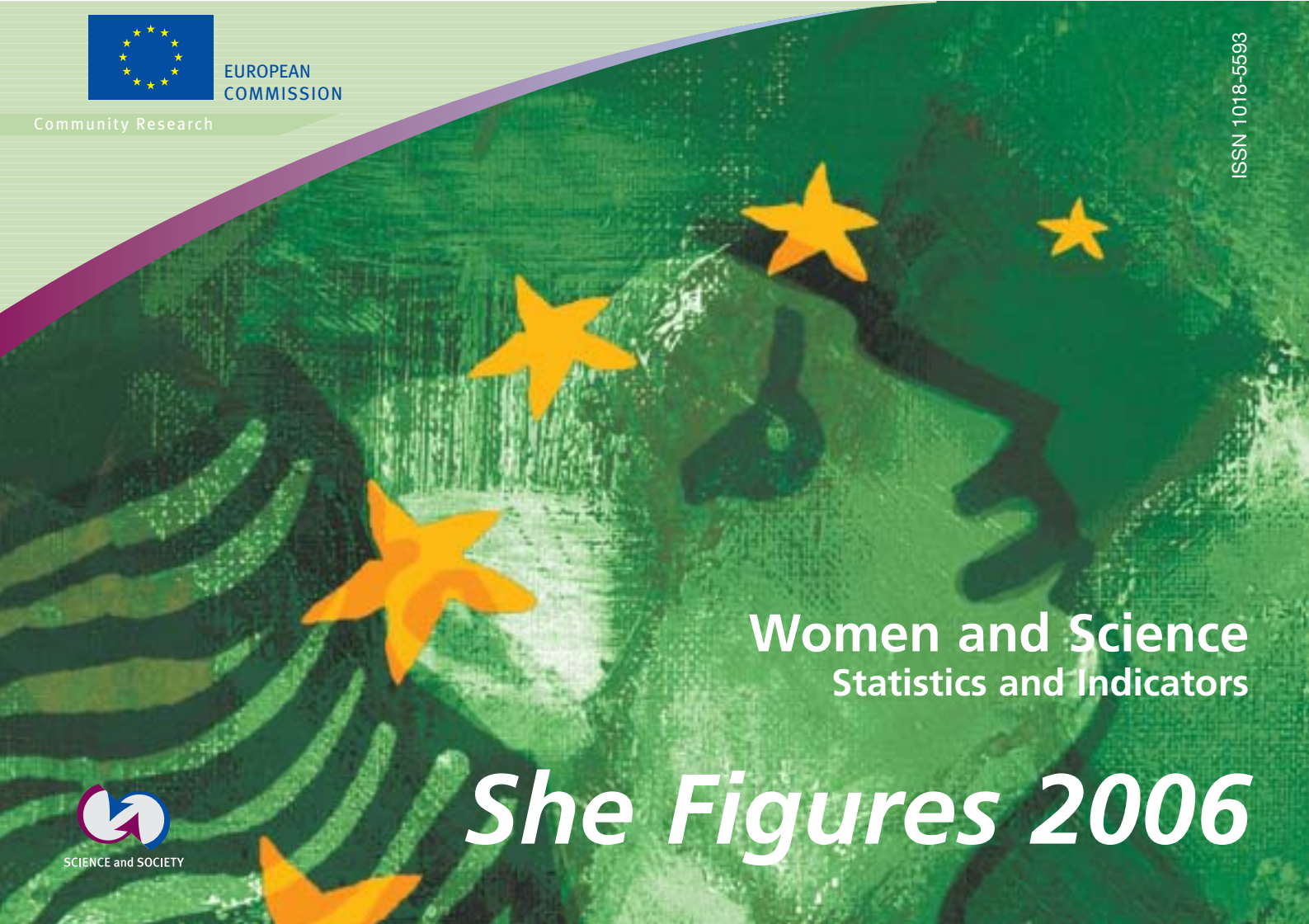
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Preface

The concept of *She Figures* originally came about thanks to the considerable efforts mobilised by various stakeholders, especially the Helsinki Group on Women and Science and its sub-group of Statistical Correspondents. The first issue, *She Figures 2003*, broadened the existing base of descriptive statistics and crucially, provided easy access to data on the participation of women as graduates, researchers, academic staff, funding beneficiaries and scientific board members. This second issue of *She Figures* continues that valuable work and also allows us to see how the participation of women is evolving in the enlarged European Union of 25 Member States and in seven countries associated to the 6th Framework Programme for Research and Development.

She Figures 2006 shows that women remain a minority among researchers in the EU (29% in 2003, a slight increase from 27% in 1999), but that the number of women in research is increasing (plus 4%, compared to 2.4% for men). This represents an increase of some 140,000 researchers in the period, of which 39% were women. While this indicates a continued positive trend overall, we should not forget that women remain underrepresented in science, especially in leading positions.

It is vital that we build upon this progress and continue our efforts in gender mainstreaming and monitoring.

Women's increasing participation in the European Research Area is integral to its success. There can be no room for gender bias if the EU is to move towards the 3% objective and achieve the knowledge based economy that is so essential for the sustained competitiveness of Europe.

JANEZ POTOČNIK
Commissioner for Science and Research

Acknowledgements

She Figures 2006 is the outcome of a co-ordinated working effort, which has benefited from the expertise of many individuals across Europe. I would particularly like to thank the following women and men who have all made valuable contributions to this booklet:

- The Statistical Correspondents of the Helsinki Group on Women and Science for providing data and technical advice (see names in annex 6).
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- Deirdre Furlong and Camilla Gidlöf-Regnier of the Women and Science Unit for impetus and overall co-ordination of this project.

JOHANNES KLUMPERS
Head of the Women and Science Unit

Executive summary

She Figures 2006 is the second publication of selected EU employment statistics disaggregated by sex and supplemented by certain other complementary data, which provide illuminating perspectives on the current employment situation of male and female scientists and researchers. The series was launched in 2003 by the Women and Science Unit of the Directorate General for Research in order to establish a rolling record that would be useful in mapping progress towards gender equality. The *She Figures* booklet follows the format of another DG Research statistical publication, *Key Figures*, which looks at investment and performance in the knowledge based economy, including data on human resources in R&D. Above all, it was intended that the series would provide systematic evidence of gender imbalances for which policy intervention might be appropriate at EU and/or at Member State level. A subsidiary aim was to promote the collection of sex disaggregated statistics for a wide range of indicators. *She Figures 2006* presents a number of analyses that were not available for *She Figures 2003*. There are, however, still important gaps in the data presented here, but the patterns of horizontal and vertical segregation by sex are strongly present in all of the evidence analysed.

The publication supports EU's policy for strengthening the European knowledge economy, and so the analysis deals only with professionals who have a tertiary level of education[1]. Detailed attention is given to those employed within the science and technology fields, as broadly defined, and even more particularly still to those employed as researchers. Gender imbalance is known to be a serious issue in these areas of employment, and the analysis confirms this to be so. In addition, there is clear evidence that women are under-deployed in research generally and in S&T specifically, have poorer access to R&D resources, receive lower pay on average, and have a disproportionately lower chance than men of reaching senior levels or holding positions of influence, for example through membership of scientific boards. This persistent pattern of disadvantage or relative exclusion raises large questions about social justice and the nature of the current research environment. More particularly, the figures suggest that the EU's research capacity will be difficult to sustain and impossible to increase according to the ambitious plans that have been set, if intellectual resources are not drawn from those with appropriate abilities and attainment on a more equitable basis than they are at present.

[1] *Tertiary Education or Higher Education involves 2 stages: the first includes largely theoretically-based programmes to provide sufficient qualifications for gaining entry to advanced research programmes and professions with high skills requirements (ISCED 5A) and programmes generally more practical/technical/occupationally specific than ISCED 5A (ISCED 5B). The second is for programmes leading to the award of an advanced research qualification (e.g. PhD, Doctorate…). The programmes are devoted to advanced study and original research. (ISCED 6)*

Women made up only 29% of those employed as scientists and engineers in 2004, and the growth rate in their participation between 1998 and 2004 was lower than that of men, so that, if this trend continues, the differential between men and women in this occupational group will widen. Other differences are similarly pronounced:

- across the EU as a whole, only 29% of researchers are women
- only 18% of researchers in the business and enterprise sector are women, even though this is the largest R&D sector in most countries, and the one that will need to provide two-thirds of the finance to meet the EU target of 3% of GDP devoted to R&D by 2010 (an increase that will in total require some 700,000 additional researchers[2])
- in higher education, only 15% of those at the highest academic grade (grade A) are women
- the gender imbalance at the senior grade is even greater in engineering and technology, where the proportion of women is just 5.8%
- of the 17 Member States that have provided data, there are only two where the proportion of female members of scientific boards is over 40%; only one in the range 30-39%; and five in the range 20-29%, with all the rest below 20%.

The graphs and figures, together with the interpretative commentary, make available an array of indicative evidence in accessible form, questions are posed, the need for further analysis is pointed out, and attention is drawn to opportunities for targeted policy development. There are many areas in which it would be beneficial to have information from a greater number of Member States, and areas of employment in which it would be useful to have more systematic and comprehensive data so that the dynamics of gendered employment choices and career trajectories might be better understood. This is particularly so in relation to the key sector of business and enterprise. But, despite these current limitations, the *She Figures* are now established as a benchmarking tool and an instrument in policy development which can be anticipated being further refined as the quality and availability of disaggregated data continue to improve.

[2] *Communciation from the Commission "Investing in research: an action plan for Europe". COM(2003) 226 final/2*

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General introduction

General introduction

She Figures 2006 presents an array of sex disaggregated data for those with high-level tertiary qualifications who are engaged in the workforce at a professional level, shaping, creating and managing new knowledge, processes, methods and systems. Particular attention is paid to various forms of scientific employment, since this is an area of crucial importance for the continuing success of Europe as a knowledge economy, and because scientific employment is recognised as an area in which women remain under-represented, to the detriment of the European research capacity and its social integration.

This is the second such booklet: the first was *She Figures 2003*, and it is no coincidence that it resembles DG Research's flagship statistical publication *Key Figures*. Those familiar with the first publication will recognise that the overall structure of the report remains the same: chapter 1 sets out women's participation in employment from various perspectives; chapter 2 examines gender differences across fields of employment broadly defined by subject orientation and employment sectors; chapter 3 analyses evidence for gender differentiation at senior levels; and chapter 4 presents data which provide evidence for the extent of women's contribution to setting the scientific agenda ('scientific' in this context including the humanities and social sciences as well as the various fields of science and technology). Chapters 1 and 2 are thus concerned with horizontal segregation, and chapters 3 and 4 with vertical segregation. As in *She Figures 2003*, data on the gender-balance of those who graduate with PhD/Doctorate or equivalent are also included, since this provides some indication of the profile of the potential highly qualified workforce of the future. *She Figures 2006* goes further than *She Figures 2003*, however, by providing several sets of additional data, including the Glass Ceiling index (chapter 3), and the gender pay-gap data by selected professional occupations in business enterprise (chapter 4).

The data presented in the following pages demonstrate that women's intellectual potential, and their contribution to society are not being fully capitalised upon. In particular, their participation is dramatically low in certain branches of the natural sciences and in engineering and technology, which are key R&D areas. Women are seriously under-represented in the business enterprise sector where the EU's R&D is most highly intensive; and in senior academic grades and influential positions where strategies are set, policies are developed, and the agenda for the future is determined.

The resource implications of these gender imbalances are of major importance for the economy of Europe, since the EU's research capacity will be difficult to sustain and impossible to increase according to plan without a disproportionate amount of the growth necessarily coming from training and retaining women. The scale of the problem is evident if one considers the goal of achieving R&D expenditure of 3% GDP by 2010.

It has been calculated that this will require a further 700,000 researchers, and that two-thirds of the increased capacity will need to be found within the business and enterprise sector. Yet the key policy areas for innovation and economic growth, and the chief sector for delivery are the very ones where women are most seriously under-represented. The corollary, however, is that these are the areas in which policy interventions should be able to improve women's participation, to the benefit of the economy as a whole. Furthermore, the promotion of a research environment free of gender bias will bring more equitable social benefits and a greater degree of democratic engagement.

Data sources

Most of the statistics used in this publication are drawn from Eurostat, the European Commission services' official data source, namely research & development, education, labour force and structure of earnings statistics. In complement to these statistics the Statistical Correspondents provide insight on a deeper level, by providing data on the seniority of academic staff by sex, differences between men and women for funding success rates and proportion of women on scientific boards. The Statistical Correspondents is a sub-group of the Helsinki Group of Women and Science led by the Women and Science Unit of the Directorate-General for Research. A list of the Statistical Correspondents can be found in Annex 6.

Eurostat

The data from Eurostat all originate from a variety of different surveys conducted at national level:

Researchers and R&D Expenditure data are collected through the R&D Survey which is since 2004 a joint data collection between Eurostat and the OECD.

Human Resources in Science and Technology data are collected through Eurostat's Labour Force Survey

Education data are collected through the UOE (UNESCO-UIS, OECD, Eurostat) questionnaire.

Gender Pay Gap data have been collected through SES2002 (Structure of Earnings survey 2002)

Statistical Correspondents

The statistics on the *seniority of academic staff*, *research funding success rates* and *membership of scientific boards* are collected at the national level through Higher Education and R&D Surveys, Ministries and Academies of Science, Research Councils and Universities as part of their own monitoring systems and administrative records. It is important to note that these data are not always ready for cross-country comparison at EU level. Technical details relating to adherence to standards and categorisation and data sources can be found in Annex 5.

Key definitions

PhD/Doctorate or equivalent graduates: The International Standard Classification of Education (ISCED) identifies a specific level – ISCED 6 – as *"tertiary programmes which lead to the award of an advanced research qualification"* (UNESCO, 1997). Education programmes such as PhDs and their equivalents are included in this level for all countries, as well as some post-doctoral programmes and, in a few cases, some shorter post-graduate programmes that are a pre-requisite for the Doctorate (for example the D.E.A. in France).

Human Resources in Science & Technology (HRSTC): This section of the workforce is defined as those who are both qualified tertiary educated graduates in the labour force and those who are working in professional or technician occupations[3] not formally qualified as above.

Scientists and Engineers (S&E): Data for this group are also drawn from the Community Labour Force Survey, more specifically from the professional occupations category, but are restricted to "physical, mathematical and engineering occupations" and life science and health occupations" and therefore exclude scientists in other occupational fields, such as social, or agricultural sciences.

Researchers: According to the common definition in the Frascati Manual (OECD, 2002), *"Researchers are professionals engaged in the conception or creation of new knowledge, products, processes, methods and systems and also in the management of the projects concerned"*.

More detailed information on these definitions can be found in Annex 5.

[3] *The definitions of Professionals and Technicians are taken from the International Standard Classification of Occupations (ISCO-88) and are more fully described in Annex 5.*

Critical mass

1. Critical mass

The data presented in this chapter provides evidence of women's participation in research at the high professional level characterised by the shaping, creating and managing of new knowledge, processes, methods and systems. Particular attention is paid to those engaged in various forms of scientific employment, since this is an area of crucial importance for the continuing success of Europe as a knowledge economy. The chapter also includes analysis of the gender-balance of those who graduate with PhD/Doctorate or equivalent (ISCED 6), since this information provides some indication of the profile of the potential highly qualified workforce of the future.

Overview

Figure 1.1 provides an initial overview of employment participation, both as a snapshot for the year 2004, and as a dynamic process of change over the period 1998-2004. In 2004 women accounted for 44% of the total labour force, and between 1998 and 2004 their participation rate had risen faster than that of men (1.5% for women; 0.4% for men). For Scientists and Engineers, however, female participation was markedly lower, at 29%, with the participation rate between 1998 and 2004 increasing much more slowly than that of men (0.3% for women; 2.0% for men). This is a worrying scenario since, if it persists, women's participation in the field of science and engineering will decrease in relative terms. The picture is significantly better for women who have received a tertiary education and who are employed in professional or technician occupations. This represents a broader range of employment, and women are here strongly represented. Their participation in this segment of the workforce, at 50%, is greater than the participation of women in the workforce as a whole. The growth in their participation between 1998-2004 was greater than that of the men (4.0% for women; 2.2% for men), and was also significantly greater than the 1.5% growth in the participation rate of women in the workforce as a whole. These figures suggest that tertiary education strengthens the participation of women and is a valuable social investment in achieving employment equity.

PhD graduates

The snapshot figures for PhD/Doctorate or equivalent (ISCED 6) graduates in 2003 (fig. 1.2) show that, in the EU as a whole, the percentage of women graduating at this level stands at 43%. This is an improvement on the situation in 1999, when the EU average was 38%. It has to be remembered, however, that these figures are for all disciplines, and that they consequently mask significant gender variations across subject groupings. These variations will be examined in chapter 2. A further point to note from an EU perspective is that three of the larger countries — France, the UK, and Germany — which numerically provide a substantial proportion of the total research resource, are below the EU average in the percentage of women graduating at this level. More informative than the snapshot, however, are the rates of growth (fig.1.3) since the national trends identified here raise questions about future levels of women's participation

and the possible need for policy intervention, either to strengthen a positive trend or to reverse a negative one. Such actions would depend on a more detailed analysis of the figures at Member State level, together with further analysis of the social and structural factors in play, which will vary from country to country.

It is encouraging to see in Figure 1.3 that the participation of women at this level has increased between 1999 and 2003 at a significantly higher rate than that of men (women 7%; men 2%). This is an improvement on the growth rates for 1998-2001 which were 5 % for women and 1% for men. However, the development of policy at EU and Member States level will depend on analyses by subject-domain. It is only by this means that it will be possible to identify whether sufficient numbers of women are qualifying in the subjects that will equip them to achieve participation in key policy areas at a growth-rate high enough to produce equity within a reasonable period, and thus strengthen the research resource in line with national needs and the over-all EU target of the 3% objective in R&D.

Employment[4]

Figure 1.4 sets out the rates at which women and men who have been educated at a tertiary level are working in professional or technician occupations. The rates for women are much the same as those for men, with a general tendency for a slightly higher proportion of tertiary educated women than men to be employed in the EU as a whole and in all Member States with the exception of France, Italy, Luxembourg and Cyprus. In interpreting the figures, however, it is important to bear in mind that the Human Resources in Science and Technology Core (HRSTC) category includes employees in science-based employment who are not necessarily involved in research, so that the relatively strong presence of women in Figure 1.4 does not reveal the extent to which they are contributing directly to the research resource. More detailed analysis is therefore required in order to understand the differences in the way men and women utilise their education, and the factors which bring this about.

A narrower focus is provided by Figure 1.5, which presents the proportion of male and female scientists and engineers in the total labour force. In this analysis, 'scientists and engineers' refer to physical, mathematical, life science and health occupations the professional category only. That this is a highly specialised segment of the labour force is evident from the fact that all the figures are low. However, it is striking that for the majority of countries the presence of women scientists and engineers is noticeably lower than it is for men. Even the over-all EU figures of 1.4% for women and 3.3% for men, despite being boosted by parity or near-parity in Belgium, Estonia, Ireland, Portugal and by a higher percentage of women than men in Lithuania, show that women's presence is little more than one-third that of men. The scientists and engineers whose presence in the labour force is counted in Figure 1.5 are a subset of the HRSTC group counted in Figure 1.4. When taken together, therefore, the two tables confirm that the narrower focus on employment as natural scientists and engineers excludes a disproportionate number of women, which in turn supports the conclusions drawn from the overview analysis of Figure 1.1 at the beginning of this chapter.

[4] *More detailed information on the classifications used in the analysis of employment can be found in Annex 5.*

The final set of figures in this chapter presents data for researchers, which is a broader base of subject-domains than those discussed so far, although the occupational function is defined more narrowly than human resources in science and technology. The 2003 snapshot of the proportion of researchers who are women (fig. 1.6) shows considerable variation between countries, but there is a clear pattern of female under-representation. When relating the number of male and female researchers to the total labour force, there is also a female under-representation in all countries except for Latvia and Bulgaria (fig. 1.8). More informative are the growth rates for the period 1999-2003 (fig. 1.7). Here we see that, for the EU as a whole, the rate of growth for women, at 4%, is higher than that for men, at 2%. While this is in general an encouraging trend, it must be remembered that, as the previous figure shows (fig. 1.7), the growth rate for women is on a smaller base than that for men. This differential growth rate, if merely sustained and not radically increased, would thus take a very long time to deliver a significantly improved gender balance.

The tables showing women's presence across the sectors[5] of the economy also reveal some recurrent patterns of under-representation. However the average proportion of female researchers for the EU as a whole (fig. 1.9) has improved slightly since 1999 in all three sectors. The proportion of women in the business enterprise sector (BES) has increased to 18% in 2003 compared to 17% in 1999, and in the government sector (GOV) to 35% compared to 33% and for the higher education sector (HES) to 35% compared to 33%.

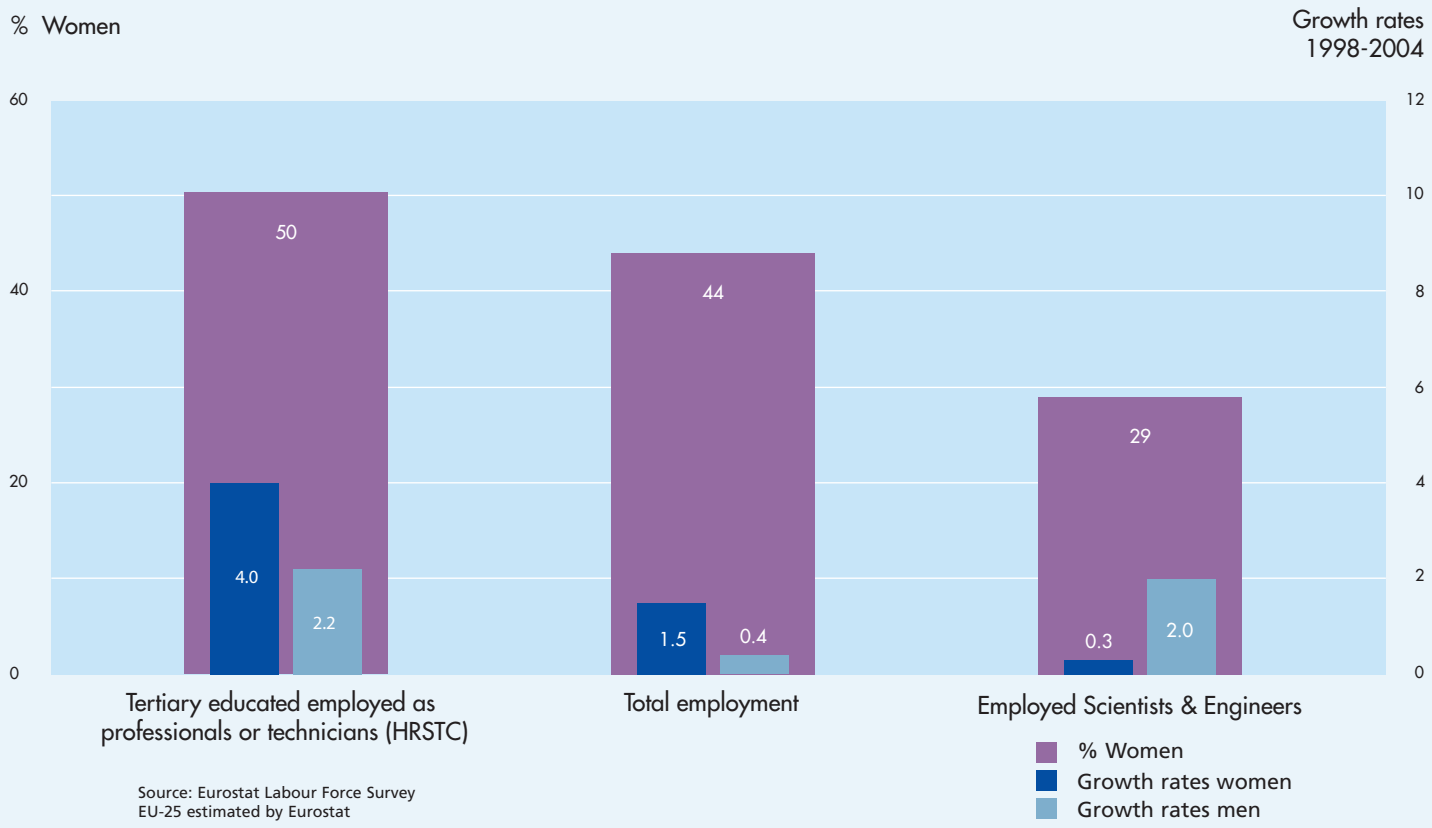
Figure 1.10, which compares the distribution of male and female researchers across the sectors, shows that in most countries women are more likely than men to opt for employment in higher education and government sectors. These sectors are in contrast with the business and enterprise sector, which is more likely to be chosen by men. In all of these sectors, the growth rates for the period analysed (see figs 1.11 – 1.13) show that the rates are higher for women than for men, but the rates are modest and the differentials are not marked, so that the trends do not point to significant changes in the medium term. There is, in any case, considerable variation between countries, reflecting differences in the way national economies are structured and employment is defined. The gender imbalance in BES is a matter of particular concern, since this is the area in which more researchers are needed if the EU is to reach the Barcelona objective of 3% of GDP devoted to R&D, given that two-thirds of this capacity should come from BES. The differences pose questions about why women are less likely to choose to be employed in the private sector, and whether there are initiatives that could be taken to promote an improved female presence within BES research.

[5] *The sectors of the economy are defined in Annex 5*

ERRATUM She Figures 2006 (15/05/06)

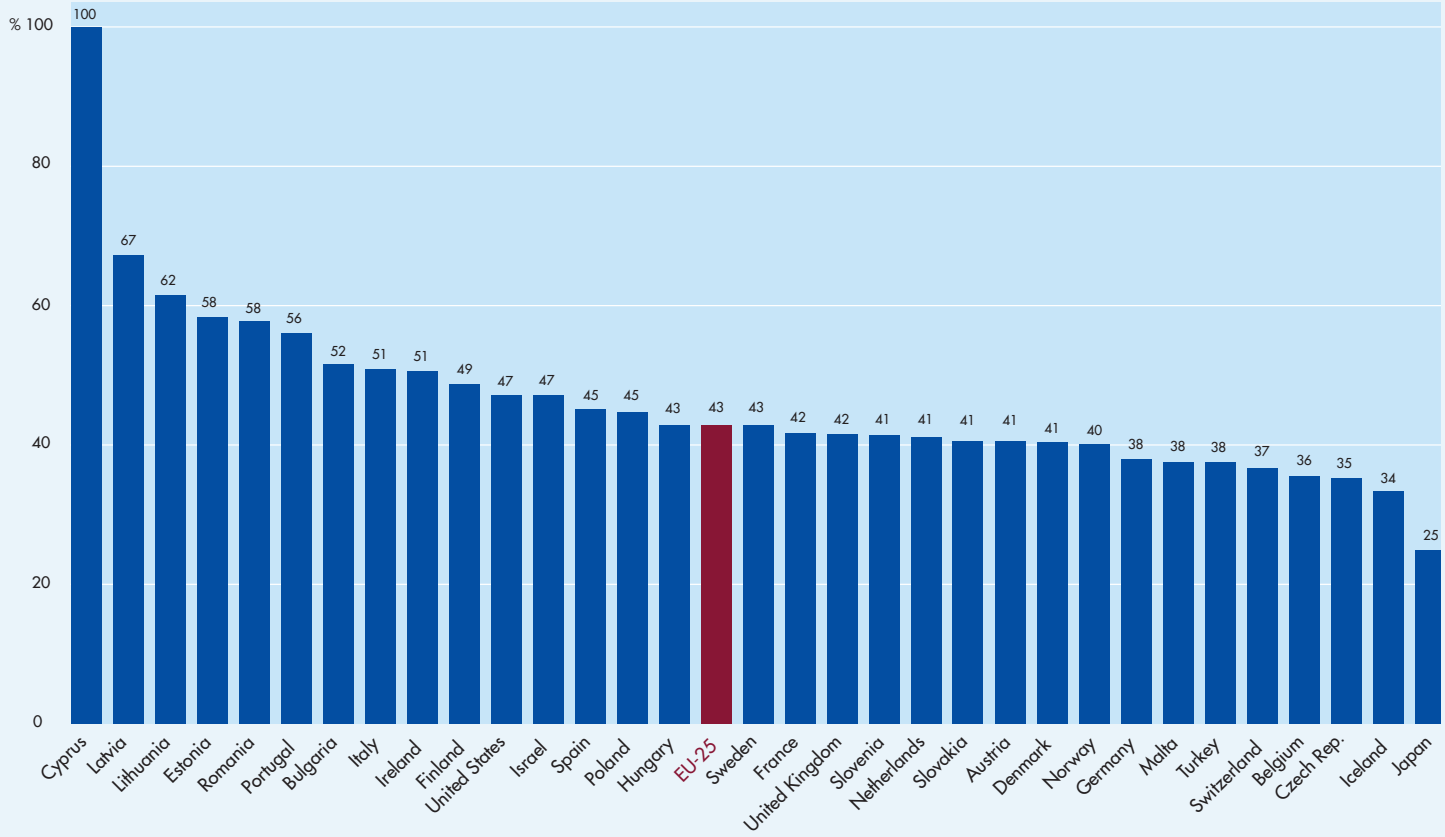
This page replaces page 20 because the bar labels (Scientists & Engineers and Total Employment) in Figure 1.1 have been mistakenly swapped.

