Who are Europe's highly qualified human resources and where do they all work?

Statistics in focus

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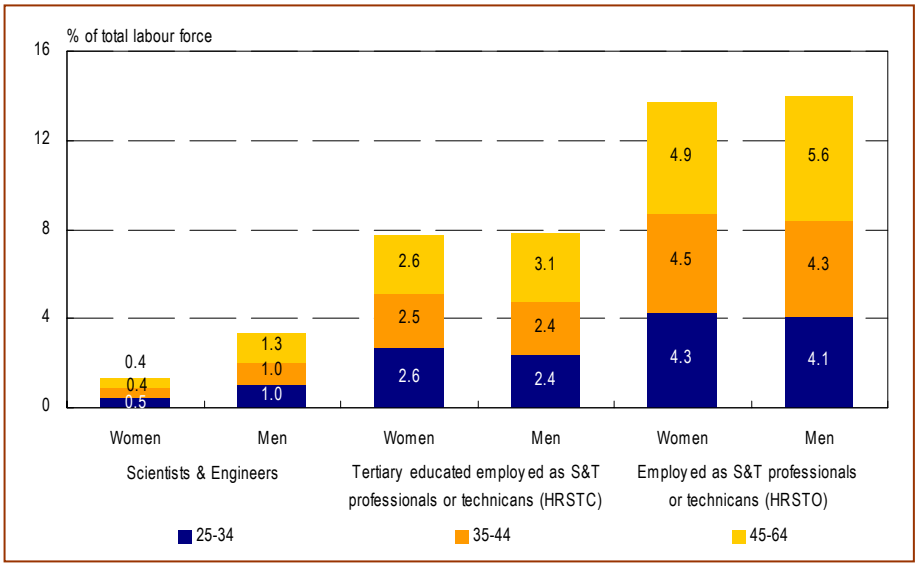
Figure 1: Scientists & Engineers, tertiary educated professionals or technicians (HRSTC) and S&T professionals or technicians (HRSTO) by gender and age, as a % of the total labour force, EU-25 — 2003



NB: EU-25 is estimated.

- In 2003, close to 51 million people were working as science and technology professionals or technicians — HRSTO — in the European Union, equivalent to 27.7% of the total labour force.
- Overall, close to two-thirds of HRSTO were aged between 25-44 and only around a third 45-64 years old.
- In the EU-25 around one in five people aged 25-64 has a tertiary education — HRSTE. This is equivalent to nearly 51 million tertiary educated people from a total 245 million — Table 3.
- Slovenia had the highest growth in the number of employed scientists and engineers at around 12% per annum, ahead of Hungary and Ireland — both 8.3%. The latter, along with Belgium and Finland, had over 10% of active 25-34 year olds working as S&E, around double the European average — Table 1.
- The manufacturing sector is the least oriented towards employing highly qualified human resources: for the EU-25, altogether 18.1% of people employed in manufacturing worked as professionals or technicians — of which 8.3% had a tertiary education. This compares with 32.6% in the services sector more generally, and with 48.8% in ***knowledge-intensive services*** in particular — Figure 2.
- 12.7 million HRSTC and a further 5.7 million HRSTO without a tertiary education were working in ***other knowledge intensive services*** in 2003, accounting for a substantial 10.3% of total employment in the EU-25 — Figure 2.
- Other sectors are close to being as oriented towards employing HRSTO: ***knowledge-intensive high technology services***, for which 45% of the 6.1 million people employed in this sector were HRSTO — 0.9% of total EU-25 employment, ***knowledge-intensive market services***, where 40% of the 13.9 million employed in 2003 were HRSTO — Figure 2.
- There is below average unemployment in regions where a high proportion of the population has a tertiary education — Table 3.

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The young are most attracted to science and engineering jobs in Finland, Belgium and Ireland

In 2003, close to 51 million people were working as professionals or technicians — HRSTO — in the European Union, equivalent to 27.7% of the total labour force. Of this, men accounted for 14% and women 13.7%, though women were more dominant in the younger age groups, indicating that there has been some degree of catch-up— see Figure 1. Overall, close to two-thirds of HRSTO were aged between 25-44 and only around a third 45-64 years old. A similar trend was evident for people not only employed as professionals or technicians, but also with a tertiary education — HRSTC. Of the total EU-25 labour force in 2003, 4.6% were scientists or engineers, equivalent to 8.5 million people. Figure 1 underlines the degree to which S&E is a profession dominated by young men: in 2003, 25-44 year old male S&E represented 2% of the total labour force compared with just 0.9% of women in the same age group.

Table 1 shows that the number of scientists and engineers has also been growing. In the EU-25, the number of people employed as scientists or engineers grew at an annual average rate of 2.2% between 2000 and 2003. Growth was higher in the New Member States (3.3%). This compares with annual average employment growth — whatever the profession — of 0.4% over the same period, but is still less than the growth for both HRSTC and HRSTO. The highest S&E growth could be found in Slovenia, at around 12% per annum, ahead of Hungary and Ireland — both 8.3%. The latter, along with Belgium and Finland, had the highest levels of 25-34 year olds working as scientists or engineers (expressed as a percentage of the labour force). Each of these had over 10% of active 25-34 year olds working as S&E, around double the European average.

