high-tech manufacturing in Czech Republic, Denmark, Poland, Portugal, Slovenia and Croatia.

By contrast, in the Netherlands, Finland and Sweden women accounted for less than 30% of those employed in this sector.

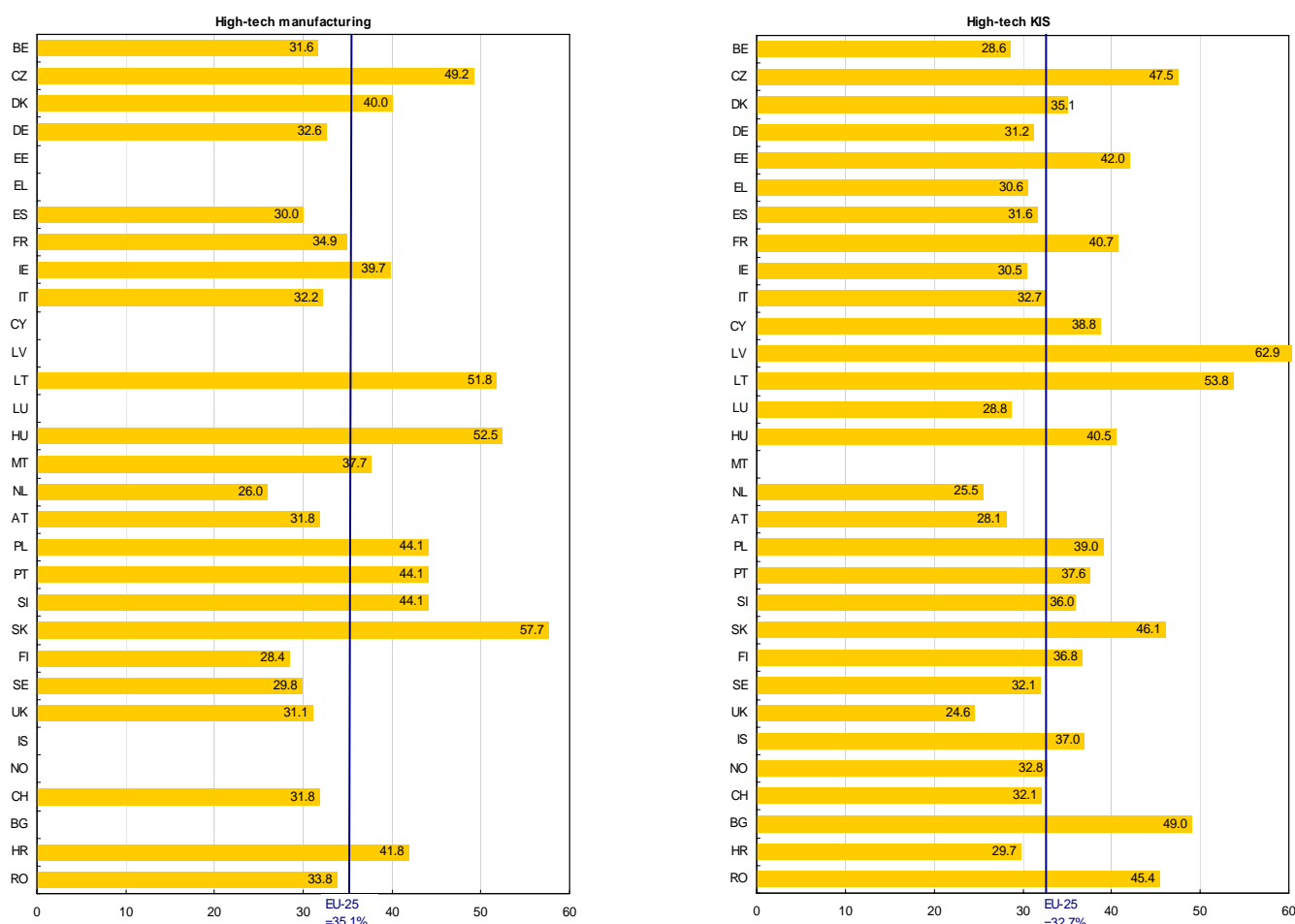
The proportion of women in high-tech KIS was fairly similar to that in high-tech manufacturing.

Only in two of the new Member States did women exceed 50%: Latvia (62.9%) and Lithuania (53.8%). Some other countries posted shares above 40%; except for France (40.7%), these were all new Member States and candidate countries.

By contrast, the proportion of women in Belgium, Luxembourg, the Netherlands, Austria and the United Kingdom was under 30%. This was also true for Croatia.