Figure 1.1: Proportion of women in the EU-25 for total employment, tertiary educated and employed (HRSTC) and scientists & engineers in 2004, growth rates for men and women 1998-2004



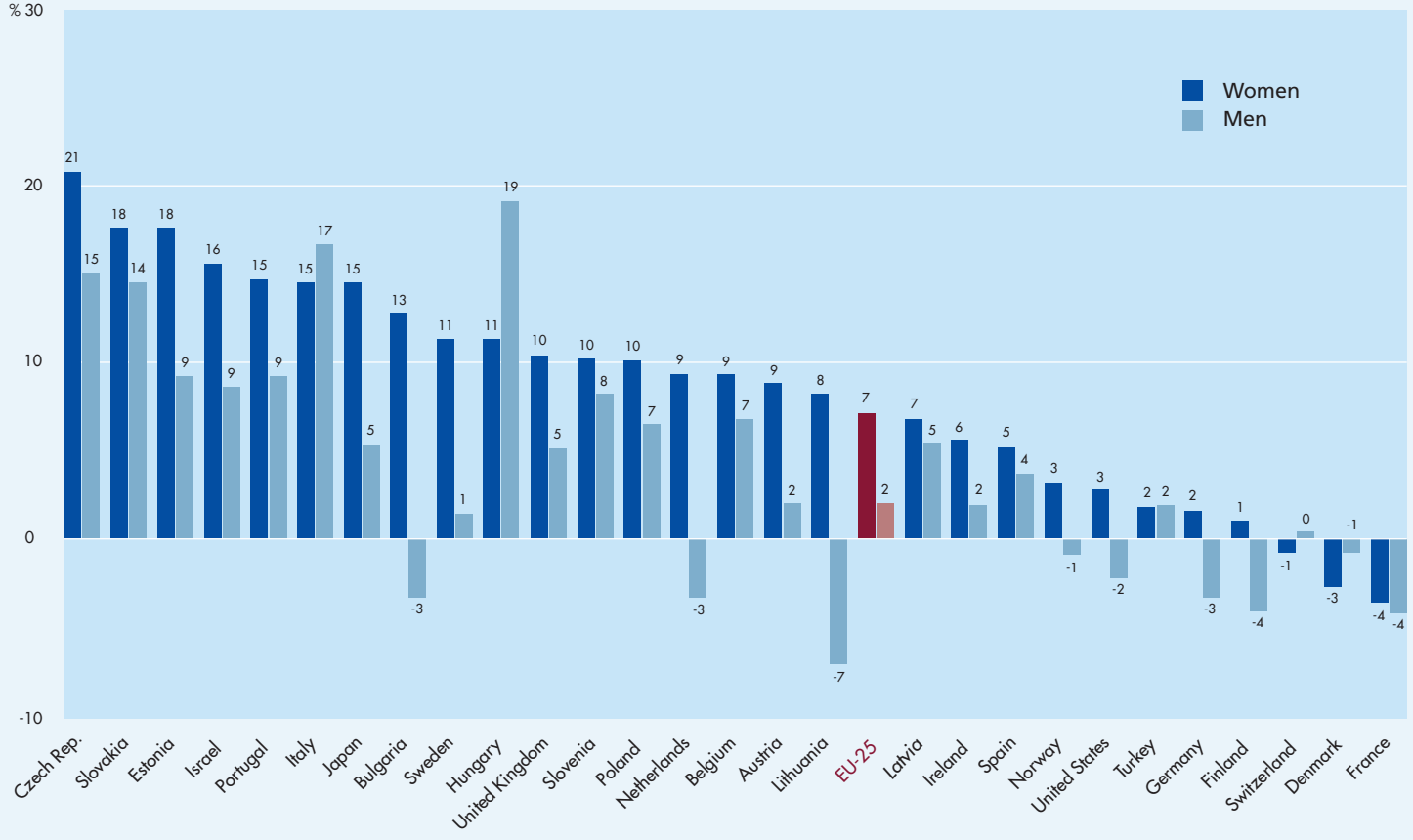
Source: Eurostat Labour Force Survey
EU-25 estimated by Eurostat

Figure 1.2: Proportion of female PhD (ISCED 6) graduates 2003



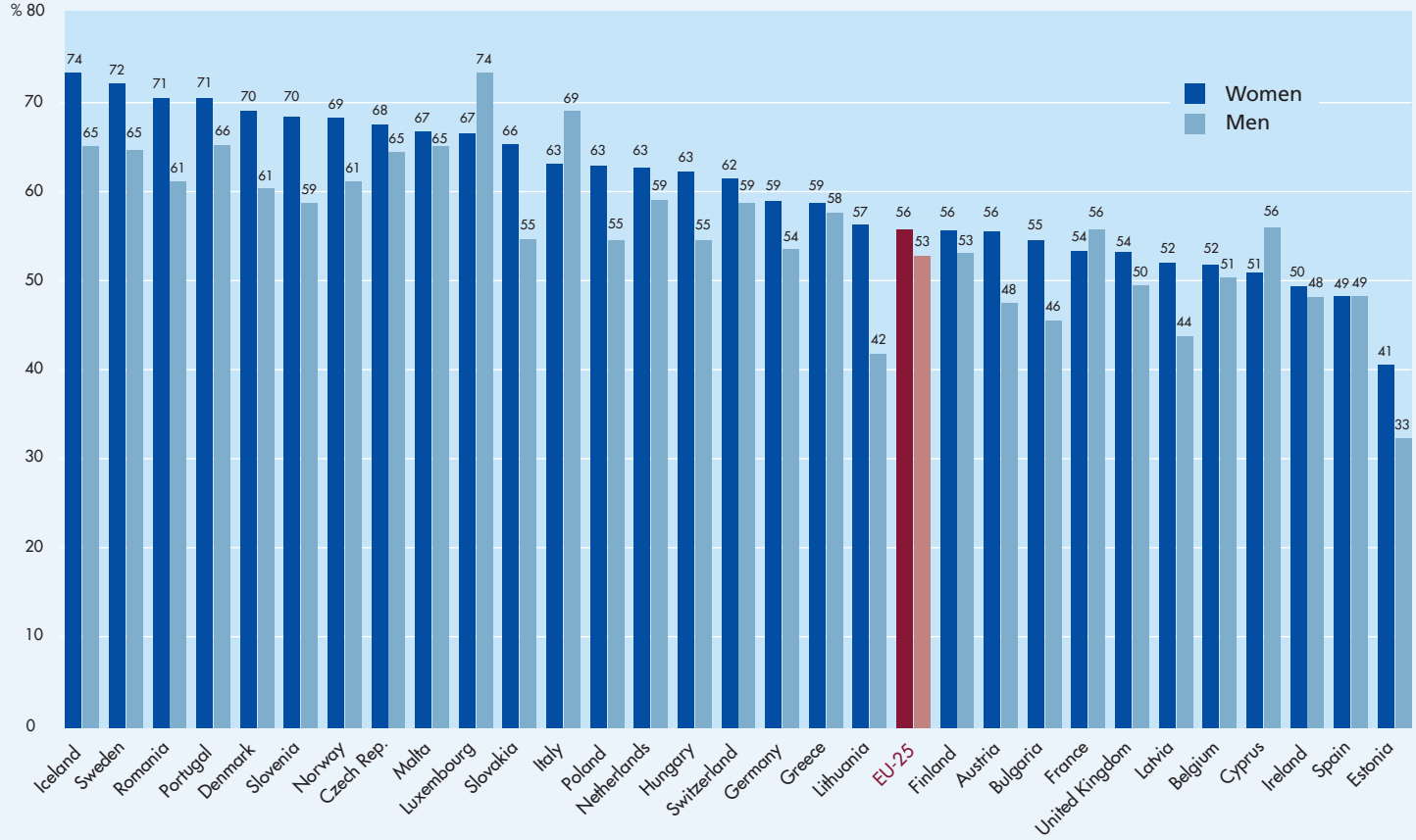
Source: Eurostat, Education statistics, Israel Central Bureau for Statistics & Council for Higher Education, The Danish Institute for Studies in Research and Research Policy
Data unavailable: EL, LU
Data less than 30 graduates: CY (1), MT (8), IS (6)
Most tertiary students study abroad and are not included: LU, CY

Figure 1.3: Growth rates of PhD (ISCED 6) graduates by sex, 1999-2003



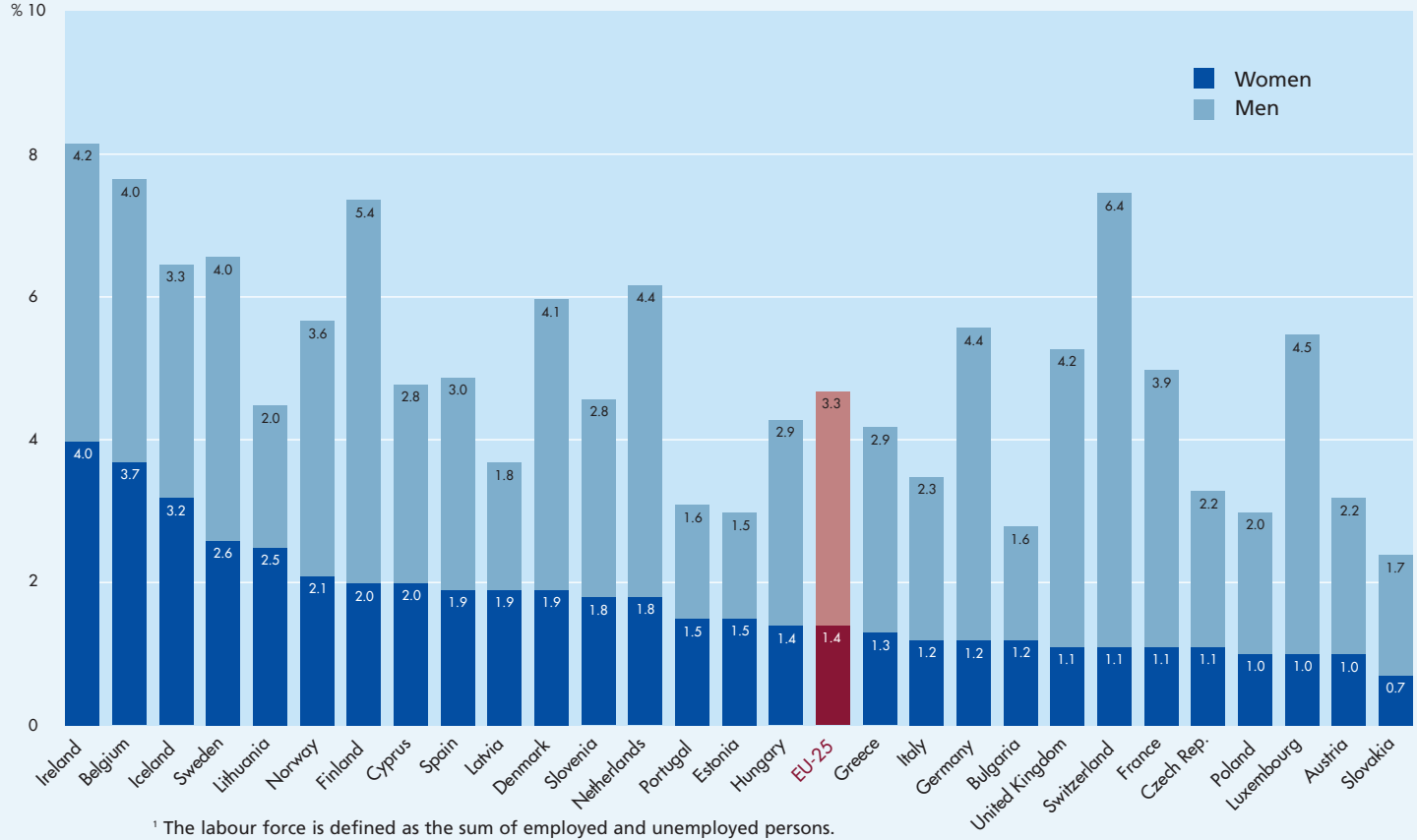
Source: Eurostat Education Statistics, Israel Central Bureau for Statistics & Council for Higher Education,The Danish Institute for Studies in Research and Research Policy
Exceptions to the reference years: IL: 1998-2000; SK: 1999-2002; BE, CY: 2000-2003
Data unavailable: EL, LU, RO
Growth rate not presented for countries with less than 30 graduates: MT (8), CY (1), IS (6)

Figure 1.4: Employed professionals and technicians (HRSTC) as a percentage of tertiary educated (HRSTE) by sex, 2004



Source: Eurostat Community Labour Force Data, EU-25 estimated by Eurostat
Exception to the reference year: NL: 2003
Break in series: AT, EL, IT, MT, PT
Provisional data: AT

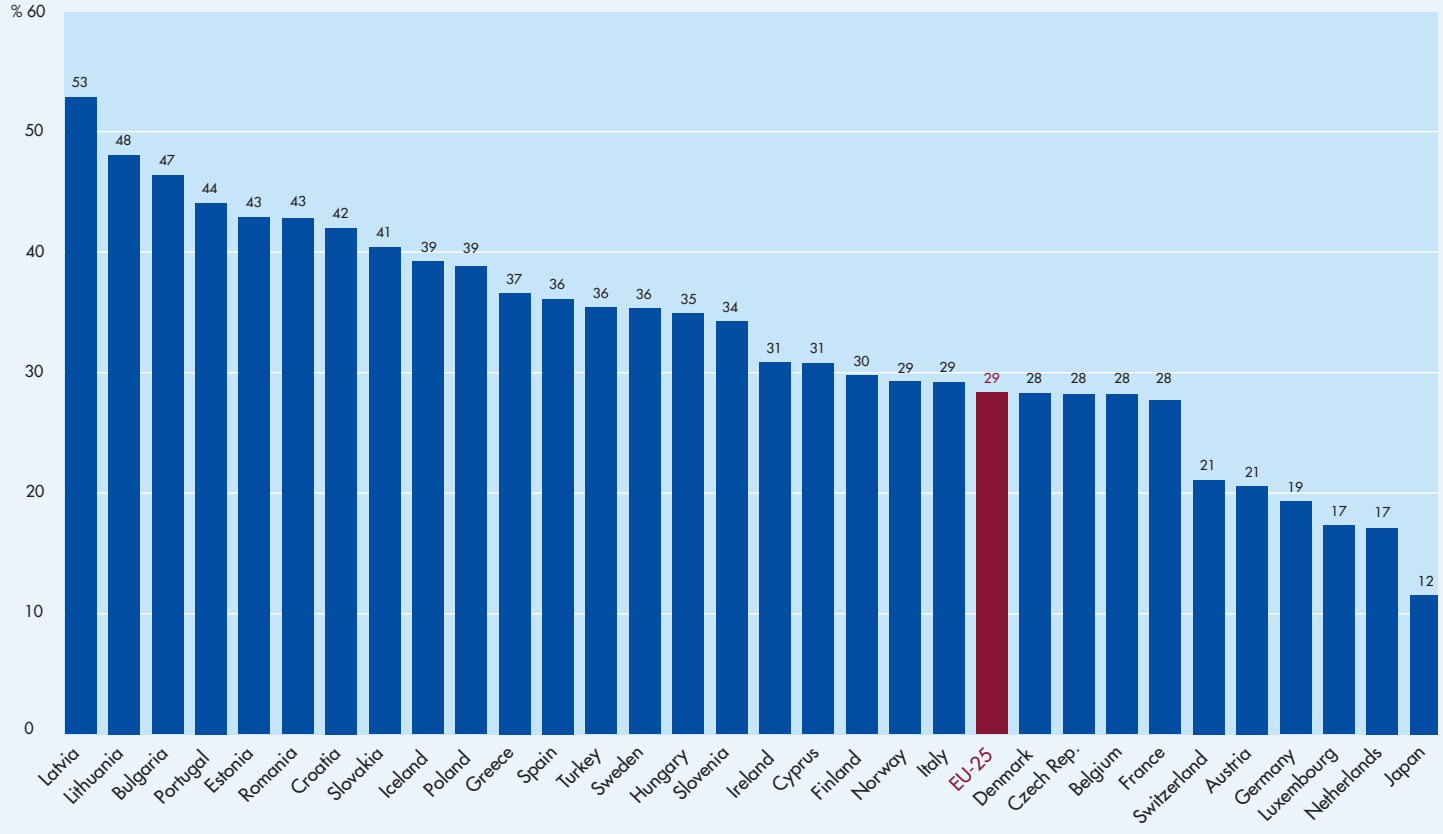
Figure 1.5: Proportion of scientists and engineers in the total labour force[1] by sex, 2004



[1] The labour force is defined as the sum of employed and unemployed persons.

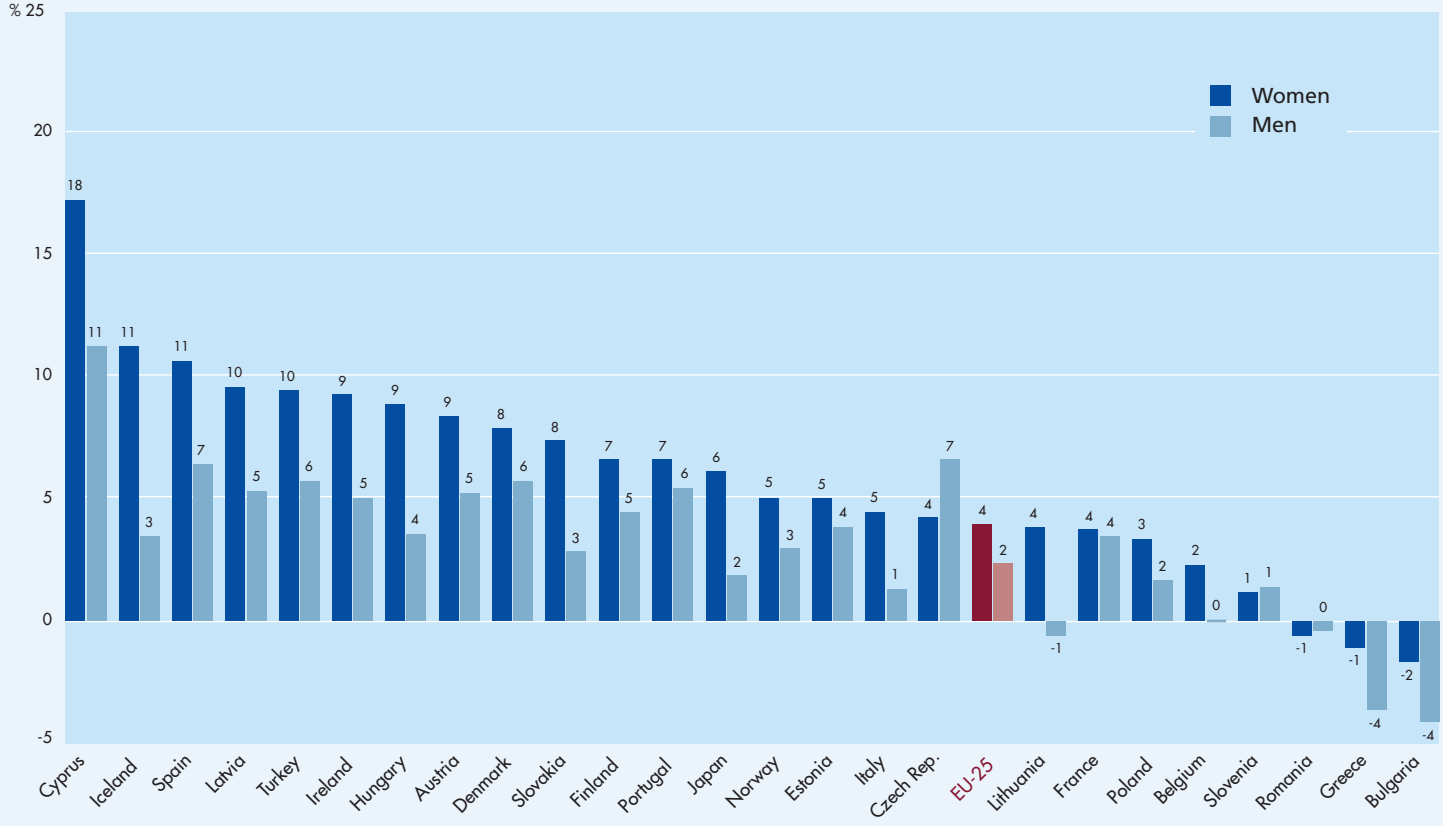
Source: Eurostat Community Labour Force Data
Exception to the reference year: NO: 2002; DK, LV, NL: 2003
Data unavailable: MT, RO

Figure 1.6: Proportion of female researchers, 2003



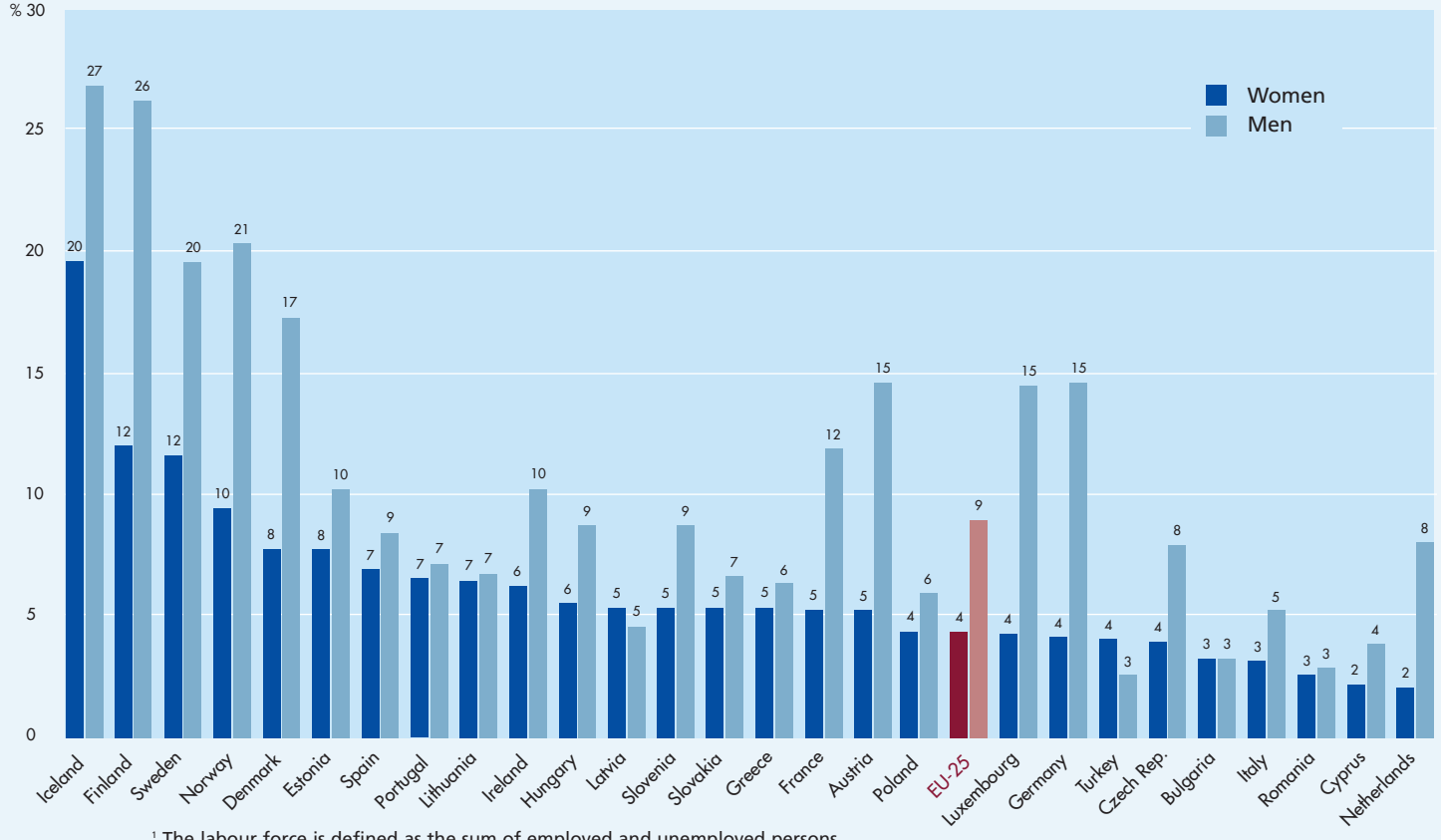
Source: Eurostat S&T statistics, EU-25 calculated by DG Research
Exceptions to the reference year: PL: 2000; AT, FI, TR: 2002
Data unavailable: MT, UK
Data estimated: SE

Figure 1.7: Growth rates for researchers by sex, 1999-2003



Source: Eurostat S&T statistics, EU-25 calculated by DG Research
Exceptions to the reference year: AT: 1998-2003; FI, TR: 1999-2002; NO: 1999-2003; LT, PL: 2000-2003; SK, JP: 2001-2003; BE, FR, IE: 2002-2003
Data provisional: IE (2003); Data estimated: SI (2003), SE
Data unavailable: DE, LU, MT, NL, SE, UK

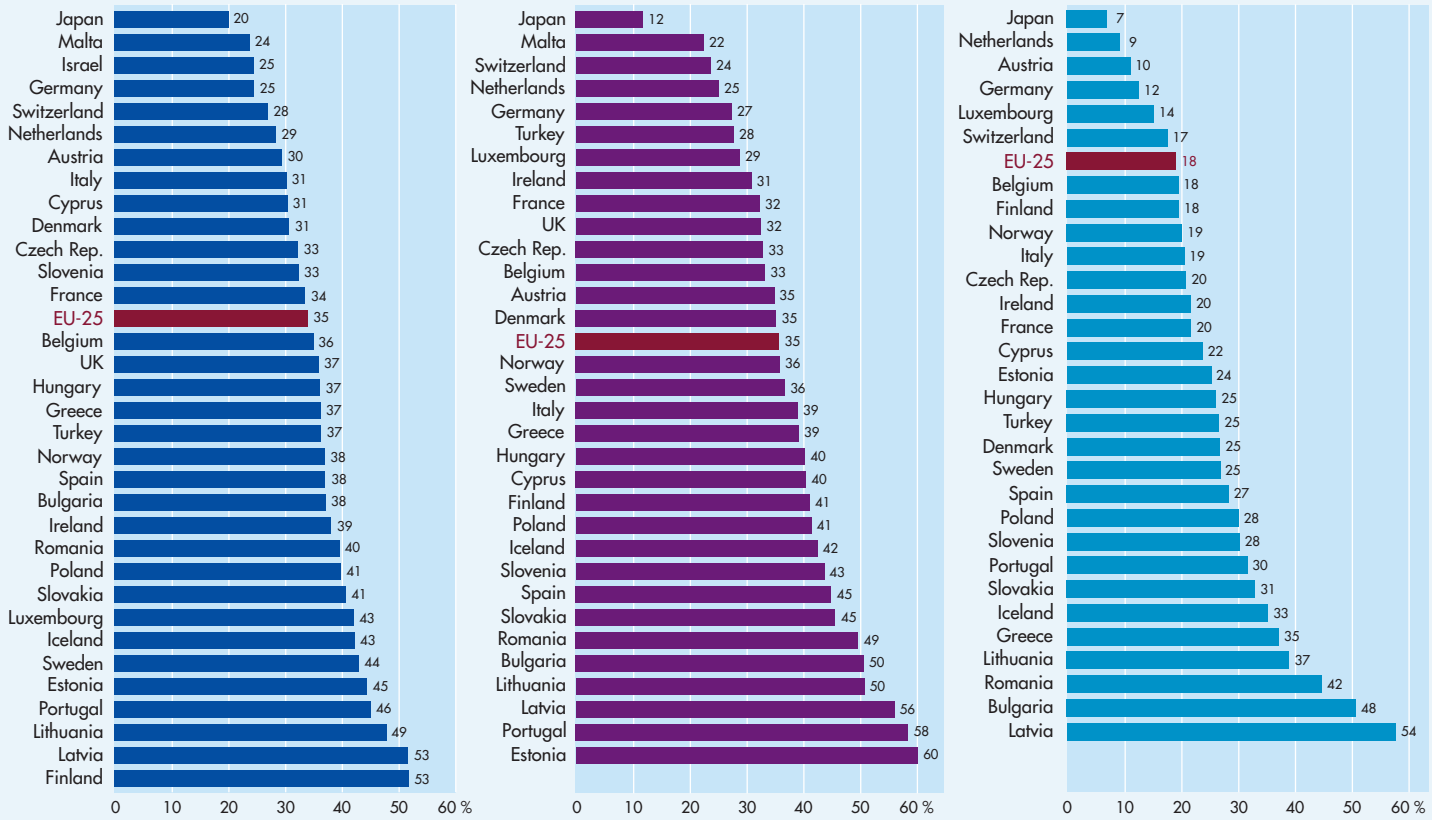
Figure 1.8: Researchers per thousand labour force[1] by sex, 2003



[1] The labour force is defined as the sum of employed and unemployed persons.

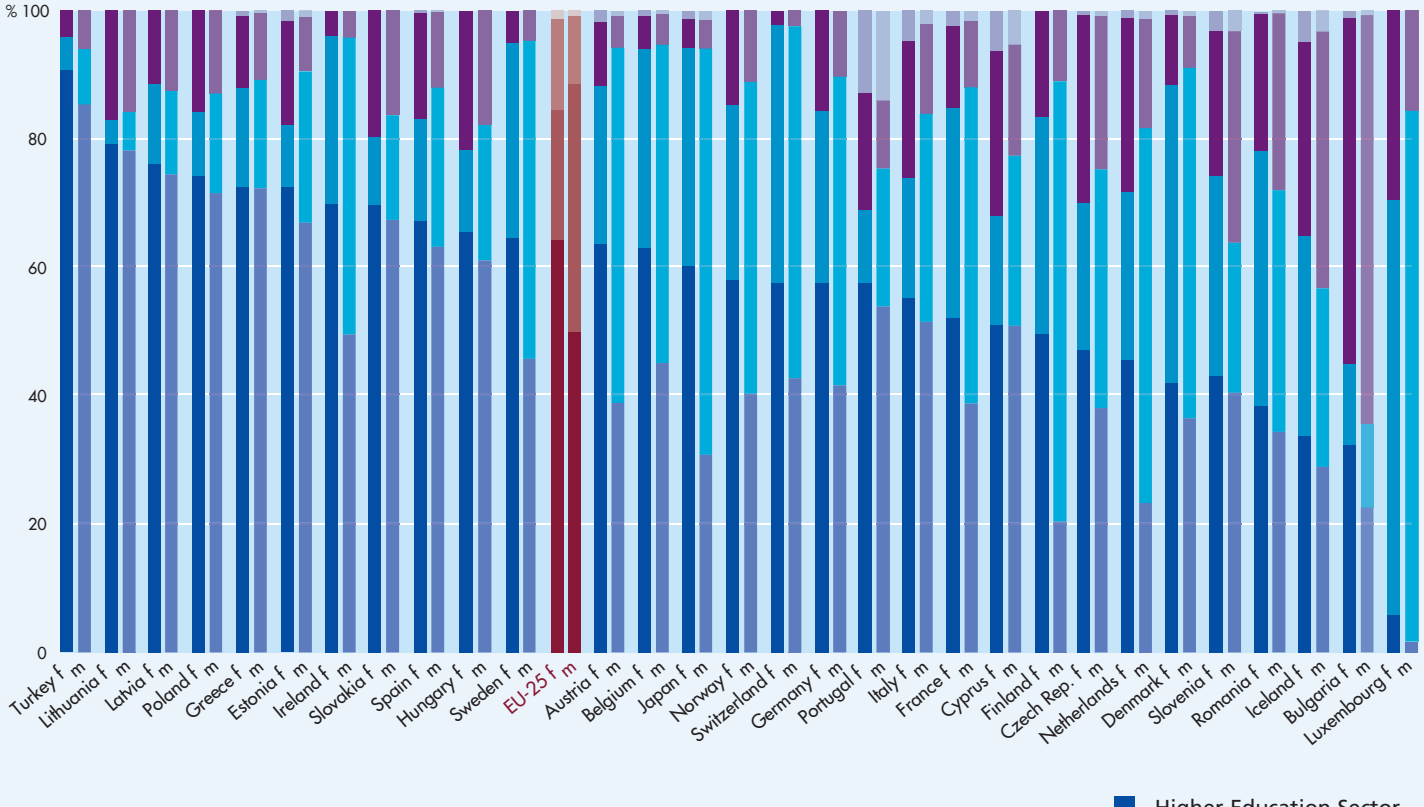
Source: Eurostat S&T statistics; Community Labour Force Survey (LFS)
Exceptions to the reference year: CH, PL: 2000; AT, FI, TR: 2002;
Break in data series: IT; Provisional data: IE; Estimated data: SE, SI
Data unavailable: BE, ES, MT, UK

Figure 1.9: Proportion of female researchers by sector, 2003



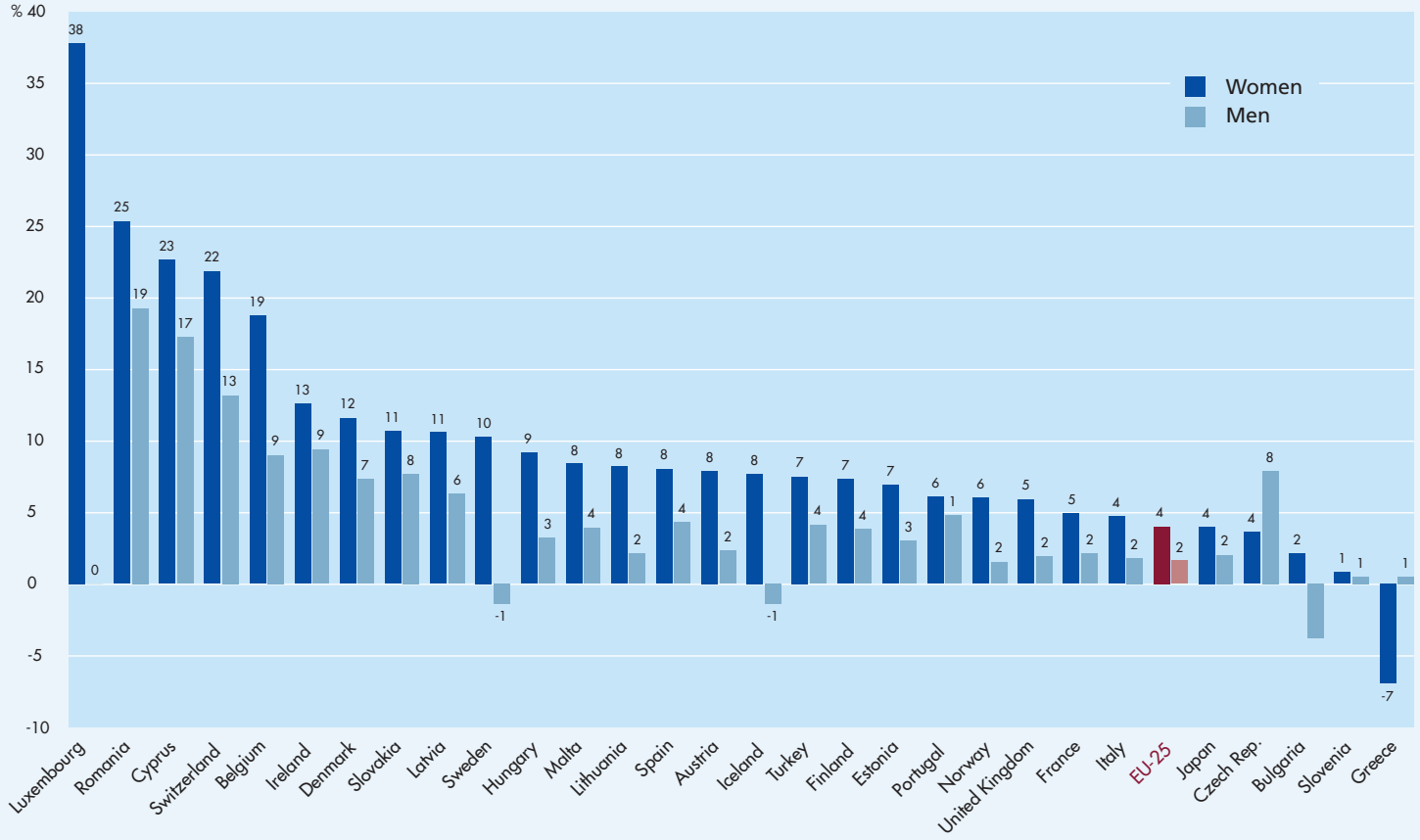
Source: Eurostat S&T Statistics *(WiS database, DG Research for IL)*, EU-25 calculated by DG Research
Exceptions to the reference year: CH (BES), PL: 2000; BE (BES), AT, CH, FI, TR: 2002
Data unavailable: MT (BES), UK (BES)
Full time equivalent (FTE) instead of head count (HC): IL
Data estimated: SE

Figure 1.10: Distribution of researchers across sectors by sex, 2003



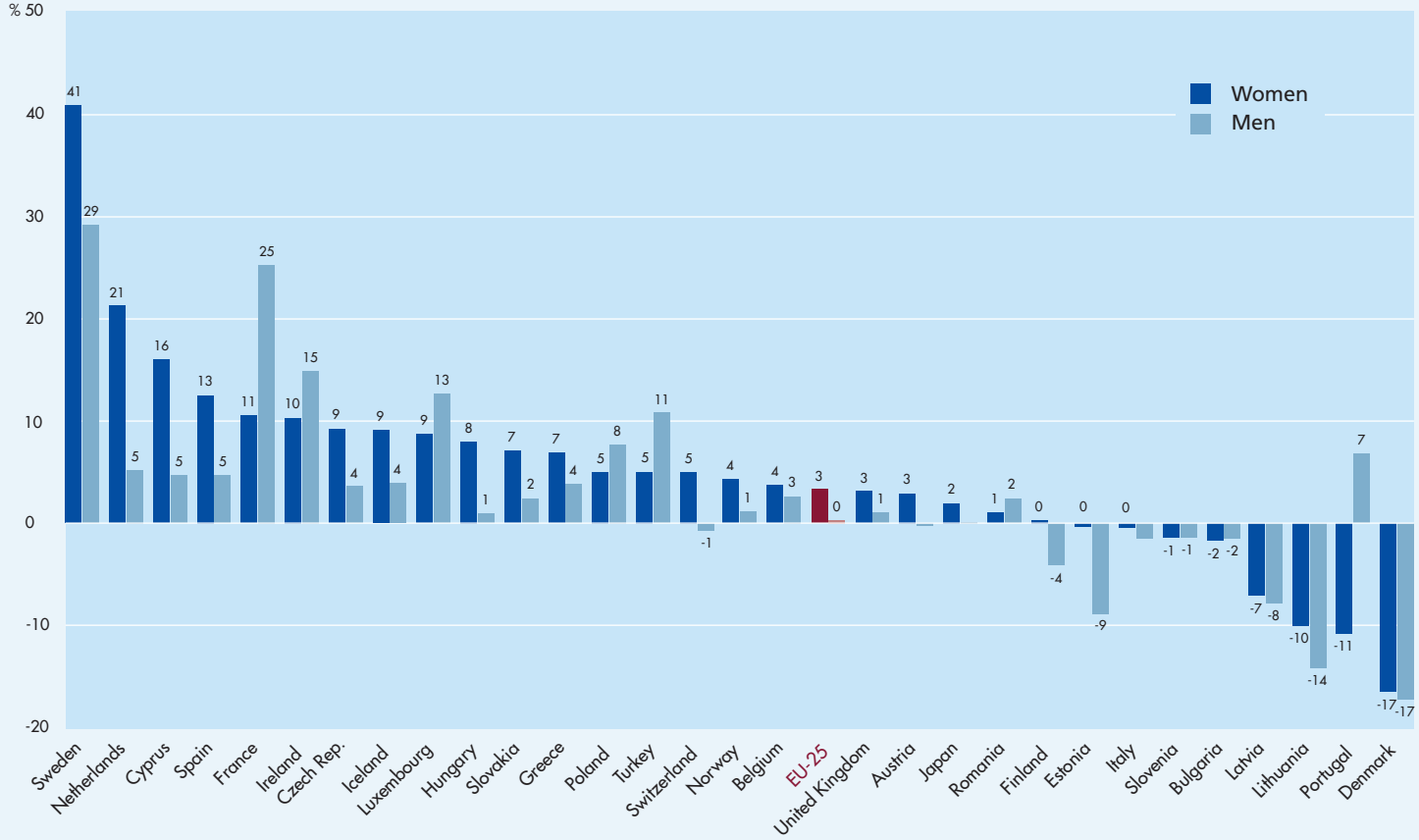
Source: Eurostat S&T statistics, EU-25 calculated by DG Research
Exception to the reference year: BE (BES), NL, AT, FI, TR: 2002
Data unavailable: MT, UK
Data estimated: SE

Figure 1.11: Growth rates for researchers in Higher Education Sector (HES) by sex, 1999-2003



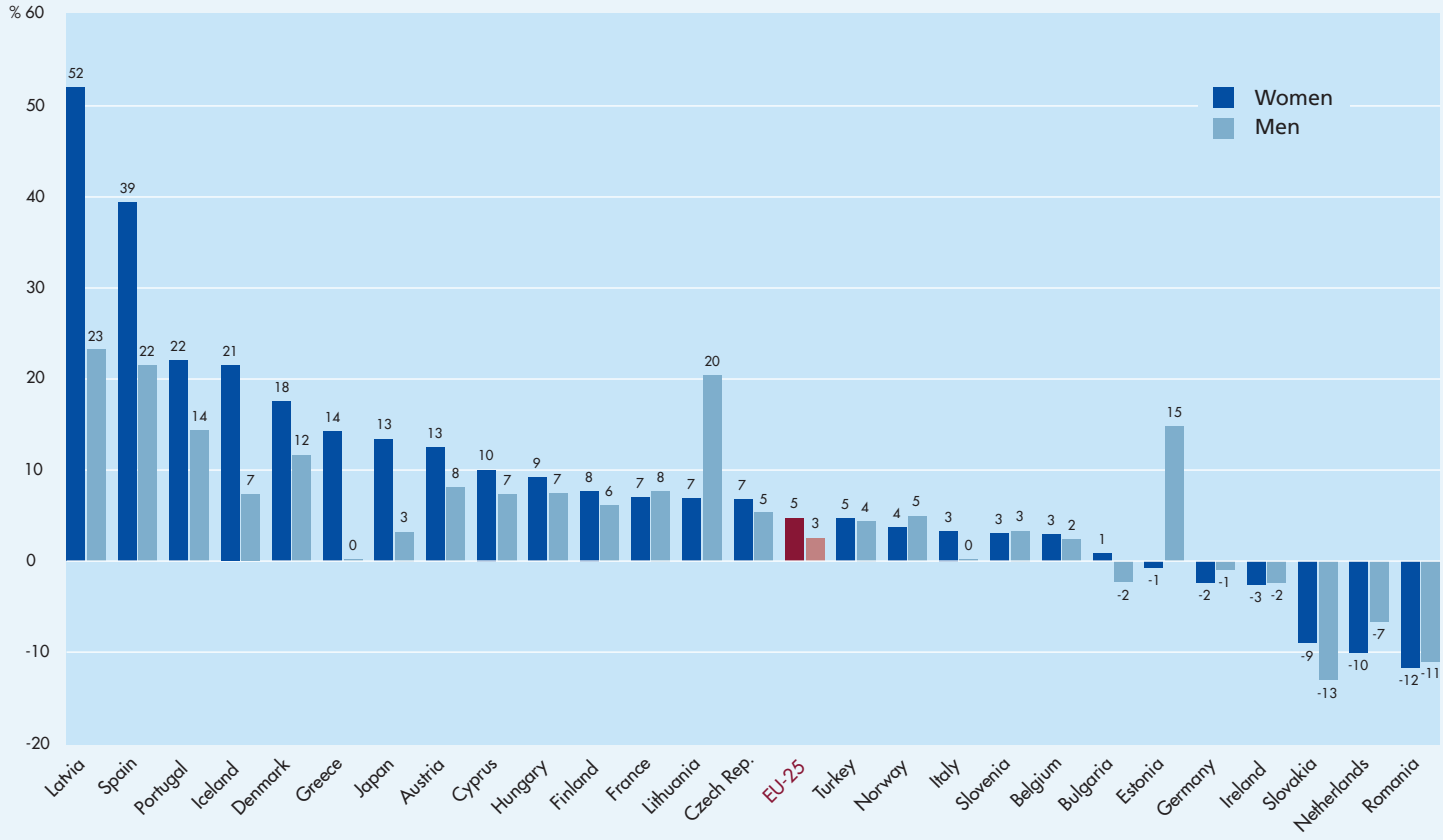
Source: Eurostat S&T statistics, EU-25 calculated by DG Research
Exceptions to the reference year: UK: 1998-2000; AT, CH:1998-2002; FI, TR: 1999-2002; LT, LU: 2000-2003, IE, MT, SK: 2002-2003
Provisional data: BE (2002),
Data unavailable: DE, NL, PL
Data estimated: SE

Figure 1.12: Growth rates for researchers in Government Sector (GOV) by sex, 1999-2003



Source: Eurostat S&T statistics, EU-25 calculated by DG Research
Exceptions to the reference year: AT, CH, TR: 1998-2002; FR, FI: 1999-2002; LT, LU, PL: 2000-2003, NL, JP: 2001-2003; BE, IE, MT, SK, UK: 2002-2003
Growth rate not presented for countries with less than 30 researchers: MT (11)
Data unavailable: DE
Data estimated: SE

Figure 1.13: Growth rates for researchers in Business Enterprise Sector (BES) by sex, 1999-2003



Source: Eurostat S&T statistics, EU-25 calculated by DG Research
Exceptions to the reference year: AT: 1998-2002; IS: 1999-2001; BE, ES, FI, TR: 1999-2002; FR, LT: 2000-2003; DE, IE, NL, JP: 2001-2003; SK: 2002-2003
Provisional data: BE (2002),
Data unavailable: LU, MT, PL, SE, UK
Data estimated: SE
High growth rate due to sharp increase in number of enterprises surveyed (23 to 191): LV

Scientific fields

2. Scientific fields

The analyses of the tables in chapter 1 identified gender differences in employment. These differences are explored in more detail in this chapter. Attention is paid to the horizontal segregation of male and female researchers by broad fields of science (here including humanities and social science, as well as the branches of 'science' more narrowly defined) in relation to the higher education (HES) and government (GOV) sectors and by economic activity in the business enterprise sector (BES). Unfortunately, horizontal segregation cannot be analysed for researchers in total sectors due to large data gaps; only data for 9 countries are available for the EU 25. As with chapter 1, the analysis begins with an examination of broad fields of study at PhD/Doctorate or equivalent (ISCED 6) level in order to assess the potential for women increasing their participation rates across the different fields in future employment.

PhD graduates

Table 1.2 shows the proportion of women graduating at PhD/Doctorate or equivalent level (ISCED 6) in 2003, analysed by broad field of study. Figure 1.3 in chapter 1 shows that women's participation at this educational level had increased over-all in the period from 1999-2003 however, despite this general increase, there is a marked differentiation between subject areas. For the EU as a whole, women constitute 60.5% of education graduates at this level, followed by humanities and the arts, and health and welfare, where women are also in a majority, at 51.4% and 51.1% respectively.

The agriculture and veterinary field is close to this, at 49.6 %, but there is then a drop to 43.1% for the social sciences, business and law and 40.0% for science, mathematics and computing. Engineering, manufacturing and construction comes far below this, with only 21.9% of graduates being women at PhD/Doctorate or equivalent level (table 2.1). Although the national figures vary, the low rate of women's participation in engineering, manufacturing and construction at this advanced educational level is notable in all countries, which suggests that it is a persistent situation.

Similar conclusions can be drawn from Figure 2.1, which shows the comparative distribution of male and female graduates across these same broad fields of study. Within the EU as a whole, women are more likely than men to choose education, humanities and the arts, health and welfare and agriculture and veterinary studies. In social sciences, business and law there is near-parity of choice. Men are more likely than women to opt for science, mathematics and computing, (30.5% men; 27.1% women), but it is engineering, manufacturing and construction that has the greatest differentiation of choice, with 18.5% of men graduating in this area, compared with 6.9% of women. Even in those countries where women generally choose their fields of study in broadly similar proportions to those of men, there is a marked gender difference for this field of study. Furthermore, since fewer women than men graduate at ISCED 6 level, the distribution percentages for women across the fields

represent lower absolute figures than corresponding percentages for men. This means that the visible presence of advanced women students across these fields relative to men is lower than the percentages superficially suggest. The data for distribution by field thus reinforce the conclusions already drawn in relation to Table 2.1: that the under-representation of women in this field is a universal feature. As Figure 2.1 shows, it is an imbalance that is replicated in such countries as Japan and the USA.

When the two broad S&T fields of study are analysed in more detail (table 2.2), further discrepancies emerge. In the natural sciences (science, mathematics and computing), it is strikingly apparent that women commonly constitute more than 50%, and sometimes more than 75%, of PhD graduates in the life sciences. The EU average for this narrow field is thus 54.4%, which contrasts sharply with physical science at 33.0%, mathematics and statistics at 31.6%, and computing at 18.6%. Similarly, the breakdown for engineering, manufacturing and construction shows major differences between the three narrow fields, with manufacturing and processing, and architecture and building having the highest participation of women, at 32% and 31.3% respectively, and engineering and engineering trades being dramatically worse at 17.1%. This figure demonstrates the value of a more detailed analysis of the available data, since it shows that analysis by broad field (as in the preceding figures for ISCED 6 graduates) masks significant variations within the subjects that make up those fields. While high level analyses may identify general areas of concern, it is clearly necessary to take the analysis to a more detailed level in order to uncover the specific areas where the sustainability of research capacity may be at risk at both the EU and Member States level, and where targeted attention by policy-makers may be urgently needed. An improved gender-balance at this educational stage would greatly enrich the potential resource since it would tap into the half of the population that is currently severely under-represented in key areas.

These data-sets, presenting the gender-balance of highly qualified graduates as they reach the point of entry into employment, prompt two policy-related questions: whether there is anything that can be done to improve the gender-balance at the basic higher education level (ISCED 5) in order to support a better gender-balance at ISCED 6; and whether in particular there is anything that can be done to encourage a higher proportion of women engaged in the two broad fields of science, mathematics and computing, and engineering, manufacturing and construction to continue to the higher level of study (ISCED 6). Attention needs to be given to both of these areas at the educational level if the overall EU research capability is to be increased.

Employment by fields of science within sectors

There are major gaps in the data on the participation of women by field of science within each of the three major employment sectors of higher education (HES), government (GOV) and business and enterprise (BES). Since the omissions include some of the countries which numerically provide a substantial part of the EU's research resource, systematic comparative analysis from country to country is not possible, and the EU averages in each data-set must be treated with caution. It is nevertheless striking that there is a consistent pattern, which agrees with the gendered distribution across fields that is indicated in chapter 1, and in the PhD/Doctorate or equivalent data, where the information is derived from a greater number of Member States.

The data in chapter 1 (fig. 1.9) demonstrated that in the EU as a whole female researchers were more likely than men to choose to work in higher education and that women constituted on average 35% of all researchers in HES. Yet, as can be seen in the breakdown by broad field in the present chapter (table 2.3), this masks major differences, with engineering and technology being the field in which women are very poorly represented, and with the natural sciences being only a little better. These two fields are all significantly outperformed in terms of women's representation by medical sciences, agricultural sciences, social sciences and humanities, although even here, on the basis of the available data, women constitute only just over one-third of researchers. The comparative analysis of women's and men's distribution across these fields (fig. 2.2) provides further evidence of gendered choice, with the discrepancy again being greatest in engineering and technology, followed by the natural sciences.

The government sector, in which women constitute 35% of all researchers, shows similar gendered patterns by broad field of science. The lowest proportion of female researchers is in engineering and technology (22.3%), with the natural sciences next at 31.0% (table 2.4). Above these come the social and agricultural sciences at 44.3% and 43.1% respectively, with women achieving near-parity in the medical sciences (49.7%), and being narrowly in the majority in the humanities, at 50.4%. The relativities are confirmed by Figure 2.3, showing the comparative distribution of women and men in the government sector across the broad fields, with the greatest differences in the employment choices made by men and women being in engineering and technology.

There are major gaps in these data-sets, although, the general trend is in line with what the more robust data-sets indicate, the EU averages are not precise.

The broad fields for researchers in the business enterprise sector are categorised differently using the General Industrial Classification of Economic Activities (NACE) within the European Union as recommended by the Frascati Manual. They categorise businesses by their main economic activity and therefore do not necessarily tell us exactly what the researchers are doing and also makes it impossible to compare with the education data. Figures 1.9 and 1.10 in chapter 1, show that women are less likely than men to choose to work in BES, and they consequently constitute only 18% of researchers in this sector. In Table 2.5 we can see that although only 15.5% of researchers in manufacturing are women companies whose main activity is pharmaceuticals (NACE 24.4) have a high proportion of women (43,7%) with 7 countries containing over 50% women researchers and 9 countries over 40%. We can see that in real estate, renting and business activities (which also includes research and development) the proportion of women stand at 20.4% with one country (Latvia) boasting over 50% women at 51.1%. The varying proportions of female researchers across each of the three economic areas (table 2.5), and the comparative data for men and women across the economic areas (fig. 2.4) suggest that a more comprehensive and penetrating analysis of the BES within Member States would be beneficial. This is especially so, given the complexity of the BES and its importance in driving forward the EU's knowledge economy, in particular for meeting the Barcelona objective of 3% GDP devoted to R&D.

Measuring horizontal segregation

Finally, as a means of measuring horizontal segregation, Table 2.6 provides the country-by-country and EU average Dissimilarity Index (DI) for researchers within HES and GOV. Within this index, the appearance of the value 0 would indicate that at that point there was an equal distribution of men and women. This is the minimum value within the index. The maximum value is 1, and if that were to occur, it would indicate that, at that point, only men or only women were employed. Figures between 1 and 0 indicate the extent of the gender imbalance or, more precisely, the proportion of researchers that, hypothetically, would need to move out of the field in order to create a balanced gender distribution. Whether it would be men or women who would have to make the hypothetical shift would depend on which group predominated. In order to discover the gender predominance that lies behind each DI number in the present table, one needs to consult Figure 1.9 for HES and GOV (Proportion of female researchers by sector, 2003).

Thus, to take Germany as an example: bearing in mind that we know female researchers are a minority in HES within Germany (25% as shown in fig. 1.9), the HES dissimilarity index for Germany of 0.21 shows that 21% of male researchers would need to change field in order to equalise the presence of men and women, on the basis of the present female numbers. This is, of course, a purely hypothetical scenario, but the calculation that lies behind the DI is a means of producing a consistent indicator of difference which allows for systematic comparison across sectors and countries. There are major gaps in the data available here, but the index confirms the extent of the gender difference across sectors and throughout the EU. There are only a few DIs that are less than 0.1 (10 % hypothetical movement needed); most are in excess of 0.20 (20% hypothetical movement, or greater).

Box 1

Dissimilarity Index

The Dissimilarity Index (DI) provides a theoretical measurement of the percentage of women and men in a group who would have to move to another occupation to ensure that the proportions of women were the same across all the possible occupations. It can therefore be interpreted as the hypothetical distance from a balanced gender distribution across occupations, based upon the overriding proportion of women (NSF, 2000). The formula for the Dissimilarity Index is:

$$DI = 1/2 \, \Sigma_i \, | F_i / F - M_i / M |$$

where: i denotes each occupation
F_i is the number of women researchers in each occupation
M_i is the number of men researchers in each occupation
F is the total number of women researchers across all occupations
M is the total number of men researchers across all occupations.
|| indicates that the absolute value is taken, but not the sign.

For example, if we have three occupations, A, B and C with 17, 37 and 91 women and 108, 74, 182 men respectively, the overall proportion of women is 28.5%. We therefore need to calculate:

$$\frac{|17 - 108| + |37 - 74| + |91 - 182|}{|145 \;\; 364| \quad |145 \;\; 364| \quad |145 \;\; 364|} = \frac{0.1795 + 0.0519 + 0.1276}{2} = 0.1795$$

This means that 18% of researchers will have to change occupation in order to maintain the background proportion of 28.5% women in each occupation.

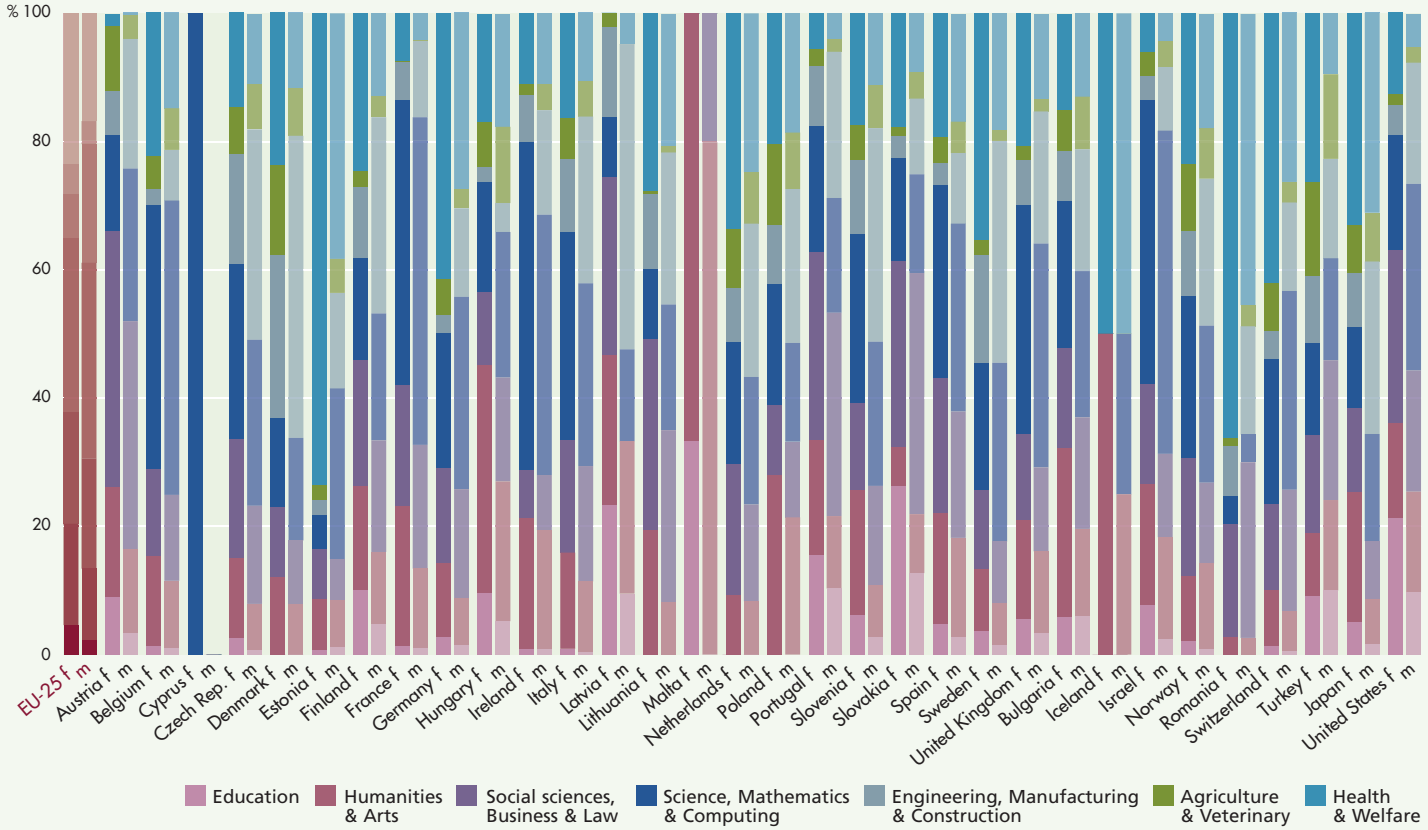
In order to interpret the DI correctly, it is important to know which gender is in the majority overall. The maximum value is 1, which indicates the presence of only either women or men in each of the occupations, depending on the majority gender. The minimum value of 0 indicates a distribution between women and men within each occupation which is equal to the overall average proportion of women. If the same occupational categories are used for different countries, the DI yields a comparable and descriptive statistic that reflects the extent to which the two sexes are differently distributed. The results also depend on the number of categories. If more categories are used, the indicator will reflect greater variability in the distribution, which in turn will yield results indicating a higher level of segregation.

Table 2.1: Proportion of female PhD (ISCED 6) graduates by broad field of study, 2003

	EDUCATION	HUMANITIES & ARTS	SOCIAL SCIENCES, BUSINESS & LAW	SCIENCE, MATHEMATICS & COMPUTING	ENGINEERING, MANUFACTURING & CONSTRUCTION	AGRICULTURE & VETERINARY	HEALTH & WELFARE
EU-25	**60.5**	**51.4**	**43.1**	**40.0**	**21.9**	**49.6**	**51.1**
Austria	65.3	47.5	43.4	30.2	18.9	65.9	72.0
Belgium	43.8	42.2	36.1	33.1	14.3	30.6	45.4
Cyprus	-	-	-	100.0	-	-	-
Czech Republic	66.7	48.6	40.0	36.7	22.3	36.7	42.2
Denmark	-	46.9	38.6	33.6	23.8	52.4	54.0
Estonia	50.0	58.8	62.5	21.9	17.6	37.5	72.5
Finland	66.7	57.9	51.6	43.1	25.5	41.7	64.3
France	49.0	55.5	41.4	38.4	25.9	55.6	56.1
Germany	52.6	49.5	34.5	29.9	11.4	54.3	47.7
Greece	:	:	:	:	:	:	:
Hungary	59.5	56.4	35.9	37.5	29.7	32.0	43.3
Ireland	50.0	53.1	47.2	56.6	31.2	31.6	50.7
Italy	72.5	58.5	50.4	54.0	31.2	54.4	61.5
Latvia	83.3	66.7	100.0	57.1	37.5	100.0	0.0
Lithuania	-	78.9	63.9	47.2	43.9	50.0	68.3
Luxembourg	-	-	-	-	-	-	-
Malta	100.0	33.3	0.0	-	-	-	-
Netherlands	-	43.8	48.5	40.1	19.9	44.3	48.7
Poland	:	51.6	42.7	50.1	24.1	53.8	47.2
Portugal	65.4	66.8	53.9	58.1	34.1	64.6	63.3
Slovakia	72.4	46.2	49.6	57.3	26.2	32.1	71.3
Slovenia	60.0	63.0	37.7	44.8	19.3	36.4	52.0
Spain	59.2	48.6	47.3	46.6	21.3	41.2	49.3
Sweden	64.0	53.2	48.3	34.8	26.4	50.7	59.4
United Kingdom	53.6	45.9	42.2	41.9	19.6	45.2	52.4
Bulgaria	52.2	68.4	50.0	52.8	31.4	46.4	56.4
Iceland	-	50.0	-	0.0	-	-	33.3
Israel	73.8	51.4	51.6	44.0	25.0	45.5	55.6
Norway	60.0	33.7	49.5	40.7	22.8	46.9	46.9
Romania	-	58.9	46.6	57.6	38.3	36.6	66.5
Switzerland	54.2	44.7	28.9	29.4	15.2	57.5	47.7
Turkey	35.3	29.2	29.7	34.8	28.9	39.8	62.6
Japan	48.6	48.7	32.4	19.9	9.2	24.7	25.7
United States	66.0	45.7	55.9	35.5	18.0	36.8	68.5

Source: Eurostat Education statistics, Israel Central Bureau of Statistics and the Council for Higher Education
Exceptions to the reference year: IL: 2000
Data unavailable: EL
Most tertiary students study abroad and are not included: LU, CY
Countries with small numbers: CY (1), MT (8), IS (6)

Figure 2.1: Distribution of PhD (ISCED6) graduates across the broad fields of study by sex, 2003



Source: Eurostat Education statistics, Israel Central Bureau of Statistics and the Council for Higher Education
Exceptions to the reference year: IL: 2000
Data unavailable: EL.
Most tertiary students study abroad and are not included: LU, CY
Countries with small numbers: CY (1), MT (8), IS (6)

Table 2.2: Proportion of female PhD (ISCED6) graduates by narrow field of study in natural science and engineering (400 & 500 fields), 2003

	Science, Mathematics & Computing				Engineering, Manufacturing & Construction		
	LIFE SCIENCE	PHYSICAL SCIENCE	MATHEMATICS & STATISTICS	COMPUTING	ENGINEERING & ENGINEERING TRADES	MANUFACTURING & PROCESSING	ARCHITECTURE & BUILDING
EU-25	**54.4**	**33.0**	**31.6**	**18.6**	**17.1**	**32.0**	**31.3**
Austria	50.3	21.8	24.4	9.5	16.1	36.4	20.0
Belgium	40.3	29.8	35.4	3.2	13.4	0.0	21.4
Cyprus	100.0	-	-	-	-	-	-
Czech Republic	50.9	28.6	31.7	10.3	19.9	47,6	25.8
Denmark	33.6	-	-	-	23.8	-	-
Estonia	28.6	18.2	0.0	100.0	15.4	100.0	0.0
Finland	62.0	39.3	34.3	13.9	23.6	42.9	34.4
France	53.4	34.3	24.3	18.8	22.8	37.7	27.8
Germany	46.7	22.8	27.9	11.9	6.8	24.2	22.3
Hungary	43.0	37.4	25.0	30.0	33.3	32.1	16.7
Ireland	60.2	52.4	0.0	21.4	24.1	58.8	0.0
Italy	72.4	45.2	42.4	25.0	13.5	25.6	48.9
Latvia	66.7	0.0	-	66.7	41.7	33.3	0.0
Lithuania	88.9	28.6	75.0	0.0	44.1	-	42.9
Netherlands	-	39.9	-	-	18.0	-	-
Portugal	73.0	56.7	58.3	28.0	28.0	51.6	42.6
Slovakia	71.4	48.9	46.2	20.0	23.9	26.9	33.3
Slovenia	65.0	34.5	20.0	15.4	10.4	28.6	57.1
Spain	54.5	46.8	40.4	22.8	16.0	62.9	24.0
Sweden	51.7	32.4	16.0	21.6	24.1	32.7	39.3
United Kingdom	56.6	32.6	24.1	23.3	16.2	33.4	21.3
Bulgaria	77.8	49.2	30.0	-	33.3	42.9	0.0
Norway	-	0.0	-	-	13.3	-	20.0
Romania	57.6	:	:	:	37.5	-	42.9
Switzerland	42.6	23.3	22.2	7.5	16.9	-	5.0
Turkey	54.1	31.7	28.6	28.6	14.7	42.5	39.8
United States	45.7	27.7	27.0	21.0	17.2	-	45.7

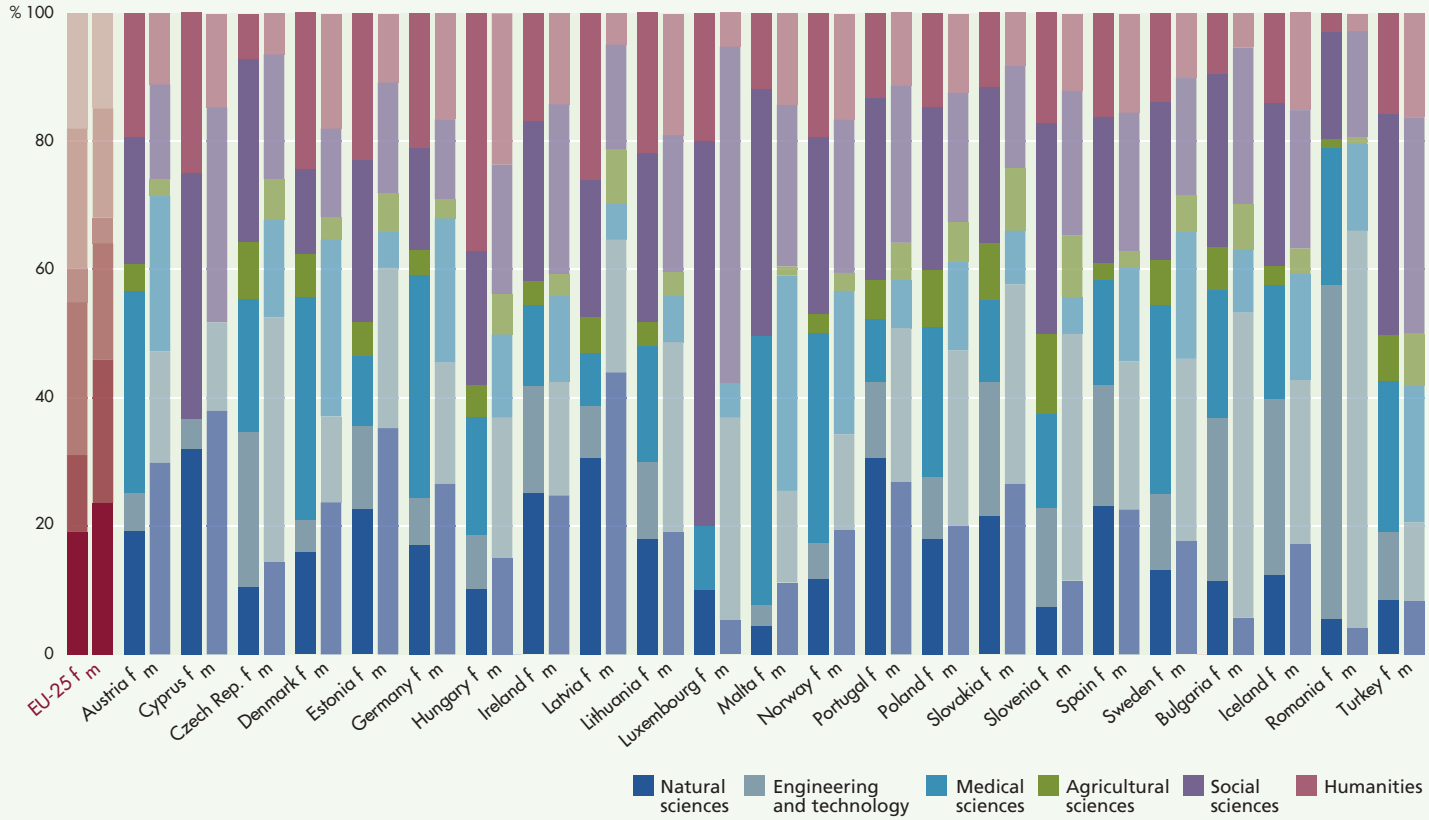
Source: Eurostat Education statistics
Exceptions to the reference year: NL, NO: 2002
Data unavailable: EL, PL, IL
Most tertiary students study abroad and are not included: LU, CY
Countries with small numbers:
400: CY (1); EE (32); IS (2); LV (7); LT (36); NO (2)
500: CY (0); EE (7); HU (37); IS (0); LV (16); LT (41); MT (0); NO (25)

Table 2.3: Proportion of female researchers in the Higher Education Sector (HES) by field of science, 2003

	NATURAL SCIENCES	ENGINEERING AND TECHNOLOGY	MEDICAL SCIENCES	AGRICULTURAL SCIENCES	SOCIAL SCIENCES	HUMANITIES
EU-25	**29.1**	**21.3**	**39.9**	**39.7**	**39.3**	**38.3**
Austria	21.6	12.6	35.8	40.9	36.3	42.8
Cyprus	27.8	13.3	:	-	34.4	43.9
Czech Republic	26.4	23.6	40.3	40.7	41.7	35.4
Denmark	23.4	14.4	36v5	46.1	30.4	38.3
Estonia	34.4	29.9	61.5	42.3	54.5	63.6
Germany	17.7	11.5	34.0	30.5	29.8	29.8
Hungary	28.4	18.0	45.3	31.3	37.5	47.8
Ireland	39.1	37.5	37.5	39.4	37.5	42.9
Latvia	43.6	29.9	62.4	42.3	59.1	85.4
Lithuania	47.2	27.5	70.4	47.5	53.8	52.5
Luxembourg	50.0	0.0	50.0	-	37.5	66.7
Malta	15.8	10.1	37.4	0.0	42.3	28.3
Norway	26.2	17.5	46.8	39.4	40.8	41.9
Portugal	49.2	29.5	52.7	47.0	49.7	49.6
Poland	38.0	19.2	53.6	49.7	46.0	45.0
Slovakia	36.4	32.3	51.7	39.6	51.8	49.7
Slovenia	24.9	17.1	57.4	40.0	43.2	42.8
Spain	38.2	33.0	40.3	37.7	39.0	39.0
Sweden	27.6	17.3	43.0	37.8	40.6	41.0
Bulgaria	55.0	24.4	55.6	35.9	40.1	52.4
Iceland	35.4	44.8	45.1	35.9	47.0	41.3
Romania	47.3	36.2	51.8	46.6	40.5	41.5
Turkey	37.4	33.8	39.2	34.5	37.5	36.6

Source: Eurostat S&T statistics, EU-25 calculated by DG Research
Exceptions to the reference year: LU, SE: 2001; AT, SI, TR: 2002
Data unavailable: BE, EL, FR, IT, NL, FI, UK, CH
Estimated data: LT, IE, SE

Figure 2.2: Distribution of researchers in the Higher Education Sector (HES) across fields of science, 2003



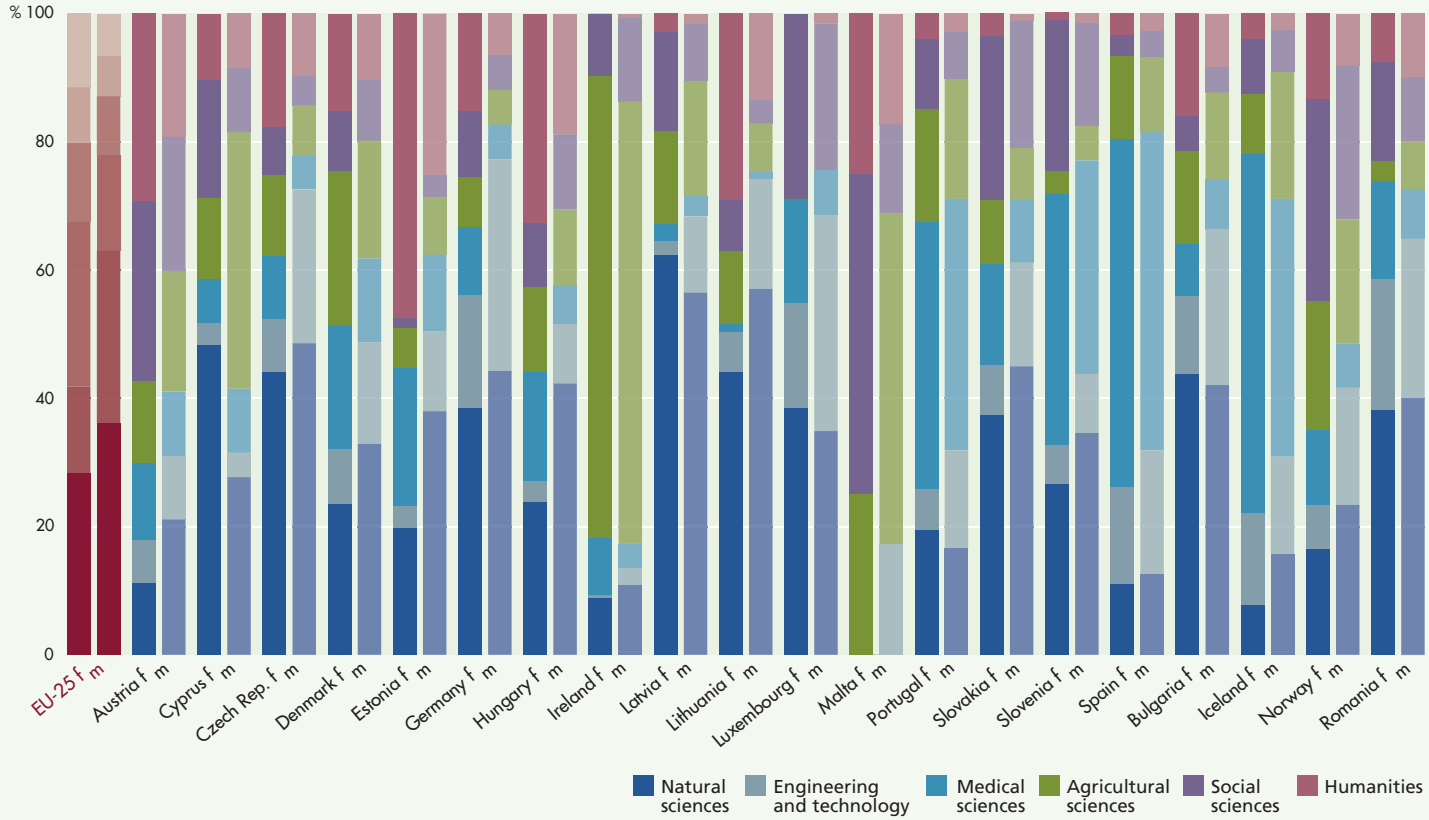
Source: Eurostat S&T statistics, EU-25 calculated by DG Research
Exceptions to the reference year: LU, SE: 2001; AT, SI, TR: 2002
No data: BE, EL, FR, IT, NL, FI, UK
Estimated data: LT, IE, SE

Table 2.4: Proportion of female researchers in the Government Sector (GOV) by field of science, 2003

	NATURAL SCIENCES	ENGINEERING AND TECHNOLOGY	MEDICAL SCIENCES	AGRICULTURAL SCIENCES	SOCIAL SCIENCES	HUMANITIES
EU-25	**31.0**	**22.3**	**49.7**	**43.1**	**44.3**	**50.4**
Austria	22.0	26.0	38.7	26.4	41.5	44.8
Croatia	43.5	14.3	47.2	29.1	48.2	54.3
Cyprus	53.8	37.5	31.6	17.5	55.2	45.0
Czech Republic	30.5	14.5	48.1	43.4	43.7	47.1
Denmark	27.7	22.7	44.0	41.3	34.7	44.2
Estonia	43.4	28.9	72.3	51.1	40.0	73.5
Germany	24.3	16.6	42.0	35.2	40.9	46.9
Hungary	27.2	19.1	65.2	42.4	36.3	53.6
Ireland	26.5	7.1	51.4	31.5	25.0	0.0
Latvia	57.9	18.6	52.6	50.0	68.3	68.8
Lithuania	43.9	26.5	55.0	60.2	69.3	68.5
Luxembourg	30.5	16.2	48.6	-	33.3	0.0
Malta	-	0.0	-	11.8	50.0	28.6
Poland	40.5	25.0	63.7	48.8	47.1	55.8
Portugal	61.6	36.9	59.2	56.6	67.2	65.4
Slovakia	40.6	28.3	56.7	51.0	51.4	74.6
Slovenia	36.9	33.6	47.3	34.4	52.8	34.6
Spain	41.3	38.8	46.7	46.9	40.5	47.8
Bulgaria	51.6	34.3	51.2	52.7	59.3	66.2
Iceland	26.2	40.8	50.3	25.5	49.3	51.5
Norway	27.9	17.2	48.8	36.5	42.0	47.6
Romania	48.0	44.3	65.8	29.0	59.8	42.5

Source: Eurostat S&T statistics, EU-25 calculated by DG Research
Exceptions to the reference year: AT, SI: 2002
Data unavailable: BE, EL, FR, IT, NL, FI, UK, TR, SE, CH
Data estimated: LT

Figure 2.3: Distribution of researchers in the Government Sector (GOV) across fields of science, 2003



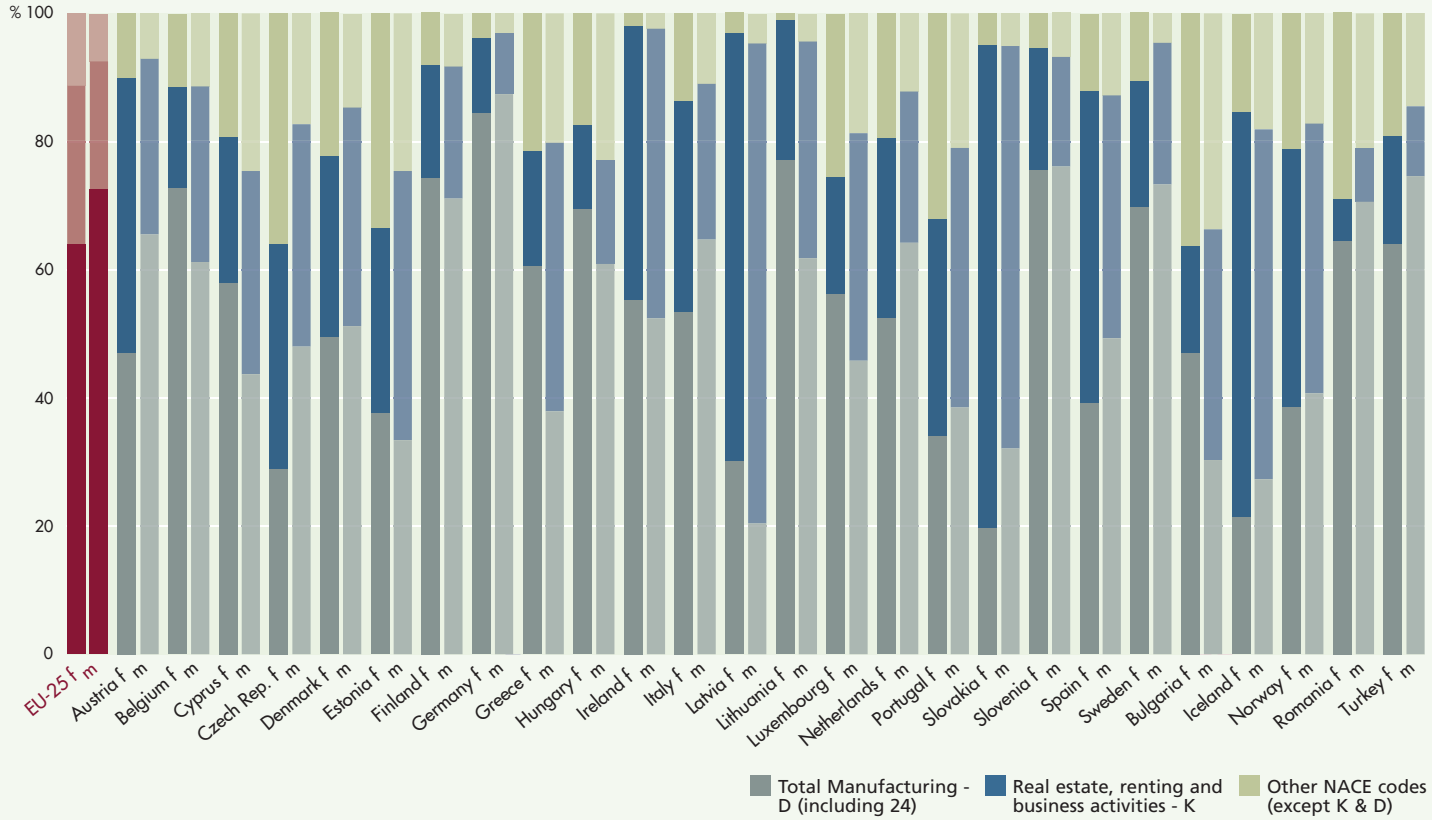
Source: Eurostat S&T statistics, EU-25 calculated by DG Research
Exceptions to the reference year: AT, SI: 2002
No data: BE, EL, FR, IT, NL, FI, SE, UK, TR, CH

Table 2.5: Proportion of female researchers by economic activity (NACE) in the Business Enterprise Sector (BES), 2003

	TOTAL MANUFACTURING - D (INCLUDING 24)	NACE CODE 24.4 - PHARMACEUTICALS	NACE CODE 24 (-24.4) - CHEMICALS AND CHEMICAL PRODUCTS (LESS PHARMACEUTICALS)	NACE CODE 24 - MANUFACTURE OF CHEMICALS AND CHEMICAL PRODUCTS	REAL ESTATE, RENTING AND BUSINESS ACTIVITIES - K	OTHER NACE CODES (EXCEPT K & D)
EU-25	**15.5**	**43.7**	**23.6**	**34.9**	**20.4**	**24.0**
Austria	7.7	41.4	18.6	31.7	15.3	14.2
Belgium	22.5	46.5	28.7	38.8	12.3	19.7
Cyprus	27.5	45.2	23.3	34.4	17.1	18.3
Czech Republic	12.7	43.4	25.8	31.8	19.6	33.6
Denmark	24.4	46.1	30.8	42.9	21.7	33.9
Estonia	25.9	c	c	59.6	17.6	29.8
Finland	22.6	:	:	36.5	19.1	21.8
Germany	11.2	37.1	20.2	27.5	14.0	14.0
Greece	45.9	37.5	:	:	18.7	36.0
Hungary	27.0	53.7	35.5	49.9	20.9	19.8
Ireland	21.2	40.8	30.8	39.1	19.4	17.4
Italy	16.4	49.1	24.1	38.3	24.3	23.1
Latvia	63.3	:	:	83.2	51.1	44.4
Lithuania	41.7	:	:	54.4	27.2	12.5
Luxembourg	16.8	:	:	:	7.9	18.4
Netherlands	7.2	12.8	12.2	12.4	10.2	13.2
Portugal	27.1	c	c	:	26.1	39.3
Slovakia	21.5	c	c	54.0	34.9	30.7
Slovenia	28.6	65.9	47.1	59.7	31.1	24.2
Spain	22.4	51.0	32.6	42.2	31.8	25.6
Sweden	24.2	52.1	40.0	49.4	23.0	44.1
Bulgaria	58.4	76.1	65.8	74.5	29.4	49.5
Iceland	26.7	41.4	28.6	-	35.1	28.4
Norway	18.0	55.8	31.5	42.1	18.3	22.4
Romania	39.6	:	:	68.4	35.8	49.8
Turkey	22.2	69.3	39.3	52.3	34.0	30.6

Source: Eurostat S&T statistics (*except IS & FI - DG RTD, WiS database*), EU-25 calculated by DG Research
Exceptions to the reference year: AT, FI, SI, TR: 2002; IS 2001
Data unavailable: FR, MT, PL, UK, CH
C: confidential data
Data estimated: SE

Figure 2.4: Distribution of researchers across economic activities (NACE) in the Business Enterprise Sector (BES), 2003



Source: Eurostat S&T statistics (*except IS & FI - DG RTD, WiS database*), EU-25 calculated by DG Research
Exceptions to the reference year: AT, FI, SI, TR: 2002; IS 2001;
Data unavailable: FR, MT, PL, UK, CH
Data estimated: SE

Table 2.6: Dissimilarity index for researchers in Higher Education Sector (HES) and Government Sector (GOV), 2003

	Dissimilarity Index HES (DI)	Dissimilarity Index GOV (DI)
EU-25	**0.14**	**0.21**
Austria	0.22	0.19
Cyprus	0.15	0.31
Czech Republic	0.18	0.20
Denmark	0.17	0.17
Estonia	0.25	0.32
Germany	0.21	0.21
Hungary	0.20	0.26
Ireland	0.03	0.08
Lithuania	0.19	0.24
Luxembourg	0.41	0.19
Malta	0.22	0.44
Poland	0.20	0.21
Portugal	0.12	0.10
Slovakia	0.16	0.16
Slovenia	0.27	0.13
Spain	0.04	0.06
Sweden	0.19	:
Bulgaria	0.23	0.12
Iceland	0.07	0.19
Norway	0.17	0.18
Romania	0.14	0.13
Turkey	0.03	:

Source: Eurostat S&T statistics, EU-25 calculated by DG Research
Exceptions to the reference year: AT, SI, TR (HES): 2002; LU, SE (HES): 2001
Data unavailable: BE, EL, FR, IT, LV, NL, SE (GOV), UK
Data estimated: SE

Seniority

3. Seniority

Chapters 1 and 2 revealed the extent to which women are under-represented in the levels and types of employment considered in the *She Figures*. In particular, the chapters highlighted the fact that there are marked gender differences in choice of field and sector of employment. In themselves these horizontal gender imbalances give rise to questions about the long-term viability of EU aspirations for R&D and the societal disadvantages of a gender-biased research environment. The questions increase in urgency when the vertical dimension is considered. This is the focus of chapters 3 and 4.

The vertical dimension of patterns of employment — that is, the relative distribution of women and men at the different levels of seniority within the employment hierarchy — is crucially important, since it is at the senior levels that decisions are made and leadership is exercised in defining and carrying forward the research agenda. In addition, the opportunities for women of equal ability with men to be promoted to senior posts at a proportionately commensurate rate is also a major element in defining career attractiveness for women leaving higher education and making long-term choices about field of employment. The distribution of women throughout the vertical axis of employment thus affects the present and influences the future.

At present, the data on seniority within academia (HES) is more robust than for the government (GOV) or business and enterprise (BES) sectors. There are several reasons for this, but chief among them is the relative consistency of academic employment grades across the Member States. The terminology used varies considerably from country to country but, despite this, it is possible to collect data on the basis of shared definitions within broad bands of qualification and responsibility in ways that cannot yet be consistently achieved for employment in GOV and BES. This chapter will consequently examine HES in more detail than GOV and BES, taking grade A as the marker of 'seniority', broadly corresponding to 'full professor' or the highest grade/post at which research is normally conducted. It should be remembered, however, that chapters 1 and 2 demonstrated that women are better represented in HES than in some other sectors of European research. The vertical segregation that is evident in HES may thus be even more pronounced elsewhere. There is consequently a pressing need for systematic data collection, since this is essential for understanding employment patterns and for developing targeted policy interventions to improve the participation of women at the more senior levels.

Seniority in academia (HES)

The "scissors" diagram (fig.3.1) graphically illustrates the way in which the gender gap changes throughout the stages of an academic career, beginning with studying at the basic level of higher education (ISCED 5A) through to the senior level of grade A, equivalent to a full professor in most countries. Figures are plotted for 1999 and 2003. Although the proportion of women has increased slightly at all stages on the graph, the pattern remains constant. Women students are in the majority in higher

education at ISCED 5A level and by graduation have increased their lead over men. But for registered students at PhD and equivalent level (ISCED 6), the male/female relativities are reversed, and thereafter women's proportional participation continues to decline, with the divergence from men increasing quite dramatically at grade B and again at grade A. It should be noted, however, that the graph encompasses all academic disciplines, and so, by including those where women are relatively well represented, it masks the more striking divergences in those fields where women are less well represented from the outset.

That the picture is indeed vastly different in the natural sciences and engineering is graphically demonstrated by the next figure (fig.3.2), which provides the same range of data, but for these two broad fields only. The preceding chapters have shown that these are the fields in which women are seriously under-represented. The graph provides a visual confirmation of this, and it also shows how extreme the gender gap is in these fields at the more senior levels. The graph further demonstrates that, despite the increase in the percentage of women between 1999 and 2003, the gender differences are so persistent that they will not self-correct in the foreseeable future. Policy intervention is thus essential, although, if it is to be well focused and effectively implemented, it will be necessary at Member State level for there to be a detailed understanding of the differential male and female participation across the subjects that make up these broad fields, and of the social, institutional and personal circumstances that affect the retention and advancement of women relative to men over the full career trajectory.

The overview provided by the scissors diagram is presented in more detail in Table 3.1 and Figure 3.3, which respectively show, country by country, the proportion of female academic staff by grade, and the percentage of grade A academic staff by sex. In the EU as a whole, women at grade A constitute only 6% of academic staff, by contrast with men who constitute 18%, and there are many countries where the discrepancy is even greater than this. If senior women are, on average, 6% of academic staff, and commonly rather less than that, they will be far less evident to other staff than are senior men who, in the majority of Member States, are more than three times as visible. Women are such a small proportion that they will either be very thinly scattered across the institution, or will be concentrated in particular areas, and absent — or nearly so — from others. This pattern of presence (or absence) creates the impression of a male-norm for seniority, and the fact of male-dominated decision making and leadership, either or both of which may affect women's progress through the hierarchy.

The pattern revealed so far is very clear, but it is difficult, faced with these data, to make comparative assessments of the proportion of women at grade A relative to their presence in the total employed group from which they are drawn. The Glass Ceiling Index (fig. 3.4) represents this relativity by one number for each country, arrived at by dividing the proportion of women in grades A, B and C by the proportion of women in grade A[6]. If the value of the resulting number is 1, women are present in grade A in a proportion that is precisely commensurate with their presence in the employed group as a whole.

[6] *Data are more comparable if only Grades A, B and C are used to calculate the Glass Ceiling Index*

Box 2

Glass Ceiling Index

The Glass Ceiling Index (GCI) is an indicator that measures the relative chance for women compared to men of reaching a top position. In this publication the GCI compares the proportion of women in Grade A positions (equivalent to Full Professors in most countries) to the proportion of women in academia (Grade A+B+C)[1], indicating the opportunity, or lack of, for women to move up the hierarchical structure in their profession.

The formula for the Glass Ceiling Index is:

$$GCI = \frac{P}{P_a}$$

where:
P = Proportion of women in grade A+B+C
P_a = Proportion of women in grade A

The value runs from 0 to infinity. A GCI of 1 indicates that there is no difference between women and men being promoted. A score of less than 1 means that women are over-represented and a GCI score of more than 1 indicates a glass ceiling effect showing that women are under-represented in grade A positions. In other words, the interpretation of the GCI is that *the higher the value the thicker the glass ceiling* and the more difficult it is for women to move into a higher position.

[1] *For comparability purposes it is better to use Grades A+B+C and exclude Grade D as coverage varies more among countries for this grade than the others*

They are proportionately over-represented at grade A if the number is below 1; and they are proportionately under-represented if it is above 1. Numbers above 1 represent the so-called Glass Ceiling, with the 'ceiling' being 'thicker' as the number is greater. The Glass Ceiling Index (GCI) in Figure 3.4 has no numbers at 1 although Romania and Turkey are closest with 1.1 and 1.4 respectively. Of the 23 EU countries reported, only 7 countries (Spain, Italy, Germany at 1.9, Finland, Portugal, Poland at 1.8 and Belgium at 1.7) have figures just below 2, although even these point to a substantial glass ceiling effect, which is in fact considerably stronger in other Member States. It is also important to remember that the GCI measures women's seniority relative to women's presence in the pipeline, so that women's under-representation in relation to men remains an issue in employment, even if women achieve a proportional presence at senior level commensurate with the proportion of their presence at all grades.

Over and above the larger question of how we increase the absolute numbers of women within that population as a whole, what the GCI powerfully shows is that women are not being utilised to the full even within the current employment population. This, then, prompts a set of policy questions which are different from, but complementary to, those posed in the previous chapters: why are women not progressing to senior posts? And what can be done to overcome the social, cultural, institutional and personal obstacles that are identified? If these questions could be answered and effective policy measures be put in place, not only would there be a better gender-balance in defining and carrying forward the research agenda, but career paths would seem more attractive to younger women, so that the participation rate of women overall might also be improved.

In discussing the gender gaps revealed by the scissors diagram above, it was noted that the proportions used were for all academic disciplines taken together, including those in which women are relatively well represented. These comprehensive data are also the bases for subsequent tables up to and including the Glass Ceiling Index. As the data in chapter 2 made plain, however, it is essential to take the analysis to a more detailed level in order to see the pattern of gender differences across subject groups. Table 3.2 and Figure 3.5 take this approach for grade A staff. The proportion of female grade A staff, analysed by main field, show that, within the EU as a whole, women are in senior posts within the humanities to a far greater degree (23.9%) than for any other field, although this is still less than one in four. In all other fields the proportion is less than 20%; and in engineering and technology it is as low as 5.8%, or around one woman for seventeen staff. This is broadly in accord with the patterns identified in chapter 2, in that humanities is a strong area for women in relative terms and engineering and technology is one where they are consistently poorly represented.

In particular, it is instructive to compare Table 2.3 in chapter 2 (showing the proportion of female researchers in the HES by field of science), with Table 3.2 in this chapter (showing the proportion of female grade A staff by main field of science). Although there is a drop in all fields between the proportion of researchers who are women and the proportion of grade A staff who are women, the drop is greater in the field where women are least well represented: engineering and technology. It is, of course, necessary to take into account the time-lag in building up an academic reputation that will result in promotion to the senior grade.

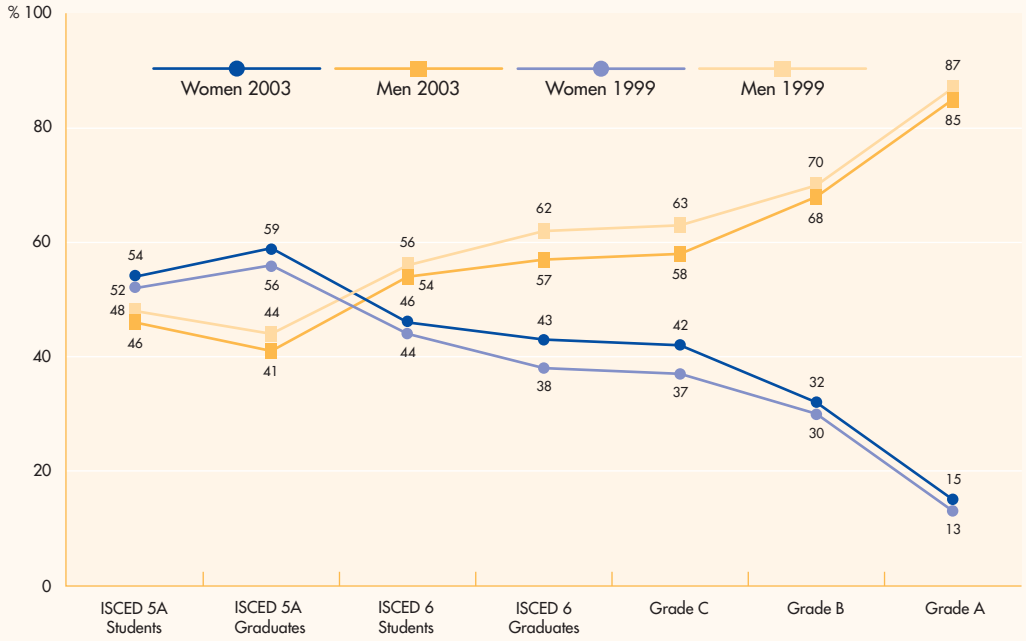
Women now at senior levels entered academia when, generally across Europe, the higher education sector was smaller than it is now. The demography of student intake, advanced study, and employment choice and progression was also shaped by different social, educational and professional contexts from those that currently prevail. It is undeniable that the patterns of seniority in the HES are strongly gendered, to the extent that they call for further analysis and policy intervention at Member State level.

Further indicative evidence to support such a step is provided by Figure 3.5, which shows the distribution of grade A staff across the broad fields by sex. Despite the gaps and some obvious anomalies (e.g. data for the UK, which are at odds with other data-sets in the *She Figures*), the distribution is clearly gendered. Engineering and technology and humanities show a strong gender pattern that has been borne out in previous chapters. The distribution of men and women in engineering and technology indicate a large gap between the sexes with women at 6.4% and men at 16.5% and the opposite gap, though not quite as large in humanities with women at 27.6% and men at 17.0%. Other fields of science where the distribution of women is higher than that of men are medical science and social science. In agricultural science men and women are evenly distributed at 4.2% and 4.3% respectively.

Seniority in R&D

Further indicative data is available by comparing the proportions of men and women in R&D, taking as the hierarchical markers the three descending occupation categories of 'researchers', 'technicians' and 'other'. These data are presented in turn for higher education (HES: fig. 3.6), government (GOV: fig. 3.7) and business enterprise (BES: fig. 3.8). There are data gaps in each of the figures and some variation between countries, as one would expect given the differences in the ways that national economies are structured, but some recurrent patterns are nevertheless apparent. A smaller proportion of the female cohort is employed at the researcher level than is the case with the male cohort; and yet at the two lower levels of 'technician' and 'other', the situation is reversed: a larger proportion of the female cohort is employed in each of these occupational levels than is the case with the male cohort. The distributions vary across sectors, but the pattern is evident for HES, GOV and BES. A similar pattern was noted in She Figures 2003, where the conclusion was reached, on the basis of the HRST data, that this was not due to gender differences in qualification. That being so, we must pose again the questions that were posed in 2003. Firstly, are women opting for occupations for which they are in fact over-qualified, perhaps as a trade-off that enables them to juggle work-life balance? Secondly, does the presence of women as technicians have a positive impact on the numbers of researchers — that is, can we see the evidence of women coming up through the ranks of R&D, or is the technician category a closed cohort in which women remain in the more auxiliary role? The questions point to the need for further analysis, both quantitative and qualitative, in order to inform future policy and support the enhancement of the EU's capacity in R&D.

Figure 3.1: Proportions of men and women in a typical academic career, students and academic staff, EU-25, 1999-2003



Definition of grades:

A: The single highest grade/post at which research is normally conducted
B: Researchers working in positions not as senior as top position (A) but more senior than newly qualified PhD holders
C: The first grade/post into which a newly qualified PhD graduate would normally be recruited

ISCED 5A: Tertiary programmes to provide sufficient qualifications to enter into advanced research programmes & professions with high skills requirements
ISCED 6: Tertiary programmes which lead to an advanced research qualification (PhD)

Source: Eurostat Education data, DG Research, WiS database seniority Grades.

2003

ISCED5A Students:
Data unavailable: FR
Exceptions to the reference year: LU: 1999; EL: 2002

ISCED6 Students:
Data unavailable: FR, LU, DE, SI
Exceptions to the reference year: EL: 2002

Grade C, B, A:
Data unavailable: IE, LU
Exceptions to the reference year: CY: 2002; FR, PT: 2001; EL: 2000
NL: FTE; SI: Data estimated; FR: Grade C unavailable

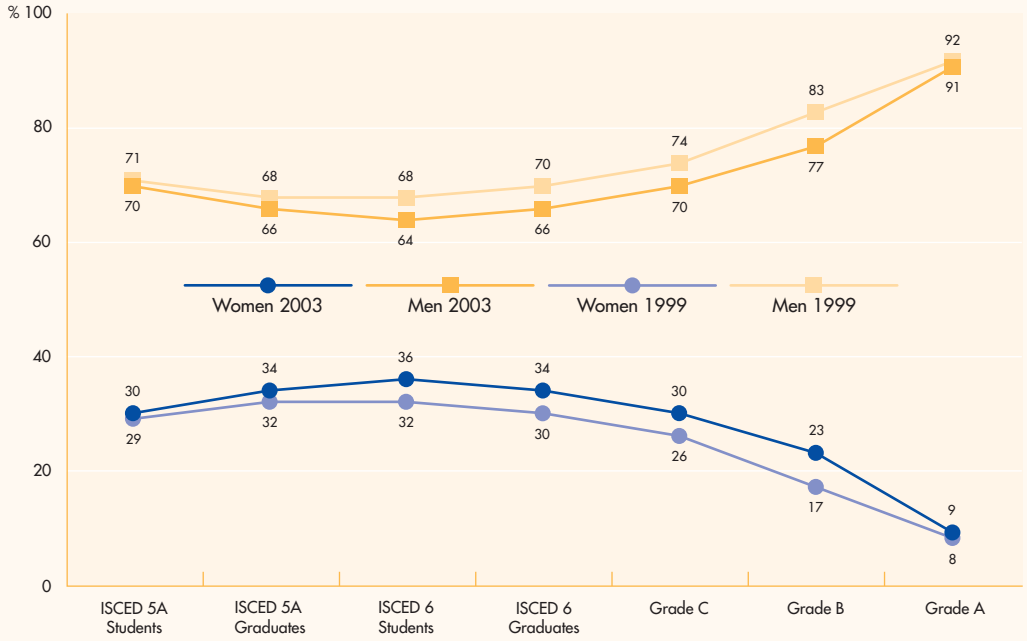
1999

ISCED 5A Students:
Exceptions to the reference year: BE, PT: 2000; EL: 2002. Data unavaible: FR
Exceptions to the reference year: PT: 1998; BE: 2000; CY: 2001; EL: 2002.

ISCED 6 Students:
Data unavailable: DE, FR, LU, SI

Grade C: Data unavailable: FR, Exceptions to the reference year: AT: 1998; PL: 2000; FTE: NL, BE (FR)
Grade B: Exceptions to the reference year: AT: 1998; FR, PL: 2000; FTE: NL
Grade A: Exceptions to the reference year: AT:1998; FR, PL: 2000; FTE: NL

Figure 3.2: Proportions of men and women in a typical academic career in science and engineering, students and academic staff, EU-25, 1999-2003



Definition of grades:

A: The single highest grade/post at which research is normally conducted
B: Researchers working in positions not as senior as top position (A) but more senior than newly qualified PhD holders
C: The first grade/post into which a newly qualified PhD (ISCED6) graduate would normally be recruited

ISCED 5A: Tertiary programmes to provide sufficient qualifications to enter into advanced research programmes & professions with high skills requirements
ISCED 6: Tertiary programmes which lead to an advanced research qualification (PhD)

SET fields of education = 400 Science, maths and computing + 500 Engineering, manufacturing and construction
SET fields of science = Engineering and Technology + Natural Sciences

Source: Eurostat Education data, DG Research, WiS database seniority Grades.
5a & 6 Students:
Exceptions to the reference year 1999: BE: 2000; Data unavailable FR
Grade A & B:
Exceptions to the reference year 2003: AT, CY: 2002; FR: 2001; LV: 2000
Exceptions to the reference year 1999: BE, CZ: 2002; CY, FR, LV, PL : 2000; AT: 1998

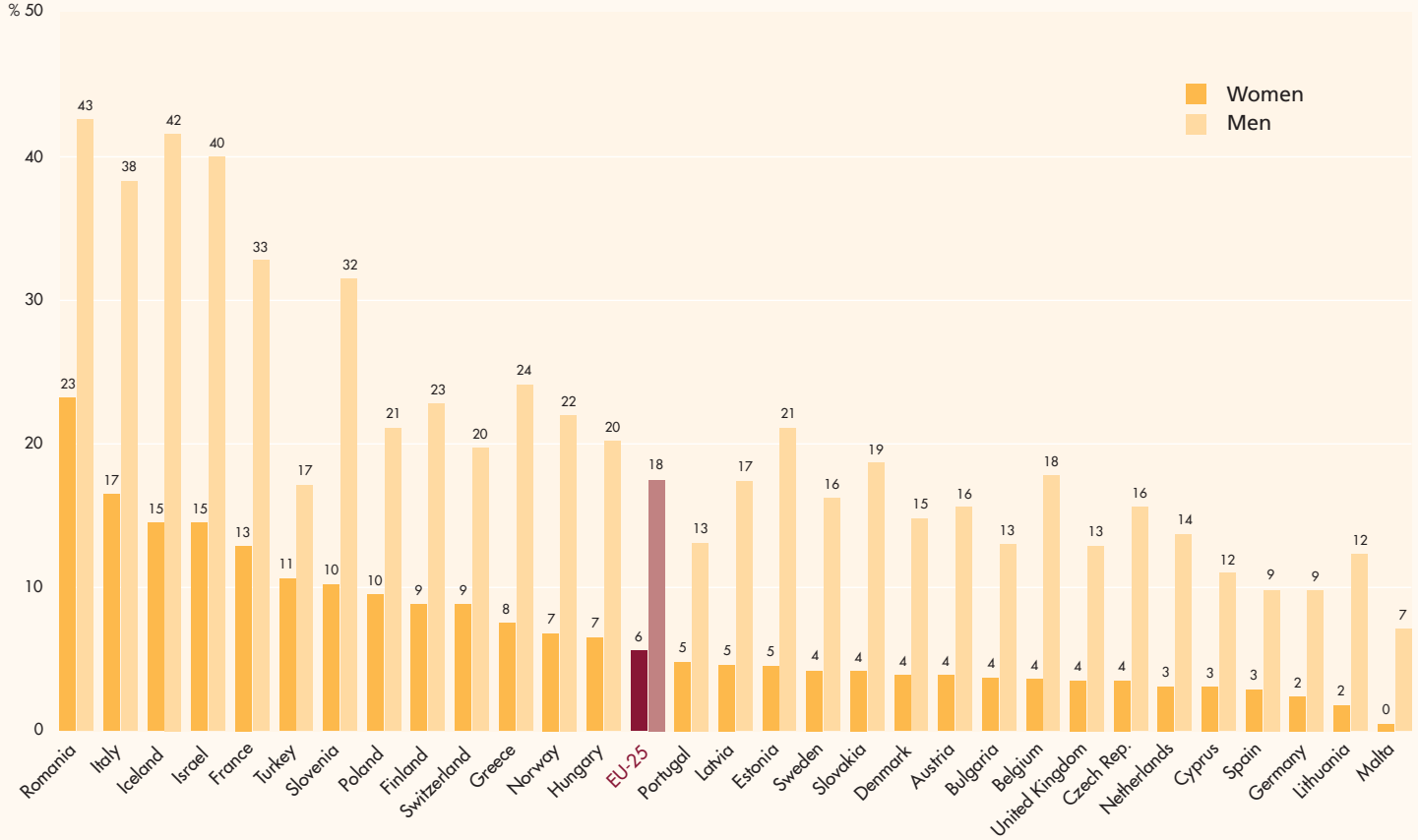
Grade C:
Exceptions to the reference year 2003: AT, CY: 2002
Exceptions to the reference year 1999: BE, CZ: 2002; CY, PL : 2000; AT: 1998
Grade C unavailable: FR, LV
All grades: Data unavailable: EE, EL, ES, HU, IE, LT, LU
FTE instead of HC: NL

Table 3.1: Proportion of female academic staff by grade and total, 2004

	GRADE A	GRADE B	GRADE C	GRADE D	TOTAL
EU-25	**15.3**	**32.2**	**42.0**	**43.3**	**36.4**
Austria	9.5	16.2	35.6	37.9	29.7
Belgium	9.0	20.7	33.1	46.6	32.7
Cyprus	10.2	17.2	37.5	33.5	31.0
Czech Republic	10.3	22.1	40.2	48.8	34.0
Denmark	10.9	24.4	37.6	42.7	31.8
Estonia	17.2	37.1	56.6	66.6	49.2
Finland	21.2	46.6	52.9	42.8	40.9
France	16.1	38.7	:	39.3	32.9
Germany	9.2	16.1	25.9	35.6	29.2
Greece	11.3	22.7	31.9	39.4	29.0
Hungary	15.4	30.9	46.0	36.7	36.3
Italy	16.4	31.4	43.8	:	31.2
Latvia	26.5	37.0	65.0	:	57.7
Lithuania	12.1	37.4	49.5	59.9	49.1
Malta	2.3	31.7	14.2	25.0	26.6
Netherlands	9.4	14.2	27.0	39.4	31.4
Poland	19.5	27.4	41.0	:	34.9
Portugal	20.9	34.4	43.4	50.4	41.8
Romania	29.1	49.1	:	55.2	42.9
Slovakia	13.5	31.5	48.5	54.3	41.1
Slovenia	12.9	25.8	39.3	47.9	31.4
Spain	17.6	36.1	52.2	50.6	42.1
Sweden	16.1	38.6	40.0	50.0	42.5
United Kingdom	15.9	31.2	46.1	46.1	41.2
Bulgaria	18.0	34.9	:	52.4	43.8
Iceland	15.1	29.9	53.0	:	33.8
Israel	10.6	21.6	33.6	44.7	24.6
Norway	15.7	28.2	45.5	48.8	37.6
Switzerland	16.5	23.3	33.8	41.3	30.8
Turkey	25.5	27.4	40.5	41.6	35.7

Source: WiS database DG Research, EU-25 calculated by DG Research
Exceptions to the reference year: TR: 2000; FR: 2001; AT: 2002; CY, NO, PT: 2003
FTE instead of HC: NL, IL (2001)
Data unavailable: IE, LU; Grade C unavailable: BG, FR, RO; Grade D unavailable: BG, FR, IT, LV, IS, PL
BE-sum of BE-FL + BE-FR
Data estimated: SI
Data are not necessarily comparable between countries due to differences in coverage and definitions

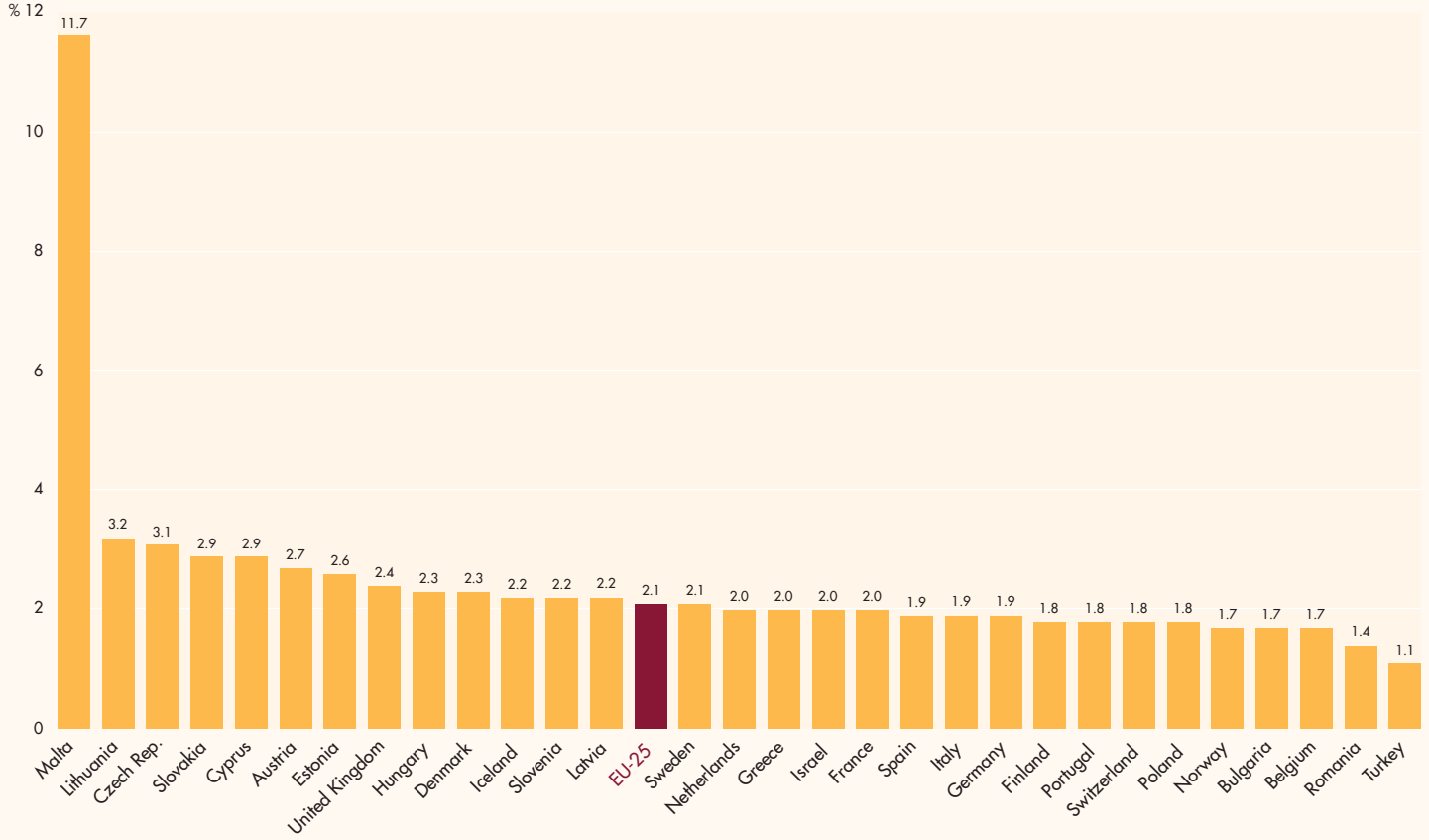
Figure 3.3: Percentage of grade A among all academic staff by sex, 2004



Source: WiS database DG Research, EU-25 calculated by DG Research
Exceptions to the reference year: TR: 2000; FR: 2001; AT: 2002; CY, NO, PT: 2003
FTE instead of HC: NL, IL (2001)
Data unavailable: IE, LU; Grade C unavailable: BG, FR, RO; Grade D unavailable: BG, FR, IT, LV, IS, PL

BE-total of BE-FL + BE-FR
Data are not necessarily comparable between countries due to differences in coverage and definitions

Figure 3.4: Glass Ceiling Index, 2004



Source: WiS database DG Research, EU-25 calculated by DG Research
Exceptions to the reference year: TR: 2000; FR: 2001; AT: 2002; CY, NO, PT: 2003
FTE instead of HC: NL, IL (2001)
Data unavailable: IE, LU; Grade C unavailable: BG, FR, RO
Country with small numbers: MT, CY, IS

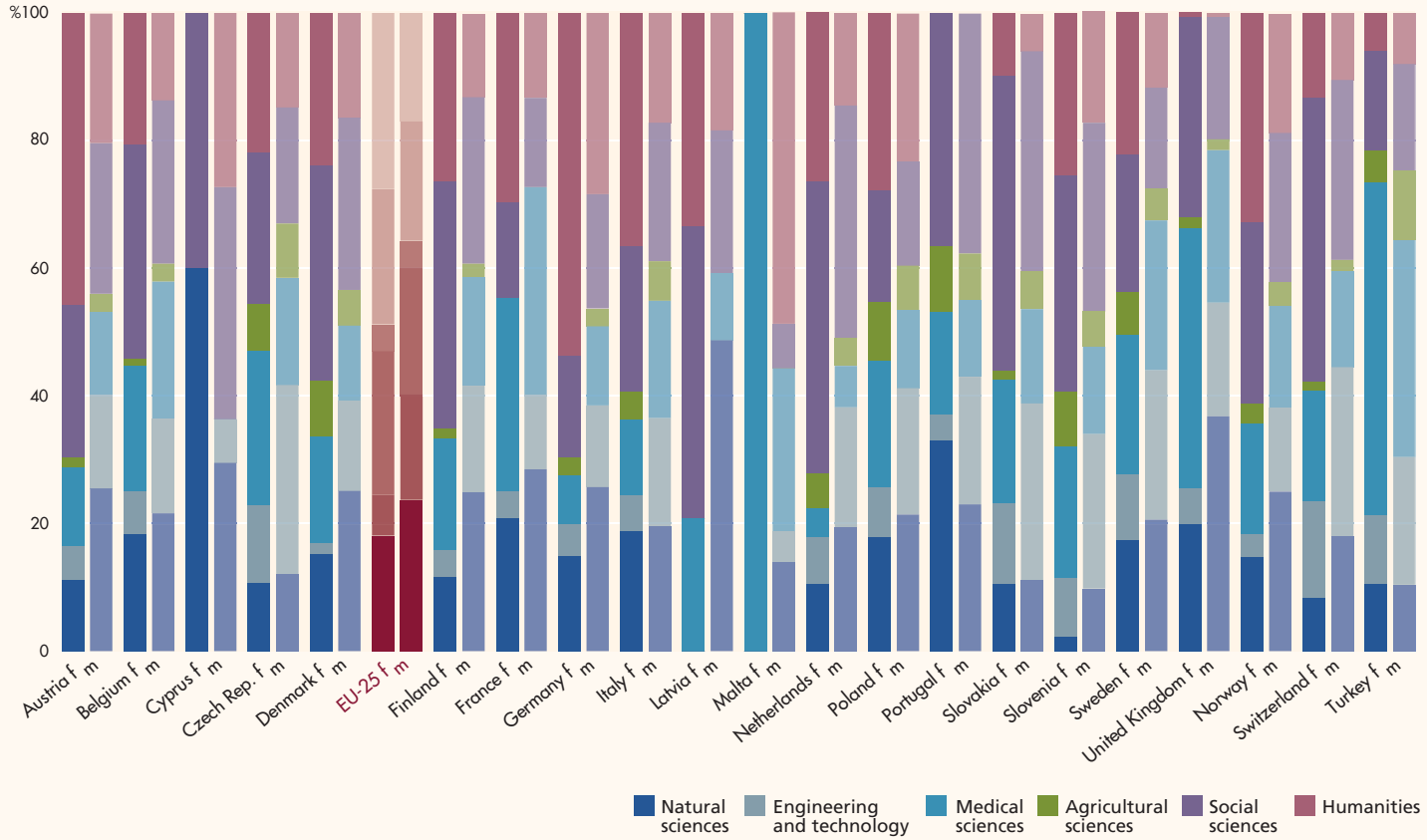
BE: sum of BE-FL + BE-FR
Data estimated: SI
Data are not necessarily comparable between countries due to differences in coverage and definitions

Table 3.2: Proportion of female grade A staff by main field of science, 2004

	NATURAL SCIENCES	ENGINEERING AND TECHNOLOGY	MEDICAL SCIENCES	AGRICULTURAL SCIENCES	SOCIAL SCIENCES	HUMANITIES
EU-25	**11.3**	**5.8**	**15.6**	**14.9**	**16.6**	**23.9**
Austria	4.4	3.7	8.9	5.6	9.6	19.1
Belgium	7.7	4.2	8.3	3.6	11.5	13.0
Cyprus	18.8	0.0	-	-	11.1	0.0
Czech Republic	9.2	4.5	14.2	9.1	13.0	14.5
Denmark	6.9	1.4	14.9	16.2	13.2	15.2
Finland	11.3	6.3	21.6	16.0	28.6	35.1
France	12.3	6.5	15.3	:	17.0	30.1
Germany	5.6	3.8	5.8	8.9	8.0	16.3
Italy	15.9	6.1	11.1	11.8	17.1	29.4
Latvia	0.0	:	38.5	:	39.3	36.4
Malta	0.0	0.0	8.3	0.0	0.0	0.0
Netherlands	5.3	3.1	6.3	11.0	11.5	16.3
Norway	9.9	4.9	16.8	14.0	18.3	24.6
Poland	16.9	8.7	28.2	24.3	20.6	22.5
Portugal	27.5	5.0	26.2	27.0	20.4	X
Slovakia	13.0	6.6	17.0	3.5	17.3	20.6
Slovenia	3.8	5.4	19.0	20.4	14.5	17.8
Sweden	11.7	7.1	15.3	18.2	19.7	25.8
United Kingdom	8.2	4.9	22.0	14.7	21.2	17.2
Switzerland	7.3	10.1	18.1	12.8	23.4	19.9
Turkey	25.7	15.6	34.5	13.6	24.3	20.3

Source: WiS database DG Research, EU-25 calculated by DG Research
Exceptions to the reference year: LV, TR: 2000; FR: 2001; AT: 2003; CY, NO, PT: 2003
FTE instead of HC: NL, IL (2001)
Data unavailable by field of science: BG, EE, EL, ES, IE, IS, HU, IL, LT, LU, RO
BE: sum of BE-FL + BE-FR
PT: H included in SS
Data are not necessarily comparable between countries due to differences in coverage and definitions

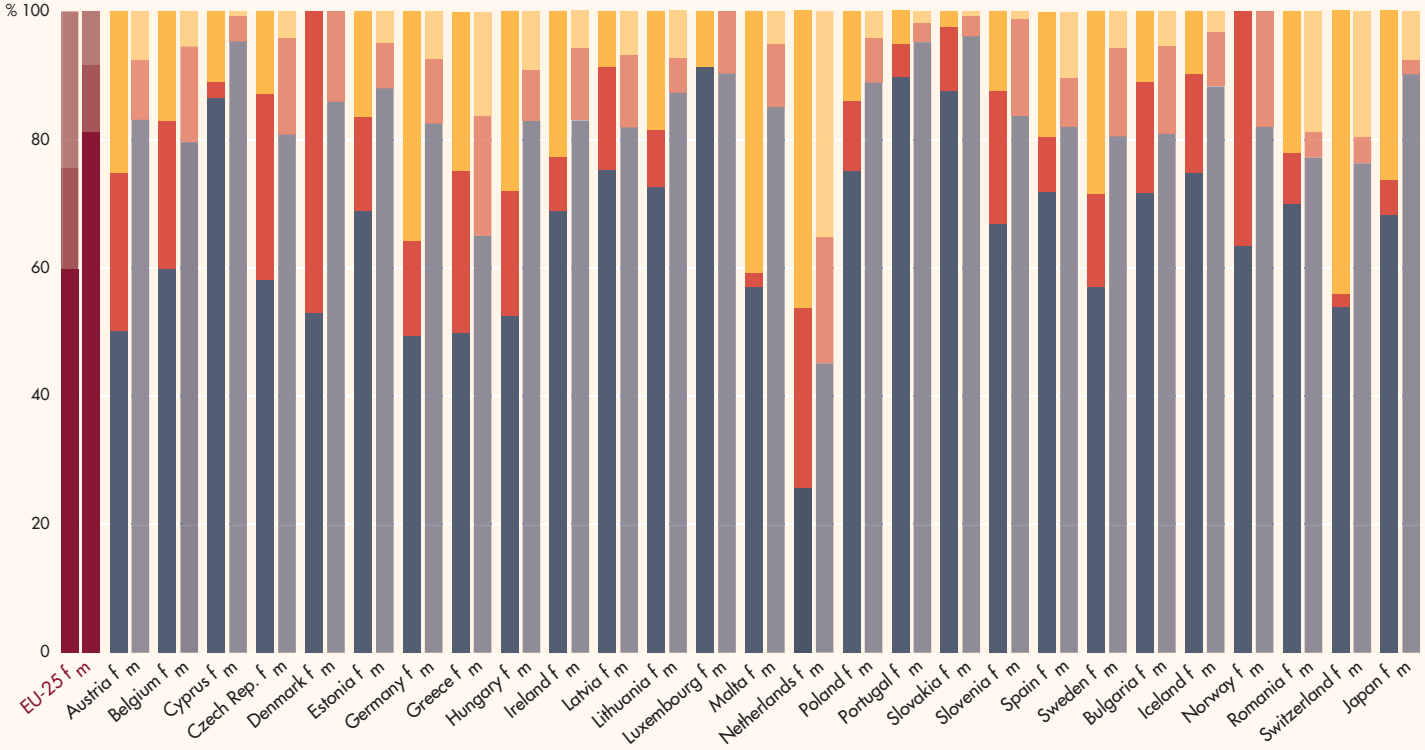
Figure 3.5: Distribution of grade A staff across fields of science by sex, 2004



Source: WiS database DG Research, EU-25 calculated by DG Research
Exceptions to the reference year: LV, TR: 2000; FR: 2001; AT: 2002; CY, NO, PT: 2003
FTE instead of HC: NL, IL (2001)
Data unavailable by field of science: BG, EE, EL, ES, IE, IS, HU, IL, LT, LU, RO

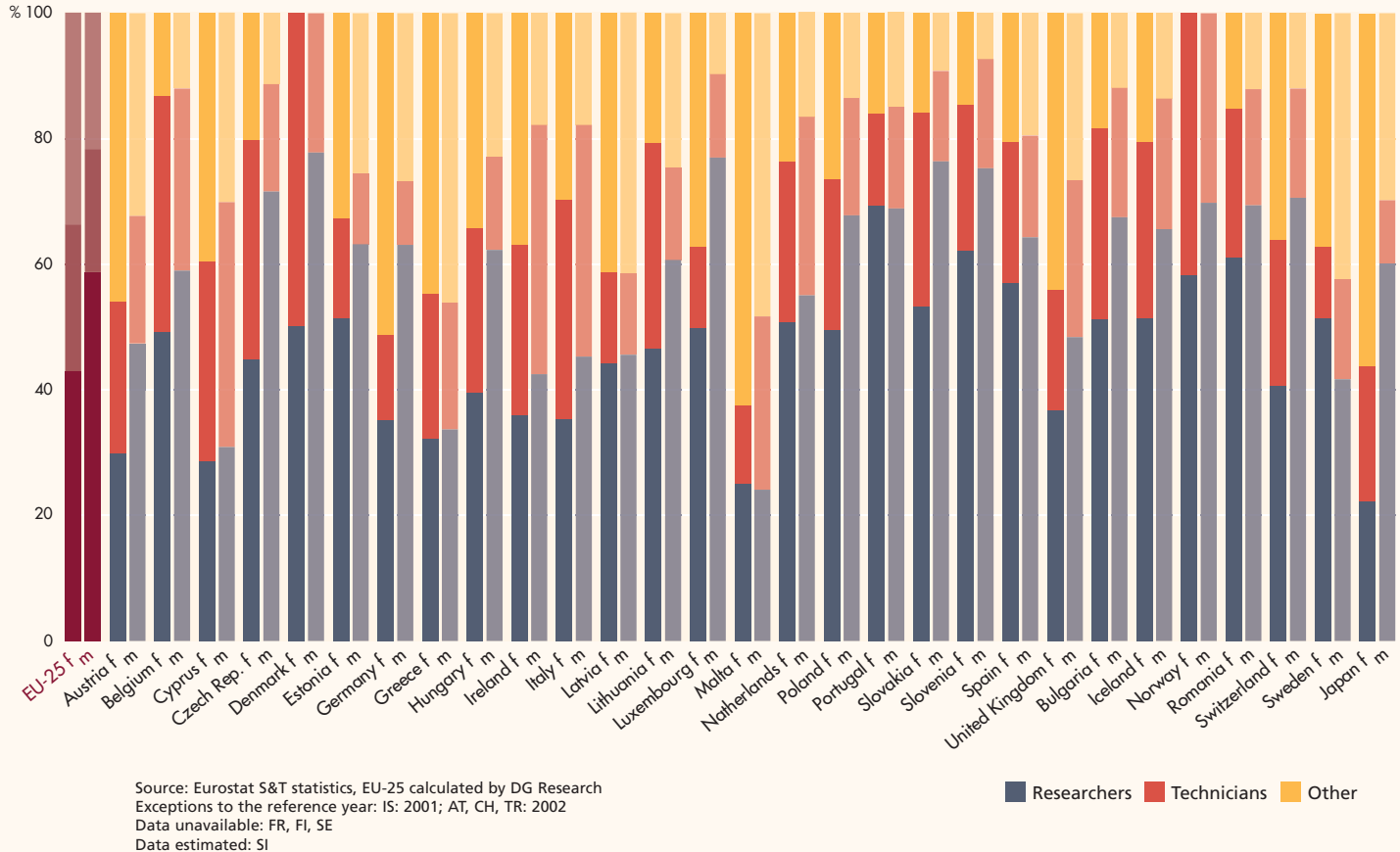
BE: Sum of BE-FL + BE-FR
PT: H included in SS
Data are not necessarily comparable between countries due to differences in coverage and definitions

Figure 3.6: Distribution of R&D personnel across occupations for the Higher Education Sector (HES) by sex, 2003



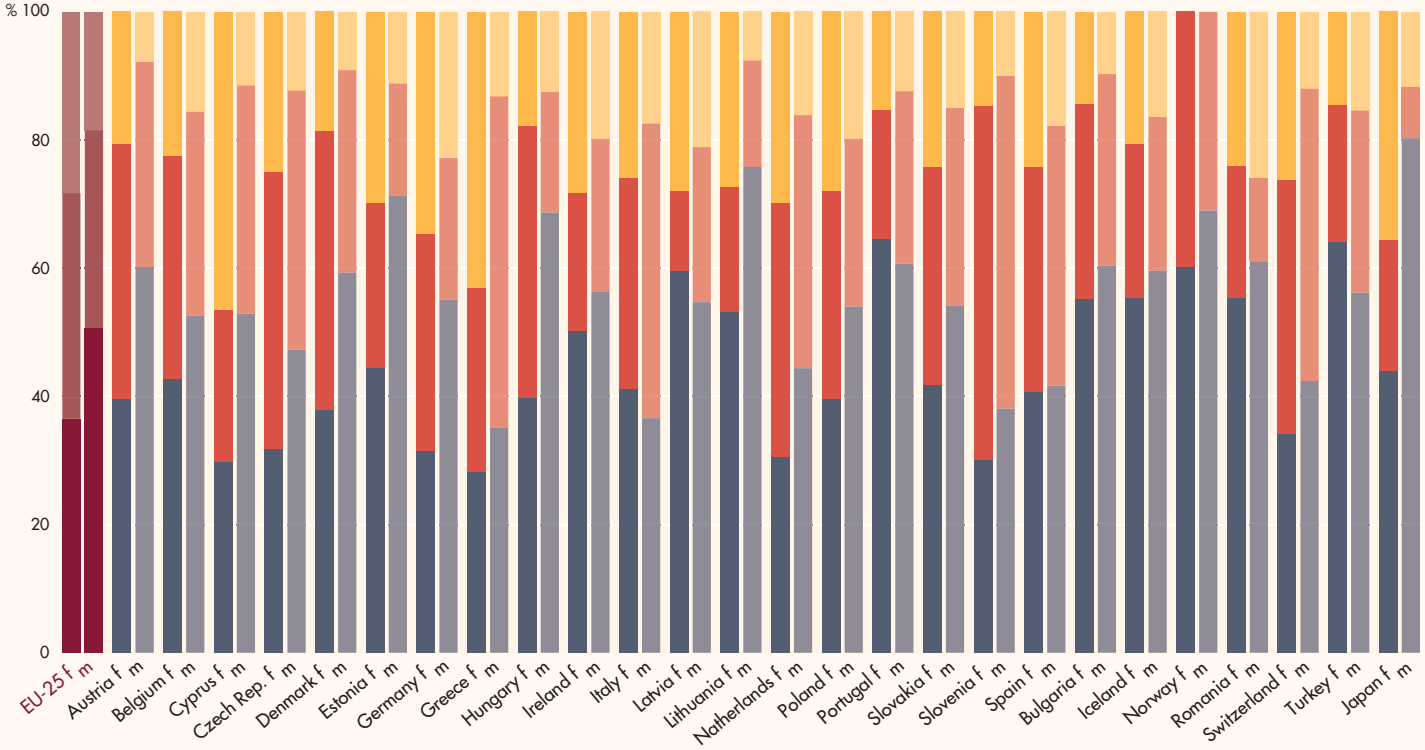
Source: Eurostat S&T statistics, EU-25 calculated by DG Research
Exceptions to the reference year: SE: 2001; AT, CH: 2002
Data unavailable: FR, IT, FI, UK
NL, SI: Data estimated
IE: Data provisional

Figure 3.7: Distribution of R&D personnel across occupations for the Government Sector (GOV) by sex, 2003



Source: Eurostat S&T statistics, EU-25 calculated by DG Research
Exceptions to the reference year: IS: 2001; AT, CH, TR: 2002
Data unavailable: FR, FI, SE
Data estimated: SI
Break in series: NL

Figure 3.8: Distribution of R&D personnel across occupations for the Business Enterprise Sector (BES) by sex, 2003



Source S&T statistics Eurostat, EU-25 calculated by DG Research
Exceptions to the reference year: CH, PL: 2000; EL: 2001; AT, BE, IT, TR: 2002
Data unavailable: FR, LU, MT, FI, SE, UK

Setting the scientific agenda

4. Setting the scientific agenda

Chapter 3 examined the extent to which women hold senior posts in higher education and as researchers in the three major sectors of higher education, government and business and enterprise. Seniority within the employment hierarchy was taken as a primary indicator of the extent to which women are able to contribute to the development of the research agenda through decision-making and leadership. The extent to which influence of this kind is gender-biased is further explored in chapter 4 through a number of other indicators, principally those concerned with access to funds, membership of scientific boards, and pay.

Research funding

Figure 4.1 shows the difference in the success rates for funding between women and men. This is a move away from the data presented on research funding in *She Figures 2003* and is a more realistic and fair way to look at the success rates given that the data are not comparable across countries due to differences in coverage within each of the national systems. A positive result shows higher success rates for men and a negative result shows higher success rates for women. In general we can see that there is not a huge amount of difference between women and men. Out of the 26 countries presented, 17 show higher success rates for men and 9 show higher success rates for women. Of these 17 countries, all but 2 show a difference of more than 10% between women and men; Cyprus (13.5%) and Austria (11%). Of the 9 countries which show greater success rates for women, the scale varies from -0.8% (Estonia) to (-4.7%) Slovakia.

It must always be remembered, however, that women are in a minority in many of the key subjects for which research funding is sought, so that equal rates of success disguise continuing differences of numbers. Furthermore, the success rates are calculated only in relation to the numbers who applied, and one needs to know, in addition, the size of the pool of potential applicants in order to determine whether men and women are applying in proportion to their presence in that pool. Only if that is the case will equal success rates indicate equitable access to the funds available. Further analysis is therefore needed in order to understand the application patterns that lie behind the success rates, since access to funds is not simply about how awards are made; it is also about the rate at which men and women apply, whether there are gender differences at this stage and, if there are, whether it is possible to remedy any perceived or actual deterrents.

Board membership

A complementary measure of women's participation in developing the research agenda is their presence on scientific boards, shown in Figure 4.2. The information here encompasses all disciplines, humanities and social sciences, as well as the S & T fields. In the light of the evidence of gender-bias in many of the sciences, which has been repeatedly revealed by the data in the preceding

chapters, the question has to be asked whether a breakdown by broad fields would reveal even lower female representation in particular fields. This is a level of analysis that is relatively straightforward in Member States where there are specific grant-awarding bodies for each of the main fields of research. However, even where there is an umbrella organisation, the processes of strategic planning, policy development and the awarding of grants may well be sub-divided in order to deploy appropriate expertise, so that further investigation of gender-balance within sub-groups is likely to be possible, leading in turn to the development of policies and practices which produce more equitable representation. What lies behind the present figures varies by country, partly because of structural differences in the way the research agenda and its associated funds are organised and managed, and partly because there are not — and probably never can be — standard definitions about what is reported for this particular data-set. There is thus a certain ad hoc quality about what countries choose to count for this purpose. However, it is clear that women are seriously under-represented on scientific boards in a majority of EU countries. In the Member States, women constitute more than 40% of board members only in Finland and Sweden; and below these two countries, only the UK and Denmark are above 30%. Norway and Bulgaria have a better gender-balance than most of the EU in this respect, and Iceland also performs relatively well. For the majority of EU countries, by contrast, the presence of women on scientific boards varies from between one in five, to rather less than one in ten, which is a striking imbalance.

Share of national research funding

Access to grant funding and participation in the decision-making processes through board membership, presented in figures 4.1 and 4.2, are important means of measuring gender-balance in research, both because of their practical impact and because of their iconic value as high-status forms of recognition. In fact, however, if the female share of R&D funding is to be fully assessed, one needs a broader analysis of the overall funding of research throughout the main economic sectors of higher education, government, and business and enterprise. Figures 4.3 and 4.4 provide some basic data on this more comprehensive assessment of research expenditure. In order to compare the data across countries and avoid the differences that arise due to different national currencies and exchange rates, results for both figures are calculated based on purchasing power parities (PPPs) and presented in purchasing power standard (PPS) rather than Euros. PPPs are defined as currency conversion rates that both convert to a common currency (PPS) and equalise the purchasing power of different currencies eliminating the differences in price levels between countries. This means that a given sum of money, when converted into PPS at the PPP rate, will buy the same basket of goods and services in all countries, thus making comparability across countries more precise.

Figure 4.3 cross references the percentage of female researchers with R&D expenditure *per capita* researcher. It is interesting to note that the 9 countries (Latvia, Estonia, Lithuania, Slovakia, Poland, Romania, Bulgaria, Portugal and Turkey) with low levels of expenditure *per capita* researcher (less than 40,000 PPS) have the highest proportion of women among all the countries.

The countries with the highest R&D expenditure *per capita* researcher are Luxembourg (180,000 PPS) and The Netherlands (170,000 PPS) followed closely by Switzerland (150,000 PPS), Italy (140,000 PPS) and France (135,000 PPS). It is interesting to note that Luxembourg and The Netherlands have the lowest proportion of female researchers at 18% and 17% respectively. The EU average of R&D expenditure per capita researcher is 130,000 PPS with the proportion of female researchers at 29%.

Figure 4.4 presents the R&D expenditure *per capita* researcher by economic sectors, higher education, business and enterprise and government. From this figure it is clear to see that in almost all countries (except France, Ireland, Greece and Cyprus) R&D expenditure *per capita* researcher is highest in the business and enterprise sector. As we have seen from chapter 1, women are significantly under-represented in the BES with the EU average at only 18%. France, Ireland, Greece and Cyprus show higher R&D expenditure *per capita* researcher in the government sector. From Figure 4.3 and 4.4 we can see a pattern emerging where the highest proportion of women are to be found in the countries and sectors with the lowest R&D expenditure and the lowest proportions of women are to be found in the sectors with the highest R&D expenditure.

While more analysis and study is required to truly understand the dynamics of this situation, these figures show that men are concentrated more than women in the sectors with the highest expenditure and this may be a factor in their decision to opt for certain sectors. Unfortunately due to unavailability of data, it is not yet possible to cross reference researchers by field of science with R&D expenditure *per capita* researcher by fields of science. However it is likely that we would see the same pattern emerging.

Gender pay-gap

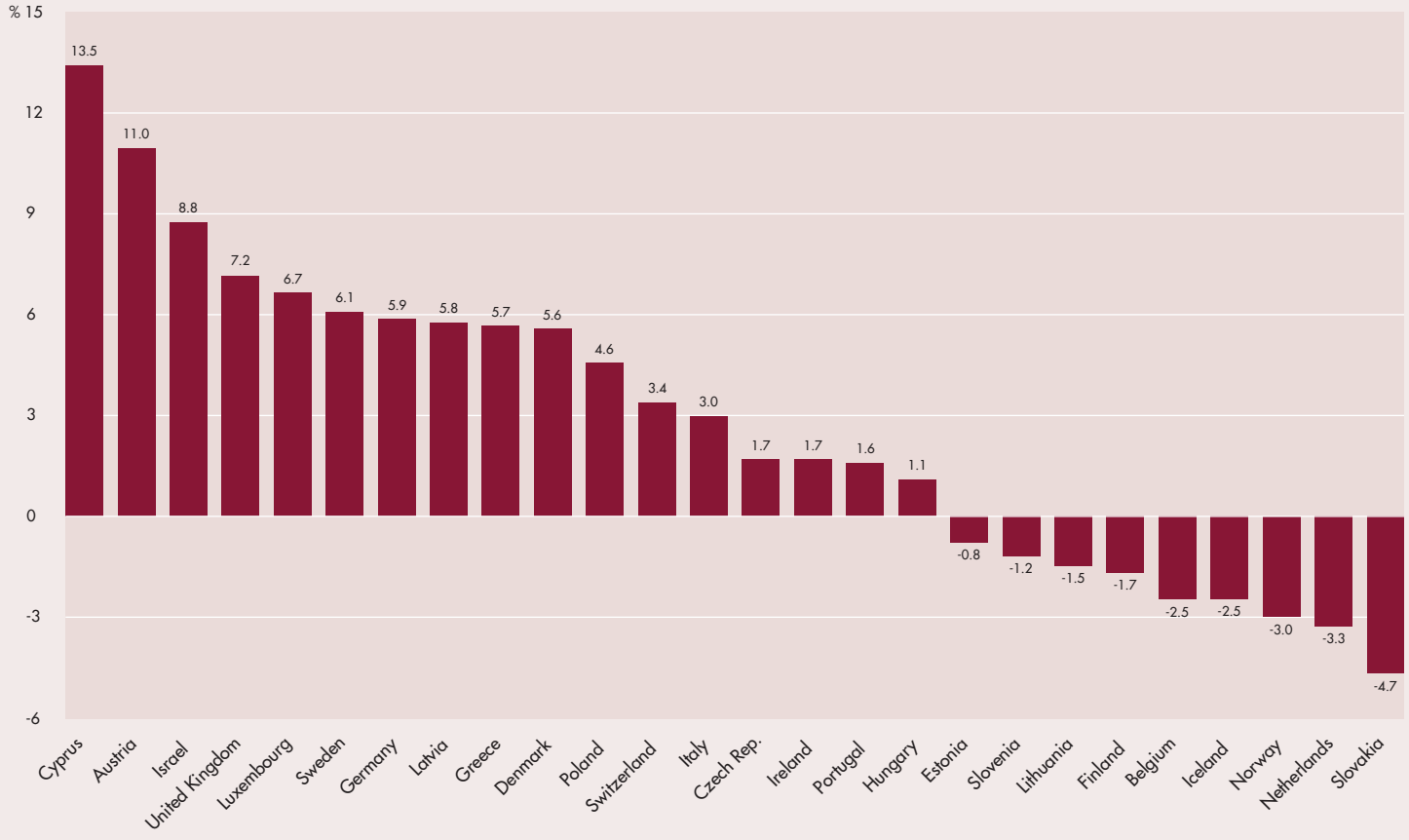
The final analysis is of the gender pay-gap both as an indicator covering the whole economy (fig. 4.5) and also by selected occupational groups in private enterprise (table 4.1). The official measure for the overall EU gender pay gap covering the entire economy currently stands at 15%, a slight improvement from 2002 at 16% (fig. 4.5). When we analyse the gender pay-gap per country we can see that the widest gaps are being portrayed by Cyprus (25%), Estonia, Slovakia (24%), Germany (23%) and the United Kingdom (22%) while the narrowest gaps are found in Malta (4%), Portugal (5%) and Belgium (6%). Wide variation can be seen among countries and it is interesting to note that all the Nordic countries lie above the EU average. While the data in Figure 4.5 provides an overview of the situation, they are collected as one single percentage figure from each country and therefore do not allow any deeper analysis.

Table 4.1 on the other hand shows the gender pay-gap for a selection of occupations in private enterprise. The figures are derived from the Structure of Earnings Survey and based on the international Standard Classification of Occupations (ISCO). The figures are for the EU as a whole only and may vary considerably within Member States, but the recurrent scale of the gap is striking.

Three occupations were selected which were deemed the most relevant for the purpose of this publication. The first group selected relate to decision making occupations (ISCO 100 Legislators, senior officials and managers) and although not specific to research they show a wide gender gap. The gap is widest for managers of small enterprises (30%) while the gap for corporate managers stands at 20%. The second group

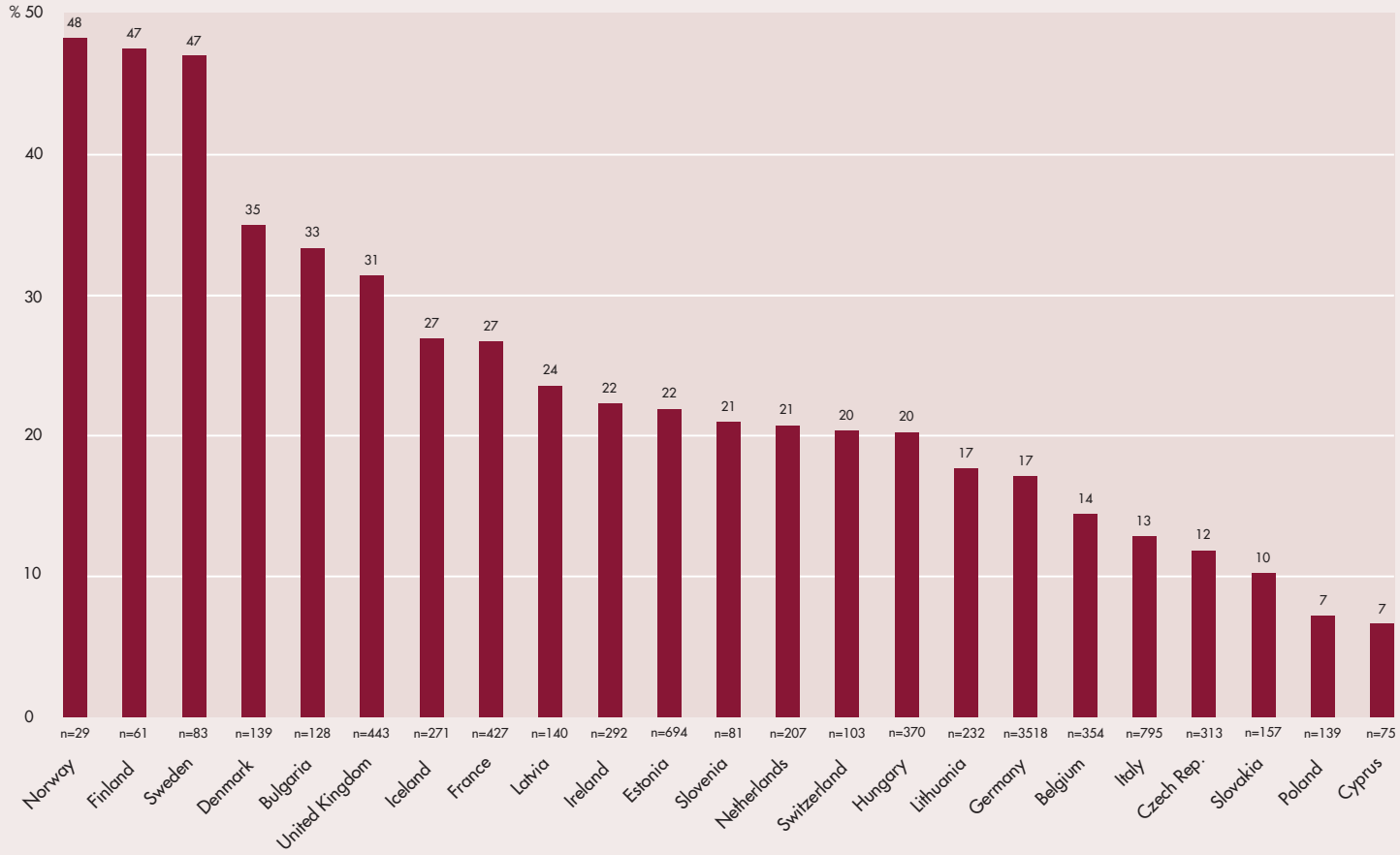
selected refer to "Professional" occupations (ISCO 200) and the third "Technical and Associate Professional" occupations (ISCO 300). From the "professional" group we can see that the gap for the physical, mathematical and engineering science professionals is 15% and slightly higher for this same group in Technical and Associate professionals at 19%. Life science and health professionals show the widest gap in the Professional group at 27% yet the narrowest gap in Technical and Associate professionals at 10%. The causes of the difference are complex and these too may vary at the national level, but in light of the data analysed in chapters 1-3, a major factor could be the difference in the proportional distribution of men and women across the vertical grading structures.

Figure 4.1: Research funding success rate differences[1] between women and men, 2004



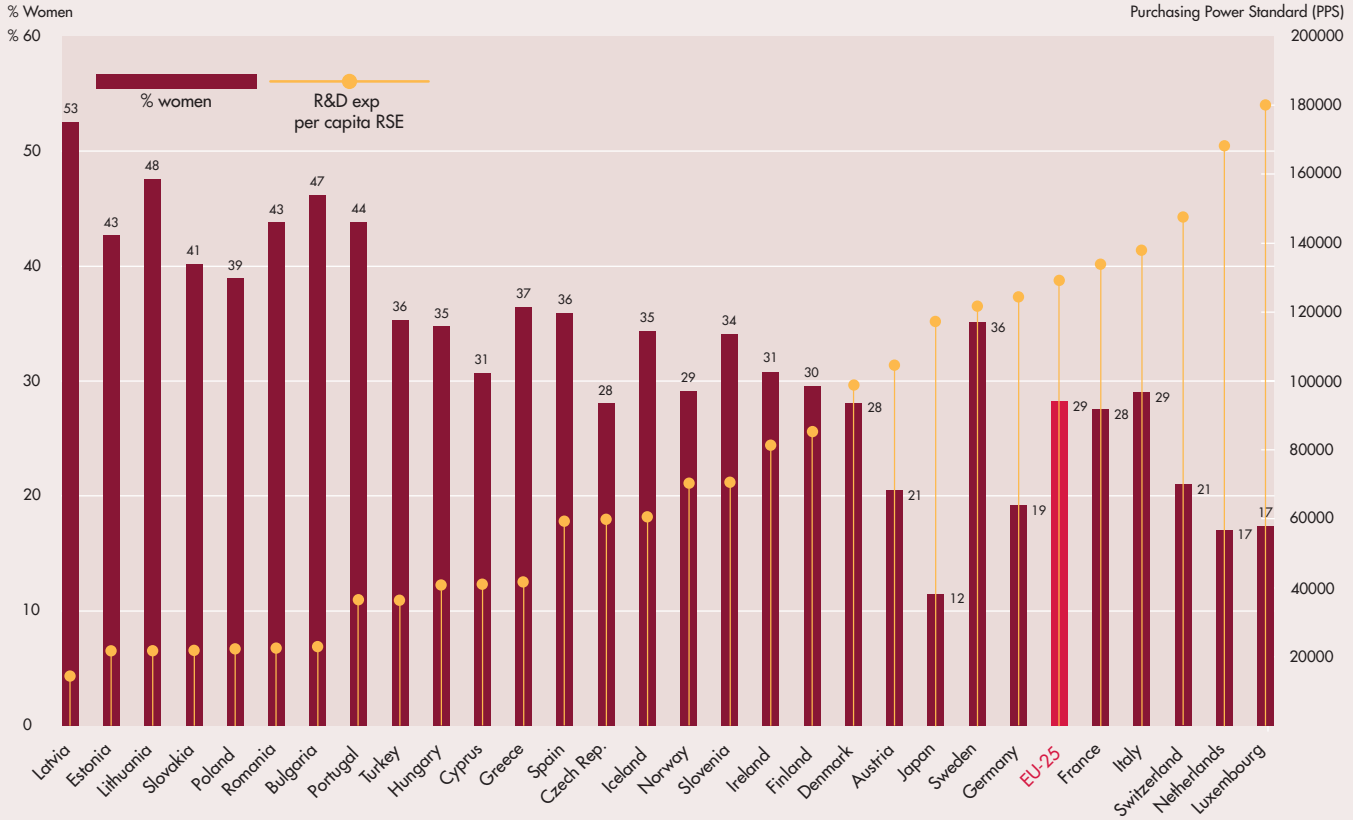
Source: WiS database DG Research
Exceptions to the reference year: AT, SE: 1999; IL: 2000; EI, LU, NL, LT: 2002; IE, IT: 2003
Data unavailable: ES, FR, MT, BG, RO, TR,
BE: Flemish community only
Data are not necessarily comparable between countries due to differences in coverage and definitions
[1] Success rate men minus success rate for women

Figure 4.2: Proportion of women on scientific boards, 2004



Source: WiS database DG Research
Exceptions to the reference year: FR, PL, SE: 2002; BG, IT, LV: 2003
Data unavailable: AT, EL, ES, LU, MT, PT, RO, TR, IL
BE: French community only
Data are not necessarily comparable between countries due to differences in coverage and definitions

Figure 4.3: Proportion of female researchers and R&D expenditure in Purchasing Power Standards (PPS) *per capita* researcher, 2003



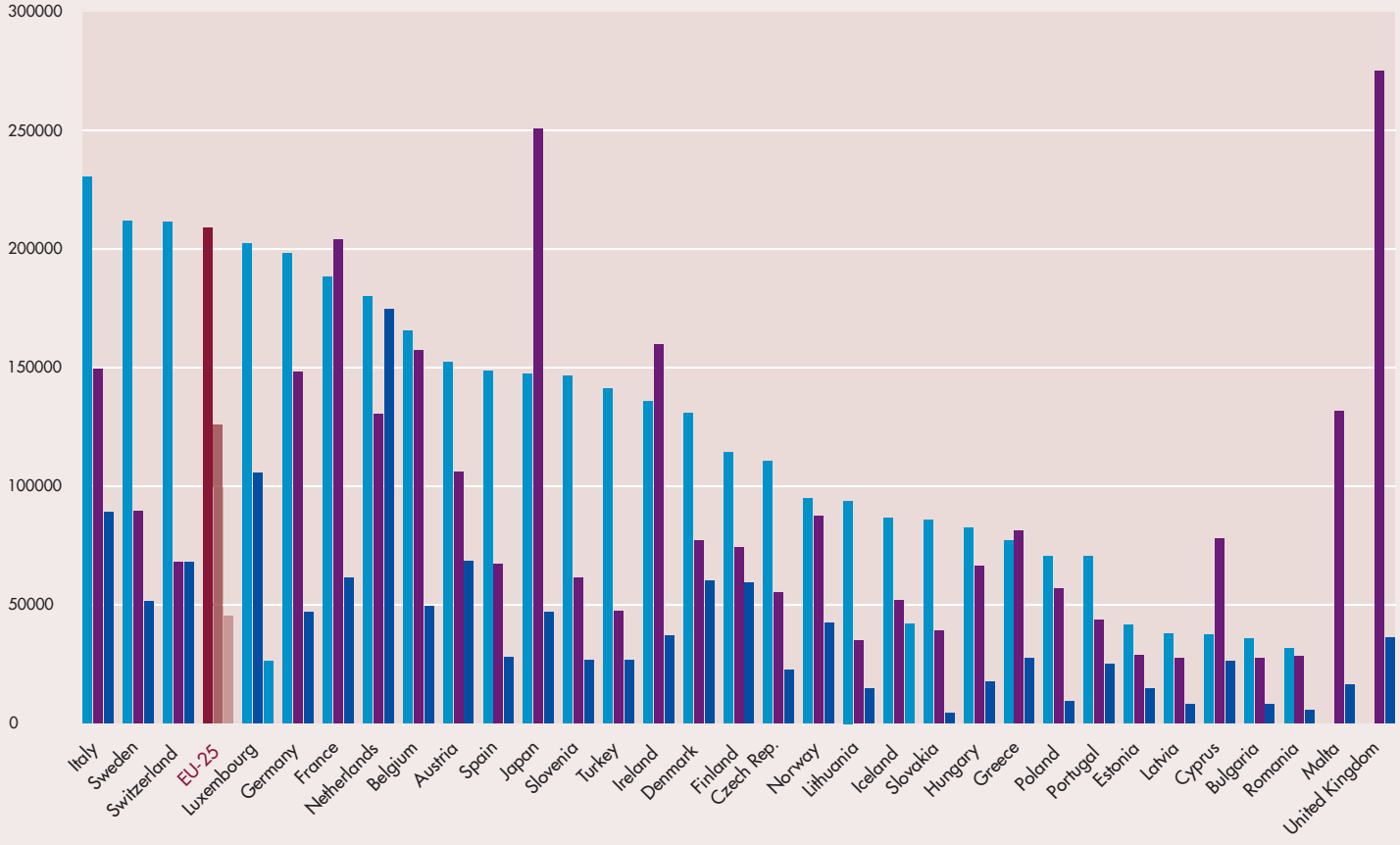
Purchasing power parties (PPP_s) are defined as currency conversion rates that both convert national currencies to a common currency and equalise the purchasing power of different currencies. Purchasing power standard (PPS) is the artificial common currency into which national currencies are converted

Source: Eurostat S&T Statistics

Researchers
EU-25 calculated by DG Research
Exceptions: PL: 2000; AT, FI, TR: 2002
Data unavailable: MT, UK

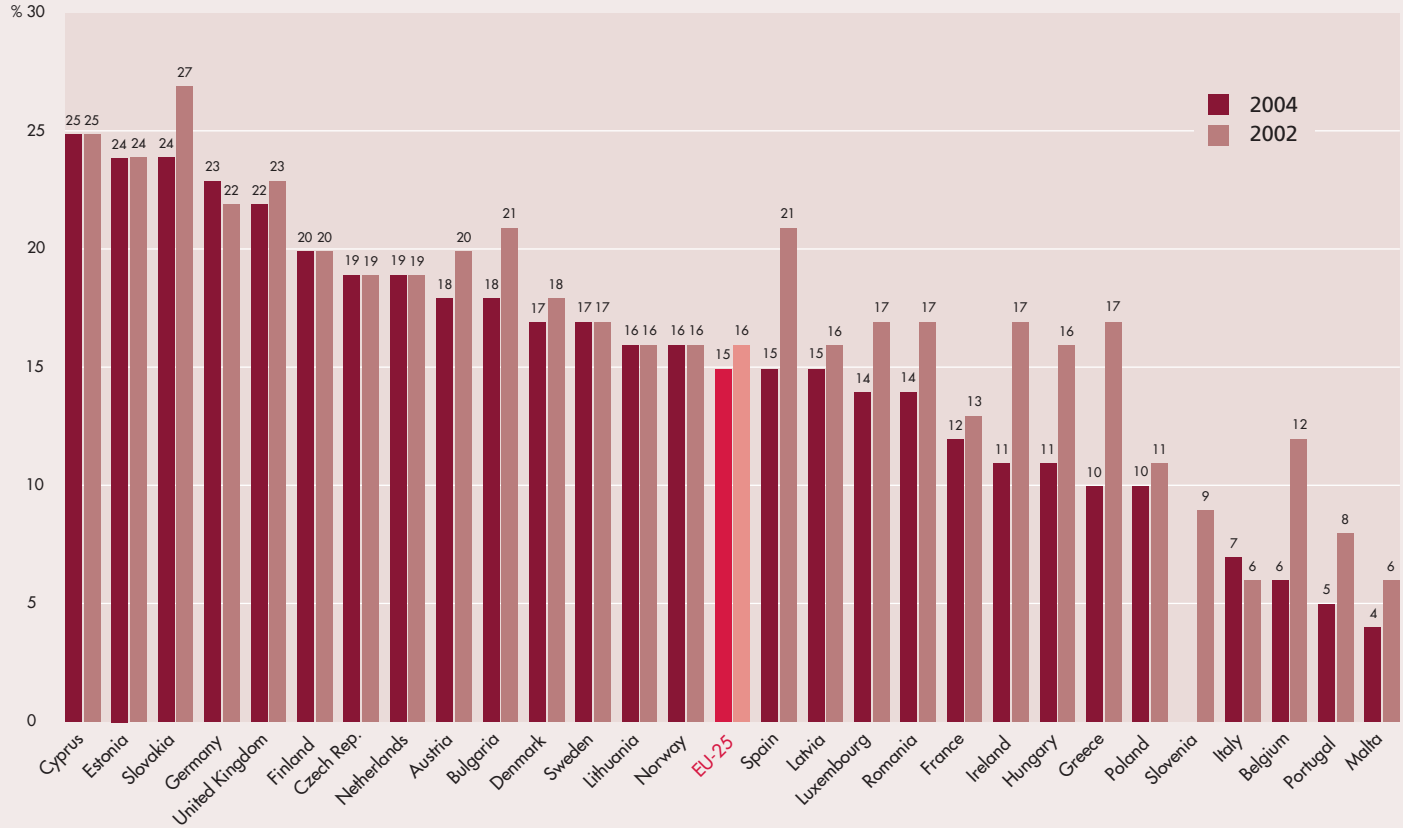
R&D Expenditure
EU-25 calculated by Eurostat
Revised value: DK, IE; Provisional value: EL; Estimated value: SI, AT
Data unavailable: TR, CH

Figure 4.4: R&D Expenditure in Purchasing Power Standards (PPS) per annum, *per capita* researcher by R&D sector, 2003



Source: Eurostat S&T statistics
Exceptions to the reference year: AT, BE (BES), FI (BES & GOV), TR, CH (HES & GOV): 2002; CH (BES): 2000
Data unavailable: MT (BES); UK (BES)
Estimated value: SI

Figure 4.5: Gender Pay-Gap covering whole economy, 2002 and 2004



Gender Pay-Gap = the difference between average gross hourly earnings of male paid employees and of female paid employees as a percentage of average gross hourly earnings of male paid employees.

Source: Eurostat economy and finance statistics, EU-25 estimated by Eurostat
Exceptions to the reference year 2004: FI: 2003
Exceptions to the reference year 2002: AT, BE, IE, IT: 2001
Data unavailable: TR, IS, CH; Break in series 2004: BE, PT, RO; Provisional value 2004: IE, IT

Table 4.1: Gender Pay-Gap by selected occupations in private enterprise, EU-25, 2002

	Gender Pay Gap
ISCO Codes	
100 Legislators, senior officials and managers	
110 Legislators, senior officials and managers	26
120 Corporate managers	20
130 Managers of small enterprises	30
200 Professionals	
210 Physical, mathematical and engineering science professionals	15
220 Life science and health professionals	27
230 Teaching professionals	14
240 Other professionals	26
300 Technicians and associate professionals	
310 Physical and engineering science associate professionals	19
320 Life science and health associate professionals	10
330 Teaching associate professionals	19
340 Other associate professionals	20

Gender Pay-Gap = the difference between average gross hourly earnings of male paid employees and of female paid employees as a percentage of average gross hourly earnings of male paid employees.

Source: Eurostat Structure of Earnings Survey (SES2002)

Annexes

Annex 1.1: Number of ISCED6 Graduates by sex 1999-2003

	1999		2000		2001		2002		2003	
	Women	Men	Women	Men	Women	Men	Women	Men	Women	Men
EU-25	**28691**	**46529**	**31006**	**48241**	**32752**	**49577**	:	:	**37720**	**50395**
Austria	635	1208	648	1142	695	1176	799	1326	891	1306
Belgium	0	0	390	757	420	897	506	907	509	923
Cyprus	0	0	10	3	0	3	2	0	1	0
Czech Republic	256	571	258	637	370	696	455	872	545	1001
Denmark	332	579	349	569	363	596	365	596	402	591
Estonia	69	66	66	51	77	72	112	76	132	94
Finland	823	1068	823	974	825	972	838	913	857	902
France	4070	5833	4445	5959	4445	5959	0	0	3514	4906
Germany	8186	16359	8852	16928	8752	16044	8672	15166	8724	14319
Hungary	493	736	274	443	301	492	440	543	458	609
Ireland	272	306	236	265	254	318	209	311	338	330
Italy	1877	1680	2054	1990	2065	1912	2303	2153	3231	3120
Latvia	33	17	19	21	18	19	37	15	43	21
Lithuania	113	130	212	230	137	124	218	169	155	97
Luxembourg	-	-	-	-	-	-	-	-	-	-
Malta	3	3	0	6	0	11	3	5	3	5
Netherlands	744	1739	806	1683	797	1736	984	1572	1063	1521
Poland	1655	2345	0	0	1832	2568	1957	2443	2434	3016
Portugal	1206	1152	1305	1199	1416	1376	1589	1402	2085	1638
Slovakia	155	260	171	275	212	320	298	436	1172	954
Slovenia	103	157	114	182	146	152	144	174	152	215
Spain	2765	3542	2643	3364	2767	3686	3136	3769	3384	4095
Sweden	991	1925	1117	1932	1328	2060	1429	2088	1522	2036
Bulgaria	128	222	164	235	158	218	204	181	207	194
Iceland	0	1	1	1	3	0	2	3	2	4
Israel	378	422	405	454	:	:	:	:	:	:
Norway	252	444	219	439	264	504	272	468	286	428
Romania	:	:	:	:	:	:	:	:	12594	9247
Switzerland	887	1905	946	1799	948	1850	1000	1743	985	1700
Turkey	983	1632	789	1335	762	1223	833	1639	1055	1760
Japan	2103	8871	2365	9827	3002	10177	3157	10485	3611	10901
United Kingdom	4163	7176	4434	7134	5594	8553	5925	8308	6192	8743
United States	19346	26664	19780	25028	20176	24728	20452	23708	21644	24350

Source Eurostat Education, Israel Central Bureau for Statistics & Council for Higher Education, The Danish Institute for Studies in Research and Research Policy
Data unavailable: EL
Data not applicable as most students graduate abroad: CY, LU
Includes State examina rigorosa for 2003: SK

Annex 1.2: Number of researchers by sex, HC 1999-2003

	1999		2000		2001		2002		2003	
	Women	Men	Women	Men	Women	Men	Women	Men	Women	Men
Austria	:	:	:	:	:	:	8192	31365	:	:
Belgium	:	:	:	:	:	:	12313	31969	12592	31957
Cyprus	177	488	208	584	258	622	298	716	337	752
Czech Republic	7528	17346	7055	19118	7133	19439	9024	21611	8905	22516
Denmark	7661	20977	:	:	8355	21436	9955	28010	10415	26300
Estonia	1920	2643	1969	2601	2078	2725	2168	2921	2340	3084
Finland	12355	30808	:	:	:	:	15025	35190	:	:
France	:	:	:	:	:	:	64253	167563	66713	173473
Germany	:	:	:	:	:	:	:	:	75693	313692
Greece	12105	17454	:	:	9295	17045	:	:	10416	17868
Hungary	7554	17055	9537	18339	9363	18988	10039	19725	10647	19645
Ireland	:	:	:	:	:	:	4686	10826	5125	11382
Italy	26450	72174	27908	72263	28176	72266	31220	77662	31483	75971
Latvia	2021	2093	3033	3084	3050	2735	3159	2942	2926	2587
Lithuania	:	:	4542	5558	4801	5412	4536	4981	5101	5451
Luxembourg	:	:	:	:	:	:	:	:	353	1670
Netherlands	:	:	:	:	:	:	:	:	7825	37729
Poland	:	:	33572	54617	:	:	:	:	37065	57367
Portugal	12255	16120	12914	16847	13572	17574	14734	18767	15895	19960
Slovakia	:	:	:	:	:	:	6086	9299	6543	9565
Slovenia	2323	4398	2358	4204	2383	4357	2466	4561	2435	4646
Spain	38099	78496	:	:	49654	90753	52850	97248	57515	101051
Sweden	:	:	:	:	:	:	:	:	25391	46201
Bulgaria	5440	6895	4797	5730	4758	5688	4837	5608	5070	5806
Iceland	913	1867	:	:	1126	2117	:	:	1384	2133
Norway	8615	22346	:	:	9883	24981	:	:	10505	25195
Romania	11443	15049	9841	13338	10107	13490	10886	13750	11179	14789
Switzerland	:	:	7064	26181	:	:	:	:	:	:
Turkey	19317	38703	23173	44339	23663	43527	25407	45881	:	:
Japan	:	:	:	:	85207	707492	88674	702550	96133	734412

Source: Eurostat S&T statistics
Data unavailable: MT, UK
Data provisional: IE (2003)
Data estimated: PT (2000 & 2002); SI (2003): SE

Annex 1.3: Number of researchers in HES by sex, HC, 1999-2003

	1999		2000		2001		2002		2003	
	Women	Men	Women	Men	Women	Men	Women	Men	Women	Men
Austria	:	:	:	:	:	:	5216	12198	:	:
Belgium	3990	10196	:	:	4511	10695	7712	14701	7958	14417
Cyprus	76	202	84	242	103	262	136	310	172	383
Czech Republic	3656	6324	3522	7212	3504	7580	4483	8364	4205	8584
Denmark	2645	7040	2819	7238	3240	7593	4373	9311	4379	9611
Estonia	1298	1836	1434	1913	1502	1967	1607	2100	1696	2066
Finland	5936	8265	6041	8531	:	:	7324	6580	:	:
France	28714	61851	:	:	30971	64355	32778	66576	34835	67275
Germany	:	:	:	:	:	:	:	:	43593	130638
Greece	10097	12702	:	:	7236	11762	:	:	7567	12940
Hungary	4898	10558	6303	11457	6313	11958	6576	12072	6976	11995
Ireland	:	:	:	:	:	:	3180	5164	3580	5650
Italy	14448	36460	14970	36983	16372	38484	17590	39943	17371	39109
Latvia	1458	1544	2059	1974	2101	1987	2199	2013	2181	1970
Lithuania	:	:	3190	4005	3439	3800	3504	3801	4040	4264
Luxembourg	:	:	8	28	21	28	:	:	21	28
Malta	:	:	:	:	:	:	143	466	155	484
Netherlands	:	:	:	:	:	:	:	:	3589	8809
Poland	:	:	24925	39072	:	:	:	:	28758	42211
Portugal	7209	8908	7500	9197	7791	9485	8467	10124	9143	10763
Slovakia	:	:	:	:	:	:	4117	5984	4558	6444
Slovenia	954	1964	1007	1947	989	2010	1047	2009	985	2004
Spain	28406	53981	34235	59684	37181	61878	37388	63631	38670	63902
Sweden	11106	22393	:	:	12857	23737	:	:	16439	21141
United Kingdom	48575	87172	51218	88722	:	:	:	:	:	:
Bulgaria	1051	2193	875	1613	992	1845	1087	1929	1144	1880
Iceland	347	653	:	:	365	653	:	:	467	617
Israel	1078	3610	1125	3549	1140	3498	:	:	:	:
Norway	4839	9525	:	:	5418	9746	:	:	6099	10117
Romania	1551	2807	1643	2872	2470	3707	3061	4483	3841	5685
Switzerland	:	:	4070	11195	:	:	5317	14010	:	:
Turkey	17283	33355	20885	38409	21413	37250	23040	39167	:	:
Japan	49642	209370	51231	208528	54541	226169	56115	225189	57989	226341

Source: Eurostat S&T statistics
Data provisional: IE
FTE instead of HC: IL
Data estimated: SE

Annex 1.4: Number of researchers in GOV by sex, HC, 1999-2003

	1999		2000		2001		2002		2003	
	Women	Men	Women	Men	Women	Men	Women	Men	Women	Men
Austria	:	:	:	:	:	:	820	1548	:	:
Belgium	:	:	:	:	:	:	625	1487	648	1525
Cyprus	50	110	56	121	73	128	72	147	87	130
Czech Republic	2300	4093	2065	4624	2234	4853	2582	5268	2611	5386
Denmark	2355	4552	2197	4117	2251	4128	1077	2122	1143	2130
Estonia	383	375	349	326	361	249	363	242	379	258
Finland	2420	4027	2163	3609	:	:	2440	3553	:	:
France	5661	14121	8478	19091	7858	15154	3451	6870	8449	17927
Germany	:	:	:	:	:	:	:	:	11895	32040
Greece	1031	1715	:	:	1105	1763	:	:	1176	1851
Hungary	1708	3382	2008	3358	1842	3330	2189	3546	2323	3499
Ireland	:	:	:	:	:	:	185	402	204	462
Italy	6841	11329	7448	11064	6231	9995	6190	9896	6721	10668
Latvia	492	407	419	381	430	339	408	336	366	294
Lithuania	:	:	1199	1367	1114	1269	919	947	874	862
Luxembourg	:	:	81	183	97	210	111	220	104	261
Malta	:	:	:	:	:	:	17	16	2	7
Netherlands	:	:	:	:	1448	5793	:	:	2130	6414
Poland	:	:	5307	7054	3256	6523	3451	6870	6150	8814
Portugal	2927	2441	2924	2366	2921	2290	2915	2204	2909	2118
Slovakia	:	:	:	:	:	:	1201	1521	1286	1558
Slovenia	849	1114	862	1057	832	1013	839	1100	803	1053
Spain	5951	9922	6628	10443	7706	10981	7686	10451	9548	11919
Sweden	314	775	:	:	366	795	:	:	1237	2162
United Kingdom	:	:	:	:	:	:	3128	6720	3225	6787
Bulgaria	3716	3861	3301	3462	3146	3241	3188	3138	3235	3142
Iceland	306	515	:	:	206	472	:	:	430	592
Norway	1300	2671	:	:	1414	2663	:	:	1540	2790
Romania	2958	2897	2638	2752	2802	2962	2997	3085	3083	3187
Switzerland	:	:	149	621	:	:	231	753	:	:
Turkey	884	1867	976	2180	989	2500	1047	2757	:	:
Japan	:	:	:	:	4068	31924	4138	31914	4233	32035

Source: Eurostat S&T statistics
PNP included in GOV: FI, NO
Data estimated: SE

Annex 1.5: Number of researchers in BES by sex, HC, 1999-2003

	1999		2000		2001		2002		2003	
	Women	Men	Women	Men	Women	Men	Women	Men	Women	Men
Austria	:	:	:	:	:	:	2012	17383	:	:
Belgium	3429	15637	3450	16250	3784	17066	3838	17191	:	:
Cyprus	39	150	54	183	65	194	70	221	57	199
Czech Republic	1559	6816	1353	6865	1341	6777	1926	7862	2030	8387
Denmark	2531	9271	:	:	2779	9502	4423	16371	4821	14365
Estonia	232	419	164	343	190	486	170	555	226	727
Finland	3999	18516	:	:	:	:	4993	22120	:	:
France	:	:	17787	68429	19014	75360	21273	80417	21813	85588
Germany	:	:	:	:	21210	153830	:	:	20205	151014
Greece	940	2991	:	:	909	3466	:	:	1599	3012
Hungary	948	3115	1226	3524	1208	3700	1274	4107	1348	4151
Ireland	:	:	:	:	1415	5536	1321	5260	1341	5270
Italy	5161	24385	5490	24216	5573	23787	6110	25937	5872	24628
Latvia	71	140	555	727	518	405	550	590	379	323
Lithuania	:	:	153	186	248	343	113	233	187	325
Luxembourg	:	:	:	:	:	:	:	:	228	1381
Netherlands	:	:	:	:	2628	25685	:	:	2125	22404
Poland	:	:	3332	8464	:	:	:	:	:	:
Portugal	818	2510	1049	2928	1280	3345	1546	3818	1811	4291
Slovakia	:	:	:	:	:	:	765	1792	696	1559
Slovenia	506	1266	471	1114	512	1213	534	1324	569	1443
Spain	3353	13957	:	:	4000	17093	7547	22856	9080	25025
Sweden	:	:	:	:	:	:	:	:	7715	22898
Bulgaria	637	798	605	620	572	556	548	527	658	727
Iceland	197	645	:	:	389	834	:	:	420	854
Norway	2476	10150	:	:	3051	12572	:	:	2866	12288
Romania	6934	9345	5560	7714	4835	6821	4828	6182	4215	5871
Switzerland	:	:	2845	14365	:	:	:	:	:	:
Turkey	1150	3481	1312	3750	1261	3777	1320	3957	:	:
Japan	:	:	:	:	25359	436603	27204	432849	32596	465024

Source: Eurostat S&T Statistics
Data unavailable: MT, UK
Data provisional: BE (2002); EL (2001)
Break in series: DK (2002)
Data estimated: PT (2000 & 2002): SE

Annex 2.1: Number of ISCED 6 graduates by broad field of study and sex, 2003

	Education		Humanities & Arts		Social sciences, business & law		Science, Mathematics & Computing		Engineering, Manufacturing & Construction		Agricultural & Veterinary		Health & Welfare		Services & Unspecified	
	Women	Men	Women	Men	Women	Men	Women	Men	Women	Men	Women	Men	Women	Men	Women	Men
EU-25	**1718**	**1124**	**5873**	**5542**	**6483**	**8572**	**10110**	**15166**	**2575**	**9175**	**1748**	**1773**	**8755**	**8366**	**458**	**676**
Austria	79	42	153	169	353	460	133	307	61	261	89	46	18	7	5	14
Belgium	7	9	70	96	69	122	207	419	12	72	26	59	113	136	5	10
Cyprus	0	0	0	0	0	0	1	0	0	0	0	0	0	0	:	:
Czech Republic	14	7	67	71	100	150	147	254	92	321	40	69	79	108	6	21
Denmark	0	0	38	43	34	54	44	87	80	256	44	40	75	64	:	:
Estonia	1	1	10	7	10	6	7	25	3	14	3	5	95	36	3	0
Finland	84	42	135	98	163	153	132	174	92	269	20	28	205	114	26	24
France	49	51	758	607	665	941	1551	2491	202	577	10	8	259	203	20	28
Germany	242	218	998	1020	1287	2439	1819	4269	252	1961	486	409	3586	3933	54	70
Hungary	44	30	162	125	52	93	78	130	11	26	32	68	77	101	2	36
Ireland	3	3	68	60	25	28	172	132	24	53	6	13	37	36	3	5
Italy	29	11	485	344	568	560	1043	888	367	810	209	175	527	330	3	2
Latvia	10	2	10	5	12	0	4	3	6	10	1	0	0	1	:	:
Lithuania	0	0	30	8	46	26	17	19	18	23	1	1	43	20	:	:
Luxembourg	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Malta	1	0	2	4	0	1	0	0	0	0	0	0	0	0	:	:
Netherlands	0	0	99	127	216	229	203	303	90	363	97	122	358	377	:	:
Poland	0	0	671	630	259	347	453	451	224	704	301	259	489	547	37	78
Portugal	295	156	342	170	559	479	375	270	178	344	51	28	107	62	178	129
Slovakia	304	116	72	84	336	342	188	140	38	107	18	38	206	83	10	44
Slovenia	9	6	29	17	20	33	39	48	17	71	8	14	26	24	4	2
Spain	155	107	572	604	688	767	992	1139	116	429	134	191	637	655	90	203
Sweden	55	31	149	131	185	198	303	567	253	704	36	35	538	368	3	2
United Kingdom	337	292	953	1122	836	1144	2202	3050	439	1800	136	165	1280	1161	9	8
Bulgaria	12	11	54	25	32	32	47	42	16	35	13	15	31	24	2	10
Iceland	0	0	1	1	0	0	0	1	0	0	0	0	1	2	:	:
Israel	31	11	76	72	63	59	180	229	15	45	15	18	25	20	:	:
Norway	6	4	29	57	53	54	72	105	29	98	30	34	67	76	:	:
Romania	0	0	349	244	2211	2533	544	401	971	1562	178	308	8341	4199	:	:
Switzerland	13	11	85	105	131	322	221	530	42	235	73	54	410	450	24	36
Turkey	95	174	102	247	161	381	148	277	110	271	153	231	276	165	10	14
Japan	176	186	720	759	466	973	449	1809	295	2917	270	823	1170	3391	65	43
United States	4514	2323	3151	3742	5700	4500	3822	6939	988	4500	337	580	2707	1245	425	521

Source: Eurostat Education statistics, Israel Central Bureau of Statistics and the Council for Higher Education
Exception to the reference year: IL 2000
Data unavailable: EL
Most students graduate abroad and are not counted: LU, CY

Annex 2.2: Number of ISCED 6 graduates by narrow fields of study and sex in natural science and engineering (400 & 500 fields), 2003

	400 Science, mathematics and computing								500 Engineering, manufacturing and construction					
	Life science		Physical science		Mathematics & statistics		Computing		Engineering & engineering trades		Manufacturing & processing		Architecture & building	
	Women	Men	Women	Men	Women	Men	Women	Men	Women	Men	Women	Men	Women	Men
EU-25	**4765**	**3990**	**3656**	**7416**	**687**	**1488**	**346**	**1517**	**1190**	**5782**	**488**	**1037**	**583**	**1279**
Austria	77	76	39	140	11	34	6	57	36	188	12	21	13	52
Belgium	131	194	57	134	17	31	2	60	9	58	0	3	3	11
Cyprus	1	0	0	0	0	0	0	0	0	0	0	0	0	0
Czech Republic	83	80	48	120	13	28	3	26	65	261	10	11	17	49
Denmark	44	87	0	0	0	0	0	0	80	256	0	0	0	0
Estonia	2	5	4	18	0	2	1	0	2	11	1	0	0	3
Finland	62	38	53	82	12	23	5	31	69	223	12	16	11	21
France	712	622	697	1335	66	206	76	328	132	447	55	91	15	39
Germany	864	988	745	2516	164	424	46	341	108	1479	59	185	85	297
Hungary	34	45	34	57	7	21	3	7	1	2	9	19	1	5
Ireland	136	90	33	30	0	1	3	11	14	44	10	7	0	2
Italy	502	191	433	524	92	125	16	48	40	256	114	331	213	223
Latvia	2	1	0	1	0	0	2	1	5	7	1	2	0	1
Lithuania	8	1	6	15	3	1	-	2	15	19	-	-	3	4
Luxembourg	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Malta	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Netherlands	:	:	195	294	:	:	:	:	80	364	:	:	:	:
Portugal	127	47	143	109	84	60	21	54	96	247	33	31	49	66
Slovakia	100	40	68	71	18	21	2	8	22	70	7	19	9	18
Slovenia	26	14	10	19	1	4	2	11	7	60	2	5	8	6
Spain	410	342	444	505	92	136	46	156	57	299	22	13	37	117
Sweden	135	126	127	265	17	89	24	87	185	582	33	68	35	54
United Kingdom	1309	1003	715	1475	90	282	88	289	247	1273	108	215	84	311
Bulgaria	14	4	30	31	3	7	0	0	13	26	3	4	0	5
Norway	:	:	0	2	:	:	:	:	2	13	:	:	2	8
Romania	544	401	:	:	:	:	:	:	804	1340	-	-	167	222
Switzerland	121	163	86	283	10	35	4	49	40	197	0	0	2	38
Turkey	40	34	78	168	26	65	4	10	26	151	45	61	39	59
United States	2301	2737	1071	2798	275	745	175	659	919	4418	0	0	69	82

Source: Eurostat Education statistics
Exceptions to the reference year: NL, NO: 2002;
Data unavailable: EL, PL, IL
IS: Only 1 PhD graduate in 400 & 500 (physical science - male)
Most students graduate abroad and are not counted: LU, CY

Annex 2.3: Number of researchers in HES by fields of science and sex, HC, 2003

	Natural Sciences		Engineering & Technology		Medical Sciences		Agricultural Sciences		Social Sciences		Humanities		Other	
	Women	Men	Women	Men	Women	Men	Women	Men	Women	Men	Women	Men	Women	Men
Austria	1002	3644	307	2120	1646	2952	221	320	1028	1807	1012	1355	:	:
Cyprus	55	143	8	52	0	0	0	0	66	126	43	55	0	0
Czech Republic	443	1237	1012	3282	880	1303	370	538	1200	1677	300	547	:	:
Denmark	696	2282	217	1287	1527	2654	289	338	581	1329	1069	1721	:	:
Estonia	383	730	221	517	185	116	90	123	429	358	388	222	:	:
Germany	7445	34685	3197	24706	15141	29436	1733	3944	6924	16309	9153	21559	:	:
Hungary	712	1796	577	2623	1294	1563	347	760	1455	2423	2591	2830	:	:
Ireland	900	1400	600	1000	450	750	130	200	900	1500	600	800	:	:
Latvia	670	866	174	407	181	109	123	168	466	323	567	97	:	:
Lithuania	728	815	480	1264	735	309	144	159	1065	913	888	804	:	:
Luxembourg	1	1	0	6	1	1	0	0	6	10	2	1	0	20
Malta	12	64	9	80	114	191	0	8	105	143	32	81	0	2
Portugal	2807	2895	1080	2584	895	804	553	623	2604	2635	1204	1222	:	:
Poland	5167	8447	2751	11559	6737	5839	2592	2628	7268	8544	4243	5194	:	:
Slovakia	980	1712	958	2005	577	539	408	622	1103	1028	532	538	:	:
Slovenia	77	232	160	773	155	115	130	195	345	453	180	241	:	:
Spain	8956	14472	7274	14762	6345	9418	977	1613	8844	13824	6274	9813	:	:
Sweden	1328	3489	1187	5663	2965	3931	688	1134	2475	3624	1393	2008	2821	3888
Bulgaria	132	108	289	894	230	184	75	134	309	461	109	99	:	:
Iceland	58	106	128	158	83	101	14	25	118	133	66	94	:	:
Norway	695	1960	320	1512	1993	2266	171	263	1673	2423	1184	1645	63	48
Romania	211	235	1996	3522	827	768	55	63	637	935	115	162	:	:
Turkey	1932	3237	2457	4821	5394	8357	1679	3191	7923	13223	3655	6338	:	:

Source: Eurostat S&T statistics
Exception: LU, SE: 2001; AT, SI, TR: 2002
Data unavailable: BE, EL, FR, IT, LV, NL, PL, FI, UK, CH
Data estimated: IE, LT, SE

Annex 2.4: Number of researchers in GOV by fields of science and sex, HC, 2003

	Natural Sciences		Engineering & Technology		Medical Sciences		Agricultural Sciences		Social Sciences		Humanities		Other	
	Women	Men	Women	Men	Women	Men	Women	Men	Women	Men	Women	Men	Women	Men
Austria	92	326	54	154	99	157	104	290	231	325	240	296	:	:
Cyprus	42	36	3	5	6	13	11	52	16	13	9	11	:	:
Czech Republic	1149	2618	219	1292	257	277	330	431	192	247	464	521	:	:
Denmark	268	701	99	337	219	279	276	392	108	203	173	218	:	:
Estonia	75	98	13	32	81	31	24	23	6	9	180	65	:	:
Germany	4563	14189	2104	10581	1244	1720	941	1733	1208	1745	1834	2073	:	:
Hungary	554	1480	77	327	395	211	307	417	233	408	757	656	:	:
Ireland	18	50	1	13	18	17	147	319	20	60	0	3	:	:
Latvia	228	166	8	35	10	9	53	53	56	26	11	5	:	:
Lithuania	385	492	53	147	11	9	100	66	70	31	255	117	:	:
Luxembourg	40	91	17	88	17	18	0	0	30	60	0	4	:	:
Malta	0	0	0	5	0	0	2	15	4	4	2	5	:	:
Poland	2027	2977	1160	3476	1394	796	853	896	305	343	411	326	:	:
Portugal	563	351	189	323	1207	831	516	396	317	155	117	62	:	:
Slovakia	480	701	100	253	203	155	128	123	328	310	47	16	:	:
Slovenia	223	381	51	101	328	366	31	59	197	176	9	17	:	:
Spain	1055	1501	1453	2295	5173	5909	1228	1392	328	482	311	340	:	:
Bulgaria	1413	1323	399	764	258	246	473	424	176	121	516	264	:	:
Iceland	33	93	62	90	241	238	40	117	37	38	17	16	:	:
Norway	252	652	106	511	180	189	311	542	485	669	206	227	:	:
Romania	1175	1271	632	796	469	244	98	240	474	318	235	318	:	:

Source: Eurostat S&T statistics
Exception to reference year: AT, SI: 2002
Data unavailable: BE, EL, FR, IT, NL, FI, PL, UK, TR, SE, CH
Data estimated: LT, SE

Annex 2.5: Number of researchers in BES by economic activity (NACE) and sex HC, 2003

	NACE code 24.4: Pharmaceuticals		NACE code 24 (-24.4): Chemicals & chemical products (less pharmaceuticals)		NACE code 24: Chemicals and chemical products		Total Manufacturing (including 24)		Real estate, renting and business activities		Other NACE codes (except K & D)	
	Women	Men	Women	Men	Women	Men	Women	Men	Women	Men	Women	Men
Austria	210	297	70	306	280	603	946	11379	861	4770	205	1234
Belgium	1115	1285	526	1305	1641	2590	2817	9696	613	4352	443	1808
Cyprus	14	17	7	23	21	40	33	87	13	63	11	49
Czech Republic	89	116	103	296	192	412	587	4028	711	2910	732	1449
Denmark	1108	1295	198	445	1306	1740	2380	7356	1362	4905	1079	2104
Estonia	c	c	c	c	28	19	85	243	65	305	76	179
Finland	:	:	:	:	976	1699	6363	21818	1497	6325	707	2529
Germany	2274	3862	1609	6357	3883	10219	17509	138236	2449	15067	799	4904
Greece	9	15	:	:	:	:	967	1142	290	1263	342	607
Hungary	512	441	89	162	601	603	935	2529	177	668	236	954
Ireland	144	209	33	74	180	280	741	2761	573	2381	27	128
Italy	1058	1098	394	1239	1452	2337	3134	15936	1926	5991	812	2701
Latvia	:	:	:	:	89	18	114	66	253	242	12	15
Lithuania	:	:	:	:	31	26	144	201	41	110	2	14
Luxembourg	:	:	:	:	:	:	128	633	42	490	58	258
Netherlands	149	1016	248	1787	398	2802	1113	14387	598	5288	414	2729
Portugal	c	c	c	c	:	:	615	1653	614	1738	582	900
Slovakia	c	c	c	c	61	52	137	501	524	979	35	79
Slovenia	141	73	49	55	190	128	403	1007	102	226	29	91
Spain	921	884	538	1113	1459	1996	3554	12332	4423	9485	1103	3208
Sweden	1656	1524	355	533	2011	2057	5375	16790	1517	5066	823	1042
Bulgaria	150	47	25	13	175	60	309	220	109	262	240	245
Iceland	12	17	2	5	0	0	83	228	246	455	60	151
Norway	187	148	137	298	324	446	1102	5005	1155	5173	609	2110
Romania	:	:	:	:	374	173	2717	4146	273	489	1225	1236
Turkey	104	46	77	119	181	165	845	2953	222	431	253	573

Source: Eurostat S&T statistics (except IS & FI - DG RTD, WiS database)
Exceptions to the reference year: AT, FI, SI, TR: 2002; IS 2001
Data unavailable: FR, MT, PL, UK, CH
C: confidential data
Data estimated: SE

Annex 3.1: Number of senior Academic Staff (Grade A) by fields of science and sex, 2004

	Agricultural Sciences		Engineering & Technology		Humanities		Medical Sciences		Natural Sciences		Social Sciences		Unknown	
	Women	Men	Women	Men	Women	Men	Women	Men	Women	Men	Women	Men	Women	Men
Austria	3	51	10	262	86	364	23	234	21	457	45	423	0	0
Belgium	2	53	13	295	41	274	39	431	36	433	67	515	2	15
Cyprus	0	0	0	3	0	12	0	0	3	13	2	16	:	:
Czech Republic	16	160	26	555	47	278	52	315	23	227	51	342	:	:
Denmark	11	57	2	143	30	167	21	120	19	255	42	275	:	:
Finland	8	42	22	328	139	257	92	334	62	489	205	513	:	:
France	:	:	158	2278	1104	2568	1136	6301	777	5526	557	2717	:	:
Germany	32	326	57	1463	625	3211	85	1391	173	2908	179	2053	12	101
Italy	126	938	165	2547	1084	2603	344	2748	557	2956	675	3283	9	36
Latvia	:	:	:	:	8	14	5	8	0	37	11	17	:	:
Malta	0	0	0	2	0	21	1	11	0	6	0	3	0	0
Netherlands	11	89	12	372	58	298	9	134	23	410	100	768	6	37
Poland	168	522	141	1474	500	1727	355	904	322	1580	315	1214	0	16
Portugal	31	84	12	230	X	X	49	138	100	264	111	432	0	0
Slovakia	3	82	27	383	21	81	42	205	23	154	100	477	:	:
Slovenia	10	39	12	212	33	152	26	111	3	76	44	259	2	27
Sweden	31	139	62	814	143	411	149	823	96	727	136	553	59	57
United Kingdom	26	151	83	1596	12	58	603	2142	294	3296	463	1722	825	3207
Norway	13	80	15	292	136	416	72	356	61	555	117	523	0	0
Switzerland	10	68	114	1014	100	403	127	573	54	688	329	1076	37	72
Turkey	105	668	226	1224	125	491	1096	2083	221	638	329	1024	:	:

Source: DG Research, WiS database
Exceptions to the reference year: LV, TR: 2000; FR: 2001; AT: 2002; CY, NO, PT: 2003
FTE instead of HC: NL, IL (2001)
Data unavailable by field of science: BG, EE, EL, ES, IE, IS, HU, IL, LT, LU, RO
BE total calculated as sum of BE-FL + BE-FR
PT: H included in SS
Data are not necessarily comparable between countries due to differences in coverage and definitions

Annex 3.2: Number of Academic Staff by grade and sex, 2004

	Grade A		Grade B		Grade C		Grade D	
	Women	Men	Women	Men	Women	Men	Women	Men
Austria	188	1791	470	2427	2167	3917	2034	3339
Belgium	200	2016	544	2072	2031	4104	2712	3106
Cyprus	5	44	14	67	98	163	55	109
Czech Republic	215	1877	844	2972	4105	6110	1049	1099
Denmark	125	1017	886	2738	557	926	1632	2189
Estonia	94	454	372	630	966	740	653	328
Finland	528	1963	1440	1648	772	687	3228	4308
France	3732	19390	20560	32546	:	:	4591	7103
Germany	1163	11453	4672	24271	4344	12457	37866	68563
Greece	216	1699	431	1468	753	1608	1481	2280
Hungary	447	2448	1657	3701	4133	4843	667	1148
Italy	2960	15111	5682	12420	9296	11933	:	:
Latvia	120	333	205	349	2293	1235	:	:
Lithuania	80	580	810	1356	933	951	2745	1839
Malta	1	43	193	415	23	139	2	6
Netherlands	219	2108	312	1884	1203	3261	5303	8153
Poland	1801	7437	2600	6881	14533	20927	0	0
Portugal	303	1148	917	1750	2751	3581	2349	2312
Slovakia	216	1382	840	1826	3409	3614	696	586
Slovenia	130	876	203	583	642	993	299	325
Spain	1965	9208	25293	44800	1596	1464	39177	38262
Sweden	676	3524	4388	6984	422	632	10617	10632
United Kingdom	2306	12172	8170	18027	25434	29728	15418	18018
Bulgaria	362	1646	2477	4624	:	:	7078	6434
Iceland	30	169	55	129	122	108	:	:
Israel	165	1398	245	891	413	818	316	391
Norway	414	2222	1215	3099	658	789	3812	4007
Romania	3076	7508	8216	8507	:	:	1958	1592
Switzerland	771	3894	485	1598	6554	12861	981	1392
Turkey	2102	6128	3737	9880	1615	2371	12449	17498

Source: DG Research WiS database
Exceptions to the reference year: TR: 2000; FR: 2001; AT: 2002; CY, NO, PT: 2003
FTE instead of HC: NL, IL (2001)
Data unavailable: IE, LU; Grade C unavailable: BG, FR, RO; Grade D unavailable: BG-FR, IT, LV, IS, PL
BE total calculated as sum of BE-FL + BE-FR
Data are not necessarily comparable between countries due to differences in coverage and definitions

Annex 3.3: Number of R&D personnel in HES by occupation and sex, HC, 2003

	Researchers		Technicians		Other	
	Women	Men	Women	Men	Women	Men
Austria	5216	12198	2555	1364	2618	1121
Belgium	7958	14417	3076	2699	2279	1002
Cyprus	172	383	5	16	22	3
Czech Republic	4205	8584	2103	1596	940	449
Denmark	4379	9611	3883	1582	0	
Estonia	1696	2066	365	166	405	115
Germany	43593	130638	13133	15876	31696	11814
Greece	7567	12940	3845	3729	3773	3234
Hungary	6976	11995	2580	1144	3737	1337
Ireland	3580	5650	440	760	1180	400
Latvia	2181	1970	463	271	253	164
Lithuania	4040	4264	494	263	1031	360
Luxembourg	21	28	0	3	2	0
Malta	155	484	6	56	111	29
Netherlands	3589	8809	3936	3853	6507	6887
Poland	28758	42211	4120	3302	5403	1951
Portugal	9143	10763	515	324	529	214
Slovakia	4558	6444	522	214	132	47
Slovenia	985	2004	307	359	183	30
Spain	38670	63902	4648	5954	10508	8043
Sweden	12857	23737	3238	4067	6456	1694
Bulgaria	1144	1880	274	317	177	128
Iceland	467	617	96	59	61	23
Norway	6099	10117	3522	2223	0	
Romania	3841	5685	440	292	1217	1384
Switzerland	5317	14010	203	759	4370	3599
Japan	57989	226341	4666	5570	22418	18999

Source: S&T statistics Eurostat
Exceptions to the reference year: SE: 2001; AT, CH: 2002
Data unavailable: FR, IT, FI, UK, TR
Data provisional: IE
Data estimated: NL, SI

Annex 3.4: Number of R&D personnel in GOV by occupation and sex, HC, 2003

	Researchers		Technicians		Other	
	Women	Men	Women	Men	Women	Men
Austria	820	1548	661	664	1263	1054
Belgium	648	1525	496	750	174	310
Cyprus	87	130	96	164	120	127
Czech Republic	2611	5386	2038	1286	1183	853
Denmark	1143	2130	1136	609	:	:
Estonia	379	258	117	46	241	104
Germany	11895	32040	4632	5077	17359	13693
Greece	1176	1851	839	1111	1638	2533
Hungary	2323	3499	1530	829	2009	1284
Ireland	204	462	155	432	210	194
Italy	6721	10668	6662	8707	5652	4200
Latvia	366	294	119	83	342	268
Lithuania	874	862	617	209	389	350
Luxembourg	104	261	27	45	78	33
Malta	2	7	1	8	5	14
Netherlands	2130	6414	1070	3309	1001	1942
Poland	6150	8814	2976	2424	3267	1759
Portugal	2909	2118	615	498	673	460
Slovakia	1286	1558	747	293	386	188
Slovenia	803	1053	301	243	190	103
Spain	9548	11919	3766	3006	3443	3624
United Kingdom	3225	6787	1678	3509	3861	3734
Bulgaria	3235	3142	1924	958	1164	554
Iceland	430	592	234	188	173	123
Norway	1540	2790	1103	1209	:	:
Romania	3083	3187	1195	852	769	555
Switzerland	231	753	131	185	205	128
Turkey	1047	2757	230	1053	758	2799
Japan	4233	32035	4101	5405	10711	15882

Source: S&T statistics Eurostat
Exceptions to the reference year: AT, CH, TR: 2002
Data unavailable: FR, FI, SE, NO
Data estimated: SI

Annex 3.5: Number of R&D personnel in BES by occupation and sex, HC, 2003

	Researchers		Technicians		Other	
	Women	Men	Women	Men	Women	Men
Austria	2012	17383	2026	9293	1058	2248
Belgium	3838	17191	3141	10385	2030	5087
Cyprus	57	199	45	134	89	43
Czech Republic	2030	8387	2754	7172	1606	2173
Denmark	4821	14365	5529	7669	2361	2207
Estonia	226	727	131	179	152	114
Germany	20205	151014	21870	60864	22177	62065
Greece	909	3466	919	5111	1390	1304
Hungary	1348	4151	1442	1134	604	759
Ireland	1341	5270	574	2225	755	1872
Italy	6110	25937	4887	32606	3860	12287
Latvia	379	323	80	143	178	125
Lithuania	187	325	69	71	96	33
Netherlands	2125	22404	2758	19961	2083	8111
Poland	3332	8464	2718	4088	2369	3136
Portugal	1811	4291	568	1900	430	882
Slovakia	696	1559	567	886	403	434
Slovenia	569	1443	1043	1964	278	379
Spain	9080	25025	7801	24309	5419	10692
Bulgaria	658	727	365	360	172	116
Iceland	420	854	183	344	156	236
Norway	2866	12288	1896	5522	:	:
Romania	4215	5871	1572	1235	1840	2499
Switzerland	2845	14365	3310	15440	2195	4075
Turkey	1320	3957	442	2003	301	1084
Japan	32596	465024	15018	45663	26538	68540

Source: Eurostat, S&T statistics
Exceptions to the reference year: CH, PL: 2000; EL: 2001; AT, BE, IT, TR: 2002
Data unavailable: FR, LU, MT, FI, SE, UK
Data estimated: SI

Annex 4.1: Number of applicants and beneficiaries of research funding by sex, 2004

	APPLICANTS		BENEFICIARIES	
	Women	Men	Women	Men
Austria	207	891	85	464
Belgium	333	436	161	200
Cyprus	72	379	15	130
Czech Republic	693	2899	439	1883
Denmark	766	1893	258	744
Estonia	209	626	186	552
Finland	470	1255	156	329
Germany	2747	18329	1518	11218
Greece	888	745	222	229
Hungary	1983	3872	1101	2192
Ireland	1451	1778	214	292
Italy	2213	7683	868	3245
Latvia	244	510	252	447
Lithuania	42	66	14	21
Luxembourg	29	43	23	37
Netherlands	898	3160	402	1310
Poland	2527	6704	798	2428
Portugal	1360	1224	433	409
Slovakia	51	185	14	42
Slovenia	936	1564	342	554
Sweden	1206	4039	472	1827
United Kingdom	7285	15967	1116	3602
Iceland	359	724	181	347
Israel	236	1119	71	435
Norway	1405	4169	492	1333
Switzerland	693	2257	403	1389

Source: WiS database DG Research
Exceptions to the reference year: AT, SE: 1999; IL: 2000; SI: 2001; El, PT, LT, LU, NL, LT: 2002; IE, FI, IT: 2003
Data unavailable: ES, FR, MT, BG, RO, TR
BE: Flemish community only
Data are not comparable between countries due to differences in coverage and definitions

Annex 4.2: Number of women and men on scientific boards, 2004

	Women	Men
Belgium	51	303
Cyprus	5	70
Czech Republic	37	276
Denmark	49	90
Estonia	152	542
Finland	29	32
France	114	313
Germany	603	2915
Hungary	75	295
Ireland	65	227
Italy	102	693
Latvia	33	107
Lithuania	41	191
Netherlands	43	164
Poland	10	129
Slovakia	16	141
Slovenia	17	64
Sweden	39	44
United Kingdom	139	304
Bulgaria	42	86
Iceland	73	198
Norway	14	15
Switzerland	21	82

Source: WiS database DG Research
Exceptions to the reference year: FR, PL, SE: 2002; BG, IT, LV: 2003
Data unavailable: AT, EL, ES, LU, MT, PT, RO, TR, IL
BE: Flemish community only
Data are not comparable between countries due to differences in coverage and definitions

Annex 4.3: Total intramural R&D expenditure (GERD) for all sectors in million PPS, 2003

	Expenditure
EU-25	**178676.316**
Austria	4652.712
Belgium	5014.474
Cyprus	44.626
Czech Republic	1894.518
Denmark	3644.858
Estonia	116.812
Finland	4420.988
France	32398.402
Germany	48851.666
Greece	1182.583
Hungary	1239.75
Ireland	1349.2
Italy	14936.286
Latvia	77.833
Lithuania	229.64
Luxembourg	366.974
Malta	16.9
Netherlands	7731.217
Poland	2099.245
Portugal	1301.979
Slovakia	351.339
Slovenia	503.038
Spain	9404.557
Sweden	8782.562
United Kingdom	28631.659
Bulgaria	249.4
Iceland	214.546
Norway	2515.057
Romania	553.195
Switzerland	4946.71
Turkey	2602.61
Japan	98107.113
United States	247744.693

Source: Eurostat R&D statistics
Exceptions to the reference year: TR: 2002; CH: 2000
Provisional value: EL
Estimated value: AT, SI

These notes are intended to provide a quick reference guide for the reader about the coverage and identification of groups, units and concepts presented in this booklet.

Statistical terms & classifications

1. Students and Graduates
The International Standard Classification of Education (ISCED-97) categorises education programmes by level. Tertiary Education or Higher Education involves 2 stages: the first includes largely theoretically-based programmes to provide sufficient qualifications for gaining entry to advanced research programmes and professions with high skills requirements (ISCED 5A) and programmes generally more practical/ technical/ occupationally specific than ISCED 5A (ISCED 5B). The second is for programmes leading to the award of an advanced research qualification (e.g. PhD, Doctorate…). The programmes are devoted to advanced study and original research. (ISCED 6).

The number of graduates refers to those graduating in the reference year and not to the number of graduates in the population. The number of graduates also refers to non-nationals graduating in the country, but does not include nationals graduating abroad. In some countries, France and Portugal, for example, non-PhD programmes with an advanced research component are included in ISCED 6.

2. Human Resources in Science and Technology (HRST)
This methodology is based upon identifying individuals from the Community Labour Force Survey case data, according to educational attainment and occupation, and is proposed by the Canberra Manual (OECD, 1994). The types of HRST presented in this publication are:
HRST: People who fulfil one or the other of the following conditions:

- Successfully completed education at the third level in an S&T field of study *(see S&T (Science and Technology) fields of study below.)*
- Not formally qualified as above but employed in a S&T occupation (ISCO-2 "Professionals" and ISCO-3 "Technicians") where the above qualifications are normally required.

HRSTE: HRST Education – People who have successfully completed tertiary education in an S&T field of study *(see S&T (Science and Technology) fields of study below.)*

HRSTO: HRST Occupation – People who are employed in an S&T occupation (ISCO '88 COM, codes 2 "Professionals" and 3 "Technicians") (see *ISCO 88 definitions* for explanation of S&T occupations)

HRSTC: HRST Core – People who are both HRSTE and HRSTO.

3. S&T (Science and Technology) fields of study
ISCED distinguishes twenty-one main fields of study. For macro-measurement of HRST, it is recommended that they are regrouped into the following seven broad fields of study in S&T: natural sciences; engineering and technology; medical sciences; agricultural sciences; social sciences; humanities; other fields. (Canberra manual §71)

4. ISCO-88 definitions
Two of the ISCO-88 major groups are used in the definition of HRST, HRSTO and HRSTC. They are:

Major group 2 - "Professionals" (ISCO-2): *"This major group includes occupations whose main tasks require a high level of professional knowledge and experience in the fields of physical and life sciences, or social sciences and humanities. The main tasks consist of increasing the existing stock of knowledge, applying scientific and artistic concepts and theories to the solution of problems, and teaching about the foregoing in a systematic manner".*

Research occupations are classified as ISCO-2.

Major group 3 – *"Technicians and associate professionals" (ISCO-3): "This major group includes occupations whose main tasks require technical knowledge and experience in one or more fields of physical and life sciences, or social sciences and humanities. The main tasks consist of carrying out technical work connected with the application of concepts and operational methods in the above-mentioned fields, and in teaching at certain educational levels."*

5. Scientists and Engineers (S&E) in employment
- Physical, mathematical and engineering occupations (ISCO '88 COM code 21)
- Life science and health occupations (ISCO '88 COM code 22).

6. Researchers and research personnel
The Frascati Manual (Proposed standard practice for Surveys on Research and Experimental Development, OECD, 2002) provides an international definition for Research personnel, §294, which is composed of:

RSE: Researchers §301: *"Researchers are professionals engaged in the conception or creation of new knowledge, products, processes, methods and systems and also in the management of the projects concerned".*

TEC: Technicians and equivalent staff §306: *"Technicians and equivalent staff are persons whose main tasks require technical knowledge and experience in one or more fields of engineering, physical and life sciences or social sciences and humanities. They participate in R&D by performing scientific and technical tasks involving the application of concepts and operational methods, normally under the supervision of researchers. Equivalent staff perform the corresponding R&D tasks under the supervision of researchers in the social sciences and humanities".*

AUX: Other supporting staff (Others) §309: *"Other supporting staff includes skilled and unskilled craftsmen, secretarial and clerical staff participating in R&D projects or directly associated with such projects".*

7. Main fields of science
The Frascati Manual (OECD 2002) also provides definitions for the six main fields of science (page 67), which are adhered to in this publication, unless otherwise indicated. The following abbreviations have been used:

NS:	Natural sciences
ET:	Engineering and Technology
MS:	Medical sciences
AS:	Agricultural sciences
SS:	Social sciences
H:	Humanities.

The breakdown of researchers by field of science is according to the field in which they work and not according to the field of study of their qualification.

8. NACE categories
The broad fields for researchers in the business enterprise sector are categorised using the General Industrial Classification of Economic Activities (NACE) within the European Union as recommended by the Frascati Manual. §169.

For a full listing of the NACE categories see Table 3.1 of the Frascati Manual which can be accessed through the OECD website http://www.oecd.org

8. Sectors of the economy
The Frascati Manual (OECD 2002) identifies and defines four sectors of the economy (§156):

HES (§206): Higher Education Sector which includes all universities, colleges of technology and other institutes of post-secondary education,whatever their source of finance or legal status. It also includes all research institutes, experimental stations and clinics operating under the direct control of or administered by or associated with higher education establishments.

GOV (§184): Government Sector which includes all departments, offices and other bodies, which furnish but normally do not sell to the community those common services, other than higher education, which cannot otherwise be conveniently and economically provided and administer the state and the economic and social policy of the community. (Public enterprises are included in the business enterprise sector); Non-profit institutes (NPIs) controlled and mainly financed by government.

BES (§163): Business Enterprise Sector which includes all firms, organisations and institutions whose primary activity is the market production of goods or services (other than higher education) for sale to the general public at an economically significant price; The private non-profit institutes mainly serving them.

PNP (§194): Private non-profit sector which covers non-market, private non-profit institutions serving households (i.e. the general public); Private individuals or households.

The sector entitled "Abroad" is not referred to in this booklet.

9. Units (Head count & Full-time equivalence)
The units of measurement proposed by the Frascati Manual are:

HC (§329): Head count. The number of persons engaged in R&D at a given date; the average number of persons engaged in R&D during the (calendar) year or the total number of persons engaged in R&D during the (calendar) year.

FTE (§333): Full-time equivalence. One FTE corresponds to one year's work by one person.

Data are presented in HC unless otherwise indicated.

10. R&D expenditure
The Frascati manual recommends using purchasing power parities (PPP) to express R&D statistics in monetary terms. (§36)

PPPs are defined as currency conversion rates that both convert to a common currency and equalise the purchasing power of different currencies. They eliminate the differences in price levels between countries in the process of conversion of economic indicators expressed in a national currency to an artificial common currency, called Purchasing Power Standard (PPS).

11. Gender Pay Gap
The gender pay gap is defined as the difference between average gross hourly earnings of male paid employees and of female paid employees as a percentage of average gross hourly earnings of male paid employees. Two gender pay gaps are presented in this publication:

• Gender Pay Gap for the whole economy

The target population consists of all paid employees aged 16-64 that are 'at work 15+ hours per week'.

• Gender Pay Gap by selected occupations in private enterprise for EU-25

The statistics refers to enterprises with at least 10 employees in the areas of economic activity defined by sections C-K of NACE Rev.1.1. Age group from 14 years upwards.

12. Average Annual Growth Rates
The average annual rate of growth g of I between initial year (year a) and final year (year b) in percent is given by:

$$g = [(I_b / I_a)^{1/(b-a)} -1] \times 100$$

13. Seniority grades / Academic staff
The statistics on the seniority of academic staff are collected at the national level through Higher Education and R&D Surveys or directly from higher education institutions as part of their own monitoring systems and administrative records. It is important to note that these data are not always completely cross-country comparable as the seniority grades are not yet part of a formal international classification. Furthermore it is not always possible to distinguish research staff from teaching staff, although the target population for 'academic staff' in the Women and Science Questionnaire has been defined as researchers in higher education institutions (excluding staff involved only in teaching or administration and not at all in research).

The grades presented in this publication are based upon national mappings according to the following definitions:

A: The single highest grade/post at which research is normally conducted
B: Researchers working in positions not as senior as top position (A) but more senior than newly qualified PhD holders (ISCED 6)
C: The first grade/post into which a newly qualified PhD graduate would normally be recruited
D: Either postgraduate students not yet holding a PhD degree who are engaged as researchers, or researchers working in posts that do not normally require a PhD. A complete list of the grades reported for each country is included later in this Annex.

Data sources

Data for **ISCED 6 graduates** come from the UOE survey and have been downloaded from Eurostat's online database NewCronos, except for Israel who provides data directly to the Women and Science Unit's WiS (Women in Science) database. The reference year is the calendar year in which the academic year began. Eurostat data represent the numbers of people who are studying in the reference country and not nationals who are studying abroad. For some countries (EL, IE, LU, PT, CY, IS, MT) large numbers also graduate from universities in other countries.

Data on **researchers, R&D personnel** and **R&D expenditure** come from the R&D survey and have been extracted from NewCronos.

Data referring to the **labour force** are drawn from the Community Labour Force Survey (CLFS) in different ways. The **HRST** data are extracted from NewCronos. The indicator on **Scientists & Engineers in the total labour force** has been supplied by Eurostat.

Data on **Gender Pay Gap for the whole economy** comes from a variety of sources such as the European Community Household Panel (ECHP), the EU Survey on Income and Living Conditions (EU-SILC) and national sources as was downloaded from NewCronos

Data on **Gender Pay Gap by selected occupations in private enterprise for EU-25** comes from the Structure of Earnings Survey 2002 and was supplied to us by Eurostat

The statistical correspondents of the Helsinki Group on Women and Science report data on **academic staff** (see *Seniority grades/ Academic staff* above), on the applicants and beneficiaries of **research funding** and the sex-composition of **scientific boards** to the WiS database on a good-will basis. A complete list of the source institutions can be found at the end of this Annex.

Other data considerations

Age Groups
Data referring to the Labour Force refer to all persons age 15+ living in private households and include the employed and unemployed populations. Data referring to HRST refer to the age group 25-65.

Small numbers
For some countries with small populations, raw data relating to small numbers of people have been reported here. The percentages and indicators have not always been included (mostly growth rates) and this is identified in the footnotes of the indicator. The reader is therefore asked to bear this in mind when interpreting the most disaggregated data, in particular for Luxembourg, Cyprus and Malta, and, in some cases, for Estonia, Iceland and Latvia.

EU estimates
Researchers, R&D personnel, Seniority in academic staff

EU totals estimated by DG Research (as noted in the footnotes) are based upon existing data for the reference year in combination with the next available year if the reference year is unavailable, in the following sequence (n-1, n+1, n-2, n+2 etc…)
These estimates are not official, but are intended as a guide to the reader.

Rounding Error
In some cases, the row or column totals do not match the sum of the data. This may be due to rounding error.

Decimal places
All the data in the figures have been calculated and presented to one decimal space. However the values have been rounded up so that all the values can fit on each figure. This explains why in some cases the same number can be displayed slightly different.

Cut-off date
Cut-off date for date downloaded from Eurostat's Newcronos database was January 2006

Country Codes
Country names have been used in full where possible and are abbreviated in accordance with the ISO Alpha-2 codes in the footnotes with the exceptions of Greece and the United Kingdom, as follows:

Member States:

AT	Austria
BE	Belgium
BE-FL	Dutch-speaking community in Belgium
BE-FR	French-speaking community in Belgium
CY	Cyprus
CZ	Czech Republic
DE	Germany
DK	Denmark
EL	Greece
EE	Estonia
ES	Spain
FI	Finland
FR	France
HU	Hungary
IE	Ireland
IT	Italy
LT	Lithuania
LV	Latvia
LU	Luxembourg
MT	Malta
NL	The Netherlands
PL	Poland
PT	Portugal
SE	Sweden
SI	Slovenia
SK	Slovakia
UK	United Kingdom

Non- Member states:
This term refers to countries that are associated to the Sixth EU Framework Programme for Research and Technological Development, 2002-2006 (FP6).

BG	Bulgaria
CH	Switzerland
IS	Iceland
IL	Israel
NO	Norway
RO	Romania
TR	Turkey

JP	Japan
US	United States of America

Countries listed in the tables and figures throughout this booklet are displayed in one of the following ways:

- ranked according to the data on women
- full country names listed in alphabetical order according to the English name of the country (EU-25 presented first, followed by non-EU-25, followed by JP and US)

Flags
The following flags have been used, where necessary:
– = data item not applicable
0 = real zero or < 0.5 of the unit
: = data not available
x = data included in another cell

For more detailed methodological notes on the data presented in She Figures 2006 please access Eurostat's online database NewCronos at:

http://europa.eu.int/newcronos

or the statistics and indicators page of the Women and Science website at:

http://europa.eu.int/comm/research/index_en.cfm
• Select Science and Society -> Women and Science

Academic staff

The following lists the academic staff grades to which reference is made in Chapter 3. Under each country heading, the grade(s) corresponding to Grade A, B, C & D are presented.

A: The single highest grade/post at which research is normally conducted
B: Researchers working in positions not as senior as top position (A) but more senior than newly qualified PhD holders
C: The first grade/post into which a newly qualified PhD (ISCED6) graduate would normally be recruited
D: Either postgraduate students not yet holding a PhD (ISCED6) degree who are engaged as researchers, or researchers working in posts that do not normally require a PhD

AUSTRIA

A
Ordentliche/r Universitätsprofessor
Vertragsprofessor/in
Stiftungsprofessor/in
Stiftungsprofessor/in
Gastprofessor/in mit F&E Tätigkeit
Emeritierte/r Professor/in mit F&E Tätigkeit
B
Universitätsdozent/in; im öffentl.-rechtl. Dienstverhältnis zum Bund; Amtstitel: Ao.Univ.Prof
Vertragsdozent/in, im privatrechtl. Dienstverhältnis zum Bund; Funktionsbez.: Ao.Univ.Prof
C
Assistenzprofessor/in
Universitätsassistent/in
Assistent/in; Funktionsbezeichnung: Univ.Ass; bzw. Ass.Arzt, gem. (§ 49 I VBG 1948)
Vertragsassistent/in
Wissenschaftliche (Künstlerische) Mitarbeiter/in (in Ausbildung) gem. § 6 Uni-AbgG
Oberarzt, Oberärztin
Assistenzarzt/Assitenzärztin
Arzt/Ärztin in Facharztausbildung
Arzt/Ärztin für Allgemeinmedizin
Facharzt/Fachärztin
Zahnarzt/Zahnärztin
Ärztliche/r Mitarbeiter/in mit Dienstverhältnis zum Land
Ärztliche/r Mitarbeiter/in mit Dienstverhältnis zum Krankenanstaltenbetreiber (KAGes, KAV, TILAK)
D
Bundeslehrer/in und Vertragslehrer/in
Beamt/in/er und Vertragsbedienstete/r des wissenschaftlichen Dienstes
Studienassistent/in
Wissenschaftliche/künstlerische Hilfskräfte
Demonstrator/in
Sonstiges wissenschaftliches Personal
(*Data relate to the Universities only*)

BELGIUM-FLEMISH SPEAKING

A
ZAP1 - Gewoon/buitengewoon hoogleraar
ZAP2 - Hoogleraar
B
ZAP3 - Hoofddocent
ZAP4 – Docent
ZAP5
C
AAP2 - Doctor-assistant
Unpaid researchers (post-doctoral)
WP3 - Post-doctoral of unlimited duration
WP4 - Post-doctoral of limited duration
D
Unpaid researchers (pre-doctoral)
WP1 - Pre-doctoral of unlimited duration
WP2 - Pre-doctoral of limited duration

FRENCH-SPEAKING COMMUNITY IN BELGIUM

A
Professeur extraordinaire
Professeur ordinaire
B
Professeur
C
Chargé(e) de cours

CYPRUS

A
Professor
B
Associate Professor
C
Assistant Professor
Lecturer
Teaching Support Staff
D
Research associates and other staff

CZECH REPUBLIC

A
Professor
B
Associate Professor
C
Senior Assistant
D
Assistant
Lecturer

DENMARK

A
Professor
B
Associate Professor
C
Assistant Professor
D
Senior/forskningsstip
Temporary scientific staff
Other scientific staff

ESTONIA

A
Professor
B
Associate Professor
C
Assistant Professor
D
Assistant
Teacher
Other
(The data on academic staff cover universities and research centres within universities)

FINLAND

A
Professor
B
Lecturer
Senior assistant
C
Assistant
Full-time teacher
D
Researcher

FRANCE

A
Directeur de recherche
Professeur d'université
B
Chargé(e) de recherche
Maître de conférence
D
boursiers de thèse et Ingénieurs de recherche
PhD students working in the labs

GERMANY

A
C4 an allen Hochschularten
W3 an allen Hochschularten
B
C3 an allen Hochschularten
C2 auf Dauer an allen Hochschularten
C2 auf Zeit an allen Hochschularten
Hochschuldozenten, R1, C2, C3, A9-A15, BAT I-IIa, III, AT
Universitätsdozenten, H1-H3, BAT Ia, Ib, AT
Oberassistenten, C2, H1, H2, A14, BAT Ia-IIa
Oberingenieure, C2, H1, H2, A14, BAT Ib
W2
C
Hochschulassistenten, C1, H2, BAT Ia-IIa
Wissenschaftliche und künstlerische Assistenten, C1, H1, A13-A14, BAT Ib, IIa
Akademische (Ober)Räte -auf Zeit-, A13, A14
Akademische Räte, Oberräte und Direktoren, A13-A16, C1-C3, R1, R2, H1-H3, BAT I-IIa, AT
W1 (Juniorprofessuren)
D
Wissenschaftliche und künstlerische. Mitarbeiter im Angestelltenverhältnis. BAT I-IVb, Va, AT, Verg. entspr. A13
Ärzte im Praktikum, Tarif für AIP
Wissenschaftliche Mitarbeiter im unbefristeten Arbeitsverhältnis 7), WM 2-6, BAT I-IIa
Studienräte, -direktoren im Hochschuldienst, A13-A16, BAT I-IIb
Fachlehrer, Technische Lehrer, A9-A13, AT
Lektoren, A13-A14, BAT I-II, AT
Sonstige Lehrkräfte für besondere Aufgaben, A9-A13, BAT I-Vc, Kr. VIII-XIII, AT
Lektoren, WM 3, BAT IIa
Lehrer im Hochschuldienst, WM 4-6, BAT IIa, IIb

GREECE

A
Professor
B
Associate Professor
C
Assistant Professor
D
Assistant staff
Lecturer
Post-graduate scholars
Temporary teaching staff

HUNGARY

A
Professors
B
Assistant Professors
C
Lecturers
D
Researchers

IRELAND

ITALY

A
Full professor
B
Associate professor
C
Academic researcher

LATVIA

A
Full Professor
B
Associate Professor
C
Assistant Professor
Assistant
Lecturer
Researcher

LITHUANIA

A
Professor
B
Associate Professor
C
Assistant Professor
D
Other teaching and research staff

MALTA

A
Professor
B
Associate Professor
C
Senior Lecturer
D
No title given

THE NETHERLANDS

A
Professor
B
Associate Professor
C
Assistant Professor
D
Other academic staff
Post-graduate (2-year post)
Post-graduate (4-year post)
Student assistant
(Data relate to the Universities only)

POLAND

A
Full Professor
B
Doctor hab.
Professor of high school
C
Doctor

PORTUGAL

A
Reitor,
Vice Reitor
Professor Catedrático
B
Professor Associado
Professor Coordenator
Professor Auxiliar
C
Professor Auxiliar
Professor Adjunto

D
Assistente
Assistente Politecnico
Leitor
Assistente estagiaro

SLOVAKIA
A
Full Professor
B
Docenti (Associate professor)
C
Lecturers
D
Assistant lecturers

SLOVENIA
A
Full Professor
B
Associate Professor
C
Assistant Professor
D
Young researchers

SPAIN
A
Head of Department
B
Permanent and part-time professor
Emeritus professor and visiting professor
C
Assistant Professor
D
PhD students

SWEDEN
A
Professor
B
Senior lecturer
Other research and teaching staff
C
Post-doctoral fellow
D
Postgraduate student
Junior lecturer
Guest lecturer
Part-time teacher
Technical and Administrative staff

UNITED KINGDOM
A
Professor
B
Senior lecturer
Senior researcher
C
Lecturer
D
Researcher

BULGARIA
A
Professor
B
Associate Professor
D
Assistant
Lecturer
Research associate

ICELAND
A
Professors
B
Associate Professor
C
Assistant Professor

ISRAEL
A
Professor
B
Associate Professor
C
Senior Lecturer
D
Lecturer

NORWAY
A
Full Professor
B
Associate Professor
Chief physician
Senior lecturer
College reader
Senior researcher
C
Post.doc. fellowshipholder
Researcher
D
Assistant Professor
PhD student
University/college lecturer
Assistant physician
Research assistant

ROMANIA
A
Professors
B
Lectures, Assistant professors, Assistants
D
Teaching assistants

SWITZERLAND
A
Doctorate with experience – Category I and II
B
Doctorate with experience – Category III and IV
University degree – category V
Independent Professor – Category VI
C
Doctorate – Category VII, VIII
University degree Category IX
D
No university degree – Category X
Teaching, helping with research

TURKEY
A
Professors
B
Associate Professor
C
Senior Assistant
D
Assistants and Lecturers

Research Funds

The following list details each of the national funding bodies which have provided data for both applicants and beneficiaries of research funds. For the funding success rate, only those funds that have data available for both applicants and beneficiaries have been used in the calculation.

AUSTRIA
Bureau for International Research and Technology Co-operation programmes (BIT)
Austrian Science Funds (FWF)
Non-framework programmes
Austrian Academy of Science (ÖAW)

BELGIUM-FLEMISH SPEAKING
Fund for scientific research Flanders (FWO)
Funds for industrial research (IWT)
Special Fund for Research (BOF)

CYPRUS
Research Promotion Foundation (RPF)

CZECH REPUBLIC
Grant Agency of Academy of Science

DENMARK
The Danish Research Council for the Humanities (SHF)
The Danish Agricultural and Veterinary Research Council (SJVF)
The Danish Natural Science Research Council SNF)
The Danish Social Science Research Council (SSF)
The Danish Medical Research Council (SSVF)
The Danish Technical Research Council (STVF)
European Space Agency-related research (ESA)

ESTONIA
Estonian Science Fund

FINLAND
Academy of Finland

GERMANY
Deutsche Forschungsgemeinschaft (DFG)

GREECE
Hellenic Public Foundation for Grants (IKY)

HUNGARY
The Hungarian Scientific Research Fund Office (OTKA)

IRELAND
IRCSET
IRCHSS
HRB
Italy
Central Administration
Higher Education Institutes

LATVIA
Latvian Council of Science

LITHUANIA
State scientific institutes

LUXEMBOURG
Gouvernement Luxembourgeois

NETHERLANDS
Royal Netherlands Academy of Arts and Sciences council (KNAW)
The Netherlands Organisation for Scientific Research Council (NWO)
The Netherlands foundation for the Advancement of Tropical Research (WOTRO)

POLAND
Government

PORTUGAL
Foundation for Science and Technology (FCT)

SLOVAKIA
Technology Assistance Agency

SLOVENIA
Ministry of Science and Technology

SWEDEN
Swedish Council for Forestry and Agricultural Research
Swedish Council for Planning and Coordination of Research
Swedish Council for Research in the Humanities and Social Sciences
Swedish Medical Research Council
Swedish Natural Science Research Council

UNITED KINGDOM
Biotechnology and Biological Sciences Research Council (BBSRC)
Engineering and Physical Sciences Research Council (EPSRC)
Economic and Social Research Council (ESRC)
Medical Research Council (MRC)
Natural Environment Research Council (NERC)
Particle Physics and Astronomy Research Council (PPARC)
Royal Academy of Engineering (RAE)
Royal Society (RS)

ICELAND
The Research Fund
The Technology Development Fund
The Graduate Research Fund
The Research Fund of the University of Iceland
The Fund for Research Equipment
The Research Fund of the University of Akureyri
The Christianity Millennium Fund
AVS R&D Fund of the Ministry of Fisheries in Iceland

ISRAEL
Bilateral (US-Israel) Science foundation
Israel Science Foundation

NORWAY
The Research Council of Norway (RCN)

SWITZERLAND
Federal Government

Scientific boards

Data from the following boards have been included in the figures, tables and annex tables results for scientific boards:

BELGIUM-FRENCH SPEAKING
Universities
Commision ad hoc "recherche en éducation"
Commission scientifique FNRS
Commission scientifique FRIA
Commission scientifique FRSM
Commission scientifique IISN

CYPRUS
Research Promotion Foundation
University of Cyprus
Agricultural Research and Development Board

CZECH REPUBLIC
Academy Assembly ASCR
Academy Council ASCR
R&D Council
Rectors Conference

DENMARK
The Danish Research Coordination Committee
Programme Commission on Nanoscience, Biotechnology and IT
Programme Commission on Energy and Environment
Programme Commission on Food and Health
Programme Commission on Non-ionizing Radiation
Board of the Danish Council for Strategic Research (DSF)
The Danish Technical Research Council (STVF)
The Danish Social Science Research Council (SSF)
The Danish Research Council for the Humanities (SHF)
The Danish Agricultural and Veterinary Research Council (SJVF)
The Danish Natural Science Research Council (SNF)
The Danish Medical Research Council (SSVF)
Board of the Danish Councils for Independent Research (DFF)

ESTONIA
Estonian Academy of Sciences
Estonian Science Foundation and its 8 Expert Commissions
Research Councils of 33 universities or scientific institutes
Council of Research Competency at the Ministry of Education and Research

FINLAND
Academy Board
Academy of Finland Research councils
Science and Technology Policy Council of Finland
National Technology Agency of Finland Board
Tekes Board

FRANCE
Board of Trustees
Scientific strategic council

GERMANY
Higher Education Institutions
Deutsche Forschungsgemeinschaft – German Research Association (DFG)
German Science Council (Wissenschaftsrat)

HUNGARY
The Hungarian Scientific Research Fund Office

IRELAND
Agriculture and Food Development Authority (Teagasc)
Agency to encourage the preservation and extension of the Irish language (Udaras)
Bord Iascaigh Mhara
Central and Regional Fisheries Board
Central Bank
COFORD (Forestry)
Dublin Institute of Advanced Education (DIAS)
Enterprise Ireland
Environmental Protection Agency
Economic & Social Research Institute (dpt of Finance)
Training and Employment Authority
Forfas
Higher Education Authority
Health Research Board
Industrial Development Authority
Marine Institute
National Roads Authority
Radiological Protection Institute
Royal Irish Academy of Science
Irish Research Council for Science Tecnology and Innovation
National Economic and Social Council
Science Foundation Ireland

ITALY
Consortium for Scientific and Technological Research Area of Trieste (AREA)
Italian Space Agency (ASI)
Italian Aerospace Research Center (CIRA)
Italian Center on Early Middle Ages Studies (CISAM)
National Research Council (CNR)
Tropical Herbarium of Florence
National Institute for the S&T of the Mountains (IMONT)
Astrophysics National Institute (INAF)
"Francesco Severi" National Institute of High Mathematics (INDAM)
National Institute for the Physics of Matter (INFM)
National Institute of Nuclear Physics (INFN)
National Institute of Geophysics and Vulcanology (INGV)
National Institute of Applied Optics (INOA)
National Institute for Meteorological Research (INRIM)
Papyrologic Institute "G. Viteli"
Museum of the Physics and Center of Studies and Researches
National Institute of Oceanography and Experimental Geophysics (OGS)
"A. Dohrn" Zoological Station (SZN)
Italian Association for Cancer Research (AIRC)
National Council of Economy and Labour (CNEL)
Agency for New Technologies, Energy and Environment (ENEA)
Italian National Institute of Health (ISS)
Muscolar dystrophy research (TELETHON ITALY)
Italian National Statistical Institute (ISTAT)

LATVIA
Latvian Council of Science

LITHUANIA
Science Council of Lithuania

NETHERLANDS
Royal Netherlands Academy of Arts and Sciences council
The Netherlands Organisation for Scientific Research Council and sub-councils
The Netherlands Organisation for Applied Research board and supervisory board
University board and supervisory board

POLAND
Governmental bodies
Higher education and research institutes
Scientific societies and foundations

SLOVAKIA
Council for Science and Technology
The Board of the state R&D programme
The Board of Science and Technology Assistance Agency

SWEDEN
Universities and Colleges
Swedish Research Councils
The Cancer Foundation
Swedish Agency for Innovation Systems

UNITED KINGDOM
Biotechnology and Biological Sciences Research Council
Council for the Central Laboratory of the Research Councils
Council for Sciences and Technologies
Engineering and Physical Sciences Research Council
Economic and Social Research Council
Medical Research Council
Natural Environment Research Council
Particle Physics and Astronomy Research Council

BULGARIA
Ministry of Education and Science

ICELAND
Board of the Graduate Research Refund
Board of the Research Fund of the UI
University Councils
Institute of Freshwater Fisheries Research
The Agricultural Research Institute
The Building Research Institute
The Icelandic Fisheries Laboratories
The Marine Research Institute
The National Energy Authority
The Technological Institute
ISOR Iceland Geo Survey, board
Council for Science and Technology Policy
Science board
Technology board
Research Fund, board and advisory boards
Technology Development Fund, board and advisory boards
Instruments Fund, board
Programme for IT and Environmental Sciences, grant committee and advisory boards
The Research Fund of the UA, board
Christianity Millennium Fund, board and advisory boards
AVS R&D Fund of Ministry of Fisheries in Iceland, board and advisory boards.

NORWAY
The Research Council of Norway

SWITZERLAND
Swiss National Science Foundation (SNSF)

Annex 6: List of the statistical correspondents of the Helsinki Group of Women and Science

Country (EU)	Statistical Correspondent	Department	Organisation	Fax	Email
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Country (EU)	Statistical Correspondent	Department	Organisation	Fax	Email
Greece	Ms Zografia KYMPERI	Programming & Planning Directorate	General Secretariat of Research and Technology	+301.771.14.27	ekyb@gsrt.gr
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Country (non EU)	Statistical Correspondent	Department	Organisation	Fax	Email
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European Commission

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