Table 1: Scientists & Engineers, tertiary educated professionals or technicians (HRSTC) and professionals or technicians (HRSTO) by age, as a % of the respective labour force — 2003, AAGR 2000-2003

	Scientists & Engineers					HRSTC					HRSTO				
	1000s	As a % of the respective labour force			AAGR (%) 2000-2003	1000s	As a % of the respective labour force			AAGR (%) 2000-2003	1000s	As a % of the respective labour force			AAGR (%) 2000-2003
	25-64	25-34	35-44	45-64	25-64	25-64	25-34	35-44	45-64	25-64	25-64	25-34	35-44	45-64	25-64
EU-25	**8 504**	**5.1**	**4.5**	**4.4**	**2.2**	**28 571**	**17.3**	**15.1**	**14.6**	**2.6**	**50 869**	**28.7**	**27.5**	**27.1**	**2.3**
EU-15	**7 548**	**5.4**	**4.8**	**4.6**	**2.1**	**25 117**	**18.0**	**15.8**	**15.3**	**2.5**	**43 846**	**29.4**	**28.1**	**27.8**	**2.4**
BE	307	10.1	7.4	6.1	3.6	811	25.4	19.1	17.8	0.3	1 145	32.1	27.3	28.0	0.4
CZ	154	3.6	3.4	3.3	-1.5	457	9.9	11.3	9.4	3.1	1 313	29.0	29.8	28.4	2.1
DK	140	5.7	6.5	5.3	1.5	600	25.5	25.1	23.8	6.0	899	36.7	38.5	35.9	1.8
DE	1 928	5.6	5.9	5.1	0.6	5 896	15.7	17.2	17.4	0.9	11 495	33.2	32.8	32.8	1.3
EE	19	3.9 u	4.3 u	2.4 u	-6.1	88	14.7	14.4	16.7	-0.2	131	24.4	23.4	22.4	-0.6
EL	138	3.0	3.4	4.2	-1.1	568	14.9	17.8	12.5	2.1	741	20.7	22.5	15.9	2.0
ES	771	5.6	4.3	4.2	6.7	2 719	19.0	16.6	13.9	6.3	3 573	23.1	22.2	19.9	5.7
FR	1 177	5.3	4.3	5.3	5.4	4 064	23.7	14.9	14.4	2.6	6 820	32.3	26.4	28.4	4.0
IE	124	10.1	7.9	6.7	8.3	256	20.1	16.5	14.5	6.7	363	26.6	23.8	22.3	6.5
IT	601	2.1	2.8	3.4	1.5	2 209	9.3	10.0	11.2	4.5	5 836	24.6	27.5	28.5	3.4
CY	15	5.9	4.6	4.4	4.7	59	26.6	18.1	16.5	9.8	79	30.1	25.4	25.3	8.9
LV	35	2.1 u	3.8	4.5	:	101	11.6	9.5	10.5	:	209	24.0	20.7	21.0	:
LT	48	2.3	3.7	3.6	:	201	14.2	12.9	13.4	:	315	20.5	21.5	21.1	:
LU	7	4.1	4.4	3.5	-6.9	26	16.8	13.9	13.1	-5.0	59	36.1	30.8	32.4	1.0
HU	146	4.0	3.0	4.5	8.3	502	13.6	12.9	13.7	5.8	927	25.0	24.5	25.0	3.3
MT	4	7.0 u	: u	: u	:	12	17.5	7.2 u	6.3	:	29	30.5	20.6	20.9	:
NL	419	7.2	6.2	5.1	2.2	1 308	20.8	18.3	18.0	1.1	2 517	39.0	36.5	34.4	1.4
AT	79	2.7	2.2	2.3	0.2	394	12.2	12.1	11.2	6.6	856	27.6	26.1	23.5	2.1
PL	438	3.6	2.6	2.9	5.8	1 695	14.9	11.2	9.5	4.8	3 210	23.8	22.1	20.9	0.4
PT	109	3.4	2.2	2.0	1.0	382	11.6	8.2	6.6	3.0	644	18.0	13.9	12.4	1.5
SI	39	5.9	4.0	4.1	12.0	128	19.0	13.8	13.1	7.0	246	31.6	29.6	26.8	6.0
SK	58	2.9	2.2	2.8	0.5	212	10.0	8.4	10.0	5.6	563	24.4	24.5	26.4	2.6
FI	159	10.5	6.7	5.3	:	515	26.1	23.7	20.2	:	726	37.2	32.4	28.9	:
SE	252	7.7	6.8	5.3	2.0	900	25.3	21.4	21.7	3.5	1 563	40.1	39.0	38.6	1.7
UK	1 337	7.1	5.0	4.4	0.5	4 469	21.3	17.1	16.0	3.2	6 612	29.9	25.6	24.6	2.6
IS	9	8.8	6.6	5.5	-3.9	25	22.1	21.5	15.5	3.8	42	34.2	34.0	30.3	3.0
NO	109	5.9	5.5	5.0	2.4	490	30.2	23.8	21.4	0.8	733	39.9	36.0	35.1	1.6
CH	258	8.6	8.1	6.5	3.2	668	20.4	20.5	18.3	4.4	1 299	39.6	38.2	36.8	1.1
BG	84	2.2	3.5	2.7	-10.3	462	15.4	15.9	15.5	1.1	653	21.2	22.6	22.2	-0.9
RO	:	:	:	:	:	727	9.7	7.3	8.9	:	1 471	18.1	16.2	18.3	:

