

III. Personnel of Research and Development

III.1 R&D personnel in the Czech Republic

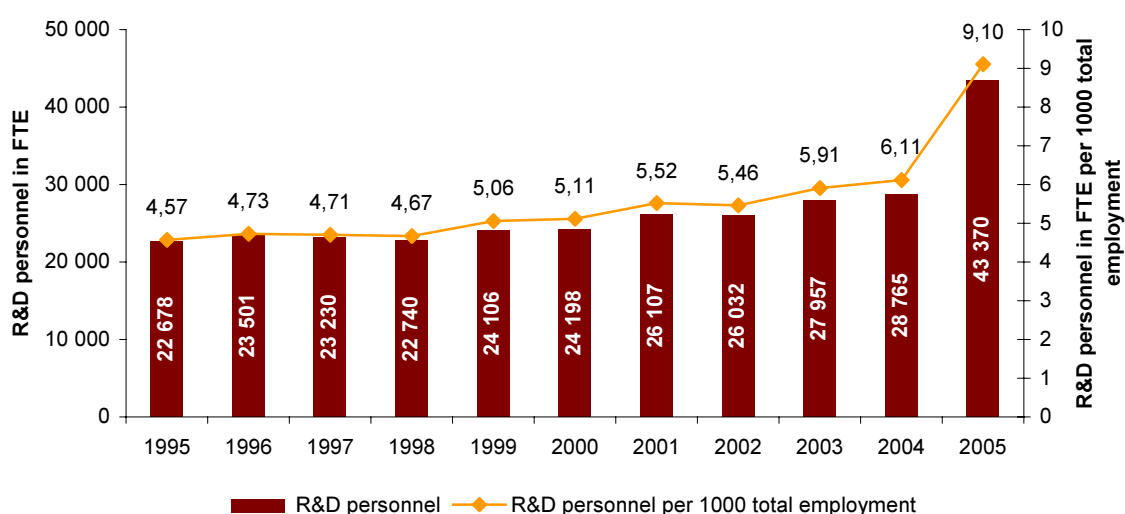
III.1.1 R&D personnel by sort of occupation

The Research and Development basis in the Czech Republic included 65 379 employees at 31 December in total, of which 22 865 were females in the year 2005.

In comparison 2005 with the previous year 2004, the number of R&D Personnel increased about 8,7 %. According the indicator FTE (see methodology), which is using for the international comparison, 43 370 employees, of which 14 135 females (32,6 %) worked in full-time equivalent of working time for R&D in the Czech Republic in the year 2005. The among-annual growth of employees in FTE was 50,8 %. The cause for this increase is explained in the methodology.

There were on the average 0,973 million CZK of expenditure on R&D for one employee in FTE in the year 2005.

Figure 3.1 Total number of R&D personnel in the Czech Republic (FTE), 1995-2005



In 2005, 9,10 FTE (calculation on adequate proportion of working time for Research and Development) of personnel R&D were in total national economy per 1000 employed. Per 1000 labour force was the share 6,11 employee in 2004. In comparison with the previous year 2004, values of both these indicators increased. Since the year 1995, the total growth of number of personnel R&D is recorded except light decrease in years 1997, 1998 a 2002 (the indicator FTE, see the graph). The indicator of number employees of R&D at 31 December (Headcount) noted similar development.

Analysis of development of number R&D personnel is recorded more detailed in the mentioned publication „Indicators of Science and Technology in the Czech Republic in 1995-2002, CZSO 2004“.

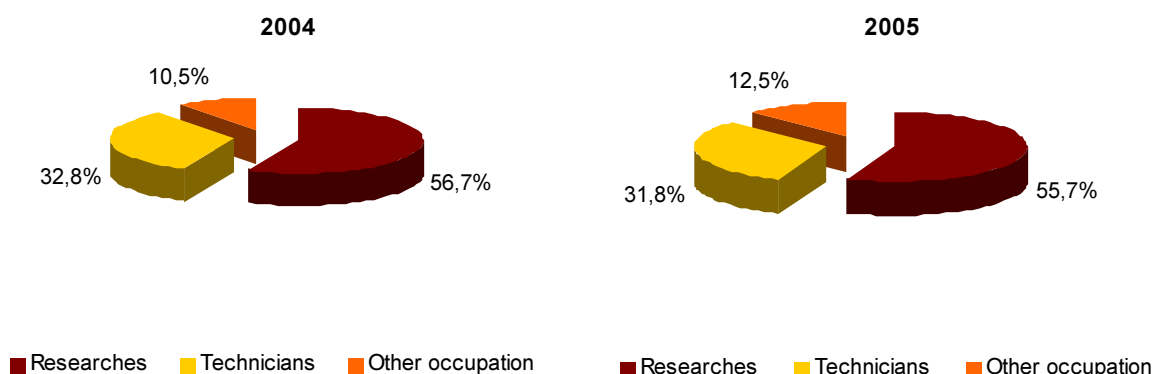
Table 3.1 Total number of R&D personnel in headcount and FTE in the Czech republic in 2004 and 2005

| R&D PERSONNEL | 2004 | | 2005 | | Index 05/04 | |
|--|--------|---------|--------|---------|-------------|---------|
| | Total | Females | Total | Females | Total | Females |
| Registered number of employees at 31 December | 60 148 | 20 823 | 65 379 | 22 865 | 1,0870 | 1,0980 |
| No. of persons with Short Term Contracts in 2005 / Number of Short Term Contracts in 2004 | 24 979 | 8 934 | 34 025 | 13 421 | 1,3622 | 1,5021 |
| Full Time Equivalent devoted to R&D – new method since the year 2005 | 28 765 | 8 808 | 43 370 | 14 135 | 1,5077 | 1,6047 |

Note: for detailed breakdown of R&D employees in the Czech Republic by occupation in headcount and FTE during 2004 and 2005 see table 25.

Researchers were the major majority of total number employees of R&D. In 2005, 24 169 researchers worked on Research and Development projects (the share 55,7 % of total number employees R&D expressed by the indicator FTE, of which 6 349 were females. The share of females was 26,3 % of researchers. There were in R&D 13 773 technicians or equivalent staff, of which 5 153 were females. The share of these personnel on the total personnel was 31,8 % in the year 2005. There were 5 429 registered other personnel in R&D, of which 2 633 were females. The share of other personnel R&D on the total personnel R&D reached 12,5 %.

Figure 3.2 Structure of R&D personnel by occupation in the Czech Republic in 2004 and 2005 (in FTE)



In comparison with the previous year 2004, the share of researchers decreased slightly (from 56,7 % in 2004 to 55,7 % in 2005), the share of technicians and equivalent staff decreased slightly (from 32,8 % in 2004 to 31,8 % in 2005), the share of other personnel R&D increased slightly from 10,5 % in 2004 to 12,5 % in 2005.

In 2005, 17 820 (73,7 % of total researchers) men and 6 349 (26,3 % of total researchers) females, in FTE, worked as researchers. In the same year 2005, 8 620 FTE men (62,6 % of total technicians) and 5 153 FTE females (37,4 % of total technicians) worked as technicians. And finally 2 795 FTE men (51,5 % of total number of other personnel) and 2 633 FTE females (45,5 % of total number of other personnel) worked as other R&D.