In general, women accounted for a larger share in the high-tech sectors (high-tech manufacturing and high-tech KIS) in the new Member States.

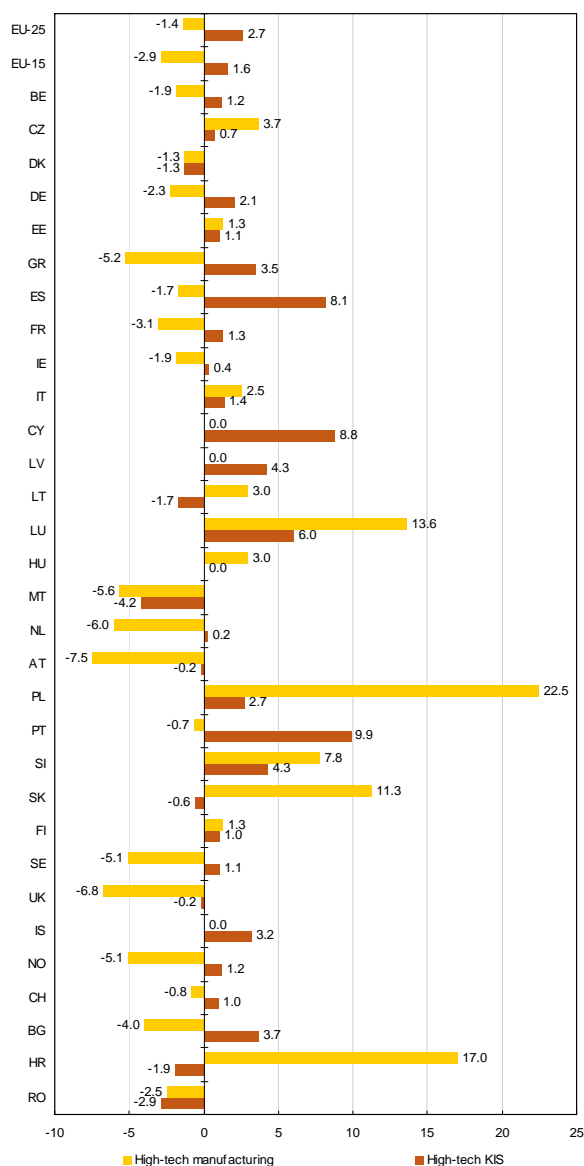
Figure 3: Share of women in total employment in high-tech manufacturing and in high-tech KIS sectors, EU-25 and selected countries — 2005



Source: Eurostat, High-tech statistics

Sizeable increase in high-tech services jobs in Portugal, Cyprus and Spain

Figure 4: AAGR of employment in high-tech manufacturing and in high-tech KIS sectors, EU-25 and selected countries, 2000 to 2005



Source: Eurostat, High-tech statistics

In EU-25, employment in high-tech KIS between 2000 and 2005 grew at an annual average rate of 2.7%, whereas employment in high-tech manufacturing fell (-1.4%) — See Figure 4.

However, the EU-25 average conceals big differences between Member States.

Employment in high-tech manufacturing decreased for thirteen Member States. It also fell in Norway, Switzerland, Bulgaria and Romania.

The biggest declines were found in Austria, the United Kingdom and the Netherlands, with annual rates of -7.5%, -6.8% and -6.0% respectively.

By contrast, employment grew in this sector between 2000 and 2005 in ten Member States, first among them being Poland with an annual average growth rate of over 20%. However, for Cyprus and Latvia during the same period employment remained stable.

At EU-25 level, employment in high-tech KIS grew at an annual rate of 2.7% between 2000 and 2005. The situation was less diversified across countries in high-tech KIS than in high-tech manufacturing.

Indeed, during this period, employment in high-tech KIS decreased in only six Member States: Denmark, Lithuania, Malta, Austria, Slovakia and the United Kingdom and their percentage decrease was fairly low. The same situation occurred in Croatia and Romania.

By contrast, for all other countries employment in high-tech KIS increased between 2000 and 2005.

The highest annual average growth rates were found in Portugal (9.9%), Cyprus (8.8%), Spain (8.1%) and Luxembourg (6.0%). The annual average growth was below 5% for all other countries.

High-tech KIS well developed around capitals

Map 5 shows the share of employment provided by high-tech KIS in 2005 across the EU-25 regions, candidate countries and selected countries at the NUTS 2 level.