Exceptions to the reference year 2003
NL and IS: 2002.

Exceptions to the reference period 2000-2003
NL and IS: 2000-2002;
SE, UK and BG: 2001-2003.

EU-25 and EU-15 are estimated.
:u reliable data not available.
u data should be treated with caution.

Compare this with Italy, Lithuania and Bulgaria, where S&E professions are relatively scarce amongst the young active population: all were less than half the European average in 2003, between 2.1% and 2.3%. In Italy, at least, it is a profession that is still growing (for 25-64 year olds), albeit at below the European average. Not so in Bulgaria, where the number of people working in S&E fell substantially between 2000 and 2003.

But if we are considering recent growth, then the highest rates for the EU-25 are evident for HRSTC — people with a tertiary education that are working as professionals or technicians (2.6% per annum). In 2003, over 17% of active 25-34 year olds were HRSTC, compared with around 15% of active 35-44 year olds, 14.5% of active 45-64 year olds and 15.5% overall. This distribution across the age groups indicates that growth in HRSTC is relatively recent.

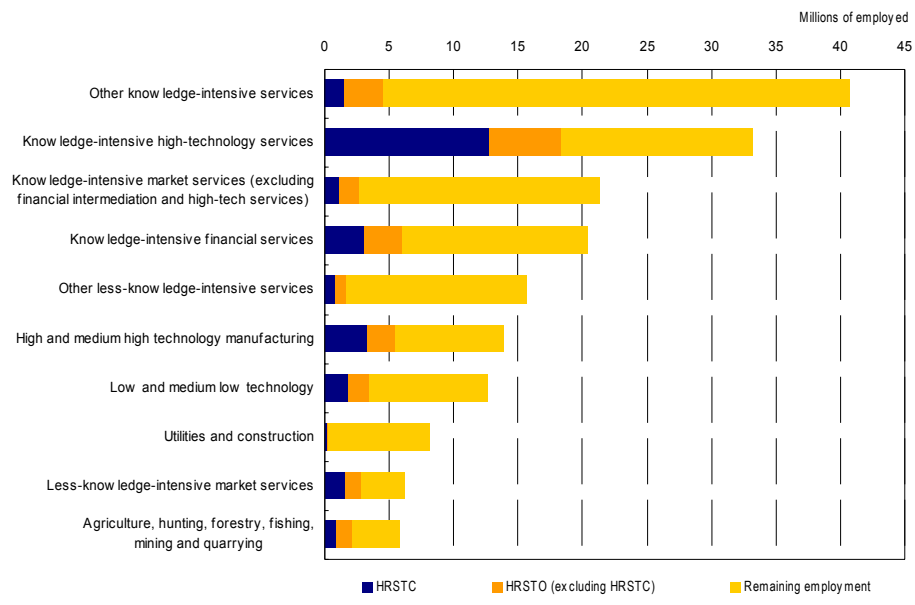
Nearly a third of all workers in EU knowledge-intensive services are tertiary educated professionals or technicians

But where do these highly qualified people work? Most — 12.7 million of them — were in the sector ***other knowledge intensive services*** — Figure 2. But a further 5.7 million people were working as professionals and technicians in this sector without a tertiary education. Together, they accounted for a substantial 10.3% of total employment in the EU-25 in 2003. ***Other knowledge-intensive services*** include such sectors of activity as ***Education*** and ***Health and Social Work*** — see methodological notes on page 7 for further information.

Other knowledge-intensive services is one of the biggest sectors, which overall accounted for 18.7% of European employment in 2003. But other, smaller sectors are close to being as oriented towards employing professionals and technicians. The first of these *is* ***knowledge-intensive high technology services***, for which 45% of the 6.1 million people employed in this sector were professionals or technicians — 0.9% of total EU-25 employment. The second is ***knowledge-intensive market services***, where the same groups accounted for 40% of the 13.9 million employed in 2003.