Table 3-2 R&D personnel by occupation in the Czech Republic in 2004 and 2005 (in FTE)

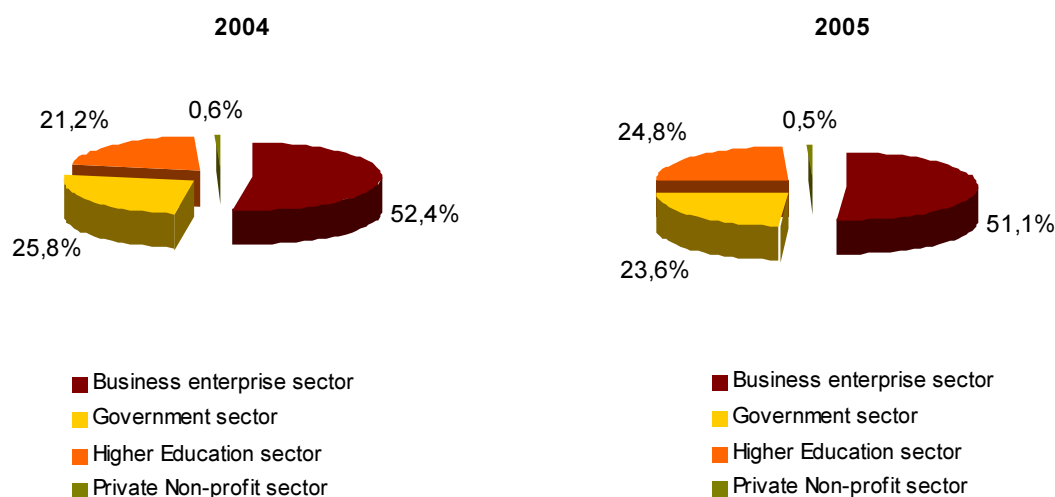
| SORT OF OCCUPATION | 2004 | | 2005 | | Index 05/04 | |
|--------------------|---------------|--------------|---------------|---------------|---------------|---------------|
| | Total | Females | Total | Females | Total | Females |
| Researches | 16 300 | 4 052 | 24 169 | 6 349 | 1,4828 | 1,5667 |
| Technicians | 9 446 | 3 407 | 13 773 | 5 153 | 1,4581 | 1,5123 |
| Other occupation | 3 020 | 1 348 | 5 429 | 2 633 | 1,7976 | 1,9527 |
| Total | 28 765 | 8 808 | 43 370 | 14 135 | 1,5077 | 1,6047 |

Note: for detailed breakdown of R&D employees in the Czech Republic by sectors and type of occupation in FTE and headcount during 2004 and 2005 see table 26 to 28.

III.1.2 R&D Personnel in the Czech Republic by sector of employment (performance)

In 2005 the highest number of personnel engaged in Research and Development was in the Business Enterprise sector. There were 22 143 full-time equivalent personnel in R&D, 51,1 % of total personnel R&D in FTE of the Czech Republic. 5 025 females worked in the Business Enterprise sector. The number of personnel engaged in R&D in the government sector was 10 223 in FTE of which 4 696 were females. The share of R&D personnel in FTE from total personnel R&D was 23,6 % in the Government sector in the year 2005. The share of R&D personnel in FTE from total personnel R&D was 24,8 % in the Higher Education sector, i.e., 10 776 R&D personnel in FTE, of which 4 281 were females. In Private non-profit sector the share of R&D personnel in FTE in total personnel R&D was only 0,5 %. For details see graph 3.3 and the table 3.3.

Figure 3.3 Structure of R&D personnel by sector of employment in the CR in 2004 and 2005 (in FTE)



In comparison between years 2005/2004, the highest increase of personnel R&D in FTE was recorded in the higher education sector (76,5 % reason for this increase was the changes in the methodology). In 2005, 17 118 men (77,3 % of total R&D personnel in the business enterprise sector) and 5 025 females (22,7 %) worked in the business enterprise sector.

In 2005, 5 527 men (54,1 % to total number of employees in the government sector) and 4 696 females (45,9 %) worked in the government sector. The higher education sector recorded 6 495 men (60,3 % of total number of employees in FTE in the higher education sector) and 4 281 females (39,7 %). The private non-profit sector recorded 95 men in FTE (41,5 % of total number of employees in the private non-profit sector) and 134 females in FTE (58,5 %).

Table 3.3 R&D personnel by sector of employment in the Czech Republic in 2004 and 2005 (in FTE)

| SECTOR OF PERFORMANCE | 2004 | | 2005 | | Index 05/04 | |
|----------------------------|---------------|--------------|---------------|---------------|---------------|---------------|
| | Total | Females | Total | Females | Total | Females |
| Business enterprise sector | 15 064 | 3 224 | 22 143 | 5 025 | 1,4699 | 1,5586 |
| Government sector | 7 422 | 3 193 | 10 223 | 4 696 | 1,3773 | 1,4708 |
| Higher Education sector | 6 104 | 2 318 | 10 776 | 4 281 | 1,7654 | 1,8469 |
| Private Non-profit sector | 175 | 74 | 229 | 134 | 1,3124 | 1,8074 |
| Total | 28 765 | 8 808 | 43 370 | 14 135 | 1,5077 | 1,6047 |

Note: for detailed breakdown of R&D employees, in the Czech republic, in the business enterprise sector by CZ-NACE in FTE and headcount during 2004 and 2005 see table 42 to 47.

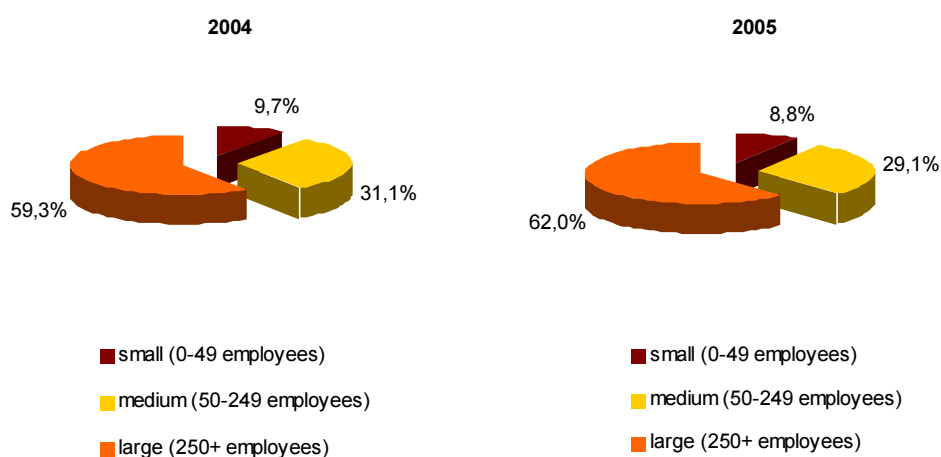
III.1.3 R&D personnel in the Czech Republic by size-class of R&D units

The highest number of personnel engaged in Research and Development was recorded in large economic subjects with more than 250 employees with 26 911 R&D personnel (FTE) in the year 2005, of which 8 961 were females. The share was 62,0 % of all R&D employees in FTE. 12 636 personnel R&D in FTE engaged in medium economic subjects (50-249 employees), of which 4 127 were females, the share in total number of employees reached 29,1 %. The share of personnel R&D in FTE engaged in small economic subjects was 8,8 %, 3 823 R&D personnel.

As in the case of R&D expenditure in individual sectors of performance substantial differences in the number of employees in R&D in all size-classes of economic subjects have been observed. Large economic subjects with more than 250 employees in the higher education sector shared almost 100 % of total R&D personnel working in this sector. On the other hand small economic subjects dominated the private non-profit sector, 96 % of total R&D personnel in this sector. In government sector medium-sized economic subjects played important role, 54,6 % of total R&D personnel in this sector. Large economic subjects with 53,8 % and medium-sized economic subjects with 31,6 % of total R&D personnel in the business enterprise sector played a significant role.

There were on the average 1,06 million CZK of expenditure on R&D for one employee in FTE in large economic subjects in the year 2005, further 0,833 million CZK in medium-sized economic subjects. And in the case of small economic subjects the expenditure on R&D was 0,802 million CZK for one employee in FTE.