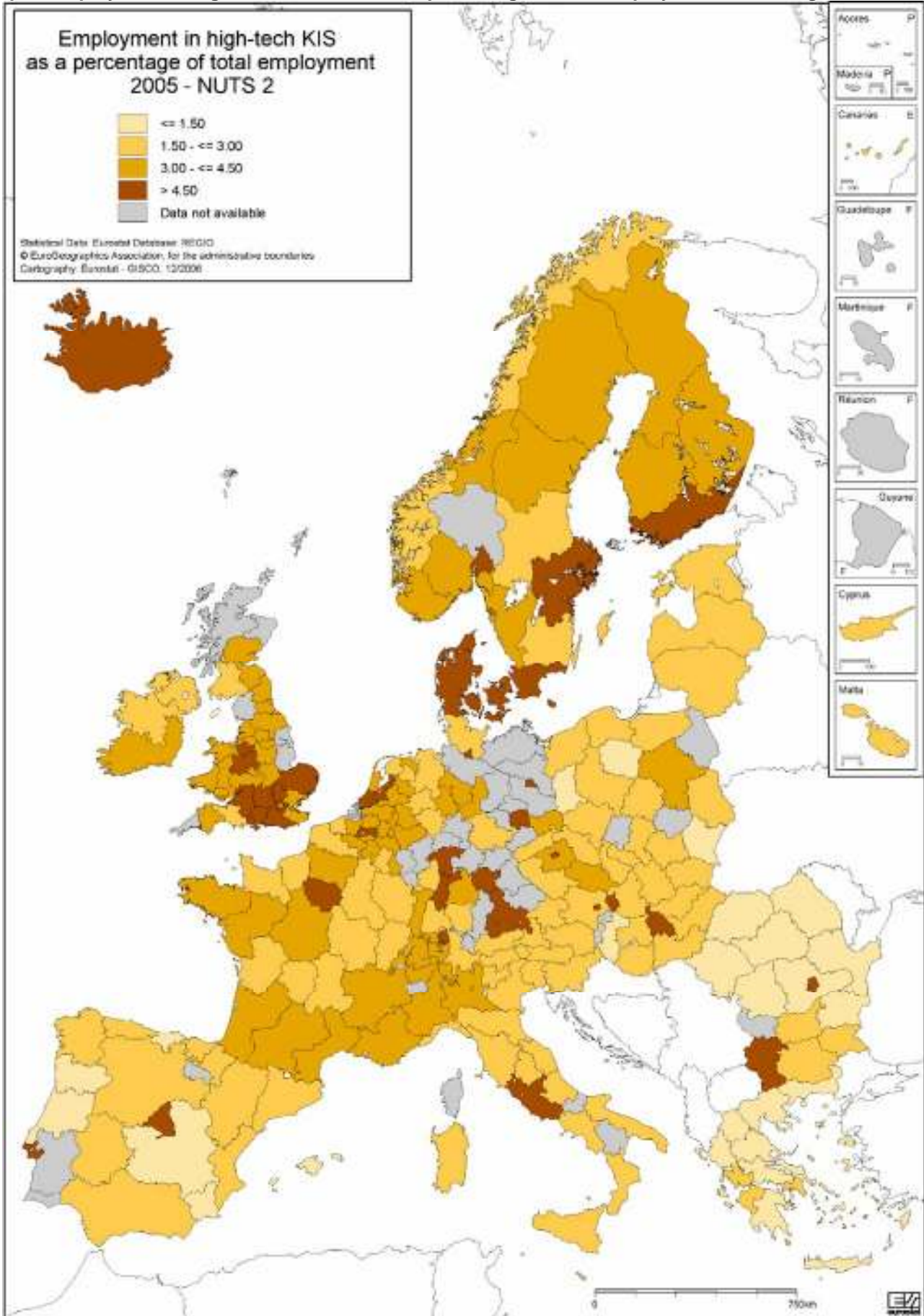
Regions around European capitals often displayed high shares of employment in high-tech KIS. This was the case, for example, in Belgium, the United Kingdom, France, Spain and Italy.

Iceland and Denmark, which are classified at NUTS level 2, also posted an employment rate in high-tech KIS of over 4.5%.

Employment in high-tech KIS in relation to total employment was often higher in northern European regions than in southern European regions.

The share of persons employed in high-tech KIS was also often quite low in regions of the new Member States.

Map 5: Employment in high-tech KIS sector as a percentage of total employment, EU-25 regions⁽¹⁾ — 2005



⁽¹⁾ See methodological notes on page 7.

Women earn less regardless of sector

Table 6 shows mean annual earnings by employee, by gender and by sector for 2002.

Irrespective of sector and country, women were paid less than men. In general, the difference was greater in the manufacturing sector than in the services sector. Moreover, the difference between women's and men's earnings was even higher in high-tech manufacturing.