Judged in these terms, it is the four sub-sectors of KIS that were the most likely to employ professionals or technicians, ahead of ***other less-knowledge-intensive services*** and ***high and medium high technology manufacturing***. This skew towards ***knowledge-intensive services*** is further underlined by Table 2, which shows the breakdown of employment for the ***manufacturing***, ***services*** **and** ***knowledge-intensive services*** sectors at the country level. The manufacturing sector is the least oriented towards employing highly qualified human resources: for the EU-25, altogether 18.1% of people employed in manufacturing worked as professionals or technicians — of which 8.3% had a tertiary education. This compares with 32.6% in the services sector more generally, and with 48.8% in ***knowledge-intensive services*** in particular. In fact, in the latter, close to a third of the employed both work as professionals or technicians and have a tertiary education — HRSTC: 31.3%, which indicates some combination of the demand for the highly skilled in ***knowledge-intensive services*** and the attraction of this sector for the highly skilled.

Figure 2: Tertiary educated professionals or technicians (HRSTC), other professionals or technicians (HRSTO) and remaining employment by sector of activity in millions and as a % of total employment — EU-25, 2003



	% HRSTC	% HRSTO (excluding HRSTC)	% remaining employmemt	Total
Other know ledge-intensive services	0.8	1.7	20.4	**22.9**
Know ledge-intensive high-technology services	7.1	3.2	8.3	**18.7**
Know ledge-intensive market services (excluding financial intermediation and high-tech services)	0.6	0.9	10.5	**12.0**
Know ledge-intensive financial services	1.7	1.6	8.1	**11.5**
Other less-know ledge-intensive services	0.5	0.5	7.8	**8.8**
High and medium high technology manufacturing	1.8	1.2	4.7	**7.8**
Low and medium low technology	1.0	1.0	5.2	**7.1**
Utilities and construction	0.1	0.1	4.4	**4.6**
Less-know ledge-intensive market services	0.9	0.7	1.9	**3.5**
Agriculture, hunting, forestry, fishing, mining and quarrying	0.5	0.7	2.0	**3.2**
	15.1	**11.6**	**73.3**	**100.0**

NB: EU-25 is estimated, but excludes Poland.

At the country level, Greece has the highest concentration of tertiary educated professionals and technicians working in ***knowledge-intensive services***. In 2003, this was close to 49% of all people working in this sector. A further 11% were working as professionals or technicians, but without a tertiary education. This proportion of HRSTC among the total employed *in* ***knowledge-intensive services*** is some distance above the EU-25 average. Belgium, Denmark, Spain, Cyprus and Bulgaria are also at least 20% above the EU-25 average.

Meanwhile, at the other end of the scale, the proportion of employed people that are HRSTC in ***knowledge-intensive services*** is 20% or more below the EU-25 average of 31.3% in Latvia, Luxembourg and Malta — 24.3%, 23.3% and 21.7% of the employed were HRSTC, respectively. In each of these countries a similar proportion of professionals or technicians without a tertiary education are employed, which is not necessarily the case in countries that already have a high proportion of HRSTC in ***knowledge-intensive services***.

Table 2: Tertiary educated professionals or technicians (HRSTC), other professionals or technicians (HRSTO) and remaining employment by selected sector of activity in thousands and as a % of total employment — 2003