Figure 3.4 R&D personnel by size-class in the Czech Republic in 2004 and 2005 (in FTE)



The highest year-on-year increase of number personnel R&D was recorded at large economic subjects. The number of R&D personnel in FTE in this case increased about 57,9 %. In 2005, 17 950 men in FTE (66,7 % of total number of R&D personnel in large economic subjects) and 8 961 females in FTE (33,3 %) worked in large economic subjects on R&D activities. In medium-sized enterprises 8 510 men (67,3 % of total number of R&D personnel in this size group) and 4 127 females (32,7 %) worked on R&D activities. Where as in small enterprises in 2005, 2 776 men (72,6 % of total number of small enterprises) and 1 047 females (27,4 %) worked on R&D activities.

Table 3.4 R&D personnel by size-class in the Czech Republic in 2004 and 2005 (in FTE)

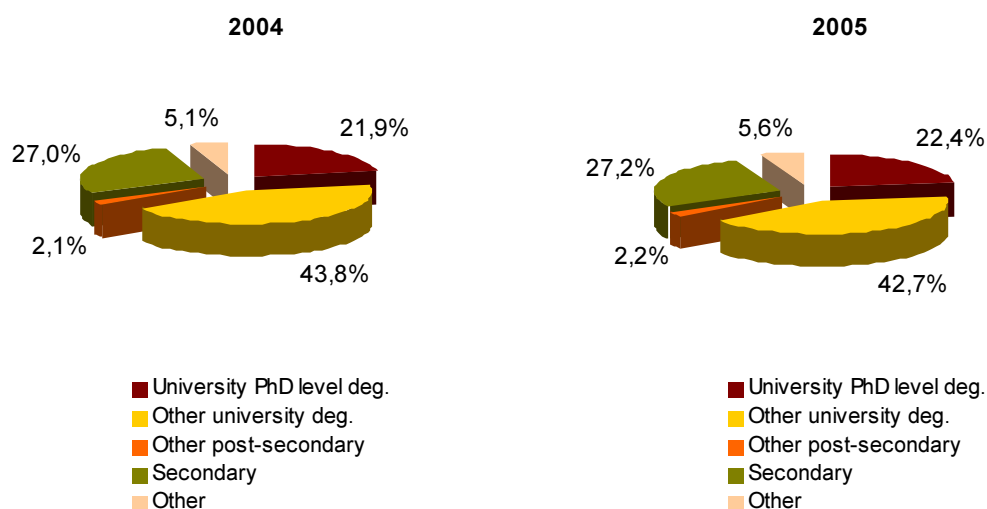
| SIZE-CLASSES OF R&D UNITS | 2004 | | 2005 | | Index 05/04 | |
|---------------------------|---------------|--------------|---------------|---------------|---------------|---------------|
| | Total | Females | Total | Females | Total | Females |
| Small (0-49 employees) | 2 780 | 637 | 3 823 | 1 047 | 1,3753 | 1,6443 |
| Medium (50-249 employees) | 8 941 | 2 854 | 12 636 | 4 127 | 1,4133 | 1,4460 |
| Large (250+ employees) | 17 044 | 5 318 | 26 911 | 8 961 | 1,5789 | 1,6850 |
| Total | 28 765 | 8 808 | 43 370 | 14 135 | 1,5078 | 1,6048 |

Note: for detailed breakdown of R&D employees, in the Czech republic, in the business enterprise sector by size groups in FTE and headcount during 2004 and 2005 see table 36 and 37.

III.1.4 R&D personnel in the Czech Republic by qualification

The highest number of R&D personnel, 42,7 % of total R&D personnel in FTE, was with basic university degree below PhD level as main group in the year 2005. There were 18 525 R&D personnel in FTE, of which 3 255 were females. The share of PhD degree holders was 22,4 % (9 708 personnel in FTE). 2 515 females in FTE with PhD degree worked in R&D in the year 2005. The share of personnel R&D with other tertiary and other post-secondary education reached 2,2 %. The share of personnel R&D with secondary education diplomas was recorded 27,2 %. It is the second highest group of personnel R&D (after R&D personnel with basic university degree), the share of females in this group was 45,6 %. The share of R&D personnel with other qualification reached 5,6 % of total number of R&D personnel.

Figure 3.5 Structure of R&D personnel by qualification in the Czech Republic in 2004 and 2005 (in FTE)



In comparison with previous year 2004, the highest increase was recorded at personnel with other qualification group (by 64,6 %) in 2005. In 2005, 7 193 men in FTE, (74,1 % of total R&D personnel with PhD degree) with PhD degree and 2 515 women in FTE (25,9 %) with PhD degree worked on R&D activities. Further in the same year, 13 441 men in FTE (72,6 % of total R&D personnel with university degree) with university degree and 5 084 women (27,4 %) worked on R&D activities. The number of R&D personnel with post-secondary education in 2005 was as follows: 628 men (67,1 % of total R&D personnel with post-secondary education) and 308 women (32,9 %). In the same year, 2005, 6 409 men in FTE (54,4 %) with secondary education and 5 381 women in FTE (45,6 %) worked on R&D activities. Finally, 1 564 men (64,9 % of total R&D personnel with other educational qualification) and 847 women (35,1 %) devoted their services to R&D activities.

Table 3.5 R&D personnel by qualification in the Czech Republic in 2004 and 2005 (in FTE)

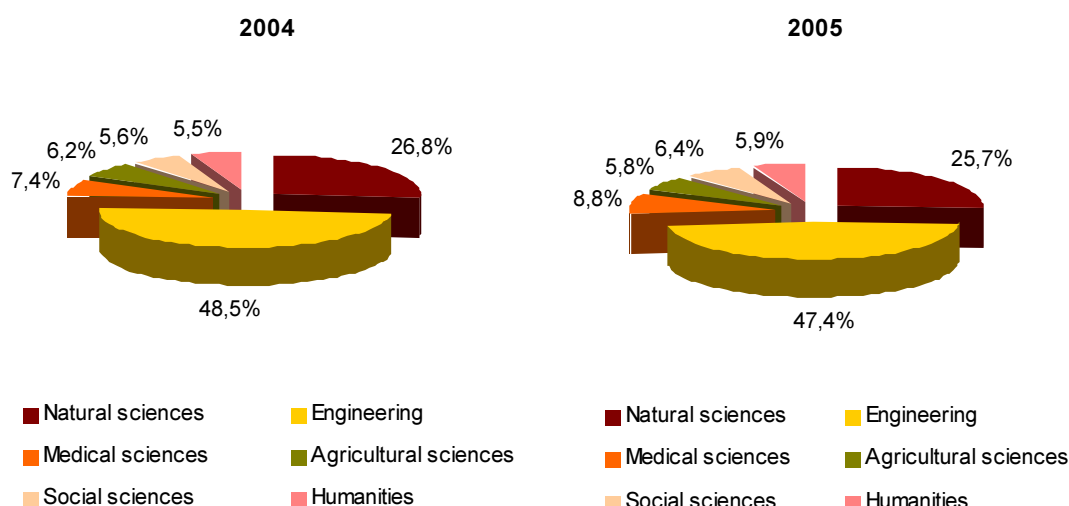
| LEVEL OF QUALIFICATION | 2004 | | 2005 | | Index 05/04 | |
|-----------------------------|---------------|--------------|---------------|---------------|---------------|---------------|
| | Total | Females | Total | Females | Total | Females |
| University PhD level degree | 6 312 | 1 503 | 9 708 | 2 515 | 1,5381 | 1,6730 |
| Other university degree | 12 595 | 3 255 | 18 525 | 5 084 | 1,4708 | 1,5619 |
| Other post-secondary | 613 | 176 | 936 | 308 | 1,5255 | 1,7457 |
| Secondary | 7 781 | 3 509 | 11 790 | 5 381 | 1,5154 | 1,5335 |
| Other | 1 465 | 365 | 2 411 | 847 | 1,6465 | 2,3228 |
| Total | 28 765 | 8 808 | 43 370 | 14 135 | 1,5077 | 1,6047 |

Note: for detailed breakdown of R&D employees, in the Czech republic by sectors and qualification in FTE and headcount during 2004 and 2005 see table 30 and 31.