In 2002, in total manufacturing, men were the best paid in Denmark, followed by the United Kingdom and Germany. For women, Denmark still ranked first, but was followed by the Netherlands.

With the exception of Latvia and Luxembourg, men's earnings in the high-tech manufacturing sector were higher than in total manufacturing. Women were less well paid in high-tech than in total manufacturing in nine Member States.

The differences between women's and men's earnings were smaller in medium high-tech manufacturing. Moreover, women were better

remunerated in this sector than in the total manufacturing sector, except in Cyprus. Men were paid less in medium high-tech manufacturing than in all manufacturing in Cyprus, but also in the Czech Republic and in Denmark.

Except in Germany, and for women in Austria and in Norway, employees' earnings were higher in services than in manufacturing.

In services, men's earnings were highest in the United Kingdom, closely followed by Denmark and Luxembourg. Women received the highest remuneration in Danish service industries.

In high-tech KIS, Denmark, Luxembourg and the United Kingdom were clear leaders in terms of employees' earnings. Women's earnings exceeded EUR 40 000 per year and men's EUR 50 000. The only countries where women were paid less in high-tech KIS than in total services were Ireland and Slovakia; for men, on the other hand, this was the situation in Ireland, Italy, Cyprus and the Netherlands.

Table 6: Annual earnings in euro per employee, in manufacturing and services sectors, by gender, EU-25 and selected countries — 2002

	Manufacturing						Services			
	Total		High-tech		Medium high-tech		Total		High-tech KIS	
	Women	Men	Women	Men	Women	Men	Women	Men	Women	Men
BE	25 950	31 999	26 614	44 518	31 585	35 294	27 373	34 177	31 454	38 062
CZ	5 232	7 637	5 183	8 078	5 549	7 601	6 273	8 371	6 341	10 428
DK	33 900	42 658	30 657	43 904	34 726	42 480	34 366	45 019	42 619	55 443
DE	28 632	39 591	30 745	46 473	33 945	43 293	27 725	38 109	33 668	46 663
EE	3 920	5 256	3 838	6 082	4 820	5 848	4 237	6 004	5 010	9 335
EL	13 934	18 724	13 795	24 566	16 085	20 968	15 145	20 655	17 661	26 486
ES	16 921	23 197	20 006	27 990	21 170	26 326	17 713	24 667	22 897	31 585
FR	24 853	31 065	26 462	38 604	28 826	33 451	25 340	32 539	30 429	38 424
IE	27 822	34 972	29 630	38 081	28 005	35 854	32 287	38 935	31 464	37 708
IT	20 598	26 091	21 933	29 659	22 948	27 589	23 452	29 745	25 047	27 211
CY	12 309	21 692	:	:	12 242	18 725	18 881	27 822	20 039	27 519
LV	3 069	3 695	2 793	3 438	3 395	3 809	3 105	4 223	4 389	7 570
LT	3 323	4 346	3 486	5 699	4 050	5 082	3 698	4 612	4 117	6 655
LU	29 853	37 117	22 458	32 808	33 502	37 080	33 122	44 257	41 471	52 609
HU	4 754	6 327	4 658	6 735	6 000	7 242	5 384	6 381	6 954	10 069
MT	:	:	:	:	:	:	:	:	:	:
NL	29 924	35 047	28 970	40 314	33 267	39 018	30 713	39 312	36 983	38 566
AT	25 265	36 436	30 333	45 060	27 899	37 756	25 528	37 453	30 442	39 815
PL	5 459	6 902	6 389	8 615	6 750	7 621	6 430	7 778	8 754	10 958
PT	8 828	13 394	11 519	20 653	13 065	16 577	14 043	17 386	21 679	25 319
SI	9 307	11 314	8 014	13 707	11 356	12 659	13 059	14 721	16 108	17 545
SK	3 903	5 785	4 023	6 381	4 448	6 519	4 567	6 549	4 448	7 075
FI	26 689	33 036	29 149	38 993	27 534	33 107	27 466	34 344	29 987	35 334
SE	26 176	31 038	:	:	26 379	32 032	28 810	35 192	34 409	46 192
UK	28 568	41 278	28 805	44 035	32 371	44 005	29 434	45 756	40 491	50 916
IS	25 504	35 672	:	:	:	:	28 340	38 179	:	:
NO	35 903	41 577	38 931	:	38 567	46 504	33 950	45 000	:	62 411
BG	1 429	1 978	1 645	1 853	1 772	2 056	1 793	2 021	2 231	2 739
RO	1 609	2 216	2 135	2 681	2 134	2 513	2 387	2 686	3 466	3 985

Source: Eurostat, High-tech statistics

➤ ESSENTIAL INFORMATION – METHODOLOGICAL NOTES

Sources

The database on Statistics on high-tech industries and knowledge-intensive services includes data on employment and on earnings in high technology and medium-high technology manufacturing sectors, knowledge-intensive service sectors, high technology service sectors, other sub-sectors and reference sectors, is compiled by Eurostat under "Science and Technology".