	Manufacturing				Services				Knowledge-intensive services			
	Total	HRSTC	HRSTO (excluding HRSTC)	Remaining employment	Total	HRSTC	HRSTO (excluding HRSTC)	Remaining employment	Total	HRSTC	HRSTO (excluding HRSTC)	Remaining employment
	1000s	%	%	%	1000s	%	%	%	1000s	%	%	%
EU-25	**34 069**	**8.3**	**9.8**	**81.9**	**120 104**	**19.1**	**13.5**	**67.3**	**59 009**	**31.3**	**17.5**	**51.2**
EU-15	**30 381**	**8.8**	**9.8**	**81.4**	**111 303**	**19.3**	**13.3**	**67.4**	**55 107**	**31.4**	**17.1**	**51.6**
BE	720	10.4	10.6	79.0	2 974	24.2	7.8	68.0	1 570	39.1	10.1	50.7
CZ	1 306	3.5	14.0	82.5	2 615	14.2	22.0	63.7	1 151	25.6	32.0	42.4
DK	425	12.1	10.4	77.4	1 985	26.9	12.2	60.9	1 169	37.6	13.1	49.2
DE	8 257	11.2	11.1	77.7	23 782	19.7	18.9	61.4	11 852	29.6	23.0	47.4
EE	130	5.2u	3.2	91.6	368	20.9	10.3	68.8	186	31.3	13.3	55.4
EL	514	5.3	3.9	90.9	2 479	21.4	6.0	72.6	909	48.7	11.3	40.0
ES	2 969	9.7	4.8	85.5	10 594	21.7	6.3	72.0	4 317	41.8	7.9	50.3
FR	4 075	11.1	12.6	76.3	16 965	20.6	12.1	67.3	8 540	32.1	13.6	54.4
IE	283	9.5	5.5	85.1	1 166	18.8	7.5	73.7	595	32.6	10.5	57.0
IT	4 949	3.2	10.7	86.1	14 010	14.2	20.6	65.2	6 051	27.6	33.1	39.2
CY	36	6.9	4.7	88.5	235	23.0	7.2	69.8	88	47.1	8.1	44.8
LV	164	5.1	6.1	88.8	588	14.4	15.2	70.4	241	24.3	22.3	53.4
LT	266	6.7	4.9	88.4	796	22.1	11.5	66.4	357	35.8	16.6	47.6
LU	18	9.4	13.0	77.6	147	16.4	20.3	63.3	72	23.3	25.9	50.8
HU	926	4.5	6.9	88.6	2 402	18.2	14.0	67.8	1 097	32.2	20.1	47.7
MT	29	:u	4.0u	94.2	101	11.3	14.4	74.3	43	21.7	21.5	56.7
NL	1 031	7.5	11.7	80.8	5 637	20.5	17.4	62.1	3 168	29.7	22.4	47.8
AT	713	4.9	8.4	86.7	2 428	14.5	15.8	69.8	1 118	27.5	21.7	50.7
PL	:	:	:	:	:	:	:	:	:	:	:	:
PT	1 016	2.2	3.4	94.4	2 748	12.6	7.7	79.7	1 007	27.6	11.2	61.2
SI	264	7.1	11.0	81.9	485	21.5	16.8	61.7	217	34.1	21.3	44.6
SK	568	3.2	11.7	85.1	1 210	14.5	20.3	65.2	524	25.2	29.9	45.0
FI	454	14.7	8.9	76.4	1 626	25.9	9.9	64.2	954	34.3	10.6	55.1
SE	702	8.4	16.6	75.0	3 254	25.4	15.7	58.9	2 055	33.1	15.8	51.1
UK	4 254	9.4	8.0	82.7	21 507	18.1	7.8	74.1	11 730	28.4	10.0	61.6
IS	22	4.9	4.6	90.5	109	20.8	13.5	65.6	66	30.7	16.6	52.6
NO	282	11.1	10.9	78.0	1 685	26.2	11.5	62.3	1 009	36.7	12.1	51.1
CH	603	10.9	10.5	78.6	2 782	20.3	18.9	60.8	1 537	28.6	24.8	46.6
BG	671	5.5	5.1	89.4	1 630	24.8	8.2	67.0	634	48.5	7.7	43.8
RO	1 964	5.8	7.1	87.2	3 108	16.8	17.0	66.2	1 219	28.0	28.7	43.3

Exceptions to the reference year 2003
NL and IS: 2002.

EU-25 and EU-15 are estimated.
EU-25 excludes Poland.

:u reliable data not available.

u data should be treated with caution.

One in five 25-64 year olds has a tertiary education in the EU, with above average regions generally showing lower levels of unemployment

Overall, in the EU-25 around one in five people aged 25-64 have a tertiary education — HRSTE. This is equivalent to nearly 51 million tertiary educated people from a total 245 million — see Table 3. But many of the top 30 regions in Europe have far higher concentrations of highly educated people amongst their regional populations. Such is especially the case for the top region, ***Province Brabant Wallon*** in Belgium, where 46.3% of 25-64 year olds have a tertiary education. A comparison of the indicators calculating the tertiary educated, the employed and the population as a proportion of their national totals further serves to underline the degree to which ***Province Brabant Wallon*** has a high proportion of tertiary educated: 5.6% of Belgium's highly educated live in this region, but just 3.4% of its total population. It is also a region that that has been attracting increasing numbers of the highly educated over recent years. Annual average growth in the number of tertiary educated was 5.8% between 2000 and 2003, whilst for the population in general it was just 0.8%.

Table 3 is ranked according to the proportion of 25-64 year olds with a tertiary education. For the most part, the unemployment rate in these regions is below the EU-25 average. In other words, there is below average

unemployment in regions where a high proportion of the population has a tertiary education. This is true for all but six regions: ***Région de Bruxelles-Capitale*** (BE, 13%), ***Île de France*** (FR, 8.2%), ***Dresden***, ***Leipzig*** and ***Berlin*** (DE, 16.6%, 20.1% and 17.8%, respectively) and Estonia, for which the NUTS 2 regional level is equivalent to the national level (9.3%). In four of these regions — ***Région de Bruxelles-Capitale*** and ***the three German*** regions — there has furthermore been a reduction in the number of resident tertiary educated people between 2000 and 2003. This could be due to a number of reasons. Either because high numbers of people have exited the target population, for example by turning 65, or more likely, because of outward migration from the region. In each of these four regions, the outflow of tertiary educated (a reduction in the annual average growth rate), exceeds that of the population in general.

There are quite a few countries represented in the top 30 regions. Apart from the United Kindgom, which has seven regions — ranging from ***Inner London*** where 37.5% of 25-64 year olds have a tertiary education, to ***Hampshire*** and ***Isle of Wight*** (30%) — there are many countries with three regions in the top 30. This is the case for Belgium, Norway, Finland, Spain and Germany. The Netherlands and Switzerland have two regions, whilst France, Sweden, Denmark and Estonia have one each. This latter is the only representative from the New Member States.