III.1.5 R&D personnel in the Czech Republic by the main fields of science

The highest number of personnel R&D in FTE worked in fields of engineering and technology in the year 2005. The number of personnel R&D in FTE engaged in this area reached 20 570, it is 47,4 % of total R&D personnel in FTE. Females formed 20,0 % of total number of R&D personnel in FTE in engineering and technology. Natural sciences (the share 25,7 %) were the second highest important field of science, there were 11 163 personnel R&D, of which 4 067 were females. Females had the share 36,4 % in natural sciences. The share of R&D personnel in medical sciences reached 8,8 % of total R&D personnel in FTE, females had in this group 55,8 % share. Shares of other fields of science are in the graph 3.6.

Figure 3.6 R&D personnel by fields of science in the CR in 2004 and 2005 (in FTE)



In 2005 the share of natural sciences in the total number of R&D personnel in the government sector was 50,4 %. In business enterprise sector and higher education the most important field of science was engineering and technology. The shares of this field in the above-mentioned sectors were 69,9 % and 34,8 % respectively.

In comparison with the previous year 2004, the highest increase of number of personnel R&D in FTE was recorded in field of Medical sciences - about 78,2 %. In the field of Natural sciences 7 096 men (63,6 % of total number of R&D personnel in FTE in this field) and 4 067 women (36,4 %) worked in 2005. In the field of engineering and technology in 2005, 16 463 men (80,0 % of total R&D personnel in FTE in this field) and 4 107 women (20,0 %) worked on R&D. In the same year 1 681 men (44,2 %) and 2 119 women (55,8 %) worked in the field of medical sciences. In agricultural sciences 1 210 men (48,3 %) and 1 295 women (51,7 %) worked in 2005. The shares of men and women in the fields of social sciences and humanities in 2005 were 1 448 i.e., 52,0 %, 1 338 (48,0 %) and 1 337 (52,5 %) and 1 209 (47,5 %) respectively.

Table 3.6 R&D personnel by fields of science in the Czech Republic in 2004 and 2005 (in FTE)

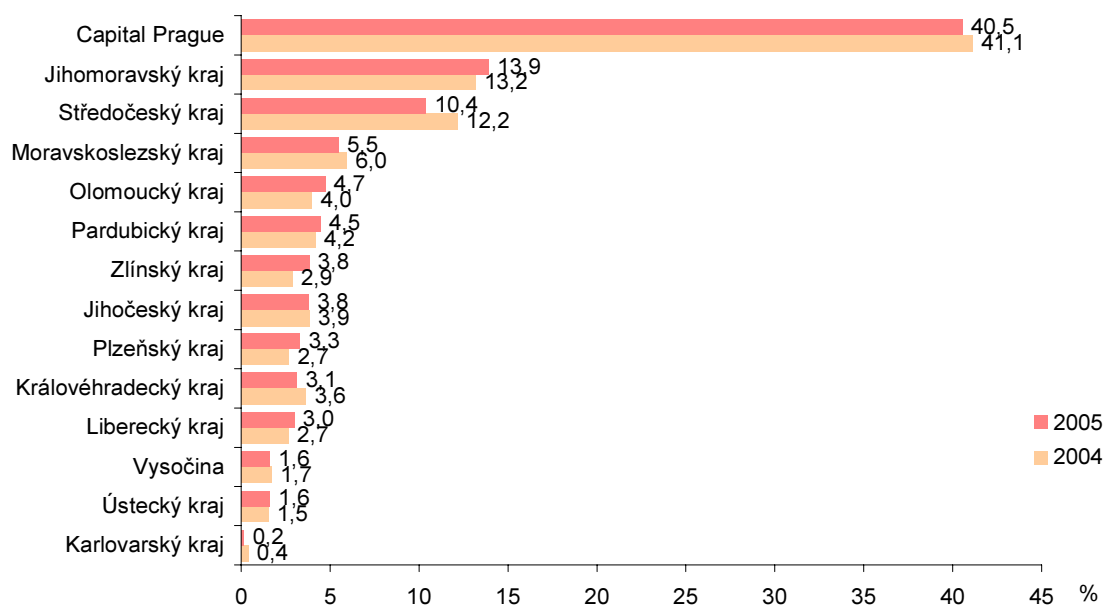
| FIELD OF SCIENCE | 2004 | | 2005 | | Index 05/04 | |
|-----------------------|---------------|--------------|---------------|---------------|---------------|---------------|
| | Total | Females | Total | Females | Total | Females |
| Natural sciences | 7 719 | 2 679 | 11 163 | 4 067 | 1,4462 | 1,5181 |
| Engineering | 13 947 | 2 586 | 20 570 | 4 107 | 1,4749 | 1,5880 |
| Medical sciences | 2 132 | 1 186 | 3 800 | 2 119 | 1,7821 | 1,7862 |
| Agricultural sciences | 1 796 | 852 | 2 505 | 1 295 | 1,3945 | 1,5192 |
| Social sciences | 1 600 | 745 | 2 787 | 1 339 | 1,7419 | 1,7977 |
| Humanities | 1 571 | 760 | 2 546 | 1 209 | 1,6204 | 1,5907 |
| Total | 28 765 | 8 808 | 43 370 | 14 135 | 1,5077 | 1,6047 |

Note: for detailed breakdown of R&D employees, in the Czech republic by field of sciences, occupation and qualification in FTE and headcount during 2004 and 2005 see table 38 to 41.

III.1.6 R&D personnel in the Czech Republic by regions (NUTS 3)

The largest number of R&D personnel in FTE was recorded in Capital Prague in the year 2005. Their number was 17 584 FTE, it represents the share 40,5 % of total number of R&D personnel in FTE. Jihomoravský region with the share 13,9 % was the second region with higher number of R&D personnel in FTE, further Středočeský region was with 10,2 %. The highest number of females in R&D worked in Capital Prague, 6 593 females in FTE, Jihomoravský and Středočeský region were following regions with higher number of females. The smallest number of females in R&D was registered in Karlovarský region (30 females in FTE).

Figure 3.7 R&D personnel by regions (NUTS3) in the Czech Republic in 2004 and 2005 (in FTE)



Nearly all the regions recorded an increase in the number of R&D personnel except one region, Karlovarský, where a decrease was registered.

Table 3.7 R&D personnel by regions (NUTS3) in the Czech Republic in 2004 and 2005 (in FTE)

| REGIONS | 2004 | | 2005 | | Index 05/04 | |
|----------------------|---------------|--------------|---------------|---------------|---------------|---------------|
| | Total | Females | Total | Females | Total | Females |
| Capital Prague | 11 832 | 4 215 | 17 584 | 6 593 | 1,4861 | 1,5643 |
| Středočeský kraj | 3 498 | 818 | 4 513 | 1 168 | 1,2903 | 1,4276 |
| Jihočeský kraj | 1 111 | 387 | 1 644 | 567 | 1,4797 | 1,4654 |
| Plzeňský kraj | 776 | 142 | 1 432 | 290 | 1,8451 | 2,0406 |
| Karlovarský kraj | 115 | 49 | 70 | 30 | 0,6109 | 0,6203 |
| Ústecký kraj | 438 | 156 | 697 | 255 | 1,5924 | 1,6396 |
| Liberecký kraj | 767 | 142 | 1 295 | 319 | 1,6884 | 2,2534 |
| Královéhradecký kraj | 1 050 | 320 | 1 365 | 417 | 1,2998 | 1,3050 |
| Pardubický kraj | 1 201 | 275 | 1 936 | 521 | 1,6120 | 1,8941 |
| Vysočina | 498 | 84 | 699 | 132 | 1,4042 | 1,5618 |
| Jihomoravský kraj | 3 791 | 1 173 | 6 036 | 2 037 | 1,5921 | 1,7358 |
| Olomoucký kraj | 1 145 | 448 | 2 058 | 843 | 1,7970 | 1,8799 |
| Zlínský kraj | 829 | 161 | 1 665 | 380 | 2,0082 | 2,3669 |
| Moravskoslezský kraj | 1 714 | 439 | 2 376 | 582 | 1,3864 | 1,3270 |
| Total | 28 765 | 8 808 | 43 370 | 14 135 | 1,5077 | 1,6047 |

Note: for detailed breakdown of R&D employees, in the Czech republic by regions and sector of performance in FTE and headcount during 2004 and 2005 see table 34 and 35.