Employment

Employment indicator presented in this publication are extracted and built up using data from the European Union Labour Force Survey — EU LFS.

Data are currently available at the national and regional levels. Regional data follow the NUTS 2003 nomenclature and are available at NUTS levels 1 and 2.

Annual earnings

Annual earnings indicators are extracted and built up using data from the Structure Earnings Survey — SES. Data are only available at national level.

It includes remuneration in cash paid directly by the employer, before deductions of tax and social security contributions. It also includes allowances and bonuses which are not paid in each pay period, such as 13th month payments or holiday bonuses. Severance payments and payment in kind are not included.

NUTS

Regional data are presented in this publication according to the Nomenclature of Territorial Units for Statistics (NUTS 2003), at NUTS level 2. More information on the NUTS classification can be found on the Internet site:

http://europa.eu.int/comm/eurostat/ramon/nuts/home_regions_en.html

Quality of the data

The guidelines on quality of the data established by the EU LFS are applied to the database on high tech industries and knowledge based services and therefore regions for which quality levels do not permit publication appear as not available.

Regions for which quality levels define the data as unreliable but allow their publication in MAP 5 are:

AT21, AT32, AT33, BE34, BG12, BG13, BG23, CH07, ES13, ES22, FR21, FR23, FR25, FR26, FR43, FR53, FR63, FR72, ITD1, ITD2, NL11, NL12, NL13, PL31, PL32, PL42, PL43, PL51, PL61, PL62, PL63, RO02 and RO04.

Statistical abbreviations and symbols

KIS Knowledge-intensive services
s Eurostat estimation
u Unreliable data
:u Extremely unreliable data
: Not available

Classification of high tech and knowledge-intensive sectors

High tech and medium-high tech manufacturing sectors

The classification of high and medium-high technology manufacturing sectors is based on the Eurostat/OECD classification — itself based on the ratio of R&D expenditure to GDP or R&D intensity. Since the EU LFS and SES only allow reporting of NACE at the 2 digit level, the aggregations are made as follows:

<i>Total manufacturing</i>	NACE Rev. 1.1 codes: 15 to 37(D)
<i>High-technology manufacturing</i>	NACE Rev. 1.1 codes: 30 Manufacture of office machinery and computers 32 Manufacture of radio, television and communication equipment and apparatus 33 Manufacture of medical, precision and optical instruments, watches and clocks
<i>Medium-high-technology manufacturing</i>	NACE Rev. 1.1 codes: 24 Manufacture of chemicals and chemical products 29 Manufacture of machinery and equipment n.e.c. 31 Manufacture of electrical machinery and apparatus n.e.c. 34 and 35 Manufacture of transport equipment

Knowledge-intensive services sector

The knowledge intensity reflects the integration with a generic or service specific science and technology base, it can be seen as a combination of knowledge embedded in new equipment, personnel, and R&D intensity.

Service sectors are defined according to their knowledge-intensity. The two main groups are:

- Knowledge-intensive services — KIS, and
- Less knowledge-intensive services — LKIS.

The aggregations are made as follows:

<i>Total services</i>	NACE Rev. 1.1 codes: 50 to 99 (G to Q)
<i>Knowledge Intensive Services (KIS)</i>	NACE Rev. 1.1 codes: 61 Water transport 62 Air transport 64 Post and telecommunications 65 to 67 Financial intermediation 70 to 74 Real estate, renting and business activities 80 Education 85 Health and social work 92 Recreational, cultural and sporting activities
<i>High-technology KIS</i>	NACE Rev. 1.1 codes: 64 Post and telecommunications; 72 Computer and related activities; 73 Research and development







For further details on NACE classification, please refer the Internet site <http://ec.europa.eu/eurostat/ramon>.

Data presented in this Statistics in Focus shows the data availability in Eurostat's reference database as of 30 October 2006.

Further information:

Data: [EUROSTAT Website/Home page/Population and Social Conditions/Data](#)

Science and technology

-  Research and development
-  Community innovation survey
-  High-tech industry and knowledge-intensive services
 -  High-tech industries and knowledge-intensive services: economic statistics at national level
 -  High-tech industries and knowledge-intensive services: employment statistics at national and regional level
 -  High-tech industries and knowledge-intensive services: science and technology statistics at national and regional level

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