Instead of concentrating on the tertiary educated, the map on Page 6 helps to illustrate, for each region, how heavily concentrated professionals and technicians are as a proportion of the labour force. Rather than listing solely the leading European regions, this categorises all regions for which data could be provided.

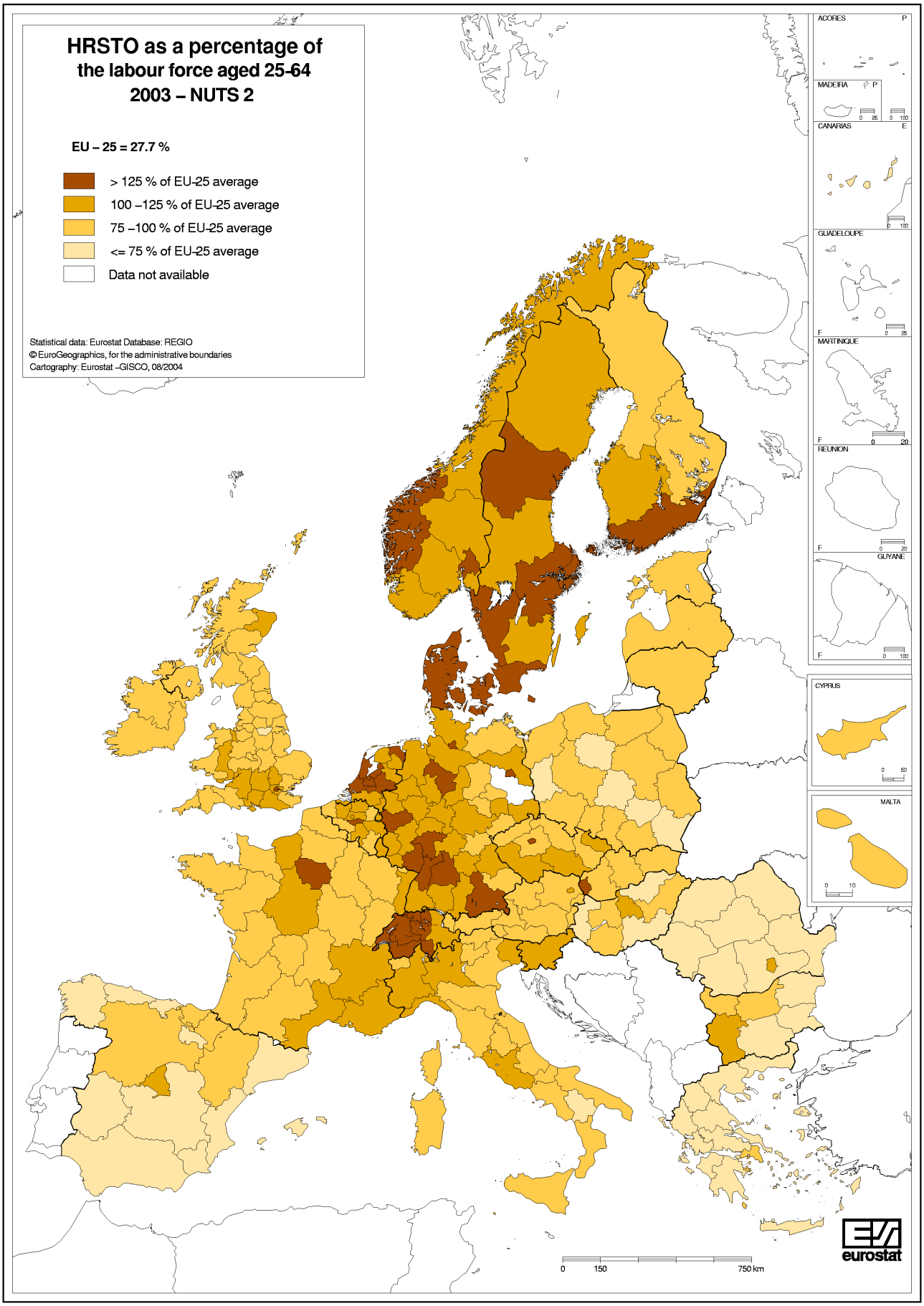
The leading regions, 25% above the EU-25 average of 27.7% HRSTO in the labour force, include many capital cities. Notable inclusions are ***Praha*** (CZ) and ***Bratislavský kraj*** (SK) where 44.3% and 42.4% of the regional labour force were working as professionals or technicians in 2003. Otherwise, there are no regions from southern Europe. Italy and Spain do, however, figure in the second group of regions with above average proportions of professionals or technicians — 100% to 125% of EU-25 average. Italy has five regions where more than 27.7% of the labour force is employed as HRSTO, whereas Spain has one — ***Comunidad de Madrid*** (30.7%). From the New Member States and Candidate countries, there are also regions in this above average group from Hungary (***Közép-Magyarország***, 33%), Czech Republic (***Jihovýchod***, 33%; ***Jihozápad***, 28.8% ; ***Moravskoslezsko***, 28%), Slovenia (national level, 29.2%) Romania (***Bucuresti***, 32.8%) and Bulgaria (***Yugozapaden***, 28.9%).