III.2 Researchers in the Czech Republic

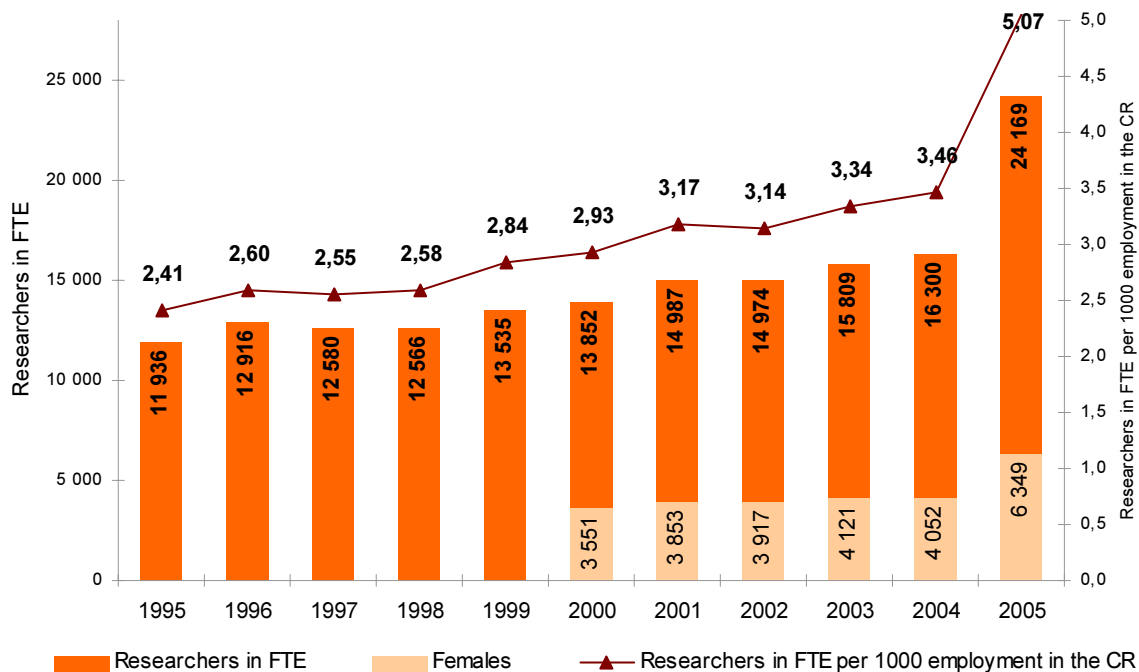
III.2.1 Researchers in the Czech Republic (main figures)

Researchers form the most important group of qualified human resources engaged in Research and Development. Researchers have job research description, there are mainly professionals engaged in the conception or creation of knowledge, products, processes, methods and systems and also in the management of the projects concerned. It is the reason for surveying this indicator from Regulation (753/2004), international institutions and councils.

In 2005, there were 24 169 researchers in FTE in the Czech Republic, this number represents the share 55,7 % of total number of R&D personnel. Number of females was 6 349 (the share 26,3 %). Male – researchers have the majority with a share of 73,7 %. In 2005, 5,07 researchers in FTE were per 1000 employed in total national economy.

By 31 December 2005, the number of researchers in headcount reached in the Czech republic 37 542 persons of which 10 827 were females. 18 068 researchers of which 6 335 women worked on contract base on R&D activities.

Figure 3-8 Total number of researchers in the Czech Republic (FTE), 1995-2005



Note: total number of researchers is broken down by gender since 2000.

Compared with the previous 2004, the number of researchers in FTE increased in 2005. Number of researchers at 31 December (Headcount) increased about 9,9 % (from 34 152 in 2004 to 37 542 in 2005).

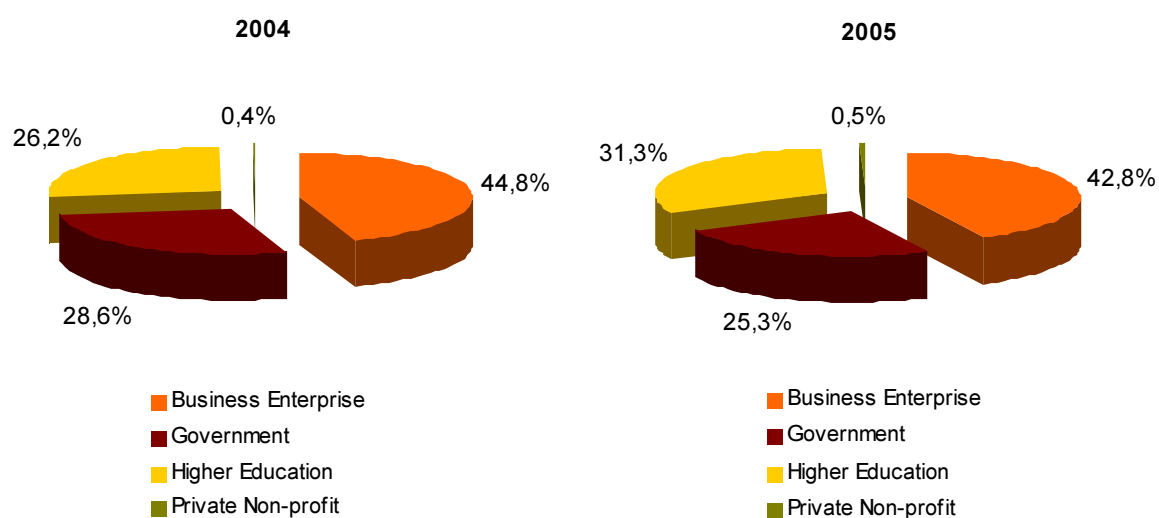
In 2005, 26 716 men researchers (head count) and 17 820 the same in FTE worked on R&D activities. The ratio of the number in FTE to the number in Headcount was 0,667. Whereas the same ratio among women was 0,586 (women researchers in head count 10 827 and in FTE 6 349).

III.2.2 Researchers in the Czech Republic by sector of employment (performance)

In 2005, the largest number of researchers in FTE was engaged in Research and Development projects in the Business Enterprise sector. In this sector, 10 353 full-time equivalent persons worked, i.e., the share was 42,8 % of total number of researchers. The higher education sector was the second important sector of R&D employment with the 31,3 % share in total number of researchers in the Czech Republic. In 2005, number of researchers reached 7 575 (in FTE) in this sector. Government sector includes research institutions of Academy of Science of the Czech Republic, resort research institutions of ministries, etc. This sector employed 25,3 % of total number of researchers in the Czech republic. The private non-profit sector employed 0,5 % of total number of researchers in FTE.

The highest number of females – researchers was recorded in the higher education sector (2 483 persons in FTE); it was the share 39,1 % of total number of researchers. The share of females was 32,8 % and the share of males was 67,2 %. Government sector was the second important sector with number of females (2 135 females persons in FTE, with 33,6 %). 1 656 female researchers worked in the Business Enterprise sector (26,1 %).

