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**Women and Science: Excellence and Innovation - Gender Equality in Science**

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## 1. INTRODUCTION

This report, submitted at the request of the Research Council of June 2001<sup>1</sup>, gives an overview of women and science actions implemented at European level since the Council Resolution and of the results achieved. In particular:

- **Activities of the European Commission** to promote gender equality in science through the Research Framework Programmes and in the context of the Science and Society Action Plan, and
- **Progress made in increasing the participation of women in science** in the EU Member States since 1999, taking into account EU enlargement also.

At the Council's request, attention is paid to the progress made by the Commission in reaching the target of "40% participation of women at all levels in implementing and managing research programmes." The report also includes data on the progress of the Women in Industrial Research (WIR) initiative, as requested by the European Council in its Resolution of November 2003<sup>2</sup>

The report should be considered in the light of the Lisbon objectives, the Barcelona target<sup>3</sup> and the Commission's Communication "Science and technology, the key to Europe's future – guidelines for future European Union policy to support research"<sup>4</sup>. It demonstrates that although some progress has been achieved since the adoption of the previous reports in 1999<sup>5</sup> and 2001<sup>6</sup>, the situation is still far from satisfactory (see annex 1.1). With a view to preparing the Seventh Framework Programme, the following challenges need to be addressed if real progress is to be made in achieving gender equality in science.

## 2. MAIN CHALLENGES

### 2.1. Empowering women in decision-making positions in research and technology

Since the 1990s, the majority of university graduates in Europe have been women, but the proportion of women in top positions in European science is still very low, even in the traditionally more 'feminised' fields of science. The scarcity of women in senior positions,

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<sup>1</sup> European Council (2001), Resolution on Science and Society and on Women in Science. (2001/C 199/01)

<sup>2</sup> European Council (2003 a), Resolution on equal access and participation of women and men in the "knowledge based society for growth and innovation" (2003/C 317/03). The European Council invited the Commission to report on progress of the Women in Industrial Research (WIR) initiative in the context of research, development, innovation and entrepreneurship. WIR-website: <http://europa.eu.int/comm/research/wir>

<sup>3</sup> In March 2000, at the Lisbon European Council, Heads of State and Government set the Union the goal of becoming by 2010 "the most competitive and dynamic knowledge-based economy in the world, capable of sustainable economic growth with more and better jobs and greater social cohesion", and that investment in European research and development (R&D) must be increased with the aim of approaching 3 % of EU GDP by 2010 (up from 1.9 % in 2000).

<sup>4</sup> European Commission (2004 a), Science and technology, the key to Europe's future – guidelines for future European Union policy to support research, COM (2004) 353, Brussels 16 June 2004

<sup>5</sup> European Commission (1999), Women and science: mobilising women to enrich European research, COM (1999) 76

<sup>6</sup> European Commission (2001), Women and Science: the gender dimension as a leverage for reforming science, SEC(2001) 771

and as a result in bodies such as scientific boards, inevitably means that their individual and collective opinions are less likely to be voiced in policy and decision-making processes, which may lead to biased decision-making on topics of future research development. If women scientists are not visible and not seen to be succeeding in their careers, they cannot serve as role models to attract and retain young women in scientific professions.

## **2.2. Reconciling professional and private life**

If research cultures are to be based on excellence, gender diversity, global cooperation and mobility, a redefinition of career development and conditions is required. Career structures based on the traditional family roles are not suitable for shaping Europe's way to the future. Scientists have the longest period of qualification, high levels of career insecurity and international mobility is a key element of their careers<sup>7</sup>. Not surprisingly, significantly more women professors than male professors live alone and do not have children. Women researchers in industry tend to have fewer children than women in academia<sup>8</sup> and return schemes after 'family breaks' are lacking<sup>9</sup>. Inequalities in career advancement and drop-out rates are significantly higher for women with children<sup>10</sup>. The international differences in social security patterns concerning maternity and parental leave, along with the lack of availability of adequate childcare provisions also tend to compound the disadvantages for women researchers with children. A more family-friendly working environment must be established to signal clearly that women are welcome and that it is feasible, and normal, both for women and men scientists, to combine family and work, children and career.

## **2.3. Gender and scientific excellence**

The report "Gender and Excellence in the Making"<sup>11</sup> suggests that existing systems of defining and evaluating scientific excellence are not as gender neutral as they are claimed to be. As the future of European science depends both on an increased participation of women in the scientific community and on excellent research, it is urgent to pursue the debate and to encourage research bodies, funding institutions and the scientific community at large to think, in a more general and systematic way, about promoting a research environment free of gender bias.

## **2.4. Strengthening gender research**

EU enlargement and the changing roles and life plans of women and men in Europe present some of the greatest challenges to European societies, and this impacts on the creation of the European Research Area. A systematic analysis of these changes and the interplay between science and society is needed. Gender research can add perspective, stimulate new methodologies and is a driver for innovation. Specific issues exist and should be addressed in

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<sup>7</sup> A study funded by the EC based on 3400 interviews with female and male professors in six countries indicated that universities are an unfriendly environment for women who more often report feelings of burn-out, exhaustion and anxiety. Zimmer, Annette (2003), Women in European Universities. Final Report 2000-2003 of the Research and Training Network (contract n° HRPN-CT-1999-0074), [www.women-eu.de](http://www.women-eu.de)

<sup>8</sup> Meulders, Danièle et al (2003), Women in industrial research. Analysis of statistical data and good practices of companies, European Commission, p. 31, 116

<sup>9</sup> Institute of Physics (2004), Career Breaks, London

<sup>10</sup> Meulders, Danièle et al (2003), p.116, graph 34

<sup>11</sup> European Commission (2004 b), Gender and Excellence in the Making

well focussed research areas<sup>12</sup>. Some countries have accumulated a good stock of gender analysis, whereas in others gender research is practically absent. A better balance in European gender research is thus needed, enabling the specific social and historical contexts of different societies to be taken into account. The European Union has the responsibility to bridge the gap to achieve equal opportunities across Europe<sup>13</sup>. A socio-cultural understanding of gender and multidisciplinary gender research is necessary to move forward towards a more transformative gender approach and integration of gender into research. In the absence of such a development, men and women in the EU will not be able to reap the full benefit of European research.

## **2.5. Increasing the participation of women in science, technology and innovation**

To reach the 3% target agreed in Barcelona, Europe will need more researchers<sup>14</sup>. The Barcelona objective will not be reached if trained women scientists continue to quit scientific careers in disproportionate terms as compared to their male colleagues. This is particularly the case for industrial research and higher education studies in science, engineering and technology (SET). The Education Council adopted in May 2003 a European target to be achieved in the specific area of mathematics, science and technology.<sup>15</sup> Gender balance is an especially important challenge in this area which attainment will require considerable effort.

## **3. ACTIVITIES OF THE EUROPEAN COMMISSION TO PROMOTE GENDER EQUALITY IN SCIENCE**

Since the adoption of the Women and Science Action Plan<sup>16</sup> by the European Commission in February 1999, policies to promote women in science, to integrate the gender dimension into the research content and to close the existing gender gap have become an important part of European research policies, supported both by the European Parliament<sup>17</sup> and the national governments<sup>18</sup> (see also annex 2.1). In the Sixth Framework Programme, a specific budget for funding women and science projects was made available within the Science and Society part of the ‘Structuring the ERA’ specific programme. The chapters below outline the overall strategy for promoting women and science at European level, this being a coherent, multi-dimensional, long-term approach pursued along three tracks – a reinforced Policy Forum, an improved understanding of “gender and science” and an enriched Gender Watch System – as

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<sup>12</sup> One example is the FLOSSPOLs activity (IST-FP6 project <http://www.flosspols.org/>) on gender issues and software development, in particular Open Source Software. While 25% of proprietary software developers are women, this falls down to only 5% in Open Source Software

<sup>13</sup> Art. 23 EU Charter: Equality between men and women must be ensured in all areas, including employment, work and pay. The principle of equality shall not prevent the maintenance or adoption of measures providing for specific advantages in favour of the under-represented sex.

<sup>14</sup> Gago, José Mariano et al (2004), Report by the High Level Group on Increasing Human Resources for Science and Technology in Europe, European Commission and European Commission (2004 b), Investing in research: an action plan for Europe, COM(2004) 226 final/2 of 4

<sup>15</sup> The target in mathematics, science and technology is as follows: ‘The total number of graduates in mathematics, science and technology in the European Union should increase by at least 15% by 2010 while at the same time the level of gender imbalance should decrease.’ European Council (2003 b), Conclusions of 5 May 2003 on reference levels of European average performance in education and training (Benchmarks), C 134/ 02, [http://europa.eu.int/eur-lex/pri/en/oj/dat/2003/c\\_134/c\\_13420030607en00030004.pdf](http://europa.eu.int/eur-lex/pri/en/oj/dat/2003/c_134/c_13420030607en00030004.pdf)

<sup>16</sup> European Commission (1999)

<sup>17</sup> European Parliament (2000), Resolution on the communication from the Commission entitled: Women and Science-Mobilising women to enrich European research, 3 February 2000 (PE 284.656)

<sup>18</sup> European Council (1999), Resolution on women and science, 20 May 1999 (8565/99)

described in the first activity report to the Council in May 2001 and taken up in the Science and Society Action Plan.

### **3.1. Synergies between European and national policies**

With a view to developing dialogue and exchanging experience and good practice regarding national policies to promote women in science, the Helsinki Group on Women and Science has continued to be a key player. A first report of the Helsinki Group, *National policies on women and science in Europe*<sup>19</sup>, based on the situation in 30 countries, was published by the Commission in June 2002. The report, and development since, shows the progress in gender equality policies in the European Union and the role of the Commission as a catalyst. Support by members of the Helsinki Group was instrumental in undertaking the first steps to establish an ERA-NET initiative on Women in Science policies<sup>20</sup>. A specific support action is currently being carried out to this end.

### **3.2. Strengthening the role and participation of women scientists**

As announced in the Science and Society Action Plan, and based on the results of a preparatory study involving consultation with relevant stakeholders, a *European Platform of Women Scientists* will be launched early in 2005 (with Commission start-up funding of approximately €2 mio until 2007), to bring together networks of women scientists and organisations committed to gender equality in scientific research.

### **3.3. Benchmarking policies and progress - statistics and strategies**

Sex-disaggregated statistics are crucial to monitor the participation of women and men at different seniority levels, sectors and scientific fields in European Research. In 1999 the information need in terms of primary statistics in European research, was identified. At the time, no systematic or centrally co-ordinated collection of sex-disaggregated data on R&D staff existed at European level. A programme of statistical work was therefore initiated and the group of Statistical Correspondents was created as a subgroup of the Helsinki Group on Women and Science in 2001. This activity has stimulated a number of publications, including the *She Figures 2003* which contains the widest collection of European data on women and science ever produced (annex 1.2). Sex-breakdown has now also been integrated into the data collected by Eurostat. Based on these data, a range of gender-sensitive indicators has been developed to measure and compare success rates of women and men to obtain senior positions in research and their access to R&D funding (see annex 1.3).