Table 3: Top 30 regions in terms of HRSTE
as a % of the population (25-64 year olds), HRSTE as a % of national total and other reference indicators — 2003
AAGR 2000-2003

		Population 1000s	HRSTE 1000s	HRSTE as a % of population	HRSTE as a % of national total	Population as a % of national total	Employment as a % of national total	Unemployment rate %	HRSTE AAGR 2000-2003 %	Population AAGR 2000-2003 %
EU-25		**245 404**	**50 800**	**20.7**	**-**	**-**	**-**	**7.9**	**2.6**	**0.4**
Prov. Brabant Wallon	BE	190	88	46.3	5.6	3.4	3.5	6.8	5.8	0.8
Oslo og Akershus	NO	572	240	42.0	31.5	23.5	23.8	3.3	0.9	1.3
Inner London	UK	1 686	633	37.5	7.4	5.3	4.9	7.5	2.3	2.2
Etelä-Suomi	FI	1 436	523	36.4	56.2	50.7	52.5	6.5	:	:
País Vasco	ES	1 205	437	36.3	7.7	5.3	5.6	7.6	5.5	0.9
Stockholm	SE	1 025	371	36.2	28.9	21.5	22.4	4.1	5.3	0.6
Région de Bruxelles-Capitale/ Brussels Hoofdstedelijk Gewest	BE	533	193	36.1	12.3	9.6	8.8	13.0	-1.3	1.5
Prov. Vlaams-Brabant	BE	558	199	35.7	12.7	10.1	11.3	3.7	2.4	0.2
Île de France	FR	5 976	2 120	35.5	30.0	19.5	20.4	8.2	1.3	-1.1
Berks., Buckinghams. & Oxfordshire	UK	1 223	429	35.1	5.0	3.8	4.2	3.1	2.9	1.4
Utrecht	NL	644	215	33.3	9.7	7.1	7.4	3.4	:	1.2
Comunidad Foral de Navarra	ES	305	102	33.3	1.8	1.4	1.5	4.4	5.2	1.4
North Eastern Scotland	UK	235	78	33.2	0.9	0.7	0.8	3.1	3.3	-0.3
Comunidad de Madrid	ES	3 034	988	32.6	17.5	13.4	14.3	6.1	4.2	2.0
East Wales	UK	573	183	32.0	2.1	1.8	1.9	2.6	4.6	0.3
Åland	FI	14	5	32.0	0.5	0.5	0.6	1.0	:	:
Eastern Scotland	UK	1 028	328	31.9	3.8	3.2	3.3	3.2	6.2	0.3
Danmark	DK	2 967	944	31.8	-	-	-	4.8	8.7	0.6
Surrey, East and West Sussex	UK	1 388	441	31.7	5.2	4.3	4.7	2.1	2.4	0.7
Zürich	CH	719	228	31.7	20.7	17.6	17.9	3.9	:	:
Dresden	DE	900	284	31.5	2.7	2.0	1.9	16.6	-3.1	-2.0
Leipzig	DE	607	190	31.2	1.8	1.3	1.2	20.1	-0.8	-0.5
Berlin	DE	2 001	623	31.1	6.0	4.4	4.0	17.8	-1.7	-0.7
Trøndelag	NO	208	64	30.9	8.5	8.6	8.5	3.3	3.2	1.0
Vestlandet	NO	407	125	30.7	16.4	16.7	17.1	2.6	3.1	0.6
Länsi-Suomi	FI	701	214	30.6	23.0	24.7	24.3	7.5	:	:
Estonia	EE	709	216	30.4	-	-	-	9.3	1.3	-0.4
Noord-Holland	NL	1 479	448	30.3	20.2	16.4	16.6	3.4	:	0.8
Hampshire and Isle of Wight	UK	963	288	30.0	3.4	3.0	3.2	3.5	7.9	0.4
Région lémanique	CH	747	223	29.8	20.3	18.3	17.5	4.5	:	:

Exceptions to the reference year 2003
NL and IS: 2002.
NB: EU-25 is estimated.

Map 1:



EU-25 is estimated.
Exception to the reference year 2003 — NL: 2002.
Data not available for PT at the NUTS 2 level, 2003 version.
Data for Brandenburg – Südwest (DE42) is included in Brandenburg – Nordost (DE41).

➢ ESSENTIAL INFORMATION – METHODOLOGICAL NOTES

Human resources in science and technology — HRST

HRST and their sub-groups are measured using characteristics of educational attainment and occupation and follow the guidelines of the *Canberra Manual*.