Figure 3.9 Structure of researchers by sector of employment in the CR in 2004 and 2005 (in FTE)



The highest increase of number of researchers in FTE was recorded in the Business Enterprise sector with comparison with the previous year 2004 – about 88,9 %. All the sectors recorded considerable increase in the number of researchers in FTE. Reason for this increase was due to the changes in the methodology.

The ratio FTE/ HC (head count to 31.12 of the reference year) of men and women researchers in the business enterprise sector was 0,860 and 0,758 respectively. The same indicator in the government sector was 0,738 for men and 0,719 for women. As most of the employees in the higher education sector also devote to teaching the above-mentioned indicator, FTE/HC, was 0,457 for men and 0,441 for women.

Table 3.8 Researchers by sector of employment in the Czech Republic in 2004 and 2005 (in FTE)

| SECTOR | 2004 | | 2005 | | Index 05/04 | |
|---------------------|---------------|--------------|---------------|--------------|---------------|---------------|
| | Total | Females | Total | Females | Total | Females |
| Business Enterprise | 7 297 | 1 116 | 10 353 | 1 656 | 1,4187 | 1,4834 |
| Government | 4 661 | 1 591 | 6 113 | 2 135 | 1,3116 | 1,3416 |
| Higher Education | 4 274 | 1 324 | 7 575 | 2 483 | 1,7725 | 1,8750 |
| Private Non-profit | 67 | 21 | 127 | 76 | 1,8890 | 3,6047 |
| Total | 16 300 | 4 052 | 24 169 | 6 349 | 1,4828 | 1,5667 |

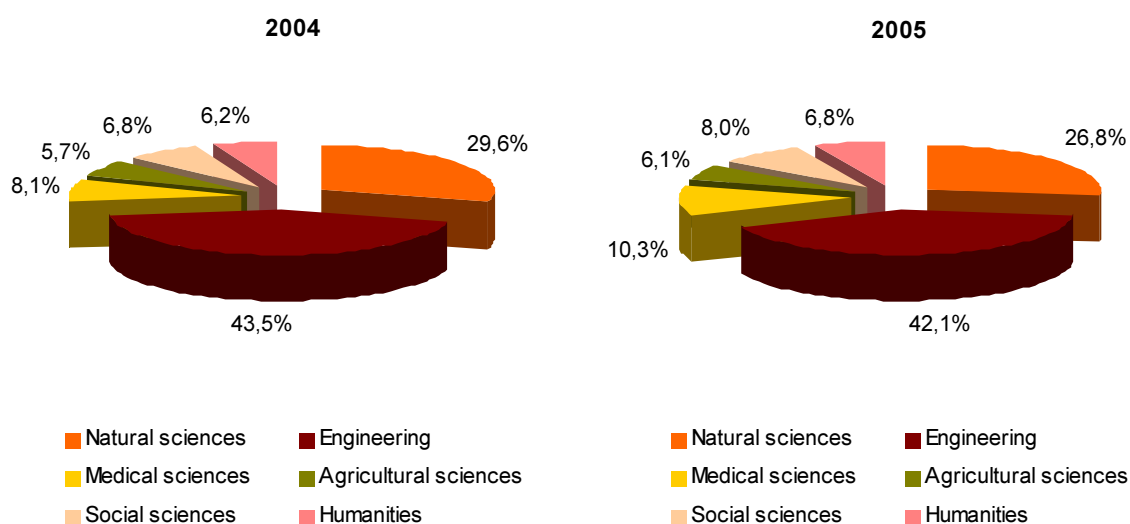
Note: for detailed breakdown of R&D employees, in the Czech republic in the business enterprise sector by CZ-NACE activities in FTE and headcount during 2004 and 2005 see table 56 to 62.

III.2.3 Researchers in the Czech Republic by main field of science

The highest number of researchers in FTE worked as in the case of R&D personnel in fields of engineering and technology in the year 2005. Number of researchers in this area reached 10 178 persons in FTE, the share 42,1 % of total number of researchers in FTE. Natural sciences were the second important area with higher number of researchers in FTE, with 6 483 researchers in FTE. The share in total number of researchers in FTE reached 26,8 %. The medical science field also played an important role with about 10,3 % share, see graph 3-10. The field agricultural sciences recorded the smallest number of researchers in FTE (the share 6,1 %).

The highest number of female – researchers in FTE was registered in the area of natural sciences (1 714 persons in FTE); it represents the share 27,0 % of total number of women researchers. The structure of researchers in this field of science by gender was: 26,4 % females and males 73,6 %. The share of women in the field of engineering and technology was 22,5 % of total women researchers. The shares of men and women in the field of engineering and technology were 86,0 % and 14,0 % respectively. The share of women researchers in the field of medical sciences was 18,3 % of total number of women researchers.

Figure 3.10 Structure of researchers by fields of science in the CR in 2004 and 2005 (in FTE)



In the 2005 the highest value of FTE / HC (headcount by 31.12 of the reference year) was in the field of natural sciences, which was 0,775 for men and 0,732 for women. The same FTE / HC value in the field of engineering and technology was 0,740 for men and 0,683 for women. The field of humanities occupied the third place with values 0,612 for men and 0,616 for women. The agricultural and medical sciences followed with values 0,533 for men and 0,550 for women and 0,450 for men and 0,460 for women respectively. The field of social sciences recorded the lowest values of researchers, i.e., 0,439 for men and 0,461 for women.

Table 3.9 Researchers by fields of science in the Czech Republic in 2004 and 2005 (in FTE)

| FIELDS OF SCIENCE | 2004 | | 2005 | | Index 05/04 | |
|-----------------------|---------------|--------------|---------------|--------------|---------------|---------------|
| | Total | Females | Total | Females | Total | Females |
| Natural sciences | 4 822 | 1 252 | 6 483 | 1 714 | 1,3447 | 1,3686 |
| Engineering | 7 083 | 980 | 10 178 | 1 427 | 1,4369 | 1,4562 |
| Medical sciences | 1 328 | 596 | 2 483 | 1 160 | 1,8699 | 1,9468 |
| Agricultural sciences | 935 | 358 | 1 462 | 583 | 1,5637 | 1,6278 |
| Social sciences | 1 115 | 453 | 1 929 | 803 | 1,7304 | 1,7734 |
| Humanities | 1 017 | 413 | 1 634 | 662 | 1,6063 | 1,6013 |
| Total | 16 300 | 4 052 | 24 169 | 6 349 | 1,4828 | 1,5667 |

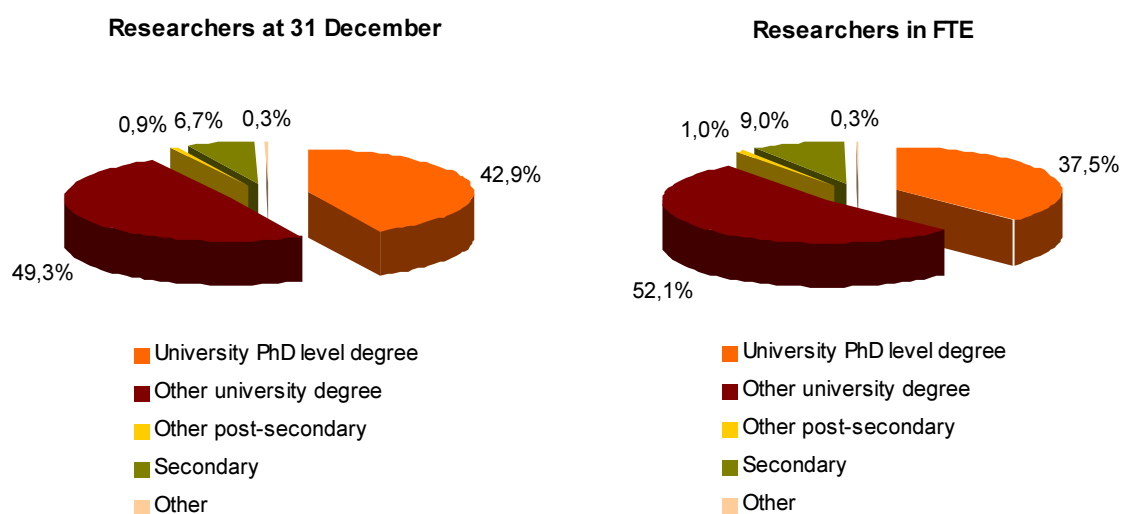
Note: for detailed breakdown of R&D employees, in the Czech republic by sectors of employment and field of science in FTE and headcount during 2004 and 2005 see table 48 and 49.