### **3.4. Women in industrial research - WIR**

At the end of 2001, the European Commission set up an expert group to analyse and make recommendations to improve the situation of women in industrial research. The report intended as a wake-up call for European industry<sup>21</sup> was presented in January 2003 and then discussed at the WIR-conference in Berlin<sup>22</sup>. A study compiling statistical data and describing

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<sup>19</sup> Teresa Rees (2002) *The Helsinki Group on Women and Science: National Policies on Women and Science in Europe*, European Commission

<sup>20</sup> ERA-NET scheme: Supporting the Cooperation and Coordination of Research Activities carried out at National or Regional Level. Preparatory project: European Policy Cooperation for Women in Science (EOWIN)

<sup>21</sup> RübSamen-Waigmann, Helga et al (2003), *Women in industrial research. A wake-up call for European industry*, European Commission. The companies involved represented more than 20 billions € R&D investment/ year

<sup>22</sup> European Commission (2004 c) *Women in industrial research. Speeding up changes in Europe*

best practices in companies<sup>23</sup> and a survey on company level data and good practices<sup>24</sup> complete the analysis. The WIR initiative revealed the low proportion of women researchers in industry in general, with a few striking exceptions of research-based companies. The expert group identified gender diversity as a key element for innovation and economic success for research-based companies in terms of global competition. As only 15% of the researchers in industry in 1999 were women (highest in Ireland with more than 28%), the group called for concerted efforts of companies, governments and universities to mobilise more women for industrial research and to quadruple their number by 2010. It criticised the lack of gender awareness in some companies and argued for a general change of research cultures and modern working conditions, which would allow women and men to have both a research career and family life. A group of CEOs of 7 leading R&D based companies issued a position paper to take concrete actions in five key areas (annex 2.2). Further steps include stimulating actions at European and national level, such as the establishment of an industry-driven expert group to analyse the business perspective of the promotion of women in industrial R&D (WIR Women in Science and Technology Expert Group).

### 3.5. Women scientists in Central and Eastern Europe and the Baltic States – Enwise<sup>25</sup>

In October 2002, the *Enwise* Expert Group was launched with a view to examining the situation facing women scientists in Central and Eastern European countries and in the Baltic States<sup>26</sup>. The *Enwise* report<sup>27</sup>, presented to the Commission on 30 January 2004 and discussed at a follow-up conference in Tallinn in September 2004, acknowledges the legacy of the communist gender policy. The importance of education and access to it, has led to the emergence of a considerable proportion of highly-qualified women active in all public spheres and notably in science. The report showed that although women account for 38% of the scientific workforce in these countries, a large proportion of female scientists are employed in areas where R&D expenditure is lowest. The specific gender policy implemented in these countries was characterised by the availability of childcare facilities, legal protection and state support for the working mother. Today, the prospects for young female scientists are very bleak, due to the unavailability of funding, rigid patterns of promotion and recognition and the lack of appropriate welfare policies, all of which are potential causes of brain-drain. In addition to the specificities encountered in the post communist countries, a number of challenges, such as for example the low number of women in decision-making positions, are common to new and old Member States. It is therefore likely that a number of problems can be tackled for EU-25. The need for continued specific action for the new *Enwise* Member States and Bulgaria and Romania will need to be looked at. As a first follow-up, the

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<sup>23</sup> Meulders, Danièle et al (2003)

<sup>24</sup> European Commission (2003 a), Women in industrial research. Good practices in companies across Europe

<sup>25</sup> Enwise=*En*large *w*omen *i*n *s*cience to *e*ast. The countries involved are: Bulgaria, the Czech Republic, Estonia, Hungary, Latvia, Lithuania, Poland, Romania, the Slovak Republic and Slovenia

<sup>26</sup> Three parallel workshops were held: Young scientists (Prague, April 2003), Bioethical issues in the Enwise countries from a gender perspective (Budapest, October 2003), Women scientists in the Balkan region (Brussels, November 2003).

<sup>27</sup> European Commission (2004 d) Waste of talents: turning private struggles into a public issue. Women and Science in the Enwise Countries. A report to the European Commission from the Enwise Expert Group on women scientists in the Central and Eastern European countries and in the Baltic States, Luxembourg, Office for Official Publications of the European Commission

Commission is funding the project “*Central European Centre on Women and Youth in Science*”, coordinating women and science activities with partners in seven countries<sup>28</sup>.

### 3.6. Gender and excellence

The workshop “Minimising gender bias in the definition and measurement of scientific excellence”<sup>29</sup>, held at the European University Institute in Florence in October 2003, provided a first opportunity to take forward the recommendations expressed in the report of the ETAN expert group<sup>30</sup> on defining and measuring scientific excellence. Possible gender bias can occur in the characterization of scientific excellence, in the assessment criteria, in the choice of the explicit and implicit indicators for scientific excellence, in the way the criteria are applied to men and women and in the failure to integrate women in scientific networks and in the procedures through which criteria are applied to people.

### 3.7. Increasing the knowledge base on Women and Science

A call for Science and Society proposals published in December 2002 resulted in the selection of five women and science projects. A call for Women and Science proposals has been published in 2004, targeting subjects such as the empowerment of women scientists, ambassadors for women and science, gender research, comparative research to analyse and assess the efficiency of existing measures, measurement and evaluation of scientific excellence, piloting new areas and enhancing the Gender Watch System. With an additional €5,7 mio earmarked in the Science and Society work programme 2005-2006 for Women and Science, in FP6 a total of around €20 mio will have been dedicated to Women in Science activities.

### 3.8. Gender mainstreaming across the European Research Framework Programmes

The European Commission seeks to mainstream gender equality in scientific research, by promoting the participation of women scientists in Framework Programme activities and by ensuring that the gender dimension is addressed in European research wherever relevant. The way in which gender was taken into account in the specific programmes of the Fifth Framework Programme (FP5) was evaluated in a series of Gender Impact Assessment Studies, published in November 2001<sup>31</sup>. The results and recommendations were implemented in the Sixth Framework Programme (FP6) and enriched the Gender Watch System. The main aspects are:

- **40% target for women’s representation in committees, groups and panels:** from FP5 to FP6 little progress has been achieved in meeting this target<sup>32</sup>:
  - **Evaluation Panels:** In FP5, the percentage of women varied from 22% to 27% (2001), the average percentage of women so far is 26% in FP6 (2003)<sup>33</sup>,

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<sup>28</sup> Central European Centre on Women and Youth (contract no SAS6-CT-2004-003582), Czech Republic, Hungary, Slovenia, Slovak Republic, Romania, France, Italy, [www.ccc-wys.org](http://www.ccc-wys.org)

<sup>29</sup> European Commission (2004 b)

<sup>30</sup> ETAN: European Technology Assessment Network; Osborn, Mary et al (2000), Science policies in the European Union: Promoting excellence through mainstreaming gender equality. A report from the ETAN Expert Working Group on women and Science, European Commission

<sup>31</sup> The synthesis report and the reports of each of the studies: <http://www.cordis.lu/science-society/library.htm>

<sup>32</sup> Statistics on the Framework Programmes – see annex 3



- **Advisory Groups:** In FP5, the average percentage of women was 28%, it has decreased to 27% in FP6. Four programmes are close to or above the target (see annex 3.5);
  - **Expert database:** In FP5, the percentage of women was only 17%. This has increased to 24% in 2004 (see annexes 3.1-3.3);
  - **Programme Committees:** The proportion of women increased from 22% in FP5 to 26% in FP6;
  - **Project Coordinators:** In FP5, the share of women was 16%<sup>34</sup> - in FP6 only 14% (2003)<sup>35</sup>
- 40% target for women’s representation in Marie Curie fellowships
    - The 40% target has not been fully achieved within the **Marie Curie Programme:** around 35% of the accepted MC fellows in individual MC actions in 2003 and 2004 were women<sup>36</sup>
  - **“Engendering” work programmes:** FP6 requires that gender aspects be systematically integrated at all stages of the policy and programme implementation process (from calls for proposals through to evaluations and contract negotiations), and wherever relevant as a cross-cutting dimension in research content itself.
  - **Gender Monitoring Studies:** a series of studies were launched at the end of 2004 to monitor progress towards gender equality and gender awareness in the thematic priorities and other FP6 activities. They will examine the participation of women and the integration of the gender dimension in the research content, with a view to both evaluating the success of current gender mainstreaming strategies and making recommendations for future action.
  - Gender Action Plans: the new instruments of FP6 (networks of excellence and integrated projects) require contractors to develop Gender Action Plans (GAPs) as part of their projects. Tools to monitor and analyse the implementation of the GAPs are in preparation.
    - **First experiences with GAPs in FP6:** In 2003 and 2004, the European Commission assessed the Gender Action Plans of 148 short-listed proposals (102 integrated projects and 46 networks of excellence) across 5 different thematic priorities. The assessment revealed that about 10% of the Gender Action Plans were very good, about 75% were adequate and about 15% were not satisfactory. A good GAP contained 3 steps: (i) a diagnosis of the current situation regarding women's participation and gender aspects in the research field; (ii) proposed

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<sup>33</sup> See annex 3.5: Only in the Science and Society programme, parity in the evaluation panels was realised. The 40% objective was also reached in the Innovation programme (41%). In addition, Citizens and Governance with 39%, Food Quality and International Cooperation with 35% each have come close to the target. On the other hand, four programmes had women participation of less than 25%: EURATOM (6%), Aeronautics (14%), IST (18%) and Life Sciences (24%). For evaluators from EU-25 the percentage of women is 27% - see annex 3.4.

<sup>34</sup> Based on 13.954 FP 5 contracts of which for 7.864 the gender of the scientific coordinator could be identified

<sup>35</sup> Based on 11.600 submitted proposals in 2003 – of 106.000 participants/coordinators 15.325 are women

<sup>36</sup> For Host-driven actions (Research Training Networks, Host Fellowships for Early Stage Research Training and Transfer of Knowledge Host Fellowships selection of researchers is done by the selected host institutions) data is not available yet. Experience show that women’s participation is higher in these early stage actions

actions based on this diagnosis; and (iii) concrete information about how the gender dimension will be integrated in the research content.

- **Good practice example:** A network on gender aspects in food quality and safety research (e.g. gender difference in susceptibility to food-related diseases and perception of disease; gender difference in risk assessment, management, perception, communication and consumer behaviour) is bringing together representatives from the Integrated Projects and Networks of Excellence funded under this priority as well as representatives from the advisory group. The objectives are: - Exchange of information regarding women's participation and gender in the research itself, development of "best practice" to be integrated in the individual project's gender action plan, development of joint activities e.g. workshops, conference, mentorship, etc, development of actions to promote gender in research in an enlarged EU, linking with/ promoting local, regional, national and other international /global initiatives.
- **Database on gender participation in FP6:** is being developed and should be online early 2005. It will contain all available sex-disaggregated statistics on expert evaluators, proposals, programme committees, advisory groups, and monitoring panels.
- **Information and Training:** *A Vademecum on gender mainstreaming in the Sixth Framework Programme* was produced in March 2003 for scientific officers, evaluators etc. It includes the legal basis for the gender mainstreaming actions and provides details of all references to gender mainstreaming in the official documents (Framework Programme, Specific Programmes and Rules for Participation)<sup>37</sup>.
- **Women and Science Working Group:** the inter-service working group, established in 2000, has continued its work of supporting the implementation of the Gender Watch System.

#### 4. PROGRESS IN THE MEMBER STATES

##### 4.1. Policies and strategies at national level

Gender equality policies in science have become an important issue in all EU Member States (see table 1), being mainly embedded in Equal Treatment Legislation. To mainstream policies to promote gender equality in science, many countries have established structures such as national committees and units dedicated to women in science in relevant government departments. Some countries have recently established national resource and coordination centres for women in science activities<sup>38</sup>. Universities and research institutions are increasingly requested to develop gender equality plans and in the Netherlands and Germany,

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<sup>37</sup> This document can be downloaded at: <ftp://ftp.cordis.lu/pub/science-society/docs/gendervademecum.pdf>

<sup>38</sup> CEWS – Centre of Excellence Women in Science, and Kompetenzzentrum Women in Information Society and Technology were established in Germany in 2000, the National Contact Centre – Women and Science was established in Czech Republic in 2002 and the National Resource Centre for Women in SET launched in United Kingdom in 2004. Other countries (eg. Austria) have established regional centres at all universities. Overview and links to national activities see also: [http://europa.eu.int/comm/research/science-society/links\\_en.html#WomenandScience](http://europa.eu.int/comm/research/science-society/links_en.html#WomenandScience)

universities are ranked according to the number and proportion of women in decision-making positions, or in Science, Engineering and Technology, and this information is published<sup>39</sup>.

Table 1: National policies to promote gender equality in science (2004)

EU-Member States (25)																										
Equality Measures in Science	BE	CY	CZ	DK	DE	EE	EL	ES	FR	IE	IT	LV	LT	LU	HU	MT	NL	AT	PL	PT	SI	SK	FI	SE	UK	
Equal treatment legislation (general)	X		X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	
Commitment to gender mainstreaming	X	X	X	X	X		X	X	X	X	X		X	X			X	X	X	X	X		X	X	X	
National Committee on Women & Science	X	X	X	xx	X	X	xx	X	X	X	X		X		X	X		X	X	X	X	X	X	X	X	
Women & Science Unit in Research Ministry					X		X5		X		X							X							X	
Publication of Sex-disaggregated Statistics	X	X	X	X	X	X	X	X	X	X		X	X	xx	X	X	X	X	X	X	X	X	X	X	X	X3
Development of Gender equality indicators	X4			X	X		X	X	X	X	X				X	X		X		X	X			X	X	
Gender balance targets: public committees	X2			X	X		X	X	X	X														X	X	
Gender balance targets on university ctees		X		X	X				X								X4	X					X	X	X4	
Gender Equality Plans in Univ.& Research I.	X4			X	X				X	X	X			xx			X4	X					X	X		
Gender <sup>2</sup> Studies & Research at Universities	X	X	X	X	X	X	X	X	X	X	X	X	X	xx	X	X	X	X		X	X	X	X	X	X	X
Programmes on W&S, special funding available					X		X		X	xx	X	xx	xx			X	X	X				X			X	
Nationwide Centres on Women & Science			X		X																				X	

**\*Source:** Information provided by the members of the Helsinki group & EOWIN, Summer 2004, DG RTD, UNIT C4 xx = in preparation

<sup>2</sup>) or women studies/research X1= only BE French-speaking X2= only BE Flemish-speaking X3= not for industrial R&D

x = yes    blanc cell = no X4= set by certain universities X5= person only responsible for W&S

**Gender studies and gender research** are emerging in many countries (see table 1)<sup>40</sup>, but there are great differences among EU Member States. Resources and infrastructures for gender research are lacking especially in many of the new EU Member States.

#### 4.2. Is the gender gap closing in research and development?

Data at European level show that the gender gap at the highest stages of the academic career is beginning to close, but at a very slow pace. Although the total number of women full professors in Europe increased by 23% from 1999 to 2002, their proportion is still only 14% compared to 13% 3 years before (see Graph 1, below). Only in Latvia, Portugal and Finland, 20% or more of the full professors are women. Data also show that a high number of women in certain areas of science does not preclude vertical segregation.

The changes that have been achieved in terms of the numbers of women graduating from university, completing PhD studies and starting a career in science, first noticed in the late nineties, have been confirmed.

- Women now constitute 58% of graduates across Europe (1999:56%); the percentage of doctorate degrees earned by women has reached about 41% (1999:39% - see Fig.1);
- The number of women and men in science and engineering graduates has sharply increased. In two thirds of the EU Member States, women graduates in science,

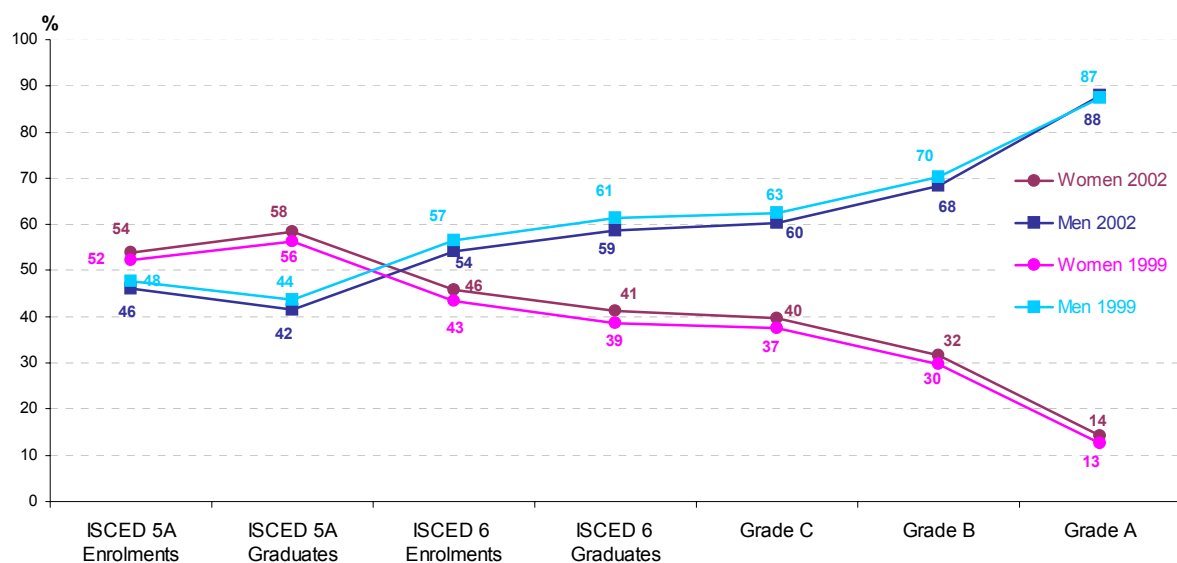
<sup>39</sup> EU-Equal Project: Bridging the Gender gap at Universities (NL) and <http://www.ranking-kompetenzz.de/> (DE)

<sup>40</sup> Gender studies are now taught at universities in almost all EU Member States. For example Germany has established more than 100 professorships on gender issues in different disciplines. [http://www.fu-berlin.de/zefrauen/doku/doku\\_prof\\_daten\\_uebersicht.htm](http://www.fu-berlin.de/zefrauen/doku/doku_prof_daten_uebersicht.htm). Many Member States have established special funding programmes dedicated to promote women in science, including funding for PhD studies, tenure track, fast track programmes to senior positions, returner schemes, funding of projects or conferences, grants, and/or gender research.

mathematics and computing are above the 40% mark (annex 1.5)<sup>41</sup>. On a European average, women constitute 44% of the graduates in this field and this has remained constant from 1998 to 2002.

- The numbers of women and men graduating in engineering, manufacturing and construction, also increased from 1998 to 2002. Women are increasing at a faster rate, with their proportion in 2002 reaching 25% as compared to 21% in 1998. However, there are big national differences: around 35 % of engineering graduates in Lithuania and Portugal are women, compared to only 13% in the Netherlands (annex 1.5)<sup>42</sup>.

**Fig. 1: Relative share of women & men in a typical academic career for EU-25, headcount, 1999 and 2002<sup>43</sup>**



Definition of grades: A-The single highest grade/post at which research is normally conducted within the institutional or corporate system, B-Researchers working in positions not as senior as top position (A) but more senior than the newly qualified PhD holders, C-The first grade/post into which a newly qualified PhD (ISCED6) graduate would normally be recruited within the institutional or corporate system.

At present, 28% of all researchers in the EU-25 are women, but the number and proportion varies widely between Member States and sectors. The proportion of women in the higher education sector is 35% in the EU, which is more than twice as much as in industrial research where the corresponding figure is 18%<sup>44</sup> (annex 1.6). Growth rates during the period 1999-

<sup>41</sup> EU 25 average is 45%. Since 1998 the increase has been highest in Sweden with 12.4 pp (followed by Estonia + 8.8pp, Slovakia +7.4pp, Slovenia +7.1, Germany + 3.7, United Kingdom+ 2.9). Trends were negative in Hungary (- 13.8pp), Poland, France, Ireland, and Italy.

<sup>42</sup> The increase since 1998 was highest in Sweden with 5.3pp, HU and EE with 4.8 and DE with 4.2pp

<sup>43</sup> 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), 2002: PhD enrolments: Exceptions to the reference year: NL:2001, ISCED 5a & PhD graduates: Exceptions: CY, DK, FR, IT, MT:2001, C, B, A: Exceptions: AT: 1998; EL: 2000; CY, DK, FR, IT, PT: 2001, FTE NL, Data estimated SI,1999 ISCED 6 graduates: Exceptions to the reference year: CY: 2000; FR, SE: 2001, ISCED 5A and 6 graduates: Exceptions: DK, IE: 1998; BE: 2000, Isced5A enrolments: Exceptions: PT: 2000, ISCED 6 enrolments: Exceptions: CY: 2001; C &B: Exceptions: AT: 1998; PL: 2000; FTE: NL, PT; BE (FR) only, A: Exceptions: AT:1998; FR, PL: 2000; FTE: NL, PT, EU-25 for graduates calculated by DG Research. Source: Eurostat, Education (Graduates & Enrolments); DG Research, WiS database (Academic Staff)

<sup>44</sup> The proportion of women researchers for all sectors 2002 was highest in Latvia with 52% and lowest in Germany with 16%

2002 were usually higher for women than for men, particularly in industrial research (see annex 1.7)<sup>45</sup>.

## **5. FUTURE PRIORITIES**

On the basis of the knowledge gained through the collection and analysis of sex-disaggregated statistics and in the light of the progress already achieved in policy terms, as outlined in this report, a number of new and continuing priorities can now be identified for future action both at Commission and member state levels. In terms of the participation of women in science, the objectives need now to be more narrowly focused, to concentrate essentially on certain disciplines or fields (engineering, entrepreneurship, innovation and technology) or levels (senior and decision-making positions). New areas of action will include gender issues in the definition and measurement of scientific excellence and the strengthening of gender research, as an interdisciplinary field of study allowing a better understanding of social relations between men and women. Furthermore, the role of men in ensuring or hampering progress towards gender equality in science will be examined more closely with a view to better understanding the mechanisms involved, and measures to encourage men to participate actively in promoting gender equality in science will be envisaged. Benchmarking and monitoring will continue to underpin the whole range of actions undertaken.

### **5.1. Improving scientific excellence by promoting gender awareness and fairness**

“Scientific excellence” is the only criterion to assess science-driven research. Based on the needs defined in the workshop “Minimising gender bias in the definition and measurement of scientific excellence” research projects will be funded in 2005 and 2006, the first results of which will be presented and discussed during a European conference to be organised in 2006. It is further proposed:

- To increase gender awareness of scientists in charge of evaluating research, special training programmes on potential areas of gender bias need to be developed and implemented.
- To increase transparency of screening and selection procedures. To that end, guidelines for scientific institutions should be developed and implemented. These may include recommendations such as ensuring accountability of panel members, public advertising of positions, developing explicit standards of promotion or appointment and using appropriate indicators of performance

### **5.2. Boosting the numbers of women in leading positions**

To increase the proportion of women in leading positions, quantitative and qualitative targets should be adopted at European, national and institutional level:

- The proportion of women in leading positions<sup>46</sup> should increase to at least 25% by 2010; for new recruitments the proportion of women should be at least 33%.

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<sup>45</sup> The increases have been highest in Spain with 4.194 additional women researchers working in industry (+ 150%), Germany with 3.936 more women researchers (+27%), France with 1.227 (+7%), Portugal with 487 (+ 61%), and Cyprus with 39 (+ 61%)

<sup>46</sup> Full professors or Grade A as described above in fig.1. The target is calculated based on a yearly rate of 5% newly recruited professors taking into regard a fair representation of women in the recruitment procedures of about 1/3

To analyse recent developments and avoid gender bias in selection procedures, Member States are encouraged to develop yearly recruitment statistics. Good practice in this respect can be found in Denmark and Germany<sup>47</sup>. Programmes, procedures, mentoring and training schemes need to be established to reach this target.

### **5.3. Strengthening gender research and the gender dimension in research**

There is a wide-spread call from the Helsinki Group on Women and Science and the scientific community for more systematic and structured support for gender research, which is not addressed appropriately by the current European research programmes. It is proposed:

- To establish gender research as a recognised item in European research funding;
- To launch a European award on excellence in gender research,
- To reflect on integrating the gender dimension in new and emerging areas of scientific research (foresight, nanotechnologies, security, technological platforms, innovation);
- To continue to promote the integration of the gender dimension effectively into the different research programmes including a dedicated budget (gender budgeting);

### **5.4. Enhancing the role of women in engineering and innovation**

The role of women in the areas of innovation, entrepreneurship, patent creation, technology and ICT development, needs to be enhanced and requires more in-depth analysis. Policies and processes need to be stimulated in order to mobilise all available talents and resources. There is a need to

- Mobilise more women for industrial research. By 2010 their proportion in Europe should reach at least one third, as it is now in higher education. The total number of female researchers in industry should be doubled by 2010.
- Increase both the number of women graduating from engineering and their proportion. A target of one third of women for all engineering graduates<sup>48</sup> by 2010 - as it is now in Lithuania and Portugal - is proposed.
- Identify good practices in companies and universities and develop adequate information strategies and coordination structures to support these changes.

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adequate to the female proportion at the level below. In 2002 the proportion of Grade B/associate professors was 32%, see fig 1 and annex 1.4

<sup>47</sup> Denmark has systematically surveyed the new appointments to scientific positions since the 1990s. The 2004 report documented that an equal proportion of both sexes has been reached for associate professors (Grade B), whereas five years earlier an equal proportion was reached for assistant professors only (Grade C). [http://www.cfa.au.dk/Publikationer/Notater/Notat\\_2004\\_1.pdf](http://www.cfa.au.dk/Publikationer/Notater/Notat_2004_1.pdf). Since 1997 the German Bund Länder Kommission für Bildungsplanung und Forschungsförderung is collecting yearly sex-disaggregated statistics on the applications and the selection procedures for professorships and top positions in research institutions. The yearly progress reports are presented to the Heads of Governments for their information and approval. <http://www.blk-bonn.de/papers/heft109.pdf>

<sup>48</sup> ISCED level 5: first degree. See also European Council (2003 b) – footnote 15.

## **5.5. Research careers which allow for a reconciliation of professional and private life**

Human resource development strategies should aim to provide a working environment, which allows both women and men scientists, to combine family and work, children and career. To this end, it is proposed that:

- Good practices need to be developed, which also mobilise men to share family responsibilities.
- Research institutions and programmes should be stimulated to develop standards to ensure a healthy work/life balance in research.
- All publicly funded programmes, especially grants and fellowship programmes for young scientists should include information on the issues of combining scientific work and responsibilities for children. The handling of maternity and parental leave should be addressed within all mobility and research programmes. Provisions should be made to encourage male researchers to take parental leave.
- Age limitations which de facto constitute a disadvantage for the careers of women with children should be abolished.
- Dual career issues should be addressed at European, national and institutional level.

## **5.6. Gender monitoring in the member states**

Despite very good progress (see chapter 3.3), there is still information lacking for certain policy measures. These are the gender pay gap for scientists and researchers, work-life balance including the questions of dual careers and mobility, the attrition of women from research and academia; career progression and promotion, women as patent originators and in innovative research enterprises and appointment procedures and recruitment strategies for the composition of scientific boards. A concerted effort is required to satisfy the need for information on these topics.

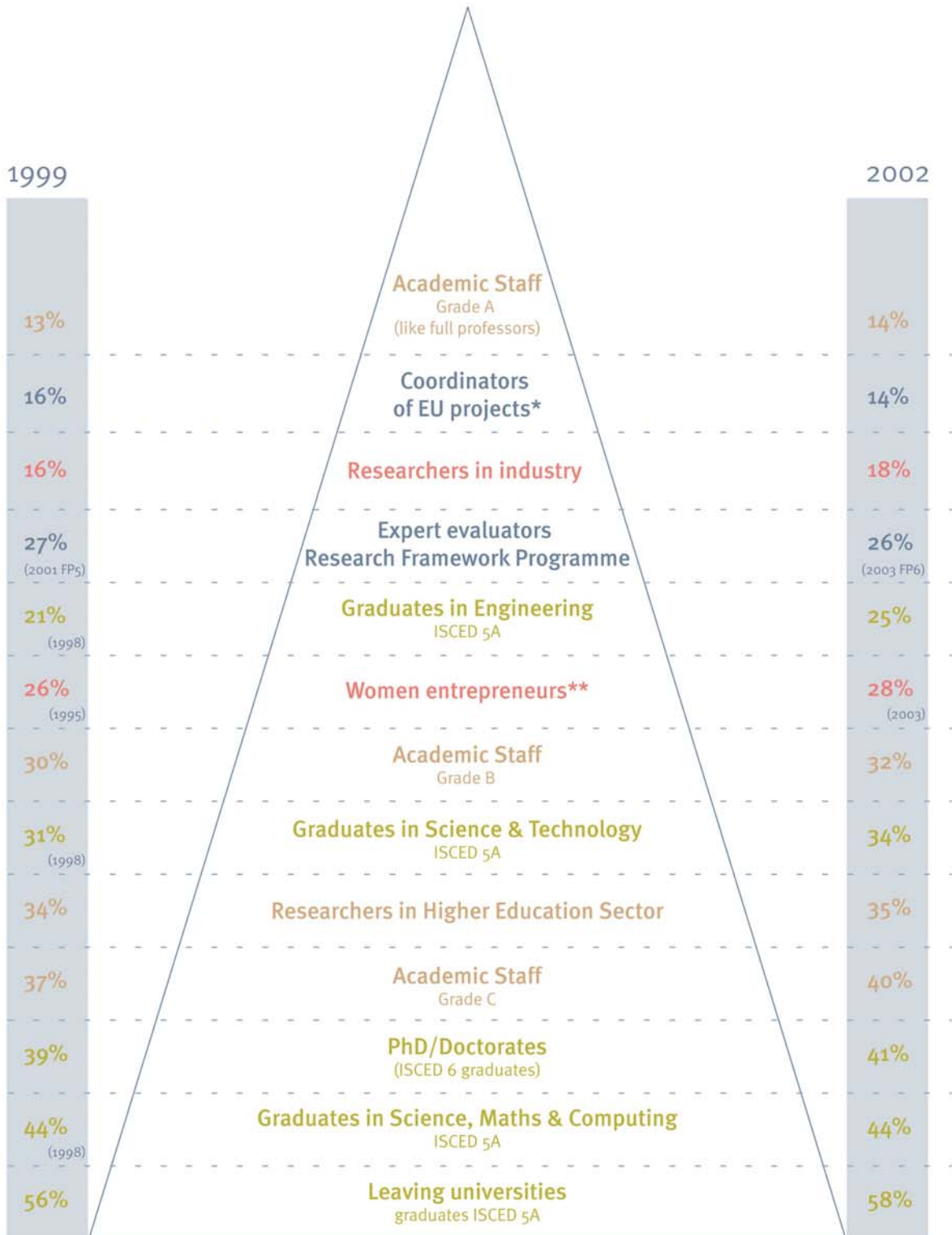
## **5.7. More efficient monitoring of the Research Framework Programme**

The *Gender Watch System* monitors the progress towards a more balanced participation of women and men in the Framework Programme. To that end it uses the 40% targets (see chapter 3.8.). To broaden and further develop the system, the following items need to be addressed in particular

- The gender data base and monitoring system needs to be technically improved to allow for more rapid update
- Regular progress reports, including the gender action plans, need to be established
- The system should include also the use of financial resources for gender related activities (gender-budgeting).

# Annex 1 Women and Science Statistics

## Annex 1.1 Are we successful in closing the gender gap in Science and Engineering? Percentage of women, EU-25



■ Researchers & entrepreneurs/ private sector
 ■ Expert evaluation & coordination in EU FRP
 ■ Academic staff & researchers in academia
 ■ Graduates

Source: Eurostat, Education S&T statistics, DG RTD WIS database, EU-25 totals for graduates and researchers in HES calculated by DG RTD, C4. **Academic Staff** (Source: WIS database - see footnote 43, report). **Researchers in Business Enterprise Sector** (Source: Eurostat R&D statistics except AT, IT, PT (1999), SE WIS database): Exceptions 2002: BE, DE, IT, LU, NL, PL, PT, SE: 2001; IE: 2000; EL-1999. Data unavailable: AT, IE, LU, MT, UK. Exceptions 1999: SK: 2002; DE, IE, NL, SE: 2001; BE, FI, FR, IT, LV: 2000; AT: 1998. Data unavailable: LU, MT, PL, UK. DE: FTE. **ISCED 5A graduates** (Source: Eurostat Education): Exceptions 1998: BE, CZ: 2000, Exceptions 2002: DK, FR, IT, MT, FI: 2001, data unavailable: EL, LU, LT (1998), LV (1998). **ISCED 6 Graduates** (Source: Eurostat Education): Exceptions 1998: SE, UK: 1999; BE: 2000. Exceptions to 2002: DK, FR, IT, MT, FI: 2001; data unavailable: ES, LU. **Researchers in Higher Education Sector** (Source: Eurostat R&D statistics except EL, IT, NL, SE, UK WIS database): Exceptions 1999: BE (FTE), IE, LU, PL: 2000; SK: 2002, data unavailable for MT, AT. Exceptions 2002: EL, IT: 1999; BE (FTE), DE (FTE), LU, NL, PT, SE, UK: 2001, data unavailable for MT, AT, IE. \*) European Commission, DG RTD, FP5 and FP6 statistics, see annex 2. \*\*) Women in % of self-employed in industry and service EU-25, Eurostat 2004, Community Labour Force Survey



## Annex 1.2: List of publications:

- **Götzfried, August (2004)**, Women, science, and technology: Measuring recent progress towards gender equality, in Statistics in Focus, Science and Technology, Theme 9 6/2004, EC/Eurostat, [http://europa.eu.int/comm/research/science-society/women/wssi/pdf/stat-focus\\_en.pdf](http://europa.eu.int/comm/research/science-society/women/wssi/pdf/stat-focus_en.pdf)
- **European Commission (2004 d)**, Waste of Talents: turning private struggles into a public issue, ("ENWISE report"), Chapter 3 [http://europa.eu.int/comm/research/science-society/pdf/enwise\\_report2\\_fulltext-120704.pdf](http://europa.eu.int/comm/research/science-society/pdf/enwise_report2_fulltext-120704.pdf)
- **European Commission (2003 b)**, **She Figures 2003**, Women and Science Statistics and Indicators, [http://europa.eu.int/comm/research/science-society/women/wssi/pdf/stat-focus\\_en.pdf](http://europa.eu.int/comm/research/science-society/women/wssi/pdf/stat-focus_en.pdf)
- **Rübsamen-Waigmann, Helga et al (2003)**, **Women in Industrial Research** - A wake up call for European industry ("WIR report"), European Commission, [http://europa.eu.int/comm/research/science-society/women/wir/pdf/wir\\_final.pdf](http://europa.eu.int/comm/research/science-society/women/wir/pdf/wir_final.pdf)
- **Meulder, Danièle et al (2003)**, Analysis of statistical data and good practices of companies ("WIR study"), European Commission, [http://europa.eu.int/comm/research/science-society/women/wir/pdf/wir-ulb\\_en.pdf](http://europa.eu.int/comm/research/science-society/women/wir/pdf/wir-ulb_en.pdf)
- **European Commission (2003 c)**, Third European Report on Science & Technology Indicators, Chapter V: *Encouraging Women into S&T*: [http://europa.eu.int/comm/research/science-society/pdf/women\\_reist\\_extracts.pdf](http://europa.eu.int/comm/research/science-society/pdf/women_reist_extracts.pdf)

## Annex 1.3: Examples of Women and Science statistics and indicators:

### Eurostat R&D statistics

[http://europa.eu.int/comm/eurostat/newcronos/reference/display.do?screen=welcomeref&open=/&product=EU\\_MAIN\\_TREE&depth=1&language=en](http://europa.eu.int/comm/eurostat/newcronos/reference/display.do?screen=welcomeref&open=/&product=EU_MAIN_TREE&depth=1&language=en)

- *Total R&D personnel* by sectors of performance (employment), occupation and sex
- *Researchers by age and sex* (HC) in Government and Higher Education Sector
- *Share of female researchers* by sectors of performance (employment)
- *Total R&D personnel* and researchers by sectors of performance (employment), qualification and sex

### Eurostat Education statistics

[http://europa.eu.int/comm/eurostat/newcronos/reference/display.do?screen=welcomeref&open=/&product=EU\\_MAIN\\_TREE&depth=1&language=en](http://europa.eu.int/comm/eurostat/newcronos/reference/display.do?screen=welcomeref&open=/&product=EU_MAIN_TREE&depth=1&language=en)

- *Women among students in ISCED 5-6* - as % of the total students at this level
- *Females students (ISCED 5-6) enrolled by field of education* - as % of male and female students in this field
- *Female graduates (ISCED 5-6) by field of education* - as % of males and females graduates
- *Graduates in science and technology* per 100 of population aged 20-29 years by sex
- *Graduates in science and technology* as percentage of graduates of all fields by sex

### DG Research - Women and Science indicators web page

[http://europa.eu.int/comm/research/science-society/women/wssi/downindi\\_en.html](http://europa.eu.int/comm/research/science-society/women/wssi/downindi_en.html)

- *Compound Annual Growth Rates* for researchers in BES and Academic Staff
- *Percentage of women researchers* among academic staff Grade A, B, C and D
- *Index of Dissimilarity*
- *Feminisation ratio*
- *Odds Ratio* for becoming Grade A (i.e. how many times more likely men are than women to become Grade A staff)
- *Funding success rates*
- *Percentage of women* members of scientific boards

**WIR Study** [http://europa.eu.int/comm/research/science-society/women/wir/pdf/wir-ulb\\_en.pdf](http://europa.eu.int/comm/research/science-society/women/wir/pdf/wir-ulb_en.pdf)

- *Gender Employment Gap* for highly qualified population by family situation 2000

See also **Statistics in focus** (annex 1.2):

- *Honeypot indicator* which measures the relationship between R&D expenditure and the concentrations of women and men in particular sectors or scientific fields of R&D.
- *Percentage change* 1998-2001 of ISCED 5A+6 graduates

**Annex 1.4: Academic Staff Grade A ranked by percentage of women;  
Headcount (HC), 1999 and 2002**

Country	% women 2002	Number of women 1999 <sup>2</sup>	Number of women 2002 <sup>1</sup>	Total women & men 1999 <sup>2</sup>	Total women & men 2002 <sup>1</sup>	% change women 1999-2002
LV	23	76	88	417	384	16
PT	20	227	255	1200	1270	12
FI	20	402	474	2200	2376	18
PL	18	1323	1645	7562	9059	24
EE	17	94	101	567	585	7
ES	17	1367	1690	9200	10083	24
BE	16	:	187	:	2239	:
FR	16	3844	3732	23745	23122	-3
IT	15	1497	2468	12913	16891	65
UK	14	1445	2023	12488	14224	40
SE	14	319	534	2671	3803	38
HU	14	302	387	2504	2840	28
LT	12	69	66	608	539	-4
SI <sup>4</sup>	12	77	87	659	719	13
EL	11	181	216	1770	1915	19
DK	9	79	105	966	1109	33
SK	9	77	119	1078	1297	55
CZ	9	109	158	1556	1811	45
NL <sup>3</sup>	8	144	192	2426	2365	33
DE	8	791	1010	12579	12549	28
CY	7	1	2	21	29	100
AT	6	:	123	:	1995	:
MT	2	2	1	49	51	-50
IE	:	:	:	:	:	:
LU	:	:	:	:	:	:
<b>EU-25<sup>5</sup></b>	<b>14</b>	<b>11413</b>	<b>15663</b>	<b>99174</b>	<b>111204</b>	<b>23</b>

Source: European Commission, DG Research, WiS database

Footnotes:

1) Exceptions to the reference year 2002: AT: 1998; EL: 2000; CY, DK, FR, IT, PT: 2001;

2) Exceptions to the reference year 1999: CY: 1998; FR, PL: 2000

3) NL FTE

4) SI data estimated

5) Data unavailable for Ireland and Luxembourg

Please note that for small countries large percentage changes can be caused by a very small change of personnel (eg. MT, CY)

Definition of grade A: The single highest grade/post at which research is normally conducted within the institutional or corporate system

## Annex 1.5: ISCED 5A graduates – women and men, and percentage of women; HC, 1998 – 2002

Country	Year	400 - Science, Maths & Computing				500- Engineering, Manufacturing & Construction				400 + 500 - SET Graduates			
		women	men	total	%	women	men	total	%	women	men	total	%
BE	2000	1021	1681	2702	38	823	3041	3864	21	1844	4722	6566	28
BE	2002	1292	2097	3389	38	878	3264	4142	21	2170	5361	7531	29
CZ	2000	881	2594	3475	25	1224	3235	4459	27	2105	5829	7934	27
CZ	2002	1057	3070	4127	26	1409	3117	4526	31	2466	6187	8653	28
DK	1998	610	890	1500	41	314	732	1046	30	924	1622	2546	36
DK	2001	859	1246	2105	41	657	2199	2856	23	1516	3445	4961	31
DE	1998	7604	16527	24131	32	7071	34844	41915	17	14675	51371	66046	22
DE	2002	7338	13051	20389	36	7299	25500	32799	22	14637	38551	53188	28
EE <sup>3</sup>	1998	73	126	199	37	97	302	399	24	170	428	598	28
EE <sup>3</sup>	2002	188	242	430	44	193	426	619	31	381	668	1049	36
EL	1998	0	0	0		0	0	0		0	0	0	
EL	2001	0	0	0		0	0	0		0	0	0	
ES	1998	8251	10118	18369	45	6027	17557	23584	26	14278	27675	41953	34
ES	2002	9033	10726	19759	46	9098	21696	30794	30	18131	32422	50553	36
FR	1998	26181	26987	53168	49	9712	34661	44373	22	35893	61648	97541	37
FR	2001	24958	32135	57093	44	11782	35041	46823	25	36740	67176	103916	35
IE	1998	1814	2176	3990	45	468	1498	1966	24	2282	3674	5956	38
IE	2002	2502	2814	5316	47	510	1779	2289	22	3012	4593	7605	40
IT	1998	8490	6503	14993	57	7201	19846	27047	27	15691	26349	42040	37
IT	2001	8332	7136	15468	54	8589	22817	31406	27	16921	29953	46874	36
CY <sup>4</sup>	1998	0	0	0		0	0	0		0	0	0	
CY <sup>4</sup>	2001	60	45	105	57	0	0	0		60	45	105	57
LV	2002	590	551	1141	52	331	794	1125	29	921	1345	2266	41
LT	2002	560	611	1171	48	1270	2328	3598	35	1830	2939	4769	38
LU <sup>4</sup>	1998	0	0	0		0	0	0		0	0	0	
LU <sup>4</sup>	2001	0	0	0		0	0	0		0	0	0	
HU	1998	751	875	1626	46	1312	4426	5738	23	2063	5301	7364	28
HU	2002	540	1074	1614	33	1394	4001	5395	26	1934	5075	7009	28
MT	1998	9	18	27	33	0	37	37	0	9	55	64	14
MT	2001	22	52	74	30	18	63	81	22	40	115	155	26
NL	1998	1025	2713	3738	27	1080	7662	8742	12	2105	10375	12480	17
NL	2002	1063	2882	3945	27	1062	7384	8446	13	2125	10266	12391	17
AT	1998	569	1208	1777	32	333	1752	2085	16	902	2960	3862	23
AT	2002	542	855	1397	39	529	2545	3074	17	1071	3400	4471	24
PL	1998	3342	1781	5123	65	5094	16172	21266	24	8436	17953	26389	32
PL	2002	9124	6816	15940	57	7822	24557	32379	24	16946	31373	48319	35
PT	1998	1006	736	1742	58	1226	2491	3717	33	2232	3227	5459	41
PT	2002	1655	1191	2846	58	2557	4975	7532	34	4212	6166	10378	41
SI	1998	153	197	350	44	226	676	902	25	379	873	1252	30
SI	2002	146	239	385	38	206	571	777	27	352	810	1162	30
SK	1998	299	834	1133	26	662	1597	2259	29	961	2431	3392	28
SK	2002	859	1409	2268	38	1391	3027	4418	31	2250	4436	6686	34
FI	1998	845	856	1701	50	988	4424	5412	18	1833	5280	7113	26
FI	2001	1068	1159	2227	48	1442	5591	7033	21	2510	6750	9260	27
SE	1998	868	1373	2241	39	1083	3646	4729	23	1951	5019	6970	28
SE	2002	1619	1461	3080	53	2310	5761	8071	29	3929	7222	11151	35
UK <sup>5</sup>	1998	21167	29685	50852	42	8079	36797	44876	18	29246	66482	95728	31
UK <sup>5</sup>	2002	32172	41325	73496	44	8285	33619	41905	20	40457	74944	115401	35
<b>EU-25<sup>1</sup></b>	<b>1998</b>	<b>84959</b>	<b>107878</b>	<b>192837</b>	<b>44</b>	<b>53020</b>	<b>195396</b>	<b>248416</b>	<b>21</b>	<b>137979</b>	<b>303274</b>	<b>441253</b>	<b>31</b>
<b>EU-25<sup>2</sup></b>	<b>2002</b>	<b>105651</b>	<b>132187</b>	<b>237765</b>	<b>44</b>	<b>69032</b>	<b>211055</b>	<b>280088</b>	<b>25</b>	<b>174683</b>	<b>343242</b>	<b>517853</b>	<b>34</b>

Source: Eurostat, Education statistics,

Footnotes:

Data unavailable: EL, LU, LT (1998), LV (1998),

1) Exceptions to the reference year 1998: BE, CZ: 2000,

2) Exceptions to the reference year 2002: DK, FR, IT, MT, FI; 2001

3) EE: Data exclude ISCED 5A Master degrees

4) CY, LU: Most tertiary students study and graduate abroad and are not included

5) UK: A change in the reporting methodology in 2001 results in non comparable data for 2001 and 2002 with previous years

EU-25 totals calculated by DG Research

## Annex 1.6: Percentage of women researchers by institutional sector; HC, 2002<sup>1</sup>

	Higher Education Sector (HES)	Government Sector (GOV)	Business Enterprise Sector (BES)	ALL SECTORS
NL	27	:	9	:
DE 2	22	24	12	16
BE 2	37	30	18	26
FI	44	41	18	30
IT	30	38	19	:
CZ	35	33	20	29
IE	:	32	20	:
FR	33	32	21	28
DK	32	34	21	26
EE	43	60	23	43
HU	35	38	24	34
EL	44	37	24	:
CY	30	33	24	29
ES	37	42	25	35
SE	40	:	25	:
PL	39	43	28	38
PT	45	56	28	44
SI	34	43	29	35
SK	41	44	30	40
LT	48	49	33	48
LV	52	55	48	52
IE	:	32	20	:
MT	:	52	:	:
UK	37	32	:	:
LU	20	34	:	:
EU-25 <sup>3</sup>	35	34	18	28

Source: Eurostat R&D statistics (except NL, IT, SE: BES; EL, IT, NL: HES; IT: GOV - source of data WiS database, DG Research)

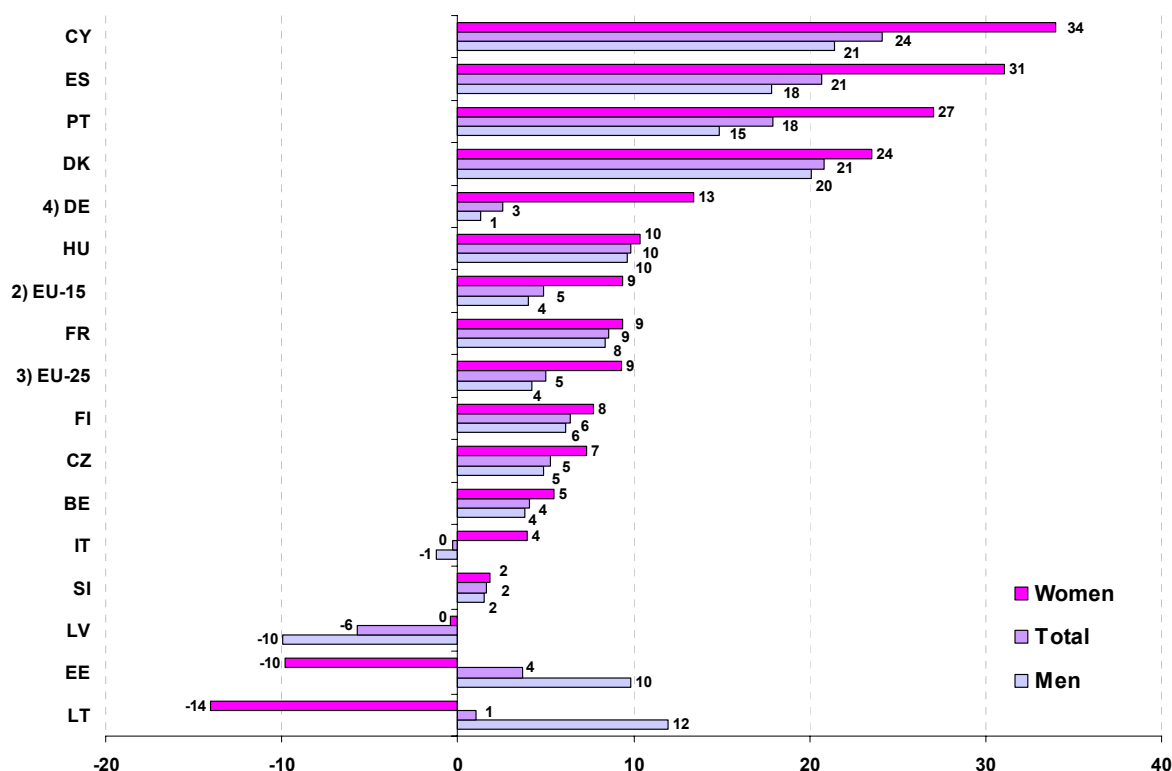
Footnotes:

1) Exception to the reference year 2002: BES: BE, DE, IE, IT, LU, NL, PT, SE: 2001; PL: 2000; EL: 1999. Data unavailable AT, LU, MT, UK  
HES: BE, DE, IT, LU, NL, PL, PT, SE: 2001; IE: 2000; EL: 1999. Data unavailable AT, IE, MT  
GOV: BE, PT: 2001; IE: 2000; EL: 1999. Data unavailable AT, NL,  
ALL SECTORS: PL: 2000; BE, DE: 2001. Data unavailable: AT, EL, IE, IT, LU, MT, NL, SE, UK

2) BE (HES, GOV, ALL SECTORS) & DE (BES, HES, GOV, ALL SECTORS) FTE

3) EU-25 calculated by DG Research, C4

## Annex 1.7: Compound Annual Growth Rate of researchers in the BES; HC, 1999-2002<sup>1</sup>



Source: Eurostat R&D statistics (except FR: 2002, IT: 1999 & 2002, PT: 2001 - source of data WiS database DG Research)

Footnotes:

1) Exceptions to the reference years: DE, DK, IT, PT: 1999-2001; BE, FR, LT, LV: 2000-2002.

2) Data unavailable: AT, EL, IE, LU, NL, SE, UK

3) Data unavailable: AT, EL, IE, LU, MT; NL, PL, SE, SK, UK

EU-15 & EU-25 calculated by DG Research, C4

## **Annex 2 General Information**

### **Annex 2.1 Milestones « Women and Science » in DG Research**

- 28-29 April 1998, Brussels, Conference « Women and Science »
- 17 February 1999: Communication from the Commission « Women and Science – mobilising women to enrich European research »
- 20 May 1999: Council Resolution on science and society and women in science. EN
- 8-9 July 1999: Women and Science : Networking the Networks - Declaration of Networks Active in Europe.
- November 1999, Presentation of the ETAN Report: Science policies in the European Union. Promoting excellence through mainstreaming gender equality »
- November 1999, Helsinki, first meeting of the « Helsinki group on women and science » (national representatives)
- 3 February 2000: European Parliament Resolution on the communication from the Commission entitled: Women and Science – Mobilising women to enrich European research. EN
- 3-4 April 2000, Brussels, Conference « Women and Science: Making Change Happen »
- June 2000, First meeting of the RTD « Women and science working group » (Commission services in charge of research programmes)
- 15 May 2001: Commission Staff Working Paper « Women and Science : The gender dimension as a leverage for reforming science »
- 26 June 2001: Council Resolution on science and society and women in science

#### **...after the Council Resolution:**

- 2001, Unit « Women and Science », DG Research, Directorate “ Science and Society”
- 2001, « Women and Science » part of the Science and Society Action Plan (Action no 24 – 27)
- 8-9 November 2001, Brussels, Conference “Gender & Research” (presentation of the results of the gender impact assessment studies on FP 5)
- June 2002, Report of the Helsinki group on « National policies on women and science in Europe»
- June 2002, Madrid, In cooperation with the European Union Presidencies a conference entitled Promoting Women in the Scientific Arena.
- 23 January 2003, Brussels, Presentation of the WIR Report « Women in industrial research. A wake up call for European industry »
- March 2003: VADEMECUM « Gender Mainstreaming in the 6<sup>th</sup> Framework Programme – Reference Guide for Scientific Officers/Projects Officers
- 10 – 11 October 2003, Berlin, Conference « Women in industrial research. Speeding up changes in Europe »
- Presentation of the Wake-up Call from CEOs « Women in Science and Technology in the Private Sector »
- Report on « Women in industrial research. Analysis of statistical data and good practices of companies »
- Publication on « Women in industrial research. Good practices in companies across Europe »
- November 2003, statistical publication « She Figures 2003»
- 23-24 October 2003, Florence, Seminar on «Gender bias in defining and measuring scientific excellence»
- 27 November 2003, Council Resolution on equal access to and participation of women and men in the knowledge society for growth and innovation (2003/ C 317/03)
- December 2003, Rome, conference on «Women in Science: Mainstreaming gender equality in the European Research Area. »
- 31 January 2004, presentation of the ENWISE Report « Waste of talents: turning private struggles into a public issue. Women and Science in the ENWISE countries »
- June 2004 - publication of the report on « Gender and Excellence in the making »
- 25-28 August 2004, Stockholm, EuroScience Open Forum (ESOF) – W&S workshops
- 9-10 September, Tallinn conference, publication and dissemination of ENWISE report
- January 2005 - publication of the report on «Women in industrial research. Speeding up changes in Europe»
- February 2005 – launch of the expert group: «Women in Science and Technology - the business perspective»

## **Annex 2.2 CEO Position Paper (Airbus, Air Liquide, EADS, Hewlett Packard, Rolls Royce, Schlumberger, Siemens, October 2003)**

### ***Women in Science and Technology in the Private Sector (A Wake-up Call from CEOs)***

This position paper is a joint, public commitment of Chief Executive Officers of companies based in Europe, who are eager to enlarge the reservoir of talent in Europe<sup>1</sup>. We want to see, in the first instance, twice as many women graduating in science and engineering. At the same time, we want to ensure that their skills are used by industry to the best advantage. We sense an urgency to tackle this problem, but we also need to make a commitment to longer-term strategies.

Our companies have different cultures and operate in a diverse range of industries and countries. We are also at different stages in developing policies to recruit, retain and promote women effectively and efficiently. However, we all want women to play a much more important role in decision-making in industrial R&D and we are committed to working together to put this issue on the agenda publicly.

We are ready to take the following actions:

- *Taking a Stand*: Each CEO and their top management will demonstrate their company's approach at public events.
- *Sponsoring a Role Model*: Each company will fund a major programme, such as endowing a Chair at a university, to create a strategic partnership with the education sector to encourage women in science and engineering.
- *Promoting Change*: Each company will be a catalyst for change: internally, by promoting awareness, initiating or improving specific company measures, defining strategic goals and monitoring progress; and externally, through co-operation with other companies and universities.
- *Making Use of Existing Programmes*: Each company will take full advantage of existing national and European programmes designed to support women in industrial research.<sup>2</sup>
- *Analysing the Business Case*: A panel of experts (sociologists, economists, scientists, etc) will review existing research, analyse the results and assess the business case today to strengthen public communication.

We should also like to trigger changes in the perceptions of women in high school and university, and throughout their careers. These changes are designed to encourage them to take up and pursue careers that will lead to the strengthening of the science and engineering workforce. This will require a contribution from a range of partners in society - primary and secondary education, government and public and private sector industry. We hope that our actions will produce a snowball effect on these other sectors of society.

We are working together as a group to make an impact. The challenge is an exciting one; addressing it successfully will enrich and diversify our corporate cultures. We are committed to sustained action on all of these initiatives. We are aware that these actions will demand investment; yet to do nothing would cost much more.

We welcome other companies that are joining us in this venture and we look forward to working together on this long and interesting journey.

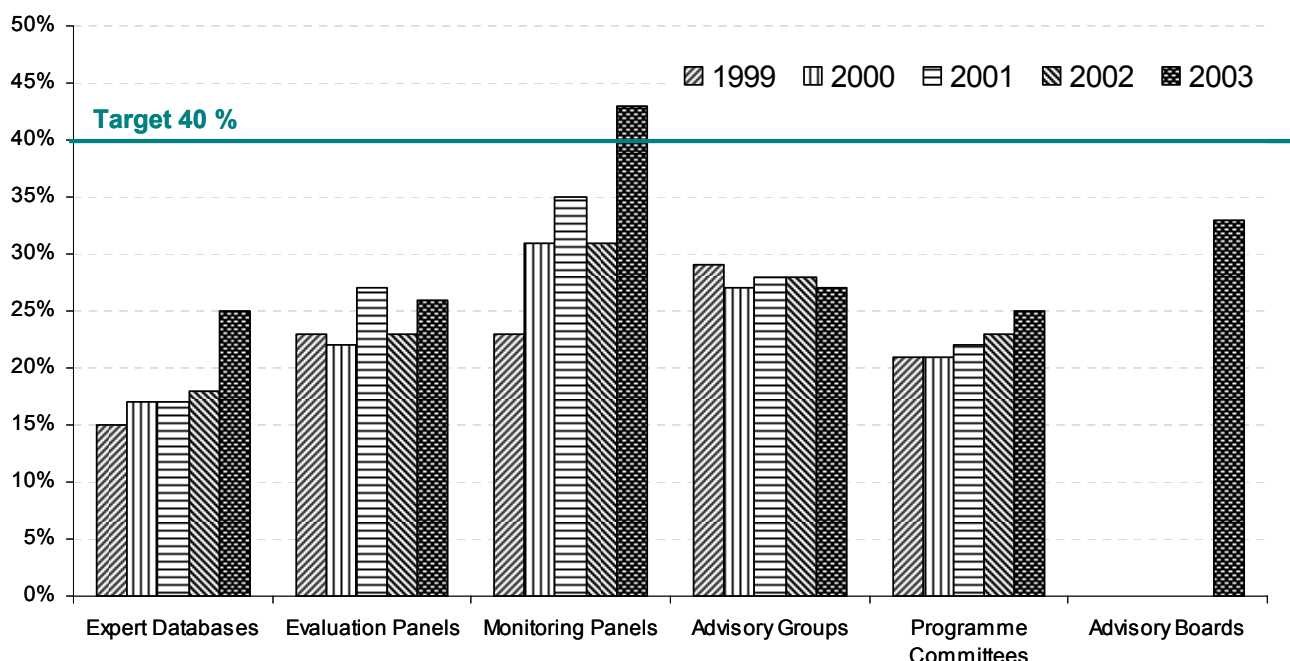
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<sup>1</sup> Rubsamen-Waigmann, H. et. al. (2003) *Women in industrial research: A wake up call for European industry* Luxembourg : Office for Official Publications for the European Communities

<sup>2</sup> Example: Marie Curie Actions in the Sixth Framework Programme of the European Commission (<http://europa.eu.int/mariecurie-actions>)

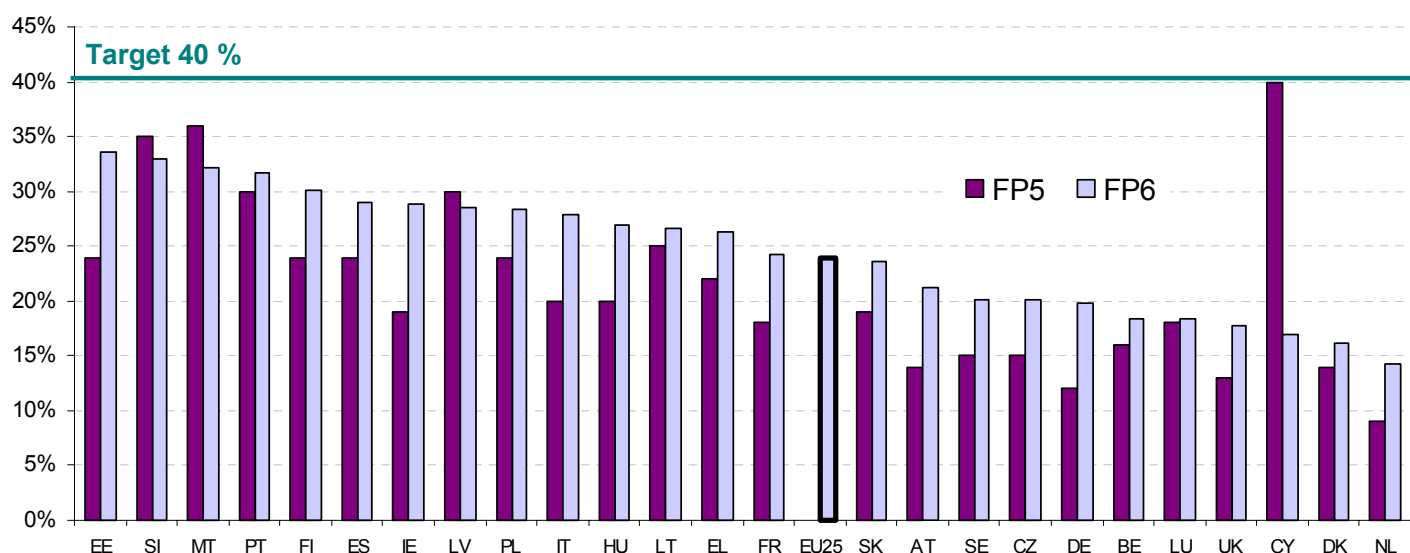
### Annex 3 Research Framework Programmes Statistics

#### Annex 3.1 Percentage of women in expert databases, evaluation panels, monitoring panels, advisory groups, programme committees, FP 5 (1999–2002), FP6 (2003)



Source: DG RTD, 2004

#### Annex 3.2: Percentage of women in expert databases, FP5 and FP6, for EU-25



Source: DG RTD, 2004

### Annex 3.3 Gender distribution in FP6: Experts' database, evaluation panels\*, advisory groups, programme committees, by country, EU-25, 2004

	Experts database				Evaluation panels				Advisory groups				Programme Committees			
	w	m	total	%w	w	m	total	%w	w	m	total	%w	w	m	total	%w
BE	239	1063	1302	18%	57	209	266	21%	6	15	21	29%	15	46	61	25%
CY	19	93	112	17%	6	14	20	30%	1		1	100%	0	2	2	0%
CZ	64	254	318	20%	16	43	59	27%	1	4	5	20%	2	9	11	18%
DK	91	471	562	16%	18	87	105	17%	2	6	8	25%	4	19	23	17%
DE	871	3523	4394	20%	116	493	609	19%	3	28	31	10%	18	82	100	18%
EE	36	71	107	34%	5	15	20	25%	1	1	2	50%	10	40	50	20%
EL	401	1125	1526	26%	56	162	218	26%	3	10	13	23%	13	68	81	16%
ES	928	2276	3204	29%	144	253	397	36%	5	12	17	29%	10	32	42	24%
FR	892	2784	3676	24%	143	406	549	26%	10	21	31	32%	10	15	25	40%
IE	169	417	586	29%	34	107	141	24%	6	3	9	67%	6	12	18	33%
IT	1146	2956	4102	28%	195	323	518	38%	3	22	25	12%	14	40	54	26%
LV	20	50	70	29%	4	6	10	40%	1		1	100%	2	24	26	8%
LT	45	124	169	27%	4	17	21	19%	2		2	100%	0	23	23	0%
LU	11	49	60	18%	4	9	13	31%					17	50	67	25%
HU	137	371	508	27%	22	55	77	29%		3	3	0%	6	15	21	29%
MT	45	95	140	32%	12	9	21	57%					8	32	40	20%
NL	170	1024	1194	14%	17	174	191	9%	3	12	15	20%	14	6	20	70%
AT	203	756	959	21%	29	114	143	20%	1	6	7	14%	9	15	24	38%
PL	308	775	1083	28%	43	100	143	30%	1	6	7	14%	17	33	50	34%
PT	254	549	803	32%	66	81	147	45%	4	6	10	40%	9	31	40	23%
SI	77	157	234	33%	23	27	50	46%		1	1	0%	11	26	37	30%
SK	38	123	161	24%	9	16	25	36%		1	1	0%	8	49	57	14%
FI	255	593	848	30%	51	88	139	37%	4	7	11	36%	22	12	34	65%
SE	223	882	1105	20%	35	152	187	19%	5	6	11	45%	13	25	38	34%
UK	575	2672	3247	18%	137	483	620	22%	9	20	29	31%	9	31	40	23%
<b>EU-25</b>	<b>7217</b>	<b>23253</b>	<b>30470</b>	<b>24%</b>	<b>1246</b>	<b>3443</b>	<b>4689</b>	<b>27%</b>	<b>71</b>	<b>190</b>	<b>261</b>	<b>27%</b>	<b>247</b>	<b>737</b>	<b>984</b>	<b>25%</b>
<b>Target</b>				<b>40%</b>				<b>40%</b>				<b>40%</b>				<b>40%</b>
<i>Total AL</i>	<i>8581</i>	<i>26550</i>	<i>35131</i>	<i>24%</i>	<i>1460</i>	<i>4074</i>	<i>5534</i>	<i>26%</i>	<i>74</i>	<i>197</i>	<i>271</i>	<i>27%</i>	<i>318</i>	<i>855</i>	<i>1170</i>	<i>27%</i>

Source: DG RTD, FP6 statistics, 2004

\* data for 2003



### Annex 3.4 FP6 Advisory group members by activity area, country and sex, 2004

	Life		IST		Nano		Aero		Food		Sust.		Cit&Gov		Mobility		Sc&Soc		All Act. Areas		
	W	M	W	M	W	M	W	M	W	M	W	M	W	M	W	M	W	M	W	M	% W
BE		3		3		3	1	2	1	2	1	2			2		1		6	15	29
CY	1																		1		100
CZ				1		1		1	1				1						1	4	20
DK		1		1		1				1			2		1		1		2	6	25
DE	1	2		2		4		7	1	1			8		1	1	1		2	3	28
EE		1																1		1	50
EL		1		1	2			1	1	1			3		1		1	1	3	10	23
ES	1			3		3	1	1					4		2	1	1		5	12	29
FR	3	1	1	2	2	1	1	6	1	1	1	5	1	1		2		2	10	21	32
IE								1		1	3			1		1	1	1	6	3	67
IT	1	3		3		3		3		1	1	6		1		2	1		3	22	12
LV									1										1		100
LT	1								1										2		100
LU																					
HU													1		1			1		3	0
MT																					
NL		2		2	1	1		1		2	1	2		1	1			1	3	12	20
AT				1		1		2		1		1					1		1	6	14
PL				1		1		1		1		2	1						1	6	14
PT	1			1		1		2				1	1	1			1	1	4	6	40
SI		1																		1	0
SK													1							1	0
FI		1		1		1		1	1		2	1			1	1		1	4	7	36
SE	1		1	1	1			2			1	2					1	1	5	6	45
UK	1	1	1	3	1	2	2	2	1	1	1	5	1	2	1	2		2	9	20	31
Bulgaria																					
Romania						1											1			2	0
Turkey								1						1						2	0
Iceland			1			1													1	1	50
Israel										1										1	0
Norway			1																	1	100
Canada															1				1		100
USA															1					1	0
<b>Total W</b>	<b>11</b>		<b>5</b>		<b>7</b>		<b>5</b>		<b>9</b>		<b>12</b>		<b>5</b>		<b>10</b>		<b>11</b>		<b>9</b>		<b>74</b>
<b>Total M</b>		<b>17</b>		<b>26</b>		<b>25</b>		<b>34</b>		<b>14</b>		<b>47</b>		<b>10</b>		<b>13</b>		<b>11</b>		<b>197</b>	

Source: DG RTD, 16.06.2004

#### Annex 3.4b Country codes

AUSTRIA	AT
BELGIUM	BE
CYPRUS	CY
CZECH REPUBLIC	CZ
DENMARK	DK
ESTONIA	EE
FINLAND	FI
FRANCE	FR
GERMANY	DE
GREECE	EL
HUNGARY	HU
IRELAND	IE
ITALY	IT
LATVIA	LV
LITHUANIA	LT
LUXEMBOURG	LU
MALTA	MT
NETHERLANDS	NL
POLAND	PL
PORTUGAL	PT
SLOVAKIA	SK
SLOVENIA	SI
SPAIN	ES
SWEDEN	SE
UNITED KINGDOM	UK

### Annex 3.5 Gender distribution in the Sixth Framework Programme: submitted proposals 2003, persons in charge\*, evaluators 2003, advisory groups 2004, programme committee members, 2004

Activity Areas	Budget in 1000€	No. of prop.	No. of particip	Persons in charge			Evaluation Panels				Advisory Groups				Progrm Committees			
				men	women	% w	women	men	total	% w	women	men	total	% w	men	women	total	% w
<b>6TH FRAMEWORK PROGRAMME - ALL AREAS</b>	<b>16.270.000 €</b>	<b>11.600</b>	<b>106.121</b>	<b>87.236</b>	<b>15.325</b>	<b>14%</b>	<b>1460</b>	<b>4074</b>	<b>5534</b>	<b>26%</b>	<b>74</b>	<b>197</b>	<b>271</b>	<b>27%</b>	<b>910</b>	<b>316</b>	<b>1226</b>	<b>26%</b>
<b>Integrating and strengthening the ERA</b>	<b>13.345.000 €</b>	<b>6.334</b>	<b>91.459</b>	<b>75.139</b>	<b>12.941</b>	<b>14%</b>	<b>997</b>	<b>3248</b>	<b>4245</b>	<b>23%</b>	<b>54</b>	<b>173</b>	<b>227</b>	<b>24%</b>	<b>639</b>	<b>217</b>	<b>856</b>	<b>25%</b>
<b>Focusing and integrating Community research</b>	<b>11.285.000 €</b>	<b>6261</b>	<b>91034</b>	<b>74845</b>	<b>12814</b>	<b>14%</b>												
1. Life sciences, genomics and biotechnology for health	2.255.000 €	541	8331	6584	1669	20%	191	608	799	24%	11	17	28	39%	50	28	78	36%
a. Advanced genomics and its applications for health	1.100.000 €	0	0	0	0	-												
b. Combating major diseases	1.155.000 €	0	0	0	0	-												
Joint call (Thematic priorities 1a,1b)		541	8331	6584	1669	20%												
2. Information society technologies	3.625.000 €	1584	21480	18571	2803	13%	263	1230	1493	18%	5	26	31	16%	68	10	78	13%
3. Nanotechnologies and nanosciences	1.300.000 €	1017	21960	19053	2692	12%	82	227	309	27%	7	25	32	22%	63	13	76	17%
4. Aeronautics and space	1.075.000 €	180	2605	2369	201	8%	26	164	190	14%	5	34	39	13%	68	10	78	13%
5. Food quality and safety	685.000 €	245	4312	3182	1120	26%	29	55	84	35%	9	14	23	39%	47	24	71	34%
6. Sustainable development, global change and ecosystems	2.120.000 €	578	9190	8068	1047	11%	96	323	419	23%	12	47	59	20%	136	40	176	23%
a. Sustainable energy systems	810.000 €	279	3980	3519	410	10%												
b. Sustainable surface transport	610.000 €	110	1707	1573	122	7%												
c. Global change and ecosystems	700.000 €	189	3503	2976	515	15%												
7. Citizens and governance in a knowledge-based society	225.000 €	273	3370	2392	945	28%	59	92	151	39%	5	10	15	33%	42	27	69	39%
Joint call (Thematic priorities 2,3)		97	2520	2310	186	7%												
Joint call (Thematic priorities 4,6a,6b)		186	2637	2302	291	11%												
<b>Specific activities covering a wider field of research</b>	<b>1.300.000 €</b>																	
Policy support and anticipating scientific and technological needs	555.000 €	402	3286	2626	611	19%	113	277	390	29%								
a. Policy-oriented research		213	2149	1658	454	21%												
b. New and emerging science and technology		189	1137	968	157	14%												
Horizontal research activities involving SMEs	430.000 €	845	8946	5516	741	8%	83	170	253	33%					165	65	230	28%
Specific measures in support of international cooperation	315.000 €	313	2397	1872	508	21%	55	102	157	35%								
<b>Non- nuclear activities of the JRC</b>	<b>760.000 €</b>																	
<b>Structuring the ERA</b>	<b>2.605.000 €</b>	<b>5.221</b>	<b>13.959</b>	<b>11.512</b>	<b>2.272</b>	<b>16%</b>	<b>460</b>	<b>779</b>	<b>1239</b>	<b>37%</b>	<b>20</b>	<b>24</b>	<b>44</b>	<b>45%</b>	<b>174</b>	<b>90</b>	<b>264</b>	<b>34%</b>
Research and innovation	290.000 €	212	1600	1163	429	27%	19	27	46	41%					47	15	62	24%
Human resources and mobility	1.580.000 €	4721	9623	8090	1401	15%	361	622	983	37%	11	13	24	46%	36	37	73	51%
Research infrastructures	655.000 €	170	1937	1687	237	12%	12	51	63	19%					51	12	63	19%
Science and society	80.000 €	118	799	572	205	26%	57	57	114	50%	9	11	20	45%	40	26	66	39%
<b>Strengthening the foundation of the ERA</b>	<b>320.000 €</b>																	
Coordination of activities	270.000 €	73	425	294	127	30%	11	22	33	33%								
Coherent development of research & innovation policies	50.000 €	0	0	0	0	-												
<b>Euratom</b>	<b>1.230.000 €</b>	<b>41</b>		<b>585</b>	<b>112</b>	<b>16%</b>	<b>3</b>	<b>47</b>	<b>50</b>	<b>6%</b>								
1. Controlled thermonuclear fusion		0	0	0	0	-												
2. Management of radioactive waste		0	0	0	0	-												
3. Radiation protection		0	0	0	0	-												
Joint call (Thematic priorities 2,3)		36	670	561	107	16%												
Other activities in nuclear technologies and safety		5	29	24	5	17%												
<b>Undefined</b>		<b>4</b>	<b>4</b>	<b>0</b>	<b>0</b>	<b>0%</b>												

Source: European Commission, DG RTD, C4, Data Advisory Boards 16.06. 2004

\* There are over 3.500 participants records with missing gender information, therefore the sum of men and women does not equal 100%