- **HRSTO**: **Human Resources in Science and Technology — Occupation**
  Individuals who are employed in a S&T occupation
  (ISCO '88 COM codes 2 or 3).
- **HRSTE: Human Resources in Science and Technology — Education**
  Individuals who have successfully completed education
  at the third level in a S&T field of study
  (ISCED '97 version levels 5a, 5b or 6).
- **HRSTC: Human Resources in Science and Technology — Core**
  Individuals who have successfully completed education
  at the third level in a S&T field of study (ISCED '97 version levels 5a, 5b or 6)
  and are employed in a S&T occupation (ISCO '88 COM codes 2 or 3).
- **S&E: Scientists and Engineers**
  physical, mathematical and engineering occupations
  (ISCO '88 COM code 21);
  life science and health occupations (ISCO '88 COM code 22).

Note that according to the *Canberra Manual*, § 71, the six broad S&T fields of study are:

- Natural sciences,
- Engineering and technology,
- Medical sciences,
- Agricultural sciences,
- Social sciences and humanities,
- Other fields

Reference manual

Manual on the measurement of human resources devoted to S&T — Canberra Manual, Eurostat/OECD, 1994.

The International Standard Classification of Education — ISCED 97

The following programmes are at the tertiary level of education:

- **ISCED level 5A**
  programmes that are largely theoretically based and are intended to provide sufficient qualifications for gaining entry into advanced research programmes and professions with high skill requirements
- **ISCED level 5B**
  programmes that are generally more practical/technical/occupationally specific than ISCED 5A programmes
- **ISCED level 6**
  this level is reserved for tertiary programmes that lead to the award of an advanced research qualification. The programmes are devoted to advanced study and original research

Data source

The indicators in this Statistics in Focus are calculated using data from the European Union Labour Force Survey (EU LFS). The most recent data were extracted in June 2004 and refer to the spring quarter of each year.

These HRST indicators can either be found in, or calculated from, Eurostat's HRST domain of NewCronos, Theme 9.

Quality of the data

The guidelines on the sample size reliability of the data established by the EU LFS are applied to the HRST database and therefore countries/regions for which quality levels do not permit publication appear as not available and are flagged as unreliable. Regions for which quality levels define the data as unreliable but allow for publication are included and flagged as unreliable.

Nomenclature of territorial units for statistics — NUTS

The Nomenclature of Territorial Units for Statistics — NUTS — was established to provide a single, uniform breakdown of territorial units for the production of regional statistics for the European Union. The NUTS is a five-level hierarchical classification comprising three regional and two local levels. In this way, NUTS subdivides each Member State into a whole number of NUTS 1 regions, each of which is in turn subdivided into a whole number of NUTS 2 regions, and so on.

In the present Statistics in Focus all data are presented at NUTS 2 level on the basis of the NUTS 2003 version (subject to being statistically significant). The exceptions have been indicated in the tables or maps. A number of countries are classified at the NUTS 2 level, which explains their presence amongst the regions. Non EU countries are not included in the NUTS classification but do have similarly defined statistical regions.

NACE

The data presented by sector of activity are based on the Statistical classification of economic activities in the European Community, NACE Rev.1.1.

Classification of sectors

Description	NACE Rev 1.1 codes
Manufacturing	15 to 37
High and medium high technology manufacturing	24, 29 to 35
Low and medium low technology	15 to 22, 23, 25 to 28 and 36 to 37
Services	50 to 99
Total knowledge-intensive services	61, 62, 64 to 67, 70 to 74, 80, 85 and 92
Knowledge-intensive high-technology services	64, 72, 73
Knowledge-intensive market services	61, 62, 70, 71, 74
Knowledge-intensive financial services	65, 66, 67
Other knowledge-intensive services	80, 85, 92
Less-knowledge-intensive market services	50, 51, 52, 55, 60, 63
Other less-knowledge-intensive services	75, 90, 91, 93, 95, 99
Agriculture, hunting, forestry, fishing, mining and quarrying	01 to 14
Utilities and construction	40, 41 and 45

Due to a lack of employment data at the 2-digit level of NACE, employment by sector indicators for PL can not be calculated and therefore are not presented in this publication. The EU aggregate excludes Poland in such cases.

Statistical abbreviations and symbols

AAGR: Annual average growth rate in %

:u reliable data not available

u data should be treated with caution

: not available

Further information:

- **Reference publications**

  Title Statistics on Science and Technology in Europe, 2003 edition
  Catalogue No KS-57-03-104-EN-C Price EUR 35

- **Databases**

  EUROSTAT website/Science and Technology/Human Resources in Science and Technology

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European Statistical Data Support:

Eurostat set up with the members of the 'European statistical system' a network of support centres, which will exist in nearly all Member States as well as in some EFTA countries.

Their mission is to provide help and guidance to Internet users of European statistical data.

The complete details concerning this support network can be found on our Internet site:
http://epp.eurostat.cec.eu.int/pls/portal/url/PAGE/PGP_DS_SUPPORT

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This document has been produced in collaboration with Alex Stimpson.
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