III.2.4 Researchers in the Czech Republic by qualification

In the year 2005, the total number of researchers were 24 169 in FTE of which 12 602 in FTE were with university degrees, i.e., 52,1 %. The total number of women researchers with the same qualification was 3 458 in FTE. The share of female researchers with university degree was 27,4 % and the rest 72,6 % was male researchers.

The second highest number researchers by qualification were holders of doctorate degree, 9 072 in FTE in the Czech Republic, it represents the share 37,5 %. In this qualification group 2 278 female researchers were recorded. The share of female–researchers with PhDs in FTE was 25,1 %, and that of male researchers was 74,9 %. See graph 3-11 for more details.

Figure 3.11 Researchers by qualification in the Czech Republic in 2005



The highest ratio FTE / HC value was recorded with male researchers with secondary education, followed by researchers with other education qualification. Where the highest ratio FTE /HC value was recorded with female researchers with other educational qualification followed by secondary education.

The lowest ratio FTE /HC value was recorded with researchers with PhD degrees. The ratio was 0,568 for men and 0,552 for women, see table 3-10.

Table 3-10 Researchers by qualification in the Czech Republic in 2005

| LEVEL OF QUALIFICATION | Researchers in HC | | Researchers in FTE | | Ratio FTE / HC | |
|-----------------------------|-------------------|---------------|--------------------|--------------|----------------|---------------|
| | Males | Females | Males | Females | Males | Females |
| University PhD level degree | 11 960 | 4 130 | 6 794 | 2 278 | 0,5681 | 0,5516 |
| Other university degree | 12 620 | 5 877 | 9 143 | 3 458 | 0,7245 | 0,5885 |
| Other post-secondary | 251 | 71 | 198 | 41 | 0,7868 | 0,5776 |
| Secondary | 1 834 | 697 | 1 642 | 530 | 0,8956 | 0,7613 |
| Other | 50 | 52 | 42 | 41 | 0,8410 | 0,7832 |
| Total | 26 715 | 10 827 | 17 820 | 6 349 | 0,6670 | 0,5864 |

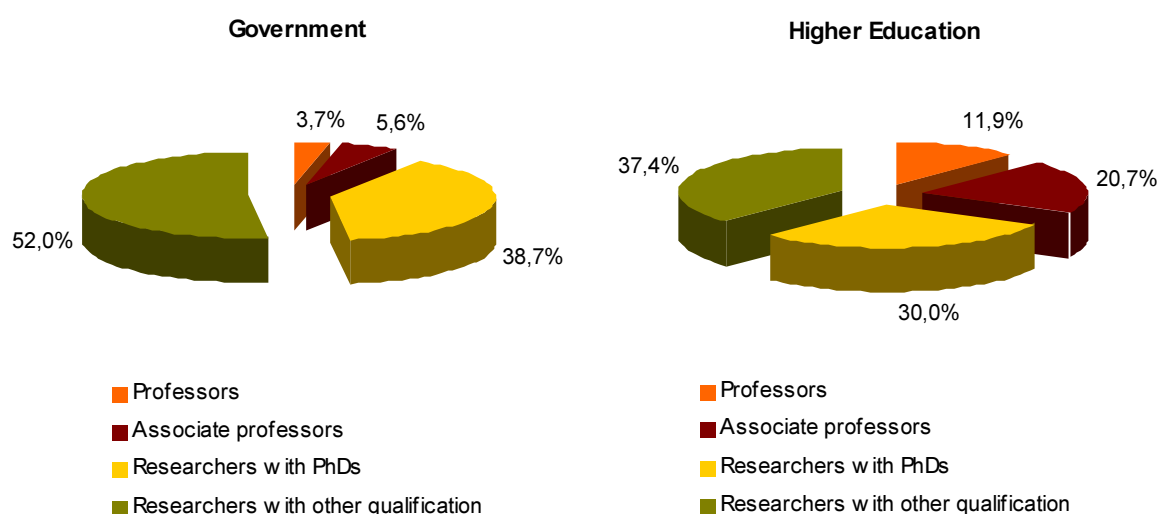
Note: for detailed breakdown of Researchers by sectors of employment in FTE and headcount in 2005 see table 54 and 55.

III.2.5 Academic degrees in the higher education and government sectors in the Czech Republic

For the first time in the Czech Republic the academic degrees of R&D personnel (researchers) have been surveyed in the higher education and government sectors with VTR 5-01 (b) questionnaire. In the government sector the highest share of researchers was 52,0 % (level D as per introduction to methodology), i.e. researchers with university degrees and researchers with other lower education level (3 182 researchers in FTE of total number 6 113). The second highest number group was researchers with PhD degrees. The share of this group was 38,7 % (2 234 researchers in FTE). The group with associate professor title was in the next place with 5,6 % (344 researchers in FTE). In the last position was the group with professors with university title with 3,7 % (244 researchers in FTE).

In the higher education sector the order of the above-mentioned groups were the same but with different shares. See graph 3-12 and table 3-11.

Figure 3.12 Researchers in FTE by academic degrees in the Czech Republic in 2005



In 2005, 1 662 HC men with academic title “professor” worked in the higher education sector (the highest qualification for R&D in the Czech Republic) i.e., 88,6 % of total number of professors by 31.12 of reference year, and 214 women professors (11,4 %). That means in FTE 774 male professors (85,9 %) and 127 female professors (14,1 %) worked in the above-mentioned sector.

2 704 men in HC with academic title “associate professor” (the second highest qualification for R&D) worked in the higher education sector (78,7 % of total number of associate professors by 31.12) and 733 females with the same title (21,3 %). In FTE the shares males and females with associate professors title were 79,3 % (1 243) and 20,7 % (325) respectively.

The ratio FTE / HC shows in the higher education sector female professors devoted much of their time to R&D activities.

Table 3-11 Researchers by academic degrees in the higher education sector in 2005

| ACADEMIC GRADES | Researchers at 31 December (HC) | | Researchers in FTE | | Ratio FTE / HC | |
|--------------------------------------|---------------------------------|--------------|--------------------|--------------|----------------|---------------|
| | Males | Females | Males | Females | Males | Females |
| Professors | 1 662 | 214 | 774 | 127 | 0,4660 | 0,5930 |
| Associate professors | 2 704 | 733 | 1 243 | 325 | 0,4595 | 0,4436 |
| Researchers with PhDs | 3 296 | 1 834 | 1 444 | 828 | 0,4381 | 0,4514 |
| of which newly qualified PhDs | 424 | 227 | 207 | 110 | 0,4890 | 0,4861 |
| Researchers with other qualification | 3 487 | 2 851 | 1 632 | 1 203 | 0,4680 | 0,4218 |
| Total | 11 148 | 5 633 | 5 093 | 2 483 | 0,4568 | 0,4408 |

Note: for detailed breakdown of researchers in FTE and headcount in the government and higher education sectors by academic degrees and field of science in 2005, see table 63 to 76.

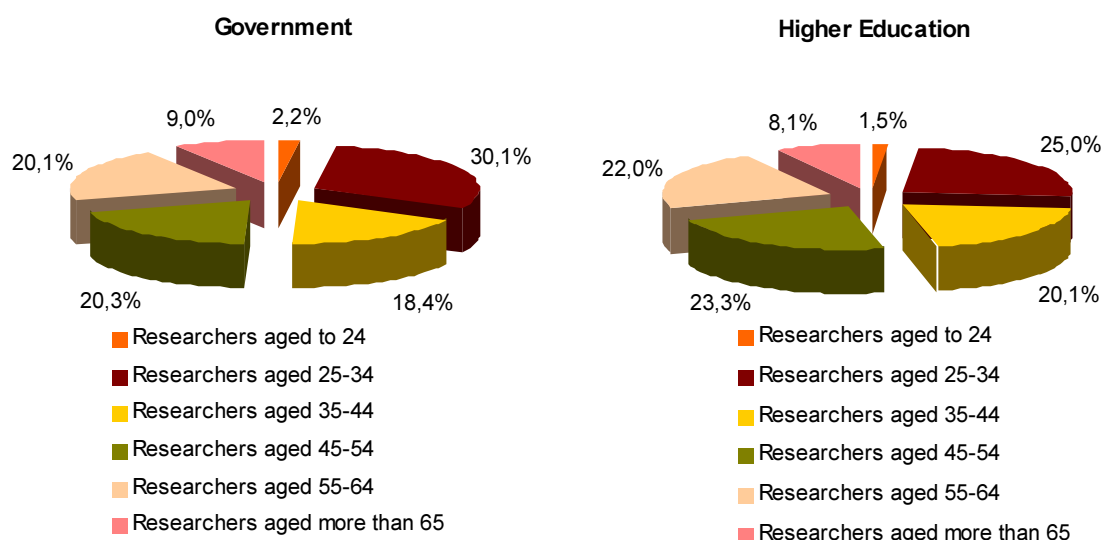
III.2.6 Researchers in the higher education and government sectors by age group

For the first time in 2005 the indicator, Researchers in R&D by age groups, has been surveyed with VTR 5-01 (b) questionnaire. The reporting units split this indicator by gender and age groups.

The age group 25 to 34 topped the government sector with 30,1 % of total number 8 361 HC. In the second place was the 45 to 54 age group with 20,3 % and the group 55 to 64 years occupied the third place with 20,1 %.

In the higher education sector, as in the case of government sector, the 25 to 34 age group with 25,0 % share of total number 16 781 occupied the first place. The shares of 45 to 54 and 55 to 64 age groups were 23,3 % and 22,0 % respectively.

Figure 3.13 Researchers in HC (by 31.12) by age groups in the higher education and government sectors in 2005



The highest age group was found out in the interval of 25 to 34 in the government sector. The shares of men and female in this age group were 57,7 % 42,3 % respectively. Age groups 45 to 54 and 55 to 64 occupied second and third positions respectively. The shares of men and female in these age groups were 63,0 %, 37,0 % (45 to 54 age group) and 69,2 %, and 30,8 % (55 to 64 age group) respectively.

The highest age group was found out in the interval of 25 to 34 in the higher education sector. In this age group 63,8 % were men and 36,2 % were women. The age group 45 to 54 occupied the second place with 63,1 % men and 36,9 % women. Finally the age group 55 to 64 occupied the third position with 70,5 % men and 29,5 % women.

Table 3-12 Researchers in HC (by 31.12) by age groups in the higher education and government sectors in 2005.

| RESEARCHERS BY AGE STRUCTURE | Government sector | | Higher Education sector | | Total GOV and HES | |
|-------------------------------|-------------------|--------------|-------------------------|--------------|-------------------|--------------|
| | Total | Females | Total | Females | Total | Females |
| Researchers aged to 24 | 181 | 92 | 249 | 99 | 430 | 191 |
| Researchers aged 25-34 | 2 519 | 1 065 | 4 196 | 1 520 | 6 715 | 2 586 |
| Researchers aged 35-44 | 1 535 | 533 | 3 381 | 1 304 | 4 916 | 1 837 |
| Researchers aged 45-54 | 1 697 | 628 | 3 904 | 1 443 | 5 602 | 2 070 |
| Researchers aged 55-64 | 1 679 | 517 | 3 693 | 1 090 | 5 372 | 1 606 |
| Researchers aged more than 65 | 750 | 135 | 1 358 | 177 | 2 108 | 312 |
| Total | 8 361 | 2 970 | 16 781 | 5 633 | 25 142 | 8 603 |

Note: for detailed breakdown of Researchers in headcount, see table 77.

III.2.7 Researchers in the higher education and government sectors by citizen ship

For the first time in 2005 the indicator, Researchers in R&D by citizen ship, has been surveyed with VTR 5-01 (b) questionnaire.

In government sector, by 31.12 of reference year, 8 361 researchers worked, of which 7 948 had Czech citizen ship, 95,1 %. And 2 788 women had Czech citizen ship. Researchers from European Union, 249 with 3,0 %, topped the government sector. The number of women researchers from European union was 118. The Slovak republic topped with 188 citizens working in the Czech republic on R&D projects of which 91 were women. Then followed Poland with 17 citizens, of which 13 were women and Germany with 13 researchers of which 3 were women.

Ukraine topped, with 57 researchers of which 22 were women, among the rest of European countries. The number of researchers from the Russian federation was 42 of which 42 were women. Among Asian countries India was in the first place with 7 of which 2 were women and from Japan 6 researchers of which 2 were women. And the highest number of researchers from African countries was from Egypt 2 male researchers and a female researcher.

Table 3-13 Researchers in HC (by 31.12) by citizen ship in the higher education and government sectors in 2005.

| RESEARCHERS (HC) BY CITIZENSHIP | Government sector | | | Higher Education sector | | |
|--|-------------------|--------------|--------------|-------------------------|--------------|--------------|
| | Total | % | Females | Total | % | Females |
| Citizenship of the Czech Republic | 7 948 | 95,1 | 2 788 | 16 252 | 96,8 | 5 436 |
| Citizenship of other EU Member States | 249 | 3,0 | 118 | 400 | 2,4 | 155 |
| of which citizenship of Slovakia | 188 | 2,2 | 91 | 300 | 1,8 | 136 |
| Citizenship of other European countries | 122 | 1,5 | 51 | 56 | 0,3 | 21 |
| Citizenship of Asia | 25 | 0,3 | 10 | 21 | 0,1 | 6 |
| Citizenship of North America | 8 | 0,1 | 0 | 35 | 0,2 | 11 |
| Citizenship of Central and South America | 3 | 0,0 | 1 | 7 | 0,0 | 2 |
| Citizenship of Africa | 6 | 0,1 | 2 | 8 | 0,0 | 1 |
| Citizenship of Australia | 0 | 0,0 | 0 | 2 | 0,0 | 1 |
| Total | 8 361 | 100,0 | 2 970 | 16 781 | 100,0 | 5 633 |

Note: for detailed breakdown of Researchers in headcount by citizen ship in the higher education and government sector, see table 78 and 79.

16 781 researchers (head count by 31.12) of which 16 252 (96,8 %) with Czech citizen ship worked in the higher education sector and 5 436 women were with Czech citizen ship. Citizens of European countries were 400 (2,4 %) of which 155 were women. There were 300 researchers from the Slovak republic of which 136 were women. There were 28 researchers, of which 3 were women, with German citizen ship. There were 15 researchers, of which 2 were women, with UK citizen ship.

Ukraine topped, with 22 researchers of which 8 were women, among the rest of European countries. The number of researchers from the Russian federation was 22 of which 7 were women. Among Asian countries India was in the first place with 2 male and a female. From the USA there were 31 researchers of which 10 were women. There were 3 male researchers and a female researcher from Canada. And the highest number of researchers from African countries was from Egypt 2 male researchers and a female